Do Institutional Investors Have an Information Advantage?

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Abstract

Most comparisons of institutional and individual investor performance are limited to investor subgroups over different sample periods. We use a novel dataset of portfolio holdings and transactions to compare the stock picking talents of individual and institutional investors. Using the complete trading history of all stocks listed on the Istanbul Stock Exchange over the 1999-2003 period, we find no evidence that institutions have superior information about the direction of future stock prices. The annualized risk-adjusted returns for individuals and institutions, at -0.08% and -0.45%, are not significant. Our results call into question the informational benefits of delegated portfolio management.

Keywords: portfolio performance; individual investors.

JEL Classification: G11, G14, G20

1 Introduction

The extent to which institutions can offer an informational advantage to individual investors remains an important and open research question. A better understanding of the sources of the benefits of delegated portfolio management allows for a more precise determination of the services that should be reflected in management fees. While a large literature on portfolio performance draws mixed conclusions about the security selection ability of institutions, only limited evidence exists on the performance of individual investors. An important limitation of most existing studies is that the conclusions are drawn from subsets of investor groups over different evaluation periods. A complete study of the simultaneous trading experience of both individuals and institutions is usually impossible due to data limitations.[1]

In this paper we bring a unique data set to bear on the issue of whether institutional investors are better informed than individuals about the future direction of security prices. Our data set is comprehensive, because it contains the complete trading history of the Istanbul Stock Exchange (ISE) over the 1999-2003 period. These data are provided directly by the ISE–the 18th largest stock market in the world in terms of dollar trading volume at the start of our sample period. The trading data are unique not only in their completeness but also in their level of detail: Every trade is categorized by a security code, transaction price, quantity of shares traded, and the group identity and brokerage firm of both buyer and seller. We

[1] Previous studies report evidence that the before-cost performance of equity mutual funds is about the same size as the typical management fee (e.g., Grinblatt and Titman, 1993; Daniel et al., 1997). Others find negative performance after fees (e.g., Sharpe, 1966; Jensen, 1968; Chen and Knez, 1996, for equity mutual funds, Lakonishok et al., 1992 for pension funds, and Elton et al., 1993, 1995; and Ferson et al., 2006a, 2006b for bond mutual funds), while others find positive performance (e.g., Carlson, 1970 for equity mutual funds, Christopherson et al., 1998 for pension funds, and Ackermann et al., 1999 for hedge funds).

merge these data with another data set-the initial ISE stock holdings of all individuals and institutions-to recover the daily portfolio returns for each investor group.

Following Jensen (1968), we focus our attention on stock selection ability in our comparisons of portfolio performance. Our data reveal significant differences in the characteristics of stocks held by individual and institutional investors. For example, institutions allocate 92% of their portfolio to the largest stocks, on average, as compared to 69% for individuals. Therefore, we compare the portfolio returns of each investor group with a benchmark portfolio that has the same exposure to local market, size, and book-to-market factors. We estimate the intercepts of this domestic market model to be 7.71% and 7.12% for individuals and institutions, respectively. The difference between these estimates is not statistically significant.

An important issue for any analysis of performance is the specification of the asset pricing model used to estimate expected returns. The large risk-adjusted returns (about 7%) estimated from the domestic market model might reflect the omission of relevant risk factors from the Turkish stock market. Our knowledge of portfolio holdings allows us to address this issue using the "benchmark-free" measure developed by Grinblatt and Titman (1993). The estimated performance for each group is lower using the weight-based measure. Specifically, the annualized risk-adjusted returns are -0.08% and -0.45% for individual and institutional portfolios, respectively. However, the difference in risk-adjusted returns between individuals and institutions is not significant. Overall, the results indicate that, relative to individual investors, institutions do not have superior stock selection ability.

We also compare the abilities of individual and institutional investors to dynamically shift the systematic risk of their stock portfolios. Following Grinblatt and Titman (1989), we decompose total performance into stock selection and market timing ability relative to the ISE Index. We find no discernible difference between individuals and institutions in selection ability or in the ability to dynamically shift systematic risk in anticipation of systematic news.

Most institutional investors in the Turkish stock market are foreigners while the majority of individuals are Turkish citizens. In fact, foreigners represent 94.7% of all institutional holdings at the start of our sample period. The applicability of our results to other capital markets is limited to the extent that individual investors have a comparative local information advantage relative to institutions. We explore this issue by comparing the performance around two local events that occurred within our sample period: the Izmit earthquake of 17 August 1999, and the public dispute between the President and Prime Minister on 19 February 2001. We take both events as exogenous and as having important effects on the Turkish stock market. Consistent with our findings for the full sample period, individual and institutions experience similar risk-adjusted returns in the one, three, and six months following each event. Therefore, our earlier conclusions do not appear to be related to an over-representation of foreigners among institutional investors in the Turkish stock market.

Finally, we examine trading behavior and find that individuals trade significantly more than institutions. Net of brokerage costs, individuals significantly underperform institutions. For example, assuming a brokerage fee of fifteen basis points per trade reduces the performance of aggregated individual and institutional portfolios to -5.25% and -1.0% per annum, respectively. The differential performance between the two groups, at -4.25%, is significant. Overall, the results suggest that the benefits of delegated portfolio management may be partly attributed to lower trading costs, and not differential information.

Existing evidence on individual investor performance is mixed. Schlarbaum, Lewellen, and Lease (1978a, 1978b) find that individuals exhibit similar net performance to institutions, after accounting for brokerage fees and the management fees charged by a typical index mutual fund. Barber and Odean (2000) reach a different conclusion in their study of individual trading at a large discount brokerage firm. More recently, San (2007) studies (inferred) individual trading activity over the 1981-2004 period and finds that individuals realize superior

gains from their trading and that institutions buy high and sell low, leading to inferior gross performance relative to individuals. One possible explanation for the different conclusions reached in earlier studies is that individual performance is correlated with broker type. For example, the more optimistic findings of Schlarbaum, Lewellen, and Lease (1978a, 1978b) might be explained by the fact that retail brokerages typically provide stock selection advice to their clients. Our dataset avoids this criticism because it captures the entire trading activity of all individuals, for all broker types, thereby allowing us to paint a complete picture of individual and institutional performance in the Turkish stock market.

Our results also speak to the growing literature that examines whether domestic investors have better information than foreign investors. Existing evidence on this issue is also mixed. Kang and Stultz (1997) find no difference in the performance of foreign and domestic investors in Japan. Choe, Kho, and Stultz (2001), Hau (2001), and Dvorak (2005) find evidence that foreign investors are at a disadvantage in Korea, Germany, and Indonesia, respectively. Meanwhile, Barber, et al. (2007) find that foreigners outperform individuals in Thailand, and Grinblatt and Keloharju (2000) reach similar conclusions for Finland. Our findings indicate no difference in performance between foreign and domestic investors in Turkey, and suggest that foreign investors do not trade at an information disadvantage.

The rest of the paper is organized as follows. Section 2 describes the data and the calculation of portfolio returns. Section 3 reports on the analysis and results. Section 4 concludes.

2 Data and methodology

2.1 Istanbul Stock Exchange

The Istanbul Stock Exchange (ISE) was founded as an autonomous, professional organization in early 1986. The ISE is the only corporation in Turkey established to provide trading in equities, bonds and bills, revenue-sharing certificates, private sector bonds, foreign securities and real estate certificates as well as international securities. All ISE members are incorporated banks and brokerage houses.

The ISE is an order-driven, multiple-price, continuous auction market with no market makers or specialists. A computerized system automatically matches buy and sell orders on a price and time priority basis. The buyers and sellers enter the orders through their work-stations located at the ISE building and also in their headquarters. It is a blind order system with trading ISE members identified upon matching. The system enables members to execute several types of orders such as "limit," "limit value," "fill or kill," "special limit," and "good till date" type orders. Members can enter buy and sell orders with various validity periods of up to one trading day. Unmatched orders without a specific validity period are canceled at the end of the trading session. The stock trading activities are carried out in two separate sessions, 9:30-12:00 for the first session and 14:00-16:30 for the second session, on workdays. Settlement of securities traded in the ISE is realized by the ISE Settlement and Custody Bank Inc. (Takasbank), which is the sole and exclusive central depository in Turkey.

Turkey has a liberal foreign exchange regime with a fully convertible currency. Since August 1989, the Turkish stock and bond markets have been open to foreign investors without any restrictions on the repatriation of capital and profits. At the start of our sample period, the vast majority (94.7%) of the institutional investors in our sample are foreigners.

Table 1 compares the trading measures of the ISE with other stock markets. ISE ranks 18th across the world in average trading volume with USD 102 billion during the 1999-2003 period. Figure 1 shows that our sample period covers both large gains and losses in the Turkish stock market. Figure 2 shows that the average daily trading volume ranges between approximately USD 300 and 700 million over our sample period. The turnover ratio of ISE is 165%, which is comparable to the turnover ratio for US. Figure 3 shows that the number of firms traded in the ISE fluctuates between 285 and 315.

2.2 A unique data set

Our proprietary data set is composed of two distinct parts. The first part is provided by the Istanbul Stock Exchange and contains the records of all completed trades on the exchange between 1/1999 and 4/2003. For each trade, these data contain the timestamp, security code, transaction price, quantity of shares traded, brokerage firm of both buyer and seller, and the investor group identity of both buyer and seller. The identity of each investor group is determined by the corresponding brokerage firm, which is required to enter a code determining the type of the trader to the best of their knowledge when the transaction order is given to ISE. There are three types of traders in the dataset: brokers, institutions and individual traders. We aggregate trades of brokers into institutional trades to obtain two groups of traders– individuals and institutions.

The second part of our data set is provided by Takasbank-the sole authority in safekeeping the physical certificates of Turkish stock securities. These data provide the total number of shares held by each investor group for each stock at the start of our sample period. We merge these data with the trading records to recover the actual holdings of ISE-listed stocks for each

investor group. We adjust the transaction prices and stock holdings to account for dividend payments and stock splits.

2.3 Calculating portfolio returns

We construct daily portfolios for individual and institutional investors by adding the aggregate daily net buy trades to the previous day's portfolio holdings for each investor group. Our ability to track the actual portfolios for each investor group reflects an advantage of our data set over previous studies, because our portfolio return calculations do not depend on a specific assumption about the investor's holding period.

Our first measure of portfolio returns combines the daily holdings of each investor group with the daily closing prices of each security. This measure more closely resembles the return calculations in existing studies that do not contain intra-day transactions data. We define

$$GR_{g,t+1} = \frac{\sum_i (n_{igt} \times p_{it} \times r_{i,t+1})}{\sum_i |n_{igt} \times p_{it}|}, \tag{1}$$

where $r_{i,t+1} = \frac{p_{i,t+1}}{p_{it}}$ is the gross return on stock i on day $t+1$, n_{igt} denotes the number of shares of stock i held by investor group g at the end of day t, p_{it} denotes the closing price of stock i on day t.[2] In economic terms, Eq. (1) tracks the portfolio returns for an investor that rebalances every day at the closing price for each security.[3]

[2]We identify all name changes and delisting events such as bankruptcies, mergers and acquisitions. We assume that at the day of delisting event the average return is -30%, which is consistent with Shumway (1997). The results are robust to different assumption about delisting returns such as no loss because of delisting, 100% loss at bankruptcy and 20% gain at the time of merger.

[3]Our use of absolute values in the denominator of Eq. (1) results from the fact that we do not observe the initial holdings of newly-listed firms within the sample period. Therefore, our implicit assumption that both investor groups start the sample with zero holdings of such firms sometimes leads to negative net holdings. The correct economic interpretation for our treatment of these cases is that investors have short positions with a one hundred percent maintenance margin. In the following, our qualitative results are unchanged after excluding IPO firms from our sample. IPO firms constitute only a small fraction of the overall market capitalization.

We also measure portfolio returns using the intra-day transactions data. Specifically, we define

$$GIR_{g,t+1} = GR_{g,t+1} + \frac{\sum_i \left[n_{igb,t+1} \times \frac{p_{i,t+1}}{p_{igb,t+1}} - n_{igs,t+1} \times \frac{p_{i,t+1}}{p_{igs,t+1}} \right]}{\sum_i |n_{igt} \times p_{it}|}, \quad (2)$$

where n_{igbt} denotes the number of shares of stock i bought buy group g within day t, p_{igbt} denotes the average buy price of stock i of group g within day t, n_{igst} denotes the number of shares of stock i sold buy group g within day t, and p_{igst} denotes the average sell price of stock i of group g within day t. In economic terms, Eq. (2) tracks the portfolio returns for an investor that rebalances each day at the volume-weighted average transaction price for all of his buys and sells, for each security. An advantage of this approach is that it incorporates the round-trip trades that are made by investors within a trading day.

3 Analysis and results

In this section we analyze whether the individuals and institutions differ in terms of their portfolio holdings, trading characteristics, and portfolio performance.

3.1 Portfolio and trading characteristics

Panel A of Table 2 reports summary statistics for institutional and individual asset allocations across groups of stocks with different market capitalizations. Institutions consistently hold larger stocks. For example, the institutional allocation to the largest stocks averages 92% as compared to 69% for individuals. This pattern is stable across the sample period. Institutions' average negative allocation to the smallest stocks reflects a greater number of institutional sales of newly issued firms over our sample period as compared to individuals.

In Panel B of Table 2 we report summary statistics for the fraction of aggregate stock market held by each investor type within each size group. Institutions represent about 47% of the aggregate market portfolio. Fifty-four percent of the largest stocks are held by institutions, and the fraction held by institutions increases with the size of the firms. Nearly all of the smallest stocks are held by individuals.

Another significant difference between two groups is their trading behavior. Table 3 shows the trading volume of institutions versus individuals in aggregate and across size groups. On average, individuals trade seven times more than institutions. Moreover, individuals trade even more in the largest stocks compared to institutions.

3.2 Comparing portfolio performance

3.2.1 Raw returns

Table 4 presents results for the average daily returns of individual and institutional portfolios. Panel A reports results for portfolio returns that are calculated using Eq. (1). Raw returns for institutions average 0.196% per day. The magnitude of portfolio returns is consistent with the overall level of returns experienced by the ISE 100 over our sample period (see Figure 1). Interestingly, the average return on the individuals' portfolio is on par (0.194%) with that of institutions. Qualitatively similar results are obtained in Panel B where we account for intraday portfolio returns as in Eq. (2).

3.2.2 Domestic alpha

Table 2 shows that the institutional portfolio allocation to large market capitalization stocks is higher, on average, as compared to individuals. Griffin (2002) examines global versions of

Fama and French's three-factor model, and finds that domestic factor models explain much more time-series variation in returns than a world factor model. Therefore, we also calculate measures of risk-adjusted returns by controlling for variation in local size, book to market, and market portfolio returns. We take book value data for ISE-listed companies from DataStream and, following the methodology of Fama and French (1992), construct benchmark portfolios based upon firm size and book-to-market ratios.

For each investor group, we run time series regressions of daily returns against the daily returns from the factor portfolios. The results are reported in Table 4. The risk-adjusted returns of institutional portfolios are estimated to be 7.1% per annum, while individual performance is estimated to be 7.7%. However, this difference is not statistically significant. Therefore, we cannot reject the hypothesis that individual and institutional investors have the same security selection skill.

Informational asymmetry is likely to be greater for smaller firms. If institutions possess superior information about individual stocks, then we expect a greater performance differential between the two groups in smaller stocks. We form size groups to test whether institutions perform better than individuals in smaller stocks. Specifically, at the start of each year in our sample period we partition the sample of stocks into size quintiles based upon the market capitalization values at the end of the previous December. Size portfolio returns are then calculated according to Eq. (1) and (2). Table 5 shows the average daily returns for each investor group by size quintile. The results show that individuals and institutions exhibit similar performance in every size decile. This result also suggests that our results are robust to the exclusion of newly issued securities, because such firms are concentrated in the smallest size decile.

3.2.3 Weight-based performance measure

An important issue for any analysis of performance is the specification of the asset pricing model used to estimate expected returns. The large risk-adjusted returns (about 7%) estimated from the domestic market model might reflect the omission of relevant risk factors from the Turkish stock market. In addition, the high average return of the ISE over our sample period reduces the precision in estimating the intercept of our market model regression.[4]

Our knowledge of portfolio holdings allows us to address both issues by using the weight-based measure developed by Grinblatt and Titman (1993). This measure compares the actual portfolio returns with the returns on a benchmark portfolio that is a function of an investor's actual portfolio weights. Ideally, the benchmark portfolio has the same systematic risk of the actual portfolio, but uncorrelated with future risk-adjusted security returns. We follow Grinblatt and Titman (1993) and Daniel, Grinblatt, Titman and Wermers (1997) and use lagged observations of actual weights as our choice of the benchmark portfolios. Specifically, the benchmark portfolio for a given day is the actual portfolio held at the end of the previous year.

Table 6 compares the performance of individuals' and institutions' actual portfolios to their corresponding benchmark ("no-trade") portfolios. The actual portfolio returns for each investor group are calculated as in Equation 1. Consistent with our findings in Table 4, the difference in risk-adjusted returns between individuals and institutions is not significant. However, estimated performance for each group is lower using the weight-based measure. The annualized risk-adjusted returns are -0.08% and -0.45% for individual and institutional portfo-

[4]See, e.g., Dougherty (p. 84). The findings of Morck, Yeung and Yu (2000) also suggest that our earlier findings might result from a high comovement of stocks in the ISE. However, our calculations of excess returns control for the market return, thereby accounting for the comovement of stocks. In addition, there appears to be enough firm specific variation in our stock returns to allow individuals and institutions to differentiate themselves. In fact, Morck, Yeung and Yu (2000) find that the average firm specific variation of stocks traded in the Istanbul Stock Exchange is larger than the average firm specific variation of stocks traded in the US.

lios, respectively. Overall, the results indicate that, relative to individual investors, institutions do not have superior stock selection ability.

3.2.4 Selectivity and timing ability

The above results suggest that institutional investors do not possess greater security selection skill as compared to individuals. However, institutions might instead possess superior market timing skill – the ability to dynamically shift systematic risk in anticipation of future realizations of a systematic factor for returns. In this case, our earlier estimates of risk-adjusted returns might be biased by the implicit assumption that the actual and benchmark portfolios have the same systematic risk.[5]

To control for the possibility of market timing we follow Grinblatt and Titman's (1989) decomposition of total returns into distinct security selection and market timing components. We assume a market model for returns and use the ISE-100 as our market index. Therefore, timing ability and stock selection ability are defined relative to the ISE-100. According to the market model,

$$r_{p,t} = \beta_{p,t} \times r_{m,t} + \varepsilon_{p,t},$$

where $r_{p,t}$ and $r_{m,t}$ denote the returns on the investor's portfolio and market index on day t, respectively, in excess of the risk-free rate. The portfolio beta is defined as usual,

$$\beta_{p,t} = \sum_{n=1}^{N} w_{n,t} \times \beta_{n,t}$$

[5]Merton (1981) shows that a perfect market timer will have the same dynamic systematic risk as that of a protective put strategy on the market index.

where $w_{n,t}$ is the portfolio's weight in security n at the start of day t, and $\beta_{n,t}$ is the security's market beta at the start of day t. Average portfolio returns can therefore be written as,

$$\bar{r}_p = \bar{\beta}_p \times \bar{r}_m + \frac{1}{T}\sum_{t=1}^{T}(\beta_{p,t} - \bar{\beta}_p) \times r_{m,t} + \bar{\varepsilon}_p \tag{3}$$

where the bars over variables reflect time series averages. Equation (3) shows that average portfolio returns equals the sum of the risk premium attributable to the average portfolio beta, the component that results from timing, and the component that results from selectivity. Intuitively, the market timing component reflects the covariance between portfolio beta and market returns, while selectivity reflects the average market model residual.

We estimate Eq. (3) for both individuals and institutional investors. For each day in our sample period, we calculate the portfolio beta for each investor group based on the portfolio weights and individual security betas measured at the end of the previous day. Security betas are estimated using rolling sixty day regressions of daily stock and ISE 100 returns. Table 7 reports the results from the decomposition in Eq. (3). We find that timing ability is not statistically different from zero for both types of investors. In fact, our point estimates suggest that the portfolio betas tend to rise in anticipation of down markets and fall in up markets. The curious negative timing coefficients are reminiscent of earlier studies of mutual fund timing ability.[6] Overall, we cannot reject the hypothesis that institutions and individuals have similar stock-picking and market timing skill. The results also suggest that our earlier conclusions about individual and institutional selection skill are robust to possible time-variation in portfolio betas.

[6]See, e.g., Henriksson (1984) and Chang and Lewellen (1984). However, Ferson and Schadt (1996) and Edelen (1999) find evidence of neutral timing ability after controlling for the variation in portfolio beta that can be explained by publicly available information.

3.3 Performance around local events

The above results suggest that neither individuals nor institutions possess superior information about the future direction of ISE-listed stock prices. Yet, in Section 1 we note that foreigners represent about 94% of all institutional holdings at the start of our sample period, while most individuals are local citizens. This introduces the hypothesis that institutional investors in Turkey trade at an informational disadvantage relative to local individuals.[7]

To test this hypothesis we undertake an event study approach and compare the trading performance of individuals and institutions around key "local" events. We use country reports provided by Economic Intelligence Unit to identify events that are exogenous and significantly affect the Turkish stock market. We identify two such events during our sample period: first, the Izmit earthquake of August 17, 1999, which resulted in 18,000 deaths, 50,000 injuries, and massive destruction in a highly industrialized region. Trading of ISE-listed stocks was suspended for several days following the earthquake and stock market performance was negatively affected. The second event is the public dispute between the President and the Prime Minister on 19 February 2001. This event triggered a sharp devaluation of the Turkish Lira against the US Dollar after investors lost confidence in the stability of the Turkish government.

If individuals are indeed superior in evaluating the implications of local events on the stock market, then we expect superior portfolio performance of individuals immediately following these events. We calculate the portfolio returns for each investor group over the 1, 3 and 6 months following each event. Our event-time portfolio returns also reflect the returns of stocks that were purchased before the event.

Table 8 shows that there is no significant difference between the returns of individuals and institutions for each event window. We repeat the analysis by forming portfolios only by

[7] Coval and Moskowitz (2001) find that investors trade local securities at an informational advantage.

considering trades after the event. Again, there is no significant difference in returns between institutions and individuals. Overall, we do not find support for the notion that the similar performance of individuals and institutions relies on a local information advantage possessed by individual investors.

3.4 Net returns after brokerage costs

In Section 3.1 we report that individuals trade significantly more than institutions. Given our findings of similar risk adjusted portfolio returns for both investor groups, this suggests lower performance for individuals net of trading costs. In this section, we attempt to quantify the difference in net performance between the two investor groups.

An advantage of our dataset is that it includes the exact price of each transaction. Therefore, the bid ask spread is implicitly included in our return calculations, which generally constitutes the largest part of transaction costs. The only missing variable is the commission paid to brokers for each transaction. We estimate these costs by reviewing the advertised commission rates for many Turkish brokers. For example, Global Securities is one of the highest volume brokers and charges a flat fee of 0.15% for its online clients. On the other hand, the commission rates of Garanti Bank are based on the past volume of the client. Garanti charges 0.099% for clients that have transaction volume of 350,000 USD in the last three months, as compared to 0.249% for clients that have transaction volume of only 700 USD. Based on this information and our discussion with ISE officials we estimate that 0.1% and 0.2% represent a reasonable range for brokerage commissions.

Table 9 reports the after-commissions performance calculated using the weight-based measure. As in Section 3.2.3., we take the benchmark (No Trade) portfolio for an investor group on a given day to be the actual portfolio held by that group at the end of the previous year.

However, actual portfolio returns for each investor group are now reduced by brokerage commissions equal to 0.15% of each day's trades. Specifically, the daily portfolio return for each investor group, net of brokerage fees, satisfies

$$\text{Actual}_t = GIR_t - \sum_{i=1}^{N} (n_{ibt} \times p_{ibt} + n_{ist} \times p_{ist}) \times 0.0015,$$

where GIR_t is defined as is Equation 2, n_{ibt} denotes the number of shares of stock i bought buy within day t, p_{ibt} denotes the average buy price of stock i within day t, n_{ist} denotes the number of shares of stock i sold within day t and p_{ist} denotes the average sell price of stock i within day t.

Table 9 shows that, net of transaction costs, both individuals and institutions lose from trade. Specifically, the actual portfolios of individuals and institutions underperform their benchmark portfolios on average by -5.25% and -1.0% per annum, respectively. The differential performance between the two groups, at -4.25%, is significant.

Overall, the evidence supports the view that individual investors' expected gains through trading are not enough to offset trading costs (Barber and Odean, 2000; Odean, 1999). However, we also find that institutions lose from trade after brokerage commissions, and do not possess superior stock selection ability or market timing skill. This evidence suggests that the benefits of delegated portfolio management can be attributed to lower trading costs, and not superior information about the direction of future stock prices.

4 Conclusions

A fundamental issue faced by individual investors is the extent to which an informational advantage can be achieved by delegating portfolio management to an institutional investor.

However, most evidence of individual investor performance is usually limited to subgroups of data provided by a particular brokerage house. This is problematic, because the identity of the counterparty to investors' trades is unknown, so nothing definitive can be said about which investor group gains from individuals' losses. In this paper, we use a unique dataset to provide a complete, simultaneous comparison of individual and institutional investor performance.

Our data allow us to recover the actual daily portfolios and associated returns for each investor group. We do not find any apparent difference in stock selection ability between individuals and institutions. Annualized risk-adjusted returns are estimated to be -0.08% and -0.45% for individual and institutional portfolios, respectively. The difference between these two estimates is insignificant. Although most institutional investors in Turkey are foreigners, our findings do not appear to be related to a local information advantage possessed by individuals. Indeed, we find similar results around key unexpected "local" events that significantly affect the Turkish stock market, such as the devastating Izmit earthquake of 1999.

Individuals' trading activity is approximately seven times larger than institutions and, after a modest account for brokerage costs, net performance drops to -5.25% and -1.0% per annum, respectively. The differential performance between the two groups, at -4.25%, is significant. The results suggest that transactional efficiency, and not superior information about securities, is an important benefit of delegated portfolio management.

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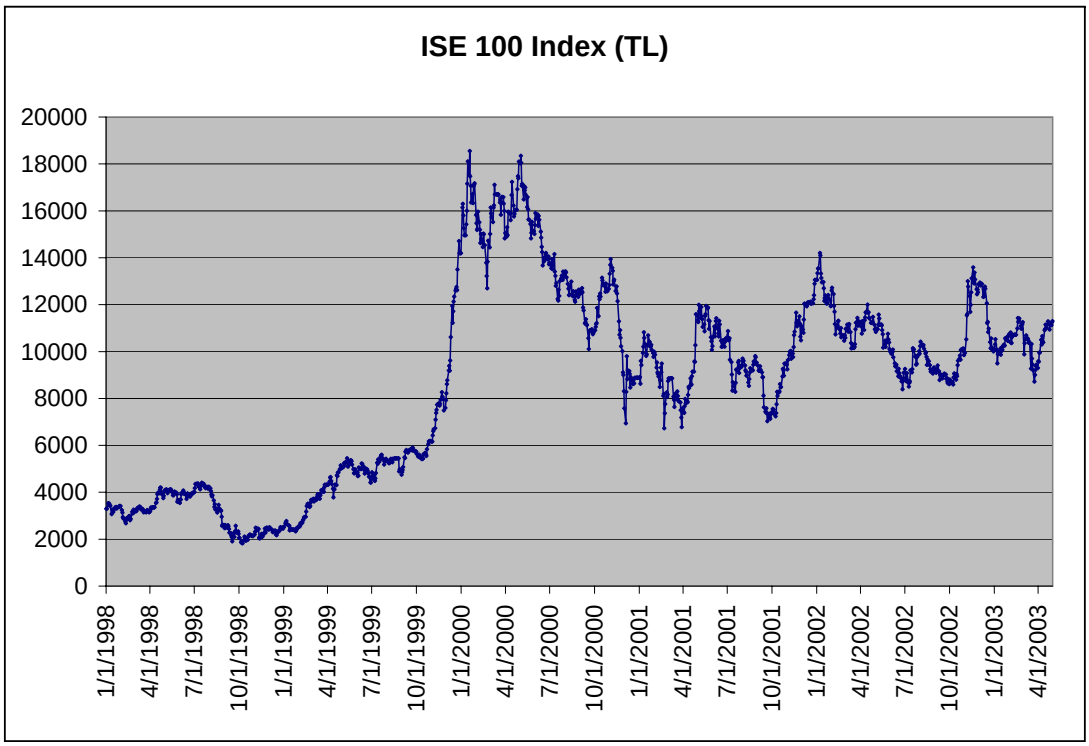

Figure 1: **ISE 100 Index daily returns over the 1999-2003 period.**

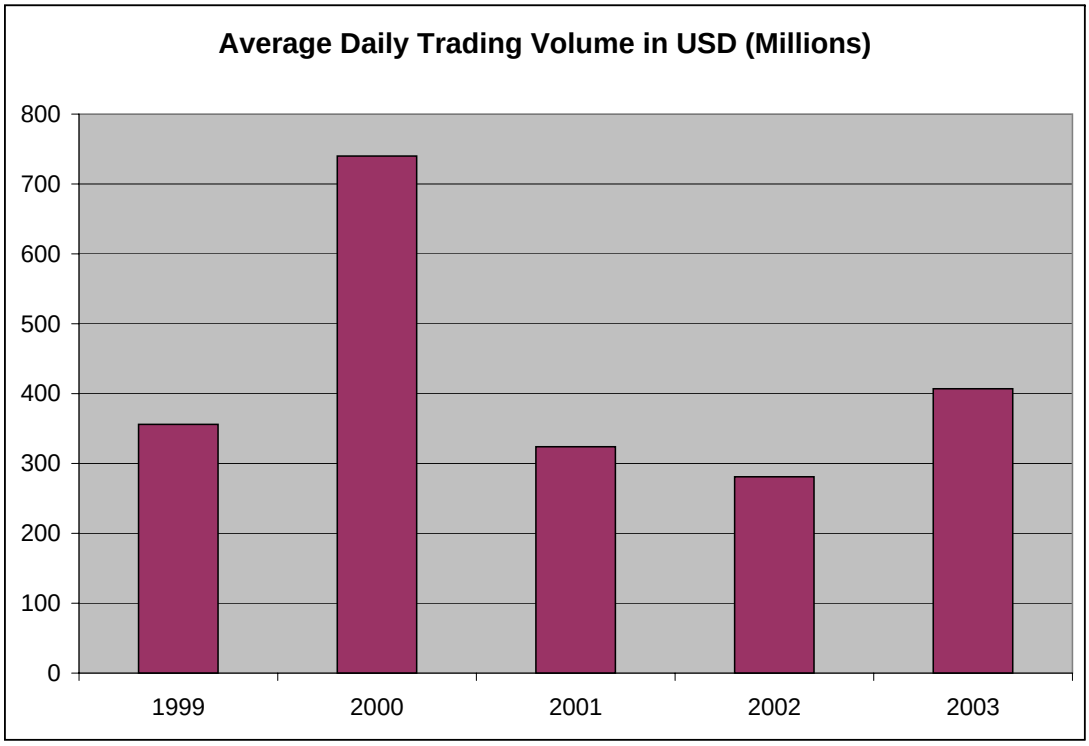

Figure 2: **Average daily trading volume (in USD millions) of ISE-listed securities by year over the 1999-2003 period.**

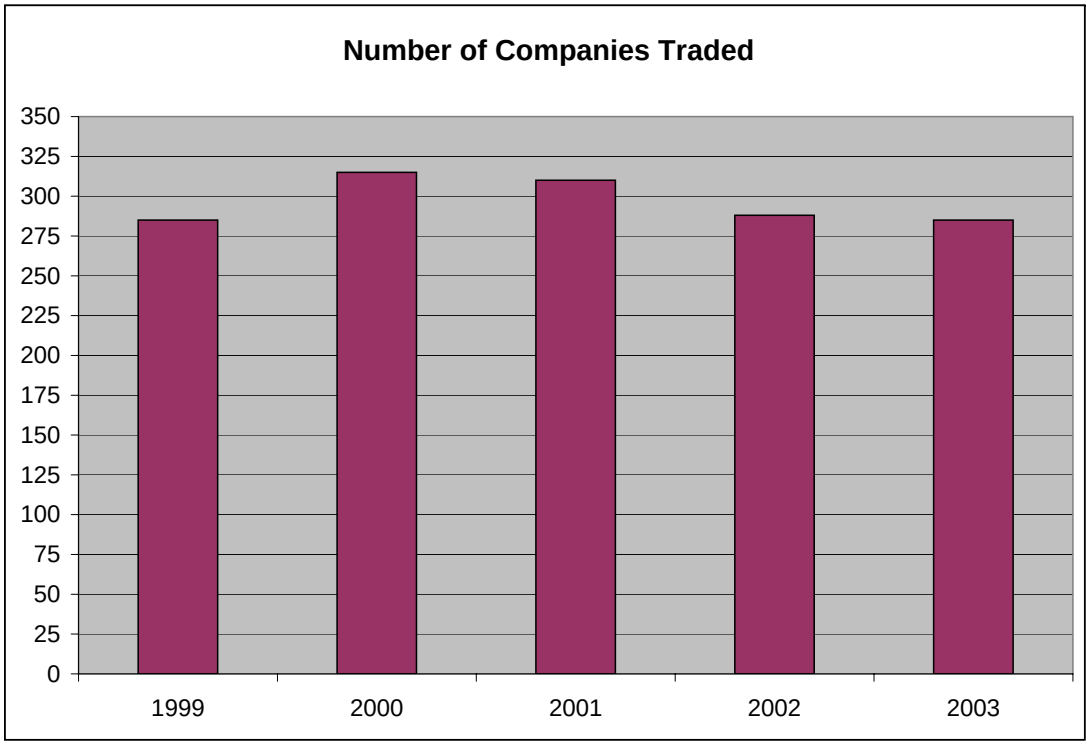

Figure 3: **Number of companies listed on the ISE by year over the 1999-2003 period.**

Table 1: **Istanbul Stock Exchange: Trading**

Average trading characteristics of Istanbul Stock Exchange compared to world markets between 1999-2003. The first column shows the yearly trade volume in USD billions. The second column shows the turnover ratio, total trade divided by market capitalization. The third column shows the total trade divided by the GDP of the country. All values are averages between 1999-2003. Source World Bank.

	Trade in USD billions		Turnover ratio		Stocks traded percent of GDP	
1	United States	24,079	Pakistan	359	Hong Kong, China	209.3
2	Japan	2,043	Korea, Rep.	302	Switzerland	178.9
3	United Kingdom	1,839	Spain	187	United States	142.0
4	Germany	1,137	United States	170	United Kingdom	123.0
5	France	976	**Turkey**	165	Korea, Rep.	112.3
6	Spain	904	India	155	Spain	106.2
7	Korea, Rep.	815	Netherlands	133	Finland	101.0
8	Netherlands	623	Germany	116	Singapore	95.1
9	Italy	614	Uzbekistan	109	Netherlands	90.4
10	Switzerland	536	China	109	Sweden	87.5
11	China	472	Slovak Republic	108	Australia	70.1
12	Canada	464	Sweden	101	South Africa	61.9
13	India	304	Italy	101	France	55.6
14	Sweden	282	Thailand	94	Canada	54.6
15	Hong Kong, China	273	Macedonia, FYR	92	India	47.4
16	Australia	265	United Kingdom	87	Germany	47.0
17	Finland	168	Norway	83	**Turkey**	41.4
18	**Turkey**	102	Switzerland	80	Denmark	40.0
19	South Africa	80	Finland	79	Thailand	38.0
20	Singapore	79	France	79	Greece	22.3

Table 2: **Portfolio Holdings**

Panel A displays the daily portfolio holdings of institutions and individuals across size groups between 1/1999 and 04/2003. Panel B displays the portfolio shares of individuals and institutions within size groups.

	Panel A: Portfolio Holdings Across Size Groups							
	Institutions				Individuals			
	Mean	Std Deviation	Min	Max	Mean	Std Deviation	Min	Max
1	(0.0001)	0.0003	(0.0006)	0.0006	0.0149	0.0043	0.0089	0.0258
2	0.0029	0.0005	0.0017	0.0038	0.0337	0.0052	0.0224	0.0462
3	0.0079	0.0022	0.0043	0.0142	0.0554	0.0095	0.0401	0.0880
4	0.0441	0.0095	0.0234	0.0608	0.1412	0.0218	0.1031	0.1964
5	0.9217	0.0132	0.8909	0.9420	0.6911	0.0252	0.6336	0.7599
	Panel B: Portfolio Share within Size Groups							
	Institutions				Individuals			
	Mean	Std Deviation	Min	Max	Mean	Std Deviation	Min	Max
1	(0.0003)	0.0168	(0.0317)	0.0387	1.0003	0.0168	0.9613	1.0317
2	0.0699	0.0060	0.0555	0.0817	0.9301	0.0060	0.9183	0.9445
3	0.1109	0.0208	0.0747	0.1558	0.8891	0.0208	0.8442	0.9253
4	0.2140	0.0312	0.1696	0.2670	0.7860	0.0312	0.7330	0.8304
5	0.5393	0.0265	0.4820	0.5830	0.4607	0.0265	0.4170	0.5180
All	0.4675	0.0248	0.4249	0.5199	0.5325	0.0248	0.4801	0.5751

Table 3: **Trading Activity**

The table displays the total trading activity (price times volume) of individuals versus institutional traders between 1/1999 and 04/2003. The first two columns shows the total trades in Turkish Lira, the third column shows the ratio of individual trades versus institutional trades, the final column shows the turnover ratio of individuals divided by the turnover ratio of institutions. The turnover ratio is equal to the ratio of total trades over total holdings.

	Trade by Institutions	Trade by Individuals	Ratio of Trades	Ratio of Turnover
All	7.26E+16	5.87E+17	8.09	7.10
Size quantiles				
1	1.21E+14	1.30E+16	107.44	7.65
2	3.50E+14	2.33E+16	66.57	5.00
3	8.94E+14	3.23E+16	36.13	4.51
4	3.60E+15	6.99E+16	19.42	5.29
5=Largest	6.25E+16	3.86E+17	6.18	7.23

Table 4: **Individual versus Institutions: Raw and Risk Adjusted Returns**

The table shows the daily returns of portfolios of individuals and institutions for the time period 1/1999-4/2003. Panel A shows the returns, which does not incorporate intra-day trading returns (gains). All buy and sell orders are assumed to be completed at the closing price of the same day. We define $GR_g = \frac{\sum_i (n_{igt} \times p_{it} \times r_{i,t+1})}{\sum_i |n_{igt} \times p_{it}|}$, where $r_{i,t+1} = \frac{p_{i,t+1}}{p_{it}}$ is the gross return on stock i on day $t+1$, n_{igt} denotes the number of shares of stock i held by investor group g at the end of day t, p_{it} denotes the closing price of stock i on day t. In panel B, portfolio returns incorporate intra-day returns. $GIR_g = GR_g + \frac{\sum_i \left[n_{igb,t+1} \times \frac{p_{i,t+1}}{p_{igb,t+1}} - n_{igs,t+1} \times \frac{p_{i,t+1}}{p_{igs,t+1}} \right]}{\sum_i |n_{igt} \times p_{it}|}$, where n_{igb} denotes the number of shares of stock i bought buy group g within day t, p^t_{igb} denotes the average buy price of stock i of group g within day t, n_{igs} denotes the number of shares of stock i sold buy group g within day t and p^t_{igs} denotes the average sell price of stock i of group g within day t. Risk adjusted returns are calculated with respect to Fama-French 3 factors. ISE100 is the return of ISE100 index. SMB is the return difference between the small and big stock portfolios and HML is the return difference between the high and low book to market portfolios in ISE.

	Panel A: Raw Returns					
		Individuals			Institutions	
	Mean	Std Dev	T Statistics	Mean	Std Dev	
Raw Returns	0.0019431	0.0328642		0.0019616	0.0344343	
Inst-Indv Mean Returns	0.00002	0.0068708	0.0874			
		Individuals			Institutions	
Risk Adjusted Returns	Coefficient	Error	T Statistics	Coefficient	Error	T Statistics
ISE 100 Index	0.9529805	0.0074428	128.04	0.989115	0.0072624	136.2
SMB	0.0166535	0.0222993	0.75	-0.1188406	0.0217589	-5.46
HML	0.0312194	0.0213704	1.46	-0.010544	0.0208525	-0.51
Constant	0.0003085	0.0002402	1.28	0.0002846	0.0002343	1.21
Inst-Indv α	-0.0000238	0.0003356	-0.07			
	Panel B: Raw Returns including intraday trades					
		Individuals			Institutions	
	Mean	Std Dev	T Statistics	Mean	Std Dev	
Raw Returns	0.0019383	0.03287		0.0019675	0.0344265	
Inst-Indv Mean Returns	0.0000292	0.0068647	0.1384			
		Individuals			Institutions	
Risk Adjusted Returns	Coefficient	Error	T Statistics	Coefficient	Error	T Statistics
ISE 100 Index	0.9531561	0.0074421	128.08	0.9888909	0.0072624	136.17
SMB	0.0165246	0.022297	0.74	-0.1186694	0.0217587	-5.45
HML	0.0310292	0.0213682	1.45	-0.0103176	0.0208523	-0.49
Constant	0.0003035	0.0002401	1.26	0.0002909	0.0002343	1.24
Inst-Indv α	-0.0000126	0.0003355	-0.04			

Table 5: **Individual versus Institutions: Daily Portfolio Returns in Size Groups**

Table displays the daily portfolio returns of individuals and institutions for the period 1/1999-04/2003 for size quintiles. Daily portfolio returns are calculated using equation 1. The size quintile of each firm is determined by sorting according to market value reported in Datastream and updated every June using the end of year values. The last row shows the portfolio return of firms that are not covered by Datastream. The standard deviations of mean returns are reported below the mean return.

	Institutions			Individuals			Difference	
	Mean	Min	Max	Mean	Min	Max	Mean	T Test
All	0.002	(0.179)	0.188	0.002	(0.170)	0.192	0.000	0.09
	0.034			0.033			0.000	
Size Quintiles								
1=Smallest	0.001	(0.079)	0.077	0.002	(0.143)	0.164	(0.001)	(0.91)
	0.018			0.028			0.001	
2	0.002	(0.109)	0.157	0.002	(0.149)	0.168	0.000	0.25
	0.024			0.028			0.000	
3	0.002	(0.131)	0.166	0.002	(0.156)	0.188	(0.000)	(0.34)
	0.026			0.029			0.000	
4	0.002	(0.145)	0.192	0.002	(0.159)	0.197	(0.000)	(0.55)
	0.029			0.029			0.000	
5=Largest	0.002	(0.182)	0.191	0.002	(0.175)	0.193	(0.000)	(0.05)
	0.035			0.035			0.000	

Table 6: **Weight-based Performance Measure**

The table compares the average daily returns of individual and institutional traders' actual portfolios with the average returns for their corresponding benchmark (no-trade) portfolios between 1/1999 and 04/2003. Daily portfolio returns are calculated as in Equation 1. The benchmark portfolio for an investor group is the actual portfolio held by that group at the end of the previous year. For each trading day and each investor group, the return differential between the Actual and No Trade portfolio is given by

$$\text{Difference}_t = GR_t - \sum_{i=1}^{N} w_{bit} \times r_{n,t}$$

where GR_t is the actual portfolio return calculated according to Equation 1, w_{bit} is the investor's portfolio weight in security i at that end of the year preceding day t, and r_{it} is the day t return on security i.

Institutions			
	Mean	Std Error	t statistics
No Trade	0.00198	0.00105	
Actual	0.00196	0.00106	
Difference (Actual-No Trade)	-0.000018	0.00002	-0.83
Individuals			
	Mean	Std Error	t statistics
No Trade	0.00194	0.00101	
Actual	0.00194	0.00101	
Difference (Actual-No Trade)	-0.000003	0.000007	-0.45

Table 7: **Market Timing and Security Selection**

The table displays the timing and stock selection ability of individuals and institutions using Grinblatt and Titman's (1989) decomposition of total returns for the period 1/1999-04/2003. We assume a market model for returns and use the ISE-100 as our market index. According to the market model, average portfolio returns can be written as,

$$\bar{r}_p = \bar{\beta}_p \times \bar{r}_m + \frac{1}{T}\sum_{t=1}^{T}(\beta_{p,t} - \bar{\beta}_p) \times r_{m,t} + \bar{\varepsilon}_p$$

where the bars over variables reflect time series averages. Average returns can therefore be written as the sum of risk premium attributed to the average portfolio beta, the component that results from timing, and the component that results from selectivity. For each day in our sample period we calculate the portfolio beta for each investor group based on the portfolio weights and individual security betas measured at the end of the previous day. Security betas are estimated using rolling sixty day regressions of daily stock and ISE 100 returns. Standard errors are reported below each coefficient estimate.

	Selection Ability		Timing Ability	
	Coefficient	T Statistics	Coefficient	T Statistics
Institutions	0.00003 0.00047	0.07	(0.00030) 0.00107	(0.28)
Individuals	0.00050 0.00033	1.51	(0.00037) 0.00099	(0.38)

Table 8: **Local Information**

The table displays the portfolio and trade performance of individual and institutional traders after local exogenous events. The returns are average daily raw returns after the event time in 1, 3, and 6 months. Daily portfolio returns are calculated using equation 1. Portfolio returns represents the return of the overall portfolio whereas trade returns represents the return of a portfolio formed only by transactions after the event. The first event is the Izmit earthquake that happened in 17 August 1999 and caused about 18,000 death and 50,000 injuries and massive destruction in a highly industrialized region. The second event is a public quarrel between President and the Prime Minister that happened on 19 February 2001. The event triggered a sharp devaluation of TL against dollar after investors lost confidence about political stability. Standard errors of mean returns are reported in the second row.

	Earthquake					
	Portfolio Returns			Trade Returns		
Duration (months)	1	3	6	1	3	6
Institutions	0.0026	0.0062	0.0083	-0.001	0.0007	0.0003
	0.0075	0.0035	0.0035	0.0015	0.0008	0.0018
Individuals	0.0032	0.0066	0.0091	0.001	-0.0007	-0.0003
	0.0072	0.0031	0.0033	0.0015	0.0008	0. 0018
Ttest (Inst-Indv)	-0.39	-0.45	-0.92	-0.67	0.88	0.18
	Quarrel between Prime Minister and President					
	Portfolio Returns			Trade Returns		
Duration (months)	1	3	6	1	3	6
Institutions	0.0091	0.0016	-0.0012	0.0012	0.00047	0.0002
	0.01	0.0045	0.0027	0.0041	0.00138	0.0007
Individuals	0.0076	0.002	-0.0006	-0.0012	-0.00047	-0.0002
	0.01	0.0044	0.0026	0.0041	0.00138	0.0007
Ttest	0.78	-0.49	-0.97	0.3	0.33	0.3

Table 9: **Portfolio Performance and Trading Costs**

The table compares the average daily net-of-commissions returns of individual and institutional traders' actual portfolios with the average returns for their corresponding benchmark (no-trade) portfolios between 1/1999 and 04/2003. Brokerage commissions of 0.15% are subtracted from daily portfolio returns that include within-day trading returns. The table reports summary statistics for the daily portfolio return (Actual) for each investor group:

$$\text{Actual}_t = GIR_t - \sum_{i=1}^{N} (n_{ibt} \times p_{ibt} + n_{ist} \times p_{ist}) \times 0.0015,$$

where GIR_t is defined as is Equation 2, n_{ibt} denotes the number of shares of stock i bought buy within day t, p_{ibt} denotes the average buy price of stock i within day t, n_{ist} denotes the number of shares of stock i sold within day t and p_{ist} denotes the average sell price of stock i within day t. The benchmark portfolio for an investor group is the actual portfolio held by that group at the end of the previous year. The return on the benchmark portfolio (No Trade) is given by

$$\text{No Trade}_t = \sum_{i=1}^{N} w_{bit} \times r_{it},$$

where w_{bit} is the investor's portfolio weight in security i at that end of the year preceding day t, and r_{it} is the day t return on security i.

Institutions			
	Trading Cost = 0.0015		
	Mean	Std Error	t statistics
No Trade	0.00198	0.00105	
Actual	0.00194	0.00106	
Difference (Actual-No Trade)	-0.00004	0.00002	1.97

Individuals			
	Trading Cost = 0.0015		
	Mean	Std Error	t statistics
No Trade	0.00194	0.00101	
Actual	0.00173	0.00100	
Difference (Actual-No Trade)	-0.00021	0.00001	24.02