Do voluntary payments to advisors improve the quality of financial advice? An experimental deception game∗

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ABSTRACT

The market for retail financial products (e.g., investment funds or insurances) is marred by information asymmetries. Clients are not well informed about the quality of these products. They have to rely on the recommendations of advisors. Incentives of advisors and clients may not be aligned, when fees are used by financial institutions to steer advice. We experimentally investigate whether voluntary contract components can reduce the conflict of interest and increase truth telling of advisors. We compare a voluntary payment upfront, an obligatory payment upfront, a voluntary bonus afterwards, and a three-stage design with a voluntary payment upfront and a bonus after. Advisors are most truthful, when mutual opportunities to reciprocate exist, and when the voluntary payment is largest. Our analysis identifies the third stage bonus payment as the key feature for success as it allows for an interplay of reciprocal behavior between clients and advisors.

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1. Introduction

For a number of important economic decisions consumers depend on experts to give them advice. Our main example is the market for retail financial products, others include health care advice or lawyer–client relationships. While the experts are better-informed about the quality of products/services, giving truthful advice to clients may not always coincide with the monopoly interest of the expert. In fact, a conflict of interest is rather common. In this paper we use a principal–agent framework to illustrate the origin of the conflict of interest, describe the negative consequences of moral hazard on market efficiency, and test a potential remedy to reduce market failure.

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Crawford and Sobel (1982) pioneered the economic analysis of such strategic information transmission. In their sender–receiver model, the incentive of the informed sender to misreport information to the uninformed receiver increases with the conflict of interest. Our experimental study uses a modified sender–receiver (or deception) game in order to analyze advisor (sender/agent) and client (receiver/principal) behavior in a stylized market for financial advice. A frequent finding in experimental deception games (see, for instance, Gneezy, 2005; Cai and Wang, 2006; Sánchez-Pagés and Vorsatz, 2007; Hurkens and Kartik, 2009; Erat and Gneezy, 2012; Danilov et al., 2013) is that senders tell the truth more often than predicted by standard Bayesian Nash equilibrium analysis, a behavioral pattern termed “overcommunication phenomenon”.

While our study tries to shed some light on the underlying motivations for overcommunication, most importantly it introduces an additional instrument to the standard deception game to analyze its effect on the level of overcommunication. We permit clients to make voluntary payments to the advisor before and/or after the actual interaction. In experiment 1 we use a one-shot design to test, whether upfront payments have an effect on the provision of truthful advice and if so, whether behavior is in line with beliefs. Experiment 2 extends experiment 1 in several directions. It adds two treatments that feature a third (bonus) stage, clients can select from five different upfront payments, and the game is repeated. This design allows us to investigate, whether voluntary contract components can reduce the conflict of interest and increase truth telling of advisors. Subjects’ beliefs and their reactions to the size of the voluntary payment give us insights about the underlying motivations to provide truthful advice (follow recommendations).

Our motivation to incorporate mutual opportunities to reciprocate as an instrument to improve information transmission originates from the success of voluntary components to alleviate moral hazard problems in principal–agent situations. Labor markets and the test of the fair wage hypothesis (Akerlof, 1982; Akerlof and Yellen, 1988, 1990) in gift-exchange experiments, pioneered by Fehr et al. (1993), may be the most prominent example. Empirical support in favor of reciprocity is clear-cut when a three-stage gift-exchange design is used, that is, a firm sets a wage, a worker chooses an effort level, and then the firm may pay a bonus. Laboratory (Fehr et al., 1997, 2007) as well as field (Regner, 2009) experiments report significantly higher effort levels with a third bonus stage than without. Given the mixed empirical results for the two-stage design and the distinctly positive ones for the three-stage design, it may be important to provide mutual opportunities to reciprocate in order to reap the benefits of reciprocity. Hence, we expect that a third stage, a possible bonus payment from client to advisor, may also be beneficial in our experimental deception game in the context of financial advice.

Our results confirm this. Across treatments the three-stage design (mutual opportunities to reciprocate exist) is most successful in combating moral hazard. Within treatments, the frequency of truthful advice is significantly higher, when the voluntary payment is large. Clients follow advice, when they pay for it, especially when the payment is large and voluntary.

The paper is organized as follows. Section 2 provides some background on the market for financial advice and leads to our experimental design using a motivating example. In Sections 3–5 we present the experimental setup of our study and the results. In Section 6 we discuss our findings and Section 7 concludes.

2. The market for financial advice

Certainly, investing one’s savings is one of the most important economic activities. However, choosing the right financial product (stocks, bonds, investment funds, life insurances, etc.) is by no means an easy feat. In fact, to most consumers the market for retail financial products must appear like a jungle. Hence, advice is dearly needed and consumers turn to expert intermediaries who provide advice concerning financial products. While such financial advisors could be paid a fee by clients for their consulting services, it is much more common in reality that advisors do not charge their clients. Instead, financial advisors receive commissions paid by financial institutions per product sold to clients. It is controversial, at best, whether consumers really get a good deal in a commission-based system of financial advice despite not having to pay a fee. In the remainder of this section we illustrate the conflict of interest between advisor and client that exists in the commission-based system of financial advice, and describe the negative consequences of this moral hazard on market efficiency. Thus, we relate the commissions-based market for financial advice to the deception game.

Our stylized market for financial advice features a client who is eager to invest, several financial institutions (funds) who compete for the client’s investment, and an advisor who recommends a fund to the client.

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2 A few other studies take a similar approach. Sánchez-Pagés and Vorsatz (2009) analyze whether the ex-post possibility to punish changes behavior in the deception game. Peeters et al. (2008) study a deception game with/without the possibility to reward in a within-subjects design.

3 Traditional principal–agent theory propagates the use of incentives in order to reduce agency costs caused by moral hazard. ‘Behavioral’ principal–agent theory suggests an alternative route to reach a second-best. Instead of using explicit incentives, contracts are deliberately left open and principals as well as agents are free to make choices that are higher than the necessary minimum. Such a design leaves room to reciprocate kind actions. Depending on the strength of available incentive instruments it may be more promising to use voluntary contract components.

4 While evidence of a positive wage-effort relationship abounds in two-stage designs in the lab, positive reciprocity is harder to find in gift-exchange field experiments with two stages, see List (2006), Gneezy and List (2006), Kube et al. (2006), Maréchal and Thóni (2007), Bellemare and Shearer (2009), and Hennig-Schmidt et al. (2010).

5 The amount of publicly listed financial products is estimated to be 840,000 and financial institutions issue new innovative products at a steady rate, see von der Hagen (2012).

6 Only in Scandinavian countries it is common that financial advisors are paid a fee by clients for their consulting. The commission-based system dominates in the USA, Germany, the UK. 7 We do not consider matching aspects, i.e., products are equally suitable to all consumers.
The advisor receives a basic commission \( c \) from the fund that is chosen for investment. If a fund attracts the investment of the client, this fund makes a profit of \( 2c \), the other fund gets nothing. There is heterogeneity in fund performance, that is, fund A pays out \( c \) to the client, and fund B \( 2c \). Table 1 shows ‘payoffs’ in the stylized market for the client and the two funds.

Hence, it is better for the client, but also preferable from an efficiency perspective, to invest in the better performing fund B. Clearly, the advisor should recommend fund B to the client. However, incentives exist for the low-performing fund A to influence the advisor’s recommendation. In turn, this would have an effect on the client’s investment decision. Since fund A would not be bought, if the advisor recommends truthfully to the client, fund A may try to influence the recommendation of the advisor by increasing the commission.\(^8\) In our example, fund A pays a high commission \( (2c \) instead of \( c \)) to the advisor. Table 2 shows ‘payoffs’ when fund A uses commissions to steer advice.

The conflict of interest – and its origin – is now evident. Interests of client and advisor are not aligned, because (especially low-performing) funds have an incentive to abuse the commission system in order to steer advice.

As a last step our motivating example adds more funds in order to be closer to reality. The funds C and D are also low-performing. They pay out \( z \leq c \) to the client, and a commission of \( z \) to the advisor. We assume that they do not steer commissions. In reality one fund would not commission-steer all existing advisors, but only a subset. Other funds commission-steer other advisors and the subsets possibly overlap. The advisor in our motivating example is in the subset of only one fund, and thus only this fund uses commissions to steer advice. Table 3 shows ‘payoffs’ with four funds and commission steering by fund A. Each fund only gets revenue when it is chosen by the client. Fund A’s profit is reduced, because it pays an extra commission in order to steer advice.

Summing up, the market for financial advice suffers from moral hazard. The combination of asymmetric information (advisor knows the product quality, the client does not) and advisors being paid by funds creates a potential conflict of interest. When funds use commissions in order to steer advice, the conflict of interest becomes real and incentives of client and advisor are misaligned. This may lead to (i) biased advice for the client, and (ii) an inefficient allocation of resources due to investment in a low-performing fund.

The conflict of interest in the market for retail financial products has been documented in the international press for years.\(^9\) Recently also government bodies recognized the misaligned incentives between clients and advisors, and have started to take action. A UK Financial Services Authority regulation prevents financial advisors in the UK from accepting commissions (effective from 2012). A new EU legislation (Mifid II, planned for 2014) envisions a shift away from the commission-based system to fee-based financial advice. Its article 24/3 requires that financial advisors clearly state, whether they are independent or whether any conflicts of interest exist. Independent financial advisors would not be allowed to accept any commission or other monetary side payments of third parties. In a similar vein a law proposition by the German minister for consumer protection dated 2011, although not forbidding commissions-based advising, legally defines and protects the profession of the fee-based advisor (Honorarberater), to facilitate the distinction between fee-based advisors and commissions-based advisors.

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\(^8\) Inderst and Ottaviani (2012) model the steering of advice formally. Two firms compete to sell a product to an uninformed customer who is advised by an informed intermediary. The two firms use commissions paid to the intermediary to steer advice. The authors show that it becomes increasingly costly for a cost-efficient firm to expand sales, because the higher commission must be paid inframarginally, i.e., also to those intermediaries who would have advised in favor of the cost-efficient firm anyway.

\(^9\) The Handelsblatt (August 2010), for instance, reports that clients in Germany lose 20–30 billion euros per year due to misleading financial advice. See Popova (2010) for more details.
sales people. In our study we suggest an alternative that combines commissions with (voluntary) fees and test, whether it is effective in combating moral hazard of advisors.

3. Overview of the experimental set up

Our experiments are designed to analyze behavior in a stylized market for financial advice. A cheap talk deception game is used as a workhorse. Experiment 1 intentionally implements the most unfavorable scenario to test whether upfront payments counteract the conflict of interest faced by advisors. The experimental situation is a one-shot, anonymous interaction between strangers, without the threat of immediate or future punishment (since reputation formation is excluded), and peer pressure (since the client never learns whether advice was truthful). In experiment 2 we add a third (bonus) stage to the structure of the deception game. Play is repeated, however without the chance to invest in a reputation and without competition, in order to focus on the effect of the voluntary components. We elicit beliefs in the one-shot game of experiment 1 (after decisions were made), but not in the repeated game of experiment 2.

Both experiments were conducted at the University of Jena with students from various disciplines. They were invited to the laboratory of the Max Planck Institute of Economics using the online recruitment system for economic experiments ORSEE (Greiner, 2004). The experiments were computer-based, using z-Tree (Fischbacher and Urs, 2007). In each session, gender composition was approximately balanced and subjects took part in one session only. Subjects in experiment 1 (2) earned 8.9 (12) Euros on average and spent 40 (90) min (15 min of which on the instructive part) in the laboratory. Experiment 1 (2) took place in January 2010 (2011).

Upon arrival in the laboratory, subjects were randomly assigned to a cubicle, where they were instructed about the experiment. During the experiment, eye contact was not possible. Although participants saw each other at the entrance of the lab, there was no way for them to guess with whom of the 32 students they would be matched later on. All subjects in experiment 1 and 94% in experiment 2 had participated in at least one experiment before.

4. Experiment 1

254 subjects participated in 8 sessions. They were randomly matched in pairs for an anonymous, one-shot interaction. In the instructions, one subject was assigned the role of “advisor” and the other of “decision maker” (hereafter client). The advisor faced three options, A, B, and C. Each option listed a monetary payoff for the advisor and a monetary payoff for the client. Payoffs were such that the best option for the client was not at the same time the best option for the advisor (see Table 4). In this sense interests were misaligned. Total welfare from option A equaled total welfare from option B. This way choosing one option over another could not be explained with a preference for efficiency. Ruling out additional explanations allowed us to concentrate on the conflict of interest for advisors.

The Pareto-dominated option C served the purpose of limiting strategic behavior by advisors and increasing the external validity of the experiment. Similar to Gneezy (2005), Rode (2010), Sutter (2009), the client faced full uncertainty about own and advisor’s payoffs, as well as the alignment of interests. The client only knew that there were three options available. The task of the advisor was to recommend one of the three options to the client. There were three possible recommendations, each stating one of the three options as the most profitable for the client. For example, recommendation 1 read: “Option A will earn you more money than the other two options.” Instead of showing the recommended option to the client, she was asked whether she wanted to follow the recommendation. If the answer was yes, the recommended option was implemented as her decision. If it was no, one of the other two options was randomly selected to be implemented as her decision. In the end, the client received feedback only about her own payoff from the chosen option. She never learned her payoffs from the other two not selected options. Moreover, she never learned the potential and actual payoffs of her advisor.

The experiment consisted of four different treatments: Obligatory payment of 1 euro (O1), Obligatory payment of 2 euros (O2), Voluntary payment of 1 euro (V1), and Voluntary payment of 2 euros (V2). Two sessions were conducted per treatment.

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Table 4
Payoff distribution (only known to advisors); all payoffs in euros.

<table>
<thead>
<tr>
<th>Option</th>
<th>Payoff for advisor</th>
<th>Payoff for client</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

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10. Essentially, we again set up a worst case scenario. Moreover, the extent of competition/reputation in the current market for financial advice does not seem to avoid the negative effects described. This is in line with the findings of Dulleck et al. (2011) who experimentally analyze markets for credence goods and conclude that reputation and competition do not reduce market inefficiencies.

11. The instructions are available in the respective working papers (Popova, 2010; Angelova and Regner, 2012).

12. In a two options environment Sutter (2009) observes that a considerable share of advisors provide truthful advice, believing that their client will invert it, i.e. select the other, not recommended option. In the presence of option C, advisors do not have any incentive to recommend option B if they actually want to deceive. More options increase the external validity since, in reality, there are more than three different funds, stocks, insurances which advisors can recommend to their clients, and inverting is therefore not possible. See also Rode (2010).

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Table 5

Sequence of events in experiment 1.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>O</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision about P or NP</td>
<td>Chance for P and NP</td>
<td>CL for P and NP</td>
</tr>
<tr>
<td>AD gives advice</td>
<td>for both P and NP</td>
<td>for either P or NP</td>
</tr>
<tr>
<td>CL decides to follow or not</td>
<td>Elicitation of beliefs</td>
<td>Feedback about payoffs</td>
</tr>
</tbody>
</table>

AD, advisor; CL, client; P, payment; NP, no payment.

32 subjects (half clients, half advisors) took part in each session (in V1, there was one pair less). The setup described so far was common to all treatments. In the following, the differences between treatments will be described. In treatments “Obligatory” both client and advisor were told that with an equal probability, advice would either be free of charge or available at a cost. Depending on the treatment, the cost was either one or two euros. Prior to their decisions neither the advisor nor the client were informed about the realization of the random move determining whether advice would be costly or not. The advisor was asked to provide two recommendations, one for each realization (strategy method, Selten, 1967). Likewise, the client was asked to state whether she would follow the recommendation for each realization. At the end of the experiment, everyone received feedback about their own payoff and whether advice was costly. The advisor was additionally informed whether the client followed her advice. Of course, the advisor was able to infer whether advice was followed only by looking at her own payoff. In treatments “Voluntary” the client could offer a voluntary payment for advice before the advisor provided the recommendation. Again, depending on the treatment, the payment amounted to one or two euros. It was common knowledge that the advisor was obliged to advise in any case, even if not offered a payment. At this point, the advisor was not informed whether she had been offered a payment. Like in the O-treatments, she provided a recommendation both for the case of payment and no payment. The client received only the recommendation that corresponded to her actual decision to offer a payment or not. Feedback at the end of the experiment was the same as in the O-treatments.

After the decision task, subjects were asked to state their belief about the behavior of subjects in the other role and the same session. Each subject stated two beliefs: one for the case a payment was made (voluntary or obligatory) and one for the case no payment was made. Clients guessed the share of advisors who advise in the best interest of clients. Advisors guessed the share of clients who follow the recommendation. In the V-treatments advisors also estimated the share of clients who offer a payment. Beliefs were incentivized in the following way. One guess was randomly selected. If the guess was within 5 points of the realization, the participant received one euro (as in Charness and Dufwenberg, 2006). Since asking for beliefs may influence behavior, beliefs were mentioned after decisions were made and before feedback on final payoffs was given. The instructions only stated that there would be an additional opportunity to earn money later on and that detailed information would be provided on the computer screens. The sequence of events in each treatment is provided in Table 5.

4.1. Behavior of advisors and clients

The main result in experiment 1 is depicted in Fig. 1, graph I. The frequency of truthful advice increases with all types of payment. However, the rates remain below 50%. Surprisingly, the voluntary payments do not lead to higher rates of truthful advice than the obligatory payments. Moreover, the low obligatory payment is more effective than the low voluntary payment.

Result 1.1. In all treatments the frequency of truthful advice is higher with payment than without payment. However, the result is only weakly significant in O2.

Naturally, clients who voluntarily pay for advice also follow it and among those, who do not pay for advice, the rate of advice implementation is less than 25%, see Fig. 1, graph II. In the O-treatments each client makes two decisions, namely whether to follow the advice or not (when she has to pay for it and also when she does not). The low obligatory payment increases significantly the rate of advice implementation: 66% of clients decide to follow the advice when chance determines that they have to pay for it. Without a payment, only 41% of clients decide to follow. In contrast, in O2 the payment does not make a difference: around 50% of clients decide to implement the advice no matter whether they have to pay for it or not.

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13 This incentive mechanism excludes rational responses below 5% and above 95%. However, it is a straightforward procedure because of its simplicity, especially compared to alternatives like the quadratic scoring rule (see Artinger et al., 2010 for a discussion).

14 The comparisons between “payment” and “no payment” within each treatment (V1, V2, O1, O2) are based on one-tailed McNemar’s tests for paired samples. Recall that because of the strategy method each advisor gives two recommendations, one for the case that the client pays and one for the case that the client does not pay. Hence, each advisor is present in each sample. Therefore, the two samples are paired. P-values: V1 = 0.0455, V2 = 0.0578, O1 = 0.0578, O2 = 0.0956.

15 Keeping the condition constant and using one-sided Fisher’s exact tests, one obtains the following results. Given payment, the shares of truthful advice in O1, O2 and V2 are identical. The same is true for the condition no payment. Given payment, advisors in V1 provide truthful advice less often than advisors in O1 (p = 0.034) and V2 (p = 0.058). Also given no payment, the share of truthful advice in V1 is lower than in O1 (p = 0.046) and V2 (p = 0.081). A Fisher’s exact test for independent samples was performed in the V-treatments to compare the behavior of clients who paid for advice to the behavior of clients who did not pay. The p-values resulting from the one-tailed test are: p = 0 for V1 and p = 0.009 for V2. A McNemar’s test for dependent samples
4.2. Beliefs of advisors and clients

The voluntary payments significantly increase the average beliefs of advisors about advice implementation, see Fig. 1, graph IV.\textsuperscript{17} While the small obligatory payment significantly decreases the average belief (WSR, $p = 0.0129$), the high obligatory payment does not cause a change. In the V-treatments and in O2 clients behave very similarly to how advisors expect them to behave (in the V-treatments the payment increases advice implementation and in O2 the payment does not have an effect). The beliefs of advisors are wrong with respect to behavior in O1. While the relationship between behavior of advisors and their beliefs is straightforward in the V-treatments, it is ambiguous in the O-treatments. There, advisors do not believe in higher rates of advice implementation given the payment, but nevertheless give more often truthful advice in this case.

In all treatments, clients believe that payments will increase the rates of truthful advice, see Fig. 1, graph III.\textsuperscript{18} This is true for all clients: those who paid voluntarily/had to pay for advice and those who did not pay/did not have to pay for it. Beliefs of clients are correct with respect to the effect of the payment. However, clients are too optimistic about the exact share of truthful advice, with and without payment. The behavior of clients is consistent with their beliefs in the V-treatments and in O1 but not in O2.

Result 1.3. In the V treatments own behavior is consistent with own beliefs for both advisors and clients, while in the O treatments the relationship between own beliefs and own behavior is ambiguous.

Summing up, all types of payment increase the frequency of truthful advice. Clients follow advice more often given they paid (or had to pay) for it with one exception: the high obligatory payment does not trigger higher frequencies of advice implementation. While clients believe that the payment will improve advice quality, advisors believe in higher frequencies of advice implementation only when the payment is voluntary.

5. Experiment 2

Experiment 1 established that upfront (voluntary) payments are an effective instrument to increase the frequency of truthful advice. In experiment 2 we check the robustness of this result. We extend the one-shot setting of experiment 1

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\textsuperscript{17} Both p-values are equal to 0 according to a two-sided Wilcoxon sign ranked test (WSR).

\textsuperscript{18} WSR, p-values: V1 – 0.0008, V2 – 0.000, O1 – 0.000, O2 – 0.0149.

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Table 6
A possible state realization; all payoffs in tokens, 1 token = 0.5 euros.

<table>
<thead>
<tr>
<th>Option</th>
<th>Payoff for advisor</th>
<th>Payoff for client</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 7
Sequence of events in experiment 2.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Decision about P</th>
<th>Payoffs</th>
<th>Payoffs</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD gives advice</td>
<td>Chance</td>
<td>O</td>
<td>V</td>
</tr>
<tr>
<td>CL decides to follow or not</td>
<td>for every P</td>
<td>CL</td>
<td>for every P</td>
</tr>
<tr>
<td>Feedback about payoffs</td>
<td>Yes</td>
<td>for chosen P</td>
<td>Yes</td>
</tr>
<tr>
<td>CL decides about bonus</td>
<td>n/a</td>
<td>for chosen P</td>
<td>Yes</td>
</tr>
<tr>
<td>Final feedback</td>
<td>n/a</td>
<td>n/a</td>
<td>Yes</td>
</tr>
</tbody>
</table>

AD, advisor; CL, client; P, payment (0, 5, 1, 1.5, 2).

to a repeated design. We also introduce an additional voluntary payment component (a bonus afterwards) and allow for 5 different upfront payment levels. Finally, payoffs are common knowledge.

Two hundred and fifty-six subjects took part in 8 sessions. Again, they were randomly assigned a role (advisor or client), which they kept throughout the entire experiment. 15 rounds were played and at the beginning of each round, each advisor was matched to a client. The payoff table changed compared to experiment 1, see Table 6. It contained four options yielding the following payoffs for advisor and client: (10; 5), (5; 10), (5; 2), and (5, 2).

Clients were informed about the possible payoff pairs, so that they were aware of the alignment of interests, as well as their own and the advisor’s possible payoffs. However, clients were not informed what state of the world was realized, i.e., which payoff pair was assigned to which option. In each round a random device assigned each of the four payoff pairs to one of the options A, B, C, or D. The assignment was announced to advisors only. Clients had to choose one option, based solely on the advisor’s recommendation. If the answer was yes, the recommended option was implemented as her decision. If it was no, one of the other three options was randomly selected to be implemented as her decision. At the end of each round, both clients and advisors received feedback about which option was selected and their resulting payoffs. Advisors were also told whether the client followed the recommendation or not. Payoffs from the chosen option were added to their initial endowment of 2.5 tokens (paid in each round) to form the final payoff from the round. Two out of 15 rounds were randomly selected and paid out in the end of the experiment. In the next round, the same advisor was matched to another client and the round followed the same pattern like the round before. The advisor–client matches were carried out within the same group of 10 subjects (5 advisors and 5 clients). Thus, each advisor met each client 3 times, but we made sure that the same advisor did not meet the same client in two subsequent rounds. One group of 10 subjects (who only met subjects from the same group) qualified as one independent observation. We chose a random stranger matching protocol to minimize strategic effects from repeated play.

Experiment 2 consisted of four different treatments. “Obligatory payment” and “Voluntary payment” are similar in style to the O and V treatments in experiment 1. The treatments “Voluntary payment and Bonus” (VB) and “Bonus” (B) feature an optional bonus payment from client to advisor once payoffs are realized. In the following the differences between treatments will be explained. Table 7 describes the sequence of events in treatments O, V, VB, and B.

In treatment V, clients could offer a voluntary payment between 0 and 2 tokens in steps of 0.5 to the advisor for the recommendation. The voluntary payment was financed by the initial endowment of the client. Advisors were not immediately informed about the amount of the voluntary payment offered by her client. Each advisor was asked to give a recommendation for every possible offer of the client, i.e., for 0, 0.5, 1, 1.5, 2 tokens (strategy method, Selten, 1967).19 Subsequently, the client received the recommendation that corresponded to her offer. In treatment O, clients were informed that they would have to make a payment to the advisor and that the amount to be paid would be chosen by the computer. Like before, advisors were asked to give a recommendation for each possible payment between 0 and 2 tokens. Clients in turn were asked to state whether they would follow the recommendation for each possible payment. In the end, everyone learned the amount of payment chosen by the computer and their final payoffs from the round (based on the corresponding recommendation for that payment amount). To ensure direct comparability with treatment V, payments in O followed the distribution of voluntary payments in V.20 In treatment VB, there was an additional step compared to treatment V. After the client was informed about her payoff from the round, she could pay a non-negative bonus up to her full earnings from the round to

19 Evidence on the equivalence of the strategy method and the direct response method is not conclusive. However, so far there has not been any instance where a treatment effect found with the strategy method, was not also found with direct responses (Brands et al., 2011).

20 In order to make sure that the only difference between V and O are intentions, O-sessions were run after V-sessions and payments in O were hard-wired based on the actual payments in V, that is, payments of each client in each round were equal in V and O.
Table 8
Voluntary payments upfront, N = 450 decisions.

<table>
<thead>
<tr>
<th>Voluntary payment</th>
<th>0</th>
<th>0.5</th>
<th>1</th>
<th>1.5</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment V (in %)</td>
<td>57</td>
<td>19</td>
<td>7</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Treatment VB (in %)</td>
<td>51</td>
<td>12</td>
<td>12</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 9
Determinants of upfront payments in treatments V and VB.

<table>
<thead>
<tr>
<th>DV: upfront payment</th>
<th>Treatment V</th>
<th>Treatment VB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeff.</td>
<td>St. error</td>
</tr>
<tr>
<td>Round</td>
<td>-.0531</td>
<td>.0248***</td>
</tr>
<tr>
<td>Good experience</td>
<td>1.898</td>
<td>.3093***</td>
</tr>
<tr>
<td>Bad experience</td>
<td>-.5963</td>
<td>-.2256***</td>
</tr>
<tr>
<td>Bonus</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>N</td>
<td>420</td>
<td>-452.57</td>
</tr>
<tr>
<td>Log likelihood</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significance level = 10%.
** Significance level = 5%.
*** Significance level = 1%

her advisor. The only difference between treatment VB and treatment B was the lack of an upfront voluntary payment in B. Clients were given a recommendation and could offer a bonus after they received feedback about their earnings.

In appendix we derive the game theoretic equilibrium of our deception game under standard preferences. In equilibrium, the advisor recommends the medium option for the client with certainty; the client is sure that the medium option has been recommended; and the client follows the advice. The resulting payoffs are 10 for the advisor and 5 for the client.

5.1. Do clients pay voluntarily?

Table 8 shows the percentage of voluntary payments in treatments V and VB. 43% of the decisions in V and half of the decisions in VB are in favor of paying for advice. The most prominent amounts are the smallest (0.5) and the largest (2). Fig. 2 depicts average voluntary payment over all rounds.

What affected the extent of the voluntary payment? We ran an ordered logit regression with standard errors clustered at the individual level for treatments V and VB, and the upfront voluntary payment (taking the values 0, 0.5, 1, 1.5, 2) as the dependent variable. We tested for possible effects over time (variable “round” going from 1 to 15) and for the clients’ experience. For this purpose we created a dummy variable that accounts for “good experience” made one round before (i.e., the client received truthful advice and followed it) and “bad experience” (advice was wrong and the client followed). Moreover, we included a dummy for whether a bonus was paid in VB. Regression results are shown in Table 9. The coefficient for “round” is negative and significant at the 5%-level in treatment V, but not significantly different from 0 in VB. While it seems that voluntary payments are fading away over time in V, they appear to be stable in VB. A good experience with trusting advice in the previous round has a substantial positive effect (1%-level) on the size of the upfront payment and a bad one has a significantly negative effect (1%-level). There is also a marginally significant correlation between the upfront payment and the bonus in VB. A regression only with payments greater than zero confirms the positive relationship between the upfront payment and the bonus (5%-level). It seems that relatively high bonuses are paid when the upfront payment was generous.
Result 2.1. Clients are willing to pay voluntarily for advice. The share of clients who offer a voluntary payment is stable over time, when mutual opportunities to reciprocate exist.

5.2. When do advisors give truthful advice?

Fig. 3 shows the share of truthful advice (i.e., the recommended option pays 10 to the client) conditional on payment. In treatments O and VB, payments of 1 or higher induce higher frequencies of truthful advice compared to no payment (McNemar’s test, \( p = 0.000 \)). In treatment V, the payments 1.5 and 2 lead to significantly more truthful advice than no payment (McNemar’s test, \( p = 0.000 \)).

Fig. 4 depicts the share of truthful advice for the different sizes of payment over time. Also here, the generous upfront payments (of 2 and 1.5) are the effective ones. Logit random effects regressions with standard errors clustered on the individual level allow us to test, whether truthful advice is affected by experiences over time. We ran a separate regression for each size of payment and treatment. In treatments O and V, we regressed a dummy for truthful advice on round. In VB and B, we included an additional regressor: the bonus received by the advisor in the previous round. While results in O and V are mixed,

21 in VB truthful advice is stable over time independently of the size of the payment. In B, truthful advice declines over time. The size of the bonus received in the period before has a significantly positive effect (1%-level) on the rate of

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21 Specifically, in O, there is a negative time trend for payments 0 and 2, a positive one for 1, and no time trend for 0.5 and 1.5. In V, truthful advice fades away over time if the payment size is 1.5 or 2, increases for payment 0.5 and remains the same for 0 and 1.
truthful advice in treatment B, and in VB for a voluntary payment of 2 (1%-level, no significant differences for payments less than 2).

**Result 2.2.** Generous upfront payments induce advisors to give truthful advice. The share of truthful advice is stable over time only when mutual opportunities to reciprocate exist.

Comparing the effect of the same amount paid across the different treatments yields the following results. The payment of 2 is more effective in VB than in V and O (the difference between O and V is not significant). The payment of 1.5 is most effective in VB, followed by V and O. The payments of 1 and 0.5 lead to the same frequency of truthful advice in all treatments. 22 Apparently, the most truth-inducing payment is a generous voluntary one, when a bonus could be given after the transaction.

**Result 2.3.** For generous upfront payments, truthful advice is given most often in treatment VB.

In treatment B, 27% of advice given is truthful. This is equivalent to what the voluntary payment of 1.5 achieves in V and better than what the obligatory payment of 1.5 achieves in O (see Fig. 4). In the first four rounds the bonus in B induces between 35% and 55% truthful advice, which is comparable to the effectiveness of the payment 2 in V and O. From round 5 onwards, the effectiveness of the bonus decreases: the bonus induces between 20% and 30% truthful advice which is similar to the impact of payments 1 and 1.5 in O and 1.5 in V.

### 5.3. When do clients follow advice?

Fig. 5 depicts the share of clients who follow advice conditional on payment in each treatment. In general, clients who paid for advice, follow it more often than clients who did not pay. 23 However, there were three exceptions: like in experiment 1 the obligatory payment of 2 did not induce clients to follow advice more often than the payment of 0. Also the payments of 0.5 and 1.5 in V did not lead clients to follow advice more often than the payment of 0. For the payment 1.5, this may be due to the very low number of observations (N = 12). We conjecture that 0.5 was perceived as too low. Judging from the behavior of advisors, they apparently had the same impression: they provided the same amount of truthful advice for payments 0 and 0.5 in all treatments.

If clients had paid for advice voluntarily and generously (either 1, or 1.5 or 2), they followed advice more often than in treatment O ($\chi^2$-test and Fisher's exact test, $p \leq 0.01$). 24 There is no significant difference in the behavior of clients across treatments V and VB. Clients do not change their behavior over time in any treatment and for any payment. 25 87% of clients in treatment B followed advice. This behavior is comparable to the behavior of clients who offered 1, 1.5, or 2 in V and VB.

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22 The pairwise comparisons between treatments holding the amount paid constant were done with a $\chi^2$-test. Given payment of 2, $p = 0$ for both VB vs. V, and VB vs. O; given payment of 1.5, $p = 0.001$ for VB vs. V, $p = 0$ for VB vs. O, and $p = 0.029$ for V vs. O. The ineffectiveness of the small upfront payments may be due to the use of the strategy method. Behavior elicited with direct responses has been observed to be more extreme (see studies discussed in Brandts et al., 2011). In our case, using direct responses may lead to higher rates of truthful advice also given the small positive upfront payments.

23 The pairwise comparisons between the behavior of clients at payment = 0 and each of the other payments within each treatment yielded significant results for all treatments. In O, $p \leq 0.003$, McNemar's test. In V, $p \leq 0.001$ and in VB $p \leq 0.004$, $\chi^2$-test (or Fisher's exact test for frequencies $\leq 5$).

24 Exception: Treatment V, payment 1.5, again probably due to the low number of observations.

25 Logit random effects regressions, regressing a dummy taking the value of 1 if the client follows advice on round, ran separately for each treatment and payment amount, never show a significant coefficient for round.
Table 10

<table>
<thead>
<tr>
<th>Bonus</th>
<th>0</th>
<th>0.5</th>
<th>1</th>
<th>1.5</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>3.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment B (in %)</td>
<td>80</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Treatment VB (in %)</td>
<td>80</td>
<td>12</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>.5</td>
<td>.5</td>
</tr>
</tbody>
</table>

**Fig. 6.** Average bonus and share of subjects who paid a bonus over time.

**Result 2.4.** If clients pay voluntarily and generously for advice, they follow it more often than when they pay the same amount unintentionally. The behavior of clients is stable over time.

5.4. Do clients pay bonuses?

Table 10 lists the amount of bonuses paid and the percentage of times a bonus was paid in treatments B and VB. In both treatments, 20% of decisions are in favor of a bonus. The average bonus paid in B is higher than in VB (see also Fig. 6). This is reasonable since in B advisors are only paid a bonus, while in VB the bonus can be combined with a voluntary payment. Note that in B the modal positive payment of 2.5 is associated with equal payoffs given that the client followed and advice was truthful. In VB the modal bonus is 5 (possibly a ‘little thank you’: 24 out of 56 times a bonus of 5 followed a payment of 2).

There is a positive and significant correlation between the profit of clients and bonus paid. The correlation in VB (Spearman’s $p=0.4623$) is lower than in B (Spearman’s $p=0.5841$) but both are highly significant ($p=0$). In other words, clients pay bonuses when satisfied with the advice received. Fig. 6 plots the average bonus and the share of subjects who paid a bonus in each round.

**Result 2.5.** In one out of five decisions truthful advice is rewarded with a bonus.

5.5. Individual behavior

Apparently, the phenomenon of a voluntary upfront payment is not due to a small number of subjects. 23 clients (77%) in V and as much 27 clients (90%) in VB do offer an upfront voluntary payment at least once. Moreover, 15 clients (50%) in V and 13 clients (43%) in VB offer an upfront payment more than half of the time (i.e., in at least 8 out of 15 rounds). Bonuses are also paid, although they are less common than upfront payments. Still, 17 clients (57%) in B and 22 clients (73%) in VB pay a bonus at least once.

We classify advisors’ decisions in three categories: lie, conditional lie, and truth. To this end, we look at the recommendations for payments 0 and 2 given by the same advisor. If the recommendation is truthful for both payment sizes, then it is classified as “truth”. If the recommendation depends on the size of the payment, such that it is truthful for 2 and not truthful for 0, then it classifies as a “conditional lie”. All remaining recommendations are classified as a “lie”.27 We add up recommendations from all rounds, so that the total number of recommendations is 450 in each treatment. The underlying assumption for this categorization is, of course, that advisors believe that clients will follow advice when clients paid for it and will not follow advice when they did not pay for it. Table 11 reports the results. We believe that the “Conditional lie” – category (to which 1/3 to 1/2 of recommendations belong) would be part of the “Lie” – category without the possibility for clients to offer a voluntary payment and/or bonus.

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26 We test in a random effects regression of bonus (as a continuous variable) on round and a logit random effects regression on bonus (as a dummy) on round, whether bonus payments decrease over time. While there is an overall negative time trend, behavior stabilizes in the second half of the experiment.

27 Recall that the strategy vector method was used.

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Table 11
Classification of decisions in O, V, and VB (N=450).

<table>
<thead>
<tr>
<th>Type of recommendation</th>
<th>O</th>
<th>V</th>
<th>VB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lie (in %)</td>
<td>55</td>
<td>58</td>
<td>43</td>
</tr>
<tr>
<td>Conditional lie (in %)</td>
<td>40</td>
<td>34</td>
<td>48</td>
</tr>
<tr>
<td>Truth (in %)</td>
<td>5</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

5.6. Summary

The results from experiment 2 confirm the behavior observed in experiment 1. Clients do pay voluntarily, advisors give more truthful advice when payments are made, and clients follow more often when they made a generous voluntary payment. However, only when mutual opportunities to reciprocate exist (treatment VB) voluntary payments and the rate of truthful advice are stable over time. Further analysis highlights the importance of the bonus. Generally, clients pay a bonus when they followed a truthful recommendation and advisors tend to be more truthful when they received a bonus in the previous round. In VB this boosts the rate of truthful advice to 57% for voluntary payments of 2, while it is 42% when no bonus is possible (treatment V, payment of 2, \( p < 0.01 \)) and 27% when there is a bonus but advisors cannot condition on a high upfront payment (treatment B). Moreover, we find a correlation between the upfront payment and the paid bonus in VB. It seems that the combination of generosity upfront and afterwards is the most successful strategy to receive truthful advice.

6. Discussion of results

Experimental tests (see, for instance, Cai and Wang, 2006; Sánchez-Pagés and Vorsatz, 2007) of strategic information transmission consistently report more truth telling than predicted by standard Bayesian Nash equilibrium analysis.

Our experimental results confirm this general finding of overcommunication. In addition, our design allows us to discuss various social preferences models that are candidates suggested by previous studies to explain overcommunication tendencies: distributional concerns, guilt aversion, and cost of lying. In this section we summarize previous findings, and then discuss the proposed explanations in the light of our data (see the appendix for detailed analysis). In the standard deception game there is no scope for reciprocity motives to explain behavior. However, based on the success of reciprocity theories (see, e.g., Rabin, 1993; Dufwenberg and Kirchsteiger, 2004) in explaining the results of gift-exchange games, they are a plausible motivation for overcommunication in our variant with upfront payment and/or bonus. Hence, we also discuss to what extent reciprocity concerns can explain our findings.

Gneezy (2005) finds that the extent of lying is sensitive to the potential gains of the sender and the potential losses of the receiver. He relates motivations to (not) lie to belief-dependent models of let down or guilt aversion (see Battigalli and Dufwenberg, 2007 for a formal framework) and Battigalli et al. (2013) show that a model of simple guilt is in line with the central tendencies of the data in Gneezy (2005). Cost of lying models, see, for instance, Ellingsen and Johannesson (2004), Chen et al. (2008), Miettinen (2008), Kartik (2009), typically assume that a cost, say \( k \), is associated with the plain act of lying, that \( k \) increases with the magnitude of the lie, and that \( k \) is belief-independent. Hurkens and Kartik (2009) propose that Gneezy’s (2005) data is also consistent with the hypothesis that people would either never lie, or always lie if the outcome obtained by lying exceeds the one obtained by not lying, i.e., lying aversion is constant and neither increasing in own gains nor decreasing in other’s losses. Ert and Gneezy (2012) vary the payoffs of the deception game to explain the interaction between lying aversion and distributional concerns. They show that, generally, lying is sensitive to incentives, but aversion to lying cannot be explained only with the negative consequences to others. Namely, a Pareto improving allocation that can only be achieved with a lie is attractive, but still a considerable number of people are reluctant to lie.

Generally, evidence is mixed. The inequity aversion model of Fehr and Schmidt (1999) cannot explain that truthful advice is given at all payment levels. While results from treatments with a voluntary payment are in line with belief-dependent models (guilt aversion, reciprocity), the truth-telling following obligatory payments cannot be predicted by them. A non-negative cost of lying in the sense of Ellingsen and Johannesson (2004), Chen et al. (2008), Miettinen (2008) or Kartik (2009) can explain the rate of truth telling when advisors pay zero. The lying aversion hypothesis of Hurkens and Kartik (2009) stands at odds with the increasing rate of truthful advice across upfront payments that we observe. See the appendix for more details.

7. Conclusions

Our study extends a standard sender–receiver (or deception) game with conflicting preferences with a preceding and/or a concluding action by the receiver. More specifically, we test whether information transmission is affected by a (voluntary) payment before the sender sends the message (experiment 1 or two-stage design in experiment 2), or by a combination of a voluntary upfront payment and a bonus after feedback on the quality of the message (three-stage design in experiment 2). The motivation to employ voluntary components to improve information transmission comes from laboratory and field experiments on gift exchange. Our results indicate that clients (receivers) are frequently willing to pay voluntarily for advice.

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This tendency is stable over time in the treatment with mutual opportunities to reciprocate. In turn, advisors (senders) readily reward generous upfront payments with truthful advice, with the three-stage design being most successful in inducing truthful advice across treatments. Within treatments, the higher payments lead to more truthful advice than the lower payments. While evidence on the stability of advisor’s behavior over time in treatments with a two-stage design is mixed, the frequency of truthful advice is stable over time in the three-stage design treatment. Our analysis identifies the third stage bonus payment as the key feature for success as it allows for an interplay of reciprocal behavior between clients and advisors.

As illustrated in Section 2, the misaligned interests in markets for financial advice, and their negative consequences for market efficiency, are on the top of the agenda of several regulation authorities. What could be effective instruments to reduce the conflict of interest? One possible measure is to require advisors to disclose commissions in order to make the conflict of interest more transparent. However, mandatory disclosure of commissions may have drawbacks. It may prevent consumers to correctly evaluate relevant product facts due to information overload (Lacko and Pappalardo, 2004) and it may result in reduced quality of advice as disclosed commissions may be perceived by advisors as a justification for deviating from professional standards (Cain et al., 2005). Ismayilov and Potters (2013) find no effect of disclosure of interest on truth-telling rates in a deception experiment. Inderst and Ottaviani (2012) conclude that the required disclosure of commissions may have ambiguous welfare implications even in the long run. Dulleck et al. (2011) experimentally analyze credence goods and find liability to be the only effective instrument (the others being verifiability, reputation and competition) to avoid inefficiencies in markets for credence goods. While financial advisors are liable for blantly wrong advice, it seems difficult to imagine that advisors can be made liable for the kind of biased, but not totally wrong advice that is the main problem in markets for retail financial products.

The results of our study indicate that voluntary components could be a promising alternative instrument to reduce moral hazard. We find that the rate of truthful advice increases with the opportunities to reciprocate, and with the size of the voluntary payment. In the treatment with the most opportunities to reciprocate (an upfront payment and bonus afterwards) voluntary payments/share of truthful advice/share of clients following do not decrease over time, despite the lack of reputation.

During the public debate in recent years the financial industry voiced concerns, whether customers would accept fee-based advice. According to recent surveys28, clients are not willing to pay (enough) for financial advice. Our experiment shows that clients readily offer voluntary payments upfront: 77% of clients in one of the treatments, and as much 90% in the other pay voluntarily upfront at least once, and half of the clients offer a payment in at least half of the rounds. It seems that voluntary components may indeed be a suitable instrument to increase the rate of truthful advice and alleviate moral hazard in the market for financial advice.

Two examples from the German financial industry round off our paper. The Quirin Bank is successful in business since 2006 and completely relies on fee-based advice. The investment counsel Deutsche Honorarberatung leaves it up to clients to choose the size of the fee. On their web site they state “out of experience we know that our clients appreciate our services and are willing to honor them. That’s why after each consultation you decide, how much our services are worth to you – and this is what you pay. We do, however, reserve the right to terminate working with a client. This way not only our services but also our business model is completely aligned with your interests.”

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:http://dx.doi.org/10.1016/j.jebo.2013.03.022.

References


28 See, e.g., Drost et al. (2011).

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