INVESTOR SOPHISTICATION:
A CASE TO CONSIDER

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Working Paper No 15/2012   November 2012

Research No. **05220100**

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January 2012

Abstract

In this unique empirical investigation investors need to decide whether or not to allow their fund manager to receive a portion of their managed portfolio transaction fees. This arrangement can cause the manager to increase the volume of trade thus increase his income and lower investor's return. Though common-sense and financial literature suggest investors should not agree evidence show most of the investors in the sample (88.7%) agreed. We differentiate between sophisticated and unsophisticated investors using two different proxies: professional occupations vs. non-professionals and firms vs. private clients. We find consenting investors to underperform 4% in the year following the decision. Under the two definitions sophisticated investors tend not to agree relative to other investors.

INTRODUCTION

Understanding the level of sophistication of the investing public has always been an issue of interest to financial economists. In a growing body of research, an attempt is being made to shed light on the variance in investors' ability (processing cost) and its effects on their decision-making and performance. The potential effects of different level of sophistication are explored in this paper by analyzing a unique database.

On March 2009, the Israeli Security Authority issued a ruling requiring portfolio mangers to obtain in writing consent of their clients that will allow them to continue and receive a portion of the transaction costs their clients pay back from the broker executing the trades. Our unique database contains the responses of 1260 investors (individuals and firms) whose portfolio is actively managed (by firm xyz) to the request to receive a portion of the transaction costs they pay. Investigating these decisions is interesting as most likely allowing the portfolio manager to receive a portion of the transaction cost paid is not in the best interest of the investors. First, perhaps these discounts on the transaction costs can be given directly to the clients reducing their effective cost of having their portfolio actively managed. Second, the fraction of the transaction costs received by the manager creates incentives for excessive trading at the clients' expense. One would therefore conjecture that most clients would disapprove.

The empirical evidence documented in this paper is in sharp contrast to this conjecture. Surprisingly, of the 1260 asked, 1,118 (88.7%) allowed the payments of a fraction of their transaction costs to the portfolio manager and only 142 (11.3%) objected. Faced with this clear evidence the natural question arise – is consenting a mistake arising from lack of knowledge or can one find a value maximizing rational for it? A possible (though not probable) rational

assumes that portfolio managers will devote more attention to the clients who consented (and hence are more profitable). If one makes in addition the heroic assumption that portfolio managers can beat the market consenting make sense. In such economy, the clients may pay larger fees but their risk-adjusted returns net of cost would be higher.

Whether or not clients should have consented is an empirical issue. If consenting is a mistake one should find the more sophisticated investors disapproving the payments to the portfolio mangers and earning higher risk-adjusted return net of cost. The opposite is true if consenting makes sense; the better-informed investors should consent and would earn higher risk-adjusted return.

To test these hypotheses we obtain three proxies for the level of investors' sophistication. The first is based on the occupation and the implied level of education of the responder.[1] Table 3 lists the occupations we classify as sophisticated, as unsophisticated, and as unknown for a subset of 498 responders. Examples of occupations that resulted in classification of the investor as sophisticated are: Accountant, architecture professor, chemistry Phd, and CFO, while we classify the investor as unsophisticated if her/his occupation was, for example, automobile mechanic, carpenter, farmer, and handy man. The empirical evidence is very clear. Controlling for management fees, maximum allowed exposure to equity, and portfolio size, investors classified as sophisticated by their occupation tend to disapprove the request. They also earn higher net of cost return. The evidence is consistent with the hypothesis that investors' consent was a costly mistake stemming from high information processing costs.

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[1] Dhar and Zhu (2006) use a similar proxy for investors' sophistication. They used demographic and socioeconomic variables as proxies for sophistication and found individuals employed in professional occupations to exhibit less disposition effect

The second proxy for investors' sophistication we use is the account owner type. Our database contains information on the owner of the managed account – whether it is a firm, a couple, she is a female; he is a male, or other. We replicate the experiment where the investor type serves as a potential proxy for the level of sophistication. We conjecture that firms are more sophisticated investors and indeed we find that firms tended to disapprove the request for fee repayments. Finally we replicate the experiment by using income as a proxy for the level of sophistication of the investor. The higher the income the more sophisticated the investor is. We find that account owner who report higher income (sophisticated) are more likely to disapprove fee repayment.

In addition to the above the experiment resulted in two interesting empirical regularities. The cost of having an account actively managed has two components – management fees that are set at an agreed upon fraction of the assets under management and transactions costs paid per trade. We document negative relations between management fees paid by the owner of the account and the tendency to consent to fee repayment. It seems that those who consent pay larger management fees as well. The evidence indicates that consenting clients also pay larger management fees.

The second empirical regularity uncovered is that older clients were more likely to consent. This finding is consistent with empirical evidence (???) indicating that older individual have lower levels of financial literacy to the point of not understanding the importance of having low fees.

Relationship to the literature.

In a typical soft dollar arrangement fund managers direct their clients' transactions to a broker and in return receive a non-cash rebate. This rebate can take different forms such as research information. This kind of arrangement is criticized as being ethically wrong because fund managers receive perks while their clients implicitly pay for transactions. In addition, the fund manager might increase the volume of trade and consequently increase the clients' transaction costs or choose brokers according to soft dollar arrangements. Conrad, Johnson and Wahal (2001) distinguish between institutional investors' orders sent to soft dollar brokers and other types of brokers. They find institutions send smaller orders in large market capitalization stocks to soft-dollar brokers. The estimated incremental implicit cost of soft dollar orders is 29 basis points for buys and 24 basis points for sells.

However, it is possible that allowing soft dollar transactions improves the fund managers' compensation allowing them to lower costs for their clients. Horan and Johnsen (2008) suggest that by paying for the managers research bill the broker posts a quality-assuring performance bond that efficiently subsidizes the managers' research. They find premium commissions to be positively related to performance and to management fees suggesting soft dollars benefit investors.

A recent study shows that IQ is a significant driver of trading behavior, performance and trading costs (Grinblatt, 2011). Using data on two decades of IQ scores from inductees in Finland's mandatory military service and eight years of trading data this research shows high-IQ investors are less susceptible to the disposition effect, more rational about minimizing taxes and more likely to supply liquidity in response to large movements in stock prices. In addition, the results show differences in portfolio performance of 2.2%-4.9% per year between low and high IQ investors. This difference is due to high-IQ investors' superior stock picking and lower trading costs.

Variation in investor's trading behavior, decision making, financial analysis and other aspects of investor's behavior is attributed to investor information and sophistication. Sophisticated investors have superior information processing capabilities compared with unsophisticated investors, thus, they demonstrate superior performance.

There is a wide empirical and experimental evidence of differences between sophisticated and unsophisticated investors. For example, sophisticated investors are more likely to engage in private information production and become informed (Indjejikian 1991, Bushman et al. 1996, Fischer and Verrecchia 1999). As a result, sophisticated investors concentrate their trading in stocks with higher levels of information asymmetry and less liquidity whereas unsophisticated investors

concentrate in firms with increased levels of press dissemination (kalay 2010). Sophisticated investors also show less mispricing of cash-flows than unsophisticated investors (Barone and Magilke 2009) and incorporate the implications of current earnings components into future earnings in a more sufficient manner (Kao 2007). In addition, trader's sophistication was found to be negatively correlated with the degree of narrow framing implying this factor reduces investor's behavioral bias (Liu, Wang, Zhao 2010). In a controlled experiment environment Victoravich (2010) showed unsophisticated investors affective reaction to positive earnings announcement are more influential on their price judgments compared with sophisticated investors.

Because rationality is directly linked to information processing capabilities it is sensible investor's rationality can be explained by degree of sophistication. Allee, Bhattacharya, Black and Christensen (2007) found that less sophisticated investors rely more on the pro forma figure when it is placed before the GAAP earnings number in a press release, while more sophisticated investors' trading is not affected by the relative placement. (i.e. investor's tendency to hold their loosing investments and sell their winning investments).

Case Description

Fund managers operating in Israel typically received a portion of the transaction costs paid by their clients. Obviously, this fee repayment arrangement may induce the fund manager to trade more intensely for his clients thereby generating more revenues. The excess trading is most likely inconsistent with the best interest of these clients.

On March 2009 the Israeli securities authority issued a ruling in which it obligates portfolio management companies to get the clients consent in writing allowing them to receive part of the transaction fees paid from the broker executing the trades.

In this study we use a unique dataset provided to us by one of Israel's largest financial institutions, hereof referred to as 'Company XYZ'. Among other financial activities XYZ has an investment management business in which it provides personal portfolio management for private customers and firms.

In our empirical investigation investors need to make a unique investment decision regarding their portfolio. The investors had to decide whether or not XYZ, their portfolio manager, could or could not receive part of the portfolio transaction fees. Table 1 exhibits a letter sent by XYZ to all existing clients with actively managed portfolios. The letter is a request to receive part of the transaction fees associated with the managed portfolio. It details a list of different assets (stocks, bonds and so on), their corresponding Buy / Sell fee the broker charges from the client and the percentage XYZ would be entitled to receive from the broker.

It is important to emphasize that the actual transaction costs paid by the clients are not affected by their decision. The decision can however affect the trading strategy of XYZ and in particular the volume of trade. In addition, XYZ added this document to its new client investment portfolio

agreement after June 2009 making it another page in a more complicated and larger agreement. In this study we are not investigating these new clients, but rather focus on existing clients who received this specific letter.

The investor's dilemma

Given this unique situation the investor needs to make a decision. Should he grant his broker the privilege to enjoy this extra income? Or maybe should he disagree even though the transaction fee he is paying is not affected by this decision? Next we will present two opponent hypotheses. The first supports agreement to fee repayments and the second opposes this decision.

Hypothesis 1: fee repayments as a motivational device

It could be argued that the investor entrusts his assets and savings in the hands of XYZ because of their specific skills. In return for this professional's services XYZ receives compensation in the form of management fees charged monthly from the investor's account. However, approving fee repayments can be used by the investor as a motivational tool. The investor may perceive this as an opportunity to grant XYZ higher compensation for its services motivating it to devote more attention to the portfolio and consequently increase his return.

Moreover, since the fees charged from the investor per transaction are the same either way, he might view denying the fund manager a portion of the transaction cost as petty or ungrateful. This is an act the investor could want to avoid given that the decision to invest with the company involves trust. According to this hypothesis the investor would agree to fee repayments and in return would expect higher portfolio return.

<u>Hypothesis 2: fee repayments and portfolio turnover</u>

Allowing XYZ to receive part of the transaction fees motivates the company to increase the volume of trade of its consenting clients. This can cause frequent buying and selling of assets not necessarily in the client's best interest. According to this hypothesis the investors should not agree to fee repayments thereby avoiding needless transactions and improving their net return. These investors do not associate more attention by the fund manager with better return.

<u>The two hypotheses and the rational decision</u>

The basis of the first hypothesis relies on the usual relation between production and compensation. The investor trusts XYZ to do better in return for higher compensation. In contrast, there is extensive literature supporting the claim that a passive portfolio yields higher return than a managed portfolio (Jensen 68, Gruber 96, Carhart 97). According to this evidence fund managers on average cannot bit the market. Consequently, we should expect more active portfolios to yield lower net returns. Following the empirical evidence of an almost efficient capital market a rational investor should not allow XYZ to receive fee repayments from the portfolio transaction fees. Agreeing to fee repayments will cause these investors to underperform relative to those who objected. In conclusion, our hypotheses are as follows:

<u>Hypotheses:</u>

1. We hypothesize that consenting investors will underperform relative to other clients.

2. We hypothesize that Sophisticated investors will be less likely to agree to fee repayments than unsophisticated investors.

Data and Method

The dataset includes all of the portfolios the company managed as of June 2010 not including those opened after June 2009, a total of 1260 portfolios. Portfolios opened after June 2009 were left out because as of this date the fee repayments agreement became an integral part of the new client agreement. In contrast clients who had portfolios before June 2009 received a special letter from XYZ (see Table 1) in which they were asked to give their consent for the fund manager to receive a part of the transaction fees from the broker.

For all the portfolios, we have the following data: A dummy variable for Investor consent to fee repayments, one if he didn't agree and zero if he agreed, this dummy variable is our main dependent variable. Out of the entire sample 1118 (88.7%) agreed for the managing company to receive a part of the transaction fees from the broker. Only 142 of them (11.3%) didn't agree. The distribution between the two groups is shown in Table 2.

In addition our data includes portfolio size (the shekel amount) on June 2009 around the time the investors made their decision regarding fee repayments and portfolio size for June 2010. We estimate the investor risk aversion by the maximum percentage equity holdings allowed by the investor. The data includes portfolio monthly management fees (as a percentage of the portfolio) and the time period during which the portfolio was managed by XYZ.

We also have portfolio return for the following periods: year 2008, Q1 2009, Q2 2009, year 2010. However, we don't have the returns for all portfolios for all dates. For example 2008 returns are not available for portfolios opened on 2009. We also know each of the owner's gender and date of birth and whether or not it's a firm. We distinguished between five categories of investors: male, female, couple, firm, and other. "Couple" means that the portfolio belongs to

two individuals (a male and a female) and "other" is all the rest. For example, three males or two females. Using the date of birth we also calculated the average investor age for each of the portfolios.

In the sample, 364 (29%) are males, 159 (12.7%) are females, 587 (46.8%) are couples, 62 (4.9%) are firms, 81 (6.5%) are other combinations and 7 missing values. The average age for a portfolio is 59.3 with S.D. of 11.26. This data is shown in Table 2.

Out of the 1260 portfolios we have the following additional information for 498 portfolios: the investor's declared occupation. Investor occupation was used as a proxy for investor sophistication. Investors with professional occupations (occupations that require a high level of education) are classified as sophisticated investors and investors with non-professional occupations are regarded as unsophisticated. Some of the declared occupations were impossible to associate to one of the groups (most of them pensioners) and are therefore regarded as unknown and will be excluded in the following analysis. Out of the 498 cases, 162 (32.4%) are sophisticated, 165 (33.0%) are unsophisticated and 171 (34.2%) are unknown. The sample of classified investors includes 327 (see Table 3). The distribution between the three types for all cases is displayed in Table 4.

Before we investigate investor consent to fee repayments we want to verify our hypothesis that agreeing to return part of the transaction fees to the fund manager induces him to increase his trading activity in order to increase his effective managing fees without adding any incremental value to the investor's portfolio. This explanation dictates that a rational decision is not to agree to this arrangement.

We analyze the 2010 full year returns. Specifically, we regress the 2010 portfolio returns on fee repayment dummy, controlling for portfolio risk level (the investor exposure to equity), portfolio management fees and portfolio size (which is the shekel amount on June 2010). The regression specification is as follows:

Return 2010 = α + β1 fee repayment + β2 exposure to equity + β3 management fees +β4 portfolio size + u

We then seek to study the effect of investor sophistication as well as other variables on the decision to agree to fee repayment. Next we will regress fee repayment on investor sophistication and the other explanatory variables described.

We will run the following probit regression:

Fee repayment = α + β1 sophistication + β2 portfolio size + β3 exposure to equity + β4 portfolio age + β5 return2008 + β6 returnQ1_2009 + β7 returnQ2_2009 + β8 management fees + β9 Average investor age + u

Unfortunately, we do not have investor sophistication for all the observations. This is quite restrictive because the above regression takes into account only 321 cases. We do however have investor type and all the other explanatory variables for most of the 1260 observations. We created five dummy variables corresponding to the five possible client types: male, female, couple, firm and other. For example, client_firm takes the value of 1 if the portfolio belongs to a firm and 0 otherwise. client_couple takes the value of 1 if the portfolio belongs to two

individuals one male and one female and 0 otherwise and so on. Using these variables we will run the following regression on 1118 observations:

Fee repayment = α + β1 Average investor age + β2 portfolio size + β3 exposure to equity + β4 portfolio age + β5 return2008 + β6 returnQ1_2009 + β7 returnQ2_2009 + β8management fees + β9 client male +β10 client female + β11 client firm + β12 client couple + u

The last regression does not include investor sophistication under the definition we have used so far, i.e. using professional occupations. However, the last equation also separates between sophisticated and unsophisticated investors in a similar sense through the use of the client type dummy variables.

In the cases of a firm, usually there is more than one person with authority to communicate with the broker and make decisions regarding the portfolio. These individuals are the senior management of the firm including the chairman, board members, CEO's and CFO's. It is more than reasonable to assume most if not all of these individuals are highly educated professionals (Some of them even have significant financial knowledge) and thus a sophisticated group compared with the other groups.

It is important to emphasize that for all the 498 cases for which we have investor occupation the portfolios belong to private customers and not firms. This means that any effect found for investor sophistication using professional occupations as a proxy is completely different and independent of an investor sophistication effect using firms as a proxy for sophisticated investors and individuals as unsophisticated. In other words, the former definition for investor

sophistication is differentiating within private investors only and the latter is differentiating between different types of private investors and firms.

Lastly, in order to get the most out of our data and because there is a significant number of observations for which we have missing returns (as explained earlier, we don't have the returns for all time periods for all the portfolios) we will drop the returns variables and run the regression again. The equation specification is:

Fee repayment = α + β1 Average investor age + β2 portfolio size + β3 exposure to equity + β4 portfolio age + β5management fees + β6 client male +β7 client female + β8 client firm + β9 client couple + u

Results

Our first objective was to test whether consent to fee repayments has an effect on the investor's future return. Our initial hypothesis was that agreeing to return part of the transaction fees to XYZ should have a negative effect on the investor's return.

The results confirm our hypothesis (Table 5). Regressing the 2010 portfolio return on the fee repayment consent dummy variable and the control variables shows that not allowing the fund manager to receive part of the transaction fees has a positive effect on the portfolio future returns. The result is not only significant statistically but also economically. With a coefficient of 4.08 the interpretation is that not allowing fee repayments increases the return by 4% in average all else held constant.

In addition, the coefficients for all the other independent variables, namely management fee, portfolio size and exposure to equity have significant effects on the 2010 return in the expected direction. Specifically, a higher portfolio management fee means lower return for the investor. Higher exposure to equity increases portfolio return. Every increment of 10% exposure raises the yearly return 1.6% on average. We also found an effect for portfolio size though it's economically insignificant. An increment of 100K NIS to the portfolio raises the return 0.02% on average.

Having found empirical support that allowing the fund manager to receive fee repayments is the "wrong" decision we then tested our second hypothesis. We hypothesize that Sophisticated investors will be less likely to agree to fee repayments than unsophisticated investors.

The results confirm this hypothesis (Table 6). We regressed the fee repayment dummy variable on the investor sophistication dummy and the portfolio manage fee, size, exposure to equity,

portfolio age, 2008 return, Q1 2009 and Q2 2009 return and the investor average age. Investor sophistication has a significant effect on fee repayments. Sophisticated investors were more likely not to agree to fee repayments than unsophisticated investors. The probability not to agree (fee repayment=1) is more than 2.5 larger if you are sophisticated than non-sophisticated (to get this interpretation we reran a logit regression and calculated the coefficient's exponent). In addition, there is a significant effect for investor's average age. Younger investors were more likely not to agree to fee repayments than older investors. Nonetheless, we point out that the age difference between the groups is not large. The average age in the entire sample for consenting clients was 59.8 and for those who didn't agree 56.1. The manage fee coefficient was close to significance and its general direction is the lower the portfolio manage fees the more likely the investor not to agree to fee repayments. In this regression there are 321 observations, in the following analysis we will show this result is much more significant on the entire sample.

We didn't get an effect for the return variables implying that two last quarters past return and the previous year return did not play a role in the investor's decision. The Investors didn't tend to "award" the fund manager with fee repayments based on previous performance. Interestingly, portfolio age, the time period during which the fund manager managed the portfolio was also not significant. This variable which can be interpreted as the investor's faithfulness to the fund manager also didn't play a role in the investor decision nor did exposure to equity which is a risk aversion measure.

Next we analyzed a similar regression. Fee repayment is still the dependent variable. We left out investor sophistication and included the investor type dummy variables for the four groups: male, female, couple and firm (the fifth group was not included to avoid multicolinearity problems). We left out investor sophistication for two reasons. First, occupation is typically an individual's

characteristic, we don't have occupation information for any of the firms (for this reason running a regression with sophistication and firm dummy is methodically impossible). The second is to increase sample size from 321 to 1118 portfolios.

We know the decision makers in firms are highly educated professionals and thus sophisticated in the same sense we used so far. As a consequence, we hypothesized firms will be more likely not to agree to fee repayments than not firms and no difference will be found for the other types of private investors.

The results partly support the hypothesis (Table 7). The firm coefficient general direction is the same as we hypothesized, suggesting firms are more likely no to agree to fee repayments, the coefficient is close to significance. The other investor types, as expected, did not yield any results. In the next regression we will further increase sample size and the difference between firms and not firms will emerge.

Regarding the other independent variables, the larger sample emphasized our previous results. Again we found an effect for investor age. Younger investors are more likely not to agree to fee repayments than older investors. In addition, we have a highly significant effect for portfolio management fees. Portfolios with lower manage fees were also more likely not to agree to fee repayments. This suggests individuals who tend to bargain for lower fees and protect themselves in advance also refuse to agree to fee repayments. None of the other variables including the past returns, exposure to equity and portfolio age were significant.

Lastly, we left out the three past return variables for 2008, Q1 2009 and Q2 2009 and ran the last regression again. This allows us to further increase the sample to 1178 portfolios and get more accurate estimators. The results support our hypothesis (Table 8). Firms are found to be more

likely not to agree to fee repayments than not firms. We should emphasize this is true after controlling for portfolio manage fees, which is negatively correlated with firm. Typically firms in the sample have larger portfolios then other types of investors and lower fees. If we had dropped the manage fee variable the coefficient for firm is much more significant. Regarding the other types of investors, as expected, no significant difference was found. In addition, the previous results regarding investor average age and management fees are again found in this regression. None of the other variables yield any results.

REFERENCES

Allee, K. D., Bhattacharya, N., Black, E. L., & Christensen, T. E. (2007). Pro forma disclosure and investor sophistication: External validation of experimental evidence using archival data. *Accounting, Organizations & Society, 32*(3), 201-222.

Barber, B. M., & Odean, T. (1999). The courage of misguided convictions. *Financial Analysts Journal, 55*(6), 41.

BARONE, G. J., & MAGILKE, M. J. (2009). An examination of the effects of investor sophistication on the pricing of accruals and cash flows. *Journal of Accounting, Auditing & Finance, 24*(3), 385-414.

Bushman, R. M., Gigler, F., & Indjejikian, R. J. (1996). A model of two-tiered financial reporting. *Journal of Accounting Research, 34*(3), 51-74.

Carhart, M. M. (1997). On persistence in mutual fund performance. *Journal of Finance, 52*(1), 57-82.

Chen, L., Johnson, S. A., Lin, J., & Liu, Y. (2009). Information, sophistication, and foreign versus domestic investors' performance. *Journal of Banking & Finance, 33*(9), 1636-1651.

Dhar, R., & Zhu, N. (2010). Up close and personal: An individual level analysis of the disposition effect. *Working Papers -- Yale School of Management's Financial Research Network,* , 1-37.

Fischer, P. E., & Verrecchia, R. E. (1999). Public information and heuristic trade. *Journal of Accounting & Economics, 27*(1), 89-124.

Gruber, M. J. (1996). Another puzzle: The growth in actively managed mutual funds. *Journal of Finance, 51*(3), 783-810.

Indjejikian, R. J. (1991). The impact of costly information interpretation on firm disclosure decisions. *Journal of Accounting Research, 29*(2), 277-301.

JENSEN, M. C. (1968). The performance of mutual funds in the period 1945-1964. *Journal of Finance, 23*(2), 389-416.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263-291.

Kalay, A. Investor Sophistication, Disclosure and the Information Environment of the Firm (2010).

KANIEL, R., SAAR, G., & TITMAN, S. (2008). Individual investor trading and stock returns. *Journal of Finance, 63*(1), 273-310.

Kao, L. (2007). Does investors' sophistication affect persistence and pricing of discretionary accruals? *Review of Pacific Basin Financial Markets & Policies, 10*(1), 33-50.

Odean, T. (1999). Do investors trade too much? *American Economic Review, 89*(5), 1279-1298.

SHEFRIN, H., & STATMAN, M. (1985). The disposition to sell winners too early and ride losers too long: Theory and evidence. *Journal of Finance, 40*(3), 777-790.

Victoravich, L. M. (2010). Overly optimistic? investor sophistication and the role of affective reactions to financial information in investors' stock price judgments. *Journal of Behavioral Finance, 11*(1), 1-10.

Yu-Jane Liu, Ming-Chun Wang, & Zhao, L. (2010). Narrow framing: Professions, sophistication, and experience. *Journal of Futures Markets, 30*(3), 203-229.

Table 1: Fee repayments request letter sent to company's XYZ clients.

The following document is the translated request letter sent to all clients with existing portfolio managed by company XYZ. The purpose of this letter is to get the client's consent to allow XYZ to receive part of the transaction fees associated with the portfolio from the Bank (Market Maker who carried out the transactions). The tables below detail the exact percentage XYZ is entitled to from a Buy/Sell transaction for different assets.

Client name

Bank name

Account number

Branch

Addendum to investment portfolio management agreement regarding fee repayment from a Bursa member

I hereby confirm I am aware that company XYZ is entitled to receive from a bursa member, in which the account is managed (hereof "bursa member" or "bank"), repayment in the basis of fees the bank charges from the client's accounts, according to the bank rate and in accordance with the agreement between the bank and the client, due to transactions made by XYZ in the client accounts, as described in the financial investment portfolio agreement signed between myself and XYZ and in this addendum.

In accordance with the agreement between XYZ and the bursa member, to apply from 31.03.2009, XYZ is entitled to receive from the bursa member repayment of part of the charged fee from the client by the bursa member according to the following detail:

Fee sort	Repayment to XYZ of any amount above
Local equities	0.1% of the transaction
Local bonds	0.1% of the transaction
Israeli government notes (Makam)	0.05% of the transaction
Options	3.5 Shekels per option
Foreign Equities	0.1% of the transaction
Foreign Bonds	0.1% of the transaction

Consequence of the above, hereby a detail of the fees charged from the client by the bank and the repayment to XYZ out of them:

	Fee paid by the client to the bank	Repayment to XYZ
Buy/Sell fee local stocks	0.2%	0.1%
Buy/Sell fee local bonds	0.2%	0.1%
Buy/Sell fee Makam	0.12%	0.07%
Options fee	-	-
Buy/Sell fee foreign stocks	0.2%	0.1%
Buy/Sell fee foreign bonds	0.2%	0.1%

* XYZ is not entitled to receive a part of a minimum fee

The parties approve with their signature below the details in this addendum and the client gives his approval with his signature for XYZ to receive fee repayment from the bursa member.

Client signature	date	XYZ

Client signature	date	XYZ

Table 2:

This table describes the response of 1260 investors to XYZ's request letter, the investor type and average portfolio size on June 2009 in Shekels. Of the 1260 only 142 didn't agree to fee repayments.

Investor type	Agreed to fee repayments			Didn't agree to fee repayments			Total sum of investors
	Sum of investors	Average age	Average portfolio size	Sum of investors	Average age	Average portfolio size	
Male	318	58.0	673,347	46	52.4	1,151,721	364
Female	144	61.5	595,330	15	54.4	810,149	159
Firm	46	56.6	10,197,573	16	57.3	16,372,402	62
Couple	531	60.8	865,897	56	58.8	888,514	587
Other	75	58.3	888,812	6	60.1	1,046,177	81
Missing	4	56.1	6,005,179	3		4,771,353	7
Grand Total	1118	59.8	1,162,329	142	56.1	2,798,857	1260

Table 3: This table details classification of 498 investors into two classes: Sophisticated and Unsophisticated based on professional occupations.

Sophisticated Investor		Unsophisticated Investor				Unknown Investor	
Professional Occupations	Freq.	Non-Professional Occupations	Freq.	Non-Professional Occupations	Freq.	Unknown	Freq.
agronomist	2	air conditioning	1	picture framer	2	100% disability	1
accountant	5	air field representative	1	police	1	acquisition manager	1
air conditioning engineer	1	aircraft mechanic	1	police officer	1	advertisement manager	1
architect	2	assistant	1	practical engineer	1	advisor	1
architecture professor	1	automobile mechanic	2	practical mechanical engineer	2	aerospace industry	2
banker	3	automobile tinsmiths	1	printing press	1	airline worker	1
biochemistry	1	bank clerk	2	private coacher	1	business development manager	1
biochemistry professor	1	bank employee	2	production worker	1	business man	3
Biology PhD.	1	bookkeeping	9	public servant	1	business manager	1
chemistry PhD	1	boutique owner	1	refurbishing contractor	1	business owner	1
Chief Executive Officer	5	car assessor	1	restaurateur	2	credit centralizer	1
Chief financial Officer	1	carpenter	2	sales	1	detective	1
Chief development officer	1	city council employee	1	sales manager	2	diamond merchant	4
civil engineer	4	clerk	1	secretary	10	education	2
computer engineer	2	computerization manager	1	security	1	interior research	1
computers	7	construction contractor	2	shoes distributer	1	factory owner	1
dentist	2	Construction Manager	1	shopkeeper	1	family therapist	1

Sophisticated Investor		Unsophisticated Investor				Unknown Investor	
development	1	construction work manager	1	snacks shop owner	1	firm owner	1
doctor (MD)	11	contractor	2	social security manager	1	food industry	1
economist	5	control manager	1	spare parts manager	1	government office worker	1
electrical engineering PhD	1	crane driver	1	state employee	2	IDF (Israel defense forces)	1
electronic engineer	6	customs officer	1	store salesman	2	IDF disabled	1
engineer	23	driver	2	student	2	internal controller	1
factory manager	2	driving instructor	3	suppliers manager	1	management	2
firm manager	6	education management	1	swimming trainer	1	manager	2
hardware engineer	1	electrician	6	teacher	8	managerial advisor	1
head of emergency room	1	errands manager	1	technician	6	marketing manager	2
high-tech	2	farmer	9	tin cutter	1	media advisor	1
history lecturer	1	fashion	1	tourist guide	1	medicine	1
history professor	1	Feldenkrais instructor	1	traffic consultant	1	metals firm owner	1
industrial engineer	1	foreign trade	1	translator	1	pensioner	107
industrialist	2	forester	1	traveling agent	1	production line manager	1
information manager	1	graphic artist	1	TV lab manager	1	project executor	1
information system	1	handy man	1	warehouseman	1	project manager	2
lawyer	6	high school headmaster	1			psychotherapy	1
lecturer	10	house painter	1			real estate advisor	1
Chief marketing Officer	1	housefather	1			regional advisor	1
mathematician	2	housewife	4			self employed	9
mechanical engineer	2	human resources	2			store manager	2

Sophisticated Investor		Unsophisticated Investor				Unknown Investor	
microbiologist	1	importer	1			store owner	2
money manager	2	infant's craft teacher	1			unemployed	4
orthodontist	1	instructor	1				
pharmacist	1	insurance	1				
PhD in psychology	1	insurance agent	2				
psychologist	2	jeweler	2				
physicist	1	kindergarten teacher	1				
Pilot	1	laundry	1				
Play-writer	1	learning advisor	1				
programmer	2	librarian	1				
psychiatrist	3	logistic manager	1				
psychology professor	1	machinist	2				
Rabbi	1	maintenance	1				
reporter	1	maintenance man	1				
scientist	1	marketing and surveys	1				
social worker	2	marketing control	1				
software design	1	masseuse	1				
software engineer	4	merchant	1				
software manager	1	Ministry of defense	1				
special education teacher	1	musician	1				
surgeon	1	nurse	2				
system analyst	1	nursemaid	1				
technical engineer	1	painter	2				

Sophisticated Investor		Unsophisticated Investor				Unknown Investor	
textile engineer	1	pastry-cook	1				
veterinarian	2	perfume (self employed)	1				
Total	**162**		**165**				**171**

Table 4: Explaining portfolio returns

In the following regressions the dependent variable is portfolio return. The independent variables are: fee repayment dummy (1 if the client didn't agree), portfolio monthly management fees, portfolio size in thousand shekels and portfolio risk estimated by the maximum exposure to equity chosen by the investor. Number of Obs. is: Panel A- 1114, Panel B- 1240 and Panel C- 1180.

Panel A: Dependent variable: 2010 returns

Independent Variable	Coefficient	t-Statistic	Prob.
Fee Repayment	4.087	2.040	**0.042**
Managing Fee	-123.758	-5.080	0.000
Portfolio size	0.000243	3.180	0.002
Exposure to equity	0.161	4.355	0.000
C	13.934	5.994	0.000

Panel B: Dependent variable: 2009 first half returns

Independent Variable	Coefficient	t-Statistic	Prob.
Fee Repayment	0.268	0.720	**0.472**
Managing Fee	-9.696	-2.122	0.034
Portfolio size	-2.77E-05	-1.532	0.126
Exposure to equity	0.185	26.476	0.000
C	8.636	19.572	0.000

Panel C: Dependent variable: 2008 returns

Independent Variable	Coefficient	t-Statistic	Prob.
Fee Repayment	0.024	0.051	**0.959**
Managing Fee	-19.660	-3.390	0.001
Portfolio size	8.01E-05	3.371	0.001
Exposure to equity	-0.332	-37.351	0.000
C	-0.762	-1.356	0.175

Table 5: Effect of Investor sophistication on Fee repayment.

These tables contain a regressions where the fee repayment dummy is a dependent variable (1 if the client didn't agree). Estimation method is probit and LPM in panel A and B respectively. The independent variables are Investor sophistication (using occupation data), monthly management fees, portfolio size on June 2009 in thousand shekels, exposure to equity, portfolio returns for the periods preceding the decision and the portfolio owners' average age. Number of Obs. is 321, out of which 289 agreed to transaction fees repayment.

Panel A: Dependent variable: Fee repayment, Probit estimation.

Independent Variable	Coefficient	z-Statistic	Prob.
Investor sophistication	0.490	2.247	**0.025**
Management fee	-9.039	-1.661	**0.097**
Portfolio size	9.38E-05	0.528	0.597
Exposure to equity	-0.012	-0.871	0.384
Portfolio age	0.062	1.555	0.120
2008 return	-0.042	-1.570	0.116
Q1 2009 return	-0.063	-0.778	0.436
Q2 2009 return	-0.042	-0.357	0.721
Investor average age	-0.024	-2.166	**0.030**
C	0.684	0.747	0.455

Panel B: Dependent variable: Fee repayment, Linear Probability estimation.

Independent Variable	Coefficient	t-Statistic	Prob.
Investor sophistication	0.082	2.427	**0.016**
Management fee	-1.499	-1.662	**0.098**
Portfolio size	2.63E-05	0.777	0.438
Exposure to equity	-0.001	-0.380	0.704
Portfolio age	0.009	1.453	0.147
2008 return	-0.007	-1.925	0.055
Q1 2009 return	-0.014	-1.029	0.304
Q2 2009 return	-0.012	-0.649	0.517
Investor average age	-0.004	-2.123	**0.035**
C	0.446	2.933	0.004

Table 6:

These tables contain regressions where the fee repayment dummy is a dependent variable (1 if the client didn't agree). Estimation method is probit and LPM in panel A and B respectively. Number of Obs. is 1118, out of which 990 agreed to transaction fees repayment.

Panel A: Dependent variable: Fee repayment, Probit estimation.

Independent Variable	Coefficient	z-Statistic	Prob.
Firm	0.540	1.684	**0.092**
Male	0.302	1.274	0.203
Female	0.189	0.717	0.473
Couple	0.136	0.592	0.554
Investor average age	-0.016	-3.467	**0.001**
Manage fee	-8.812	-4.314	**0.000**
Portfolio size	-5.57E-06	-0.672	0.501
Portfolio age	0.015	0.794	0.427
Exposure to equity	-0.001	-0.235	0.814
2008 return	-0.011	-0.920	0.358
Q1 2009 return	-0.022	-1.006	0.315
Q2 2009 return	-0.014	-0.364	0.716
C	0.366	0.886	0.375

Panel B: Dependent variable: Fee repayment, Linear Probability estimation.

Independent Variable	Coefficient	t-Statistic	Prob.
Firm	0.143	2.224	**0.026**
Male	0.059	1.434	0.152
Female	0.037	0.816	0.415
Couple	0.025	0.629	0.530
Investor average age	-0.003	-3.553	**0.000**
Manage fee	-1.828	-4.685	**0.000**
Portfolio size	-1.18E-06	-0.741	0.459
Portfolio age	0.003	1.017	0.310
Exposure to equity	0.000	0.006	0.996
2008 return	-0.001	-0.661	0.509
Q1 2009 return	-0.006	-1.203	0.229
Q2 2009 return	-0.001	-0.168	0.866
C	0.437	5.647	0.000

Table 7:

These tables contain regressions where the fee repayment dummy is the dependent variable, on the independent variables detailed below. Estimation method is probit and LPM in panel A and B respectively. The number of observations in this regression is 1178 of which 1048 agreed to fee repayment.

Panel A: Dependent variable: Fee repayment, Probit estimation.

Independent Variable	Coefficient	z-Statistic	Prob.
Firm	0.591	1.911	**0.056**
Male	0.316	1.358	0.175
Female	0.196	0.755	0.451
Couple	0.162	0.717	0.473
Investor average age	-0.016	-3.469	**0.001**
Manage fee	-8.054	-4.079	**0.000**
Portfolio size	-1.54E-06	-0.244	0.807
Portfolio age	0.030	1.689	0.091
Exposure to equity	-0.001	-0.251	0.802
C	0.019	0.050	0.960

Panel B: Dependent variable: Fee repayment, Linear Probability estimation.

Independent Variable	Coefficient	t-Statistic	Prob.
Firm	0.160	2.617	**0.009**
Male	0.060	1.523	0.128
Female	0.038	0.876	0.381
Couple	0.029	0.767	0.443
Investor average age	-0.003	-3.571	**0.000**
Manage fee	-1.655	-4.442	**0.000**
Portfolio size	-5.88E-08	-0.040	0.968
Portfolio age	0.006	1.849	0.065
Exposure to equity	0.000	-0.083	0.934
C	0.359	5.308	0.000

Table 8: Robustness Tests

Panel A: Dependent variable: Fee repayment, Probit estimation. Random sophistication assignment for all 498 investors with reported occupations.

Independent Variable	Coefficient	z-Statistic	Prob.
Random occupations	-0.106	-0.659	**0.510**
Management fee	-7.369	-1.801	0.072
Portfolio size	-1.68E-05	-0.163	0.870
Exposure to equity	-0.006	-0.564	0.572
Portfolio age	0.017	0.610	0.542
2008 return	-0.038	-1.848	0.065
Q1 2009 return	-0.088	-1.622	0.105
Q2 2009 return	-0.015	-0.179	0.858
Investor average age	-0.015	-2.065	0.039
C	0.691	1.073	0.283

Panel B: Dependent variable: Fee repayment, Linear Probability estimation. Random sophistication assignment to 327 investors originally classified as sophisticated / unsophisticated.

Independent Variable	Coefficient	z-Statistic	Prob.
Random occupations	0.234	1.138	**0.255**
Management fee	-10.697	-1.964	0.050
Portfolio size	0.000102	0.586	0.558
Exposure to equity	-0.006	-0.504	0.614
Portfolio age	0.070	1.793	0.073
2008 return	-0.041	-1.624	0.104
Q1 2009 return	-0.059	-0.739	0.460
Q2 2009 return	-0.067	-0.584	0.559
Investor average age	-0.025	-2.331	0.020
C	0.981	1.086	0.277

Table 9: Wage distribution for 498 investors with reported occupation.

Wage level	Num of investors	% of investors
Refuse to report	110	22.1%
0-5000	45	9.0%
5000-10000	93	18.7%
10000-20000	160	32.1%
20000-40000	77	15.5%
40000 and above	13	2.6%
Total	498	100%

Table 10: Robustness Tests

Panel A: Dependent variable: Fee repayment, Probit estimation.

Independent Variable	Coefficient	z-Statistic	Prob.
Wage	0.272	2.642	**0.008**
Management fee	-0.389	-0.074	0.941
Portfolio size	0.000245	1.501	0.133
Exposure to equity	-0.016	-1.229	0.219
Portfolio age	-0.022	-0.616	0.538
2008 return	-0.023	-0.980	0.327
Q1 2009 return	-0.073	-1.099	0.272
Q2 2009 return	0.039	0.373	0.709
Investor average age	-0.017	-1.878	0.060
C	-0.725	-0.822	0.411

Panel B: Dependent variable: Fee repayment, Linear Probability estimation.

Independent Variable	Coefficient	t-Statistic	Prob.
Wage	0.040	2.604	**0.010**
Management fee	-0.017	-0.021	0.983
Portfolio size	4.42E-05	1.526	0.128
Exposure to equity	-0.002	-1.198	0.232
Portfolio age	-0.002	-0.403	0.687
2008 return	-0.004	-1.243	0.215
Q1 2009 return	-0.013	-1.183	0.238
Q2 2009 return	0.004	0.248	0.805
Investor average age	-0.003	-1.896	0.059
C	0.206	1.482	0.139