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The neglected firm effect and an application in Istanbul Stock Exchange

Abstract

In this study, the semi-strong form market efficiency in Istanbul Stock Exchange is tested in the context of the neglected firm effect. The monthly return data covering ten years between January 1st, 1999 and December 31st, 2008 are employed in the analysis. Three portfolios, namely neglected, normal, and popular, are formed in order to investigate the neglected firm effect. As a result of the empirical analysis conducted, monthly average abnormal returns of -1.00%, 0.88%, and 2.89% are found for neglected, normal and popular portfolios, respectively. Based on the empirical findings of the study, it can be concluded that the neglected firm effect may not exist in Istanbul Stock Exchange.

Introduction

The fund supply and demand in the long term are met in the capital markets by the gathering of economic units with fund surplus and fund deficit. The savings turn into investments in the hands of firms through capital markets. This not only helps investors get some return from their investments but also contributes to the efficient management of firms. In macro terms, increasing investments with increasing production and sales would lead to increasing tax income by the government and controlling of budget deficits and thus decreasing borrowing needs of the government to the reasonable levels. This in turn would result in price stability and financial stability in the economy. Therefore, the operations of the capital markets concern households, firms, and the government very closely.

The reciprocal needs of economic units with fund surplus and fund deficit are satisfied by using instruments offered in the capital markets. Stocks, which are important instruments in the capital markets, are being used for equity financing needs of firms. The prices of stocks after the initial public offerings are determined based on supply and demand in the market. The efficient markets hypothesis advocated by Fama (1970) states that the stock prices reflect all available information. Whenever new information arrives at the market, this info is processed by investors and reflected in supply and demand. Therefore, new stock price is determined. Fama argues that as the stock prices reflect all available information, it is not possible to earn abnormal returns consistently based on any trading strategy used in the stock market. Therefore, in an efficient market, the price of a stock will be its true value and the investors will get returns commensurate with the risks they bear. In other words, the prices of financial assets will

reflect the true values of those assets. Fama defines market efficiency in three forms: weak form, semi-strong form, and strong form. If investors cannot get abnormal returns by using historical data, the markets are said to be efficient in the weak form. On the other hand, if investors cannot get abnormal returns by using public information such as financial statements of firms, the markets are said to be efficient in the semi-strong form. Finally, if investors cannot get abnormal returns by using even inside information which is not public (insider trading), then the markets are said to be efficient in the strong form.

Most of the studies testing market efficiency come up with findings inconsistent with the efficient markets hypothesis. Those studies find that stock returns can be forecast and abnormal returns can be earned by using different trading strategies in stock markets. Those empirical findings inconsistent with the efficient markets hypothesis are called market anomalies, such as January effect, day of the week effect, holiday effect, price/earnings (P/E) ratio effect, firm size effect, and overreaction hypothesis. The neglected firm effect can also be given among those market anomalies.

This study reviews the neglected firm effect and the empirical literature related to this market anomaly in the next section. Section 2 describes the data and the methodology used in the empirical analysis. The empirical findings of the study are discussed in section 3. Finally, the last section concludes the paper.

1. Review of the related literature

The neglected firm effect is one of the market anomalies inconsistent with the efficient markets hypothesis and supported by empirical findings. The neglected firm effect states that neglected stocks in capital markets provide higher returns compared to returns provided by popular stocks. Based on this market anomaly, investors can consistently get higher returns by investing in neglected stocks. This

finding is not consistent with the efficient markets hypothesis and implies that markets are not efficient in the semi-strong form.

Arbel et al. (1983) note that institutional investors have many difficulties in investing small cap stocks due to higher risks associated with them. They may be reluctant to take so much risk and may be cautious when investing in small cap stocks. Instead, they may prefer investing in stocks about which they have quality information. The fact that institutional investors are not willing to take risks by investing in small cap stocks implies that such firms are neglected by institutional investors. Those researchers also state that investors bear some costs to get quality and precise information about stocks in financial markets just as customers pay for the quality and precision of the information about a product they want to buy. If it is possible to get high quality information about a stock, the price of that stock rises and its return becomes lower than the returns provided by neglected stocks. The higher returns of neglected stocks result from the premium due to lack of information.

The neglected firm effect is first investigated by Bauman (1961) as part of his doctoral study and then published as two different articles in 1964 and 1965. He examines the average returns of investing in less popular stocks compared to the returns of more popular stocks. This effect is first explored by using data between 1954 and 1960. Then, data for 1961, 1962, and 1963 are also added to the analysis. For the first seven years, it is found that the average annual return of less popular stocks is 18.9% when compared to 15.3% average annual return of more popular stocks. The difference is 3.6%. During the time period analyzed, the average annual return of S&P 500 index is 17.8%. For the whole period, less popular stocks earn 14.9% average annual return as opposed to 13.7% earned by more popular stocks.

Arbel et al. (1983) investigate the neglected firm effect over the years between 1971 and 1980 on the American stock markets. In their study, 510 stocks are divided into three different groups based on their neglect levels. Thus, three portfolios are formed and their average annual returns are calculated. As a result, the portfolio consisting of neglected stocks earns higher and statistically significant returns than the returns of other two portfolios. The authors further investigate whether this effect is stemmed from the firm size or not. For that purpose, they divide each portfolio into three groups and form three portfolios based on firm sizes. When the returns of those portfolios are calculated, it is

observed that the neglected firm effect persists independent of the firm size effect.

Carvell and Strebel (1987) examine the relationship between the neglected firm effect and January and small firm effects. They find that the neglected firm effect exists independent of the firm size but this effect is weakened by excluding the returns due to January effect from the data set.

Beard and Sias (1997) also find that the portfolio consisting of neglected stocks earns higher returns than the returns of other portfolios as a result of a comprehensive study using data for 3752 firms on average per year between January 1982 and December 1995 on American stock exchanges. However, as this finding may result from the firm size effect, they divide the portfolios into 10 groups based on firm sizes and repeat return calculations. They observe that the neglected firm effect disappears when the firm size is taken into account.

Karan (2000) examines the neglected firm effect on the Istanbul Stock Exchange over the three years running from 1996 through 1998. The author forms up three different portfolios, namely neglect, normal, and popular, consisting of 20 stocks for each. He shows that the portfolio consisting of neglected firms has superior performance than the performance of portfolios consisting of normal and popular stocks based on monthly average abnormal returns. In other words, investors investing in the portfolio consisting of neglected firms get higher returns compared to the returns of other portfolios and the market portfolio. Karan (2000) also investigates whether the neglected firm effect stems from the firm size effect and he concludes that the neglected firm effect exists and is more important than the firm size effect.

As we can see, studies focusing on the neglected firm effect come up with contradicting results implying that there is no consensus. Although it is found that this anomaly exists in some of the markets, it is also shown that there is no such anomaly in other markets. Another finding from previous studies is that the neglected firm effect may stem from the January effect or the firm size effect.

2. Data and methodology

The neglected firm effect on the Istanbul Stock Exchange is investigated in this study over 10-year time period covering January 1st, 1999 through December 31st, 2008. Monthly volume data of stocks obtained from www.foreks.com are used as the measure of neglect. In addition, monthly return data are obtained from the official website of the ISE

(www.imkb.gov.tr) and organized for the analysis. Monthly return data obtained from the ISE are adjusted for stock splits and dividends. The neglected firm effect is examined for each year separately. Stocks which started trading in the middle of the year are not included in the data set of that year but they are included in the data set of the following year. Similarly, stocks which discontinued trading in the middle of the year are not included in the data set of that year. In other words, stocks which have missing data for some reason during a year are not included in the data set of that year[1].

Table 1 presents information about the stocks in the data set. The number of stocks increases each year consistently. There are 219 stocks in 1999 as opposed to 318 stocks in 2008. The average monthly trading volumes of stocks also increase each year consistently except 2008. With the bankruptcy of Lehman Brothers in the last quarter of 2008, foreign investors left emerging stock markets and the investments of foreign investors in the ISE also decreased. This in turn affected the trading volumes as a result of the global financial crisis in 2008 and the average monthly trading volume in the ISE slightly decreased in that year compared to that in 2007.

Table 1. Number of stocks and average monthly trading volume

Year	Number of stocks	Average monthly volume (in TL)
1999	219	486,602,052
2000	230	752,252,135
2001	257	1,813,043,190
2002	260	2,665,542,629
2003	266	4,719,861,542
2004	271	5,452,262,561
2005	283	6,468,406,041
2006	293	7,283,805,112
2007	308	9,537,792,682
2008	318	9,469,127,584

The performance of portfolios formed based on the neglected firm effect is measured using the monthly return data obtained from the ISE. In order to determine whether portfolios formed based on the degree of neglect provide abnormal returns or not, monthly abnormal returns of stocks are calculated. We take the monthly ISE-100 index return as the market return. ar_{it} is the abnormal return of stock i,

relative to the index m, in month t, and can be calculated as the difference between the return of stock i and the return of index m in month t.

$$ar_{it} = r_{it} - r_{mt}.$$

After the abnormal monthly returns of each stock are calculated, the stocks are organized based on their monthly trading volumes starting from the stock which has the lowest monthly trading volume through the stock which has the highest monthly trading volume. Three different portfolios are formed for each month, namely neglected, normal, and popular, and 10% of the number of stocks in each year is included in each portfolio. For example, there are 219 stocks in 1999. Therefore, 22 stocks are included in each portfolio. That is, 22 stocks which have the lowest trading volumes are included in the portfolio called neglected, 22 stocks which have relatively average trading volumes are included in the portfolio called normal, and 22 stocks which have the highest trading volumes are included in the portfolio called popular. The portfolios are formed anew from the beginning for each month. Then, the abnormal returns of the portfolios are calculated as follows:

$$AR_t = \frac{1}{n} \sum_{i=1}^{n} ar_{it}.$$

As can be seen, the abnormal return relative to index return in month t of a portfolio consisting of n stocks is the equally-weighted average of the abnormal returns of stocks relative to index return in month t. Hence, the monthly abnormal returns of three portfolios called neglected, normal, and popular are calculated for 12 months in each year.

The cumulative abnormal returns (CARs) are obtained for each year by using those monthly abnormal returns. For example, the cumulative abnormal return of 1999 (CAR_{1999}) is calculated by summing up all 12 monthly abnormal returns in that year. This procedure is repeated for each portfolio in each year. Thus, we obtain 10 CARs for 10 years analyzed in our study. This metric is used to determine how much cumulative abnormal return an investor can get by implementing a trading strategy based on the neglected firm effect after 12 months.

$$CAR_{1999} = \sum_{i=1}^{12} AR_i.$$

Finally, we calculate average CARs for each of the three portfolios called neglected, normal, and popular as follows:

$$ACAR = \frac{1}{10} \sum_{i=1}^{10} CAR_i.$$

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[1] IPO stocks are not included in the data set of the IPO year due to missing data. There is empirical evidence that IPO stocks may provide higher returns in the first days/months of the IPO as they are underpriced (Kiymaz, 2000; Sevim and Akkoc, 2006). By excluding the IPOs from the data set, we avoid possible impact of underpricing on the neglected firm effect.

As can be seen, 10 annual CARs are summed up and divided by 10 to calculate ACAR for each portfolio.

3. Empirical results

As a result of empirical analysis investigating the neglected firm effect in the ISE over 10 years between 1999 and 2008, we find that the portfolio consisting of popular stocks earns the highest abnormal return when compared to the abnormal returns earned by the other two portfolios consisting of neglected and normal stocks. In other words, the neglected firm effect does not exist on the ISE as opposed to the findings previously reported for the other stock exchanges in the world. The results for the three portfolios, namely neglected, normal, and popular, are presented in Table 2.

As can be seen from Table 2, the monthly average abnormal return of portfolio consisting of popular

stocks is higher than that of portfolio consisting of neglected stocks in all years but 2008. The monthly average abnormal returns of popular, normal, and neglected portfolios over 10 years are 2.89%, 0.88%, and -1.00%, respectively. The monthly average abnormal return of neglected portfolio is negative as opposed to the positive returns of popular and normal portfolios. That is, the neglected portfolio does not earn investors returns above the market return on average. As a result of t-test applied to the monthly average abnormal returns of popular, normal, and neglected portfolios, t-values for popular portfolio are statistically significant in each year, t-values for normal portfolio are statistically significant in 7 years out of 10 years except 2003, 2005, and 2007, and t-values for neglected portfolio are statistically significant in all years but 2008 at the 5% level.

Table 2. Monthly average abnormal returns (%)

Years	Popular	t-value	p	Normal	t-value	p	Neglected	t-value	p
1999	4.12	-7.772*	.000	-3.08	9.666*	.000	-6.52	17.973*	.000
2000	2.58	-4.003*	.000	4.63	-8.954*	.000	2.34	-3.423*	.001
2001	3.01	-5.041*	.000	2.3	-3.327*	.001	-0.93	4.474*	.000
2002	2.51	-3.834*	.000	2.24	-3.182*	.002	1.95	-2.482*	.014
2003	3.27	-5.669*	.000	0.11	1.962	.051	-3.22	10.004*	.000
2004	4.16	-7.819*	.000	1.75	-1.999*	.046	2.08	-2.796*	.005
2005	4.39	-8.374*	.000	0.36	1.358	.175	-1.07	4.812*	.000
2006	2.18	-3.037*	.003	-0.43	3.266*	.001	-1.59	6.067*	.000
2007	4.07	-7.601*	.000	1.13	-0.501	.616	-3.53	10.753*	.000
2008	-1.37	5.536*	.000	-0.23	2.783*	.006	0.49	1.044	.297

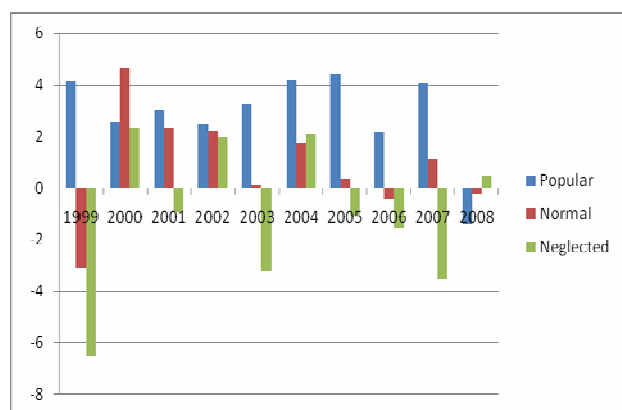Note: * Statistically significant at the 5% level.

Fig. 1. Monthly average abnormal returns (%)

Figure 1 shows the monthly average abnormal returns of popular, normal, and neglected portfolios. The neglected portfolio earns above market returns in years 2000, 2002, 2004, and 2008 whereas the popular portfolio earns above market returns in all years but 2008. The normal portfolio also earns above market returns in 7 years out of 10 years except 1999, 2006, and 2008.

Figure 2 exhibits month by month average abnormal returns over 10 years for the three portfolios formed. All portfolios earn above market returns in January, March, May, and August. The popular portfolio earns higher returns than neglected portfolio in all months except March and May. This result contradicts with the neglected firm effect.
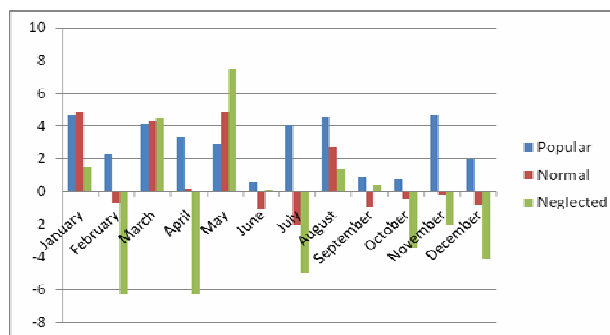

Fig. 2. Monthly distribution of average abnormal returns (%)

Another market anomaly which is commonly investigated by researchers in the capital markets is

the January effect. It is said that investors can earn higher returns in January as opposed to the returns they can earn in other months of the year. There is empirical evidence found by academics investigating this anomaly that returns in January are significantly higher than the returns in other months of the year (Gultekin and Gultekin, 1983; Corhay, Hawawini, and Michel, 1987; Agrawal and Tandon, 1994). This anomaly also exists on the ISE (Ozmen, 1997; Bildik, 2000). As the neglected firm effect may result from the January effect, we exclude the returns of January and recalculate the monthly average abnormal returns. Then we repeat the same analysis.

Table 3 shows the monthly average abnormal returns of the three portfolios excluding the returns of January. The popular portfolio earns higher abnormal returns than the abnormal returns earned by neglected portfolio in all years except 2008. This result is similar to that found by including the returns of January. The monthly average abnormal returns of popular, normal, and neglected portfolios

are 2.73%, 0.51%, and -1.23%, respectively, over 10 years excluding the returns of January. In comparison with the result including January, there is decrease in the monthly average abnormal returns of all three portfolios. The popular and normal portfolios earn investors above market returns whereas the neglected portfolio earns below market returns. As a result of t-tests applied to the abnormal returns of all three portfolios, t-values for the popular portfolio are statistically significant in all years except 2000. The t-values for normal portfolio are statistically significant in 5 years out of 10 years except 2000, 2003, 2004, 2005, and 2006. Also, t-values for neglected portfolio are statistically significant in 8 years out of 10 years except 2000 and 2001. It appears that the results are similar even when the January returns are excluded from the analysis. It can be said that the previously found effect contradicting with the neglected firm effect persists independent of the January effect.

Table 3. Monthly average abnormal returns (%) (January not included)

Years	Popular	t-value	p	Normal	t-value	p	Neglected	t-value	p
1999	4.8	-10.192*	.000	-3.07	9.249*	.000	-6.8	18.464*	.000
2000	0.69	-0.039	.969	1.37	-1.719	.087	-0.08	1.863	.063
2001	3.41	-6.758*	.000	2.16	-3.670*	.000	-0.09	1.888	.060
2002	2.34	-4.115*	.000	2.23	-3.843*	.000	1.74	-2.663*	.009
2003	1.92	-3.077*	.002	0.05	1.542	.124	-3.46	10.213*	.000
2004	4.33	-9.031*	.000	0.19	1.196	.232	1.55	-2.163*	.031
2005	3.82	-7.771*	.000	1.04	-0.903	.367	-1.07	4.309*	.000
2006	3.02	-5.795*	.000	-0.04	1.765	.079	-0.65	3.271*	.001
2007	4.11	-8.487*	.000	1.57	-2.213*	.028	-3.18	9.521*	.000
2008	-1.11	4.408*	.000	-0.36	2.555*	.011	-0.21	2.184*	.030

Note: * Statistically significant at the 5% level.

Figure 3 shows the monthly average abnormal returns year by year for the popular, normal, and neglected portfolios, respectively. The neglected portfolio earns above market returns only in years 2002 and 2004. On the other hand, the popular portfolio earns above market returns in all years except 2008. Also, the normal portfolio earns above market returns in 7 years out of 10 years except 1999, 2006, and 2008.
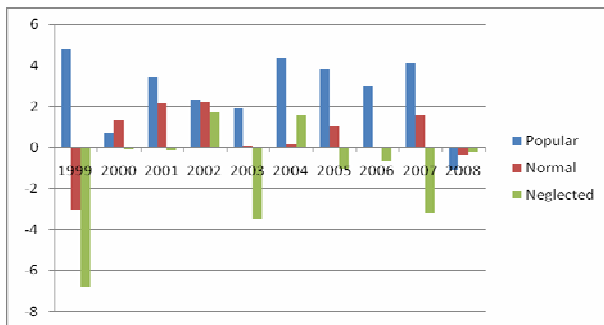

Fig. 3. Monthly average abnormal returns (%) (January not included)
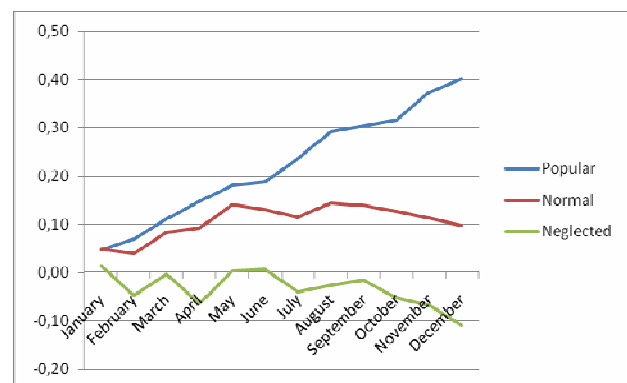

Fig. 4. Average cumulative abnormal returns month-by-month over 10 years

Figure 4 exhibits the average cumulative abnormal returns month by month over 10 years between January 1999 and December 2008 for popular, normal, and neglected portfolios. As can be seen, the average cumulative abnormal return provided by neglected portfolio remains below market return most

of the time. The average cumulative abnormal returns provided by popular and normal portfolios, however, remain above the market return in each of the 12 months. The popular portfolio, for example, offers abnormal return 40% above the market return at the end of 12 months. In addition, the normal portfolio earns abnormal return 10% above the market return. On the contrary, the neglected portfolio provides abnormal return 11% below the market return.

As a result of the t-test applied to the monthly average abnormal returns of the popular and neglected portfolios, we obtain a t-value of -3.976 which is statistically significant at the 1 percent level. In other words, the difference in abnormal returns of popular and neglected portfolios is statistically significant. That is, the popular portfolio provides investors with higher abnormal returns as opposed to the abnormal returns provided by the neglected portfolio. This finding contradicts with the neglected firm effect.

Summary and conclusion

The efficient markets hypothesis argues that one cannot earn abnormal returns consistently by using any trading strategy in the capital markets. However, there is empirical evidence that it is possible to earn abnormal returns by using some trading strategies. Those empirical findings contradicting with the theory are called market anomaly. The neglected firm effect is one of those market anomalies and argues that investors can get abnormal returns by investing in neglected stocks.

This study examines the neglected firm effect on the ISE over 10 years between 1999 and 2008. As a result, we find evidence contradicting with the neglected firm effect. That is, the monthly average abnormal return of neglected portfolio is -1.00% whereas that of popular portfolio is 2.89%. We further our study to find out whether this result is due to January effect or not. Thus, we exclude the returns of January from our analysis and repeat it with return data of other months. However, we get similar results and conclude that our finding is not due to January effect. In other words, our finding contradicting with the neglected firm effect persists even when the January effect is accounted for. In conclusion, we recommend further research where other market anomalies such as small firm effect should also be considered in order to determine the reason behind this contrasting result.

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