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How do firm characteristics affect the market reaction to investment announcements: ISE case

Abstract

This study examines the market reaction to corporate investment announcements and firm characteristics which could explain the direction and strength of this reaction. The data comprise the cross-border investment announcements made by the listed firms on the Istanbul Stock Exchange (ISE) between 2003 and 2007. The market reaction is measured by abnormal returns around the announcement period. Abnormal returns after the announcement date (t = 1) are positive and statistically significant indicating a favorable market reaction to the investment announcements. The study also examines whether a firm's characteristics could explain the excess returns around the announcement period. The investment opportunities, free cash flow, firm size, debt ratio, dividend returns and variability of daily stock returns are used as explanatory variables in the regression model. The findings show that the excess returns around the announcement period are not affected by the investment opportunities and free cash flow levels of firms. On the other hand, the excess returns are found to be affected by the dividend returns and the variability of daily stock returns.

Keywords: investment announcements, abnormal returns, free cash flow, investment opportunities, firm characteristics.
JEL Classification: G11, G12, G31.

Introduction

While finance literature grows rapidly through the development process of the financial markets, firms as participants of these markets are being closely examined. In such environment, where all critical decisions of firm management quickly reach the markets as well as information users, an important issue regarding financial research is the effects of investment decisions of firms on capital markets. As Del Brio, Perote and Pindado have stated (2003), finance literature which examines capital expenditures focuses on two main topics traditionally. The first focus is on measuring the capital markets' reaction to investment announcements and is associated with the efficient market hypothesis. The second is on firms' characteristics affecting the market reaction to investment announcements and is associated with the free cash flow theory of Jensen (1986) or the asymmetric information approach of Myers (1984) and Myers and Majluf (1984).

Various studies on stock market reaction to the investment announcements document statistically significant and positive abnormal returns around the announcement period. Woolridge and Snow (1990) report a positive market reaction to the public announcements of corporate strategic investment decisions. Chan et al. (1997) document positive and statistically significant abnormal returns around the announcement period of strategic alliances. Blose and Shieh (1997), also report significant and positive abnormal returns around the period of capital investment announcements.

Additonally, Chen et al. (2000) examined the market reaction to international joint ventures and found a significantly positive market response on the dates the announcements were made. Kim et al. (2005) found significantly positive abnormal returns in their study investigating the capital investment decisions of Korean firms. Oh and Kim (2001) determined that the information technology investment announcements led to an abnormal return in the market.

There are also studies which have found little or no evidence on market reaction to investment announcements. The study of Del Brio, Perote and Pindado (2003) provided little evidence regarding the value effects of investment announcements in the Spanish capital markets. Burton, Lonie and Power (1999) examined the UK stock market reaction to the announcement of different types of capital expenditures and found that only announcements of joint ventures are associated with a positive market reaction.

As stated before, these studies basically raise the question of how the market response will be when a corporate investment announcement is made and is associated with the efficient market hypothesis. Many of these studies, on the other hand, are analyzing the relationship between the strength of the market reaction and the factors which would have an impact on the market response to the investment announcements, such as investment type and firm characteristics.

One firm characteristic investigated in these studies is a firm's investment opportunities. According to this approach, namely the investment opportunities hypothesis, the primary determinant of the market reaction to investment decisions is the quality of a firm's investment opportunities. In other words, markets react more favorably to the announcements of firms with good investment opportunities than to

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those of firms with poor investment opportunities (Chen et al., 2001, p. 300). Chung, Wright and Charoenwong (1997) present empirical evidence supporting the postulation that announcements of increases (decreases) in capital expenditures positively (negatively) affect the stock prices of firms with valuable investment opportunities while announcements of increases (decreases) in capital spending negatively (positively) affect the share prices of firms without such opportunities. Chen, Chung and Chung (2001) found significant positive abnormal returns related to announcements of cross-border investments in China by Taiwanese firms and that firms with favorable investment opportunities have a positive response, wheras firms with poor investment opportunities have a negative response. There is also evidence for UK companies which supports the effect of investment opportunities on market valuations (Jones, Danbolt and Hirst, 2004).

Another firm characteristic considered to be a determinant of the wealth effect of investment decisions, is the free cash flow that a firm has. According to this approach, market reaction to investment decisions is associated with a firm's level of free cash flow. Jensen (1986) argues that managers of firms with a high free cash flow level will invest in wasteful investments rather than pay it out to their shareholders. As Chen, Chung and Chung (2001) discussed, cross-border investments may be one such use of this free cash flow. For this reason, the agency costs of investments made by firms with high free cash flow levels will be higher. On the other hand, investments by low-free-cash-flow firms increase the chance that they will seek new external financing. New external financing provides monitoring, and the firm's willingness to undergo such monitoring may be a favorable signal (Szewczyk, Tsetsekos and Zantout, 1996). As a result, the market response to a cross-border investment announcement would be inversely related to the firm's level of free cash flow.

There are many studies investigating the free cash flow theory. Szewczyk, Tsetsekos ve Zantout (1996) examined the announcements of increases in R&D expenditures and found no empirical evidence supporting the free cash flow hypothesis. Chen, Chung and Chung (2001) determined that the free cash flow theory is not supported by cross-border investments of Taiwanese firms and argued that this hypothesis may not be appropriate for cross-border investments. Kato, Loewenstein and Tsay (2002) examined the relationship between the market reaction to dividend announcements and the firms' level of free cash flow. The results show that the free cash flow hypothesis is not supported for dividend announcements or cannot accurately predict the market reaction to dividend announcements. Ding and Sun (1997) analyzed the market evaluation of foreign direct investment (FDI) announcements by Singaporean companies. Although the announcements are found to be associated with positive abnormal returns, they discussed that the debt-asset ratio is quite low so that it may not be a good proxy for the free cash flow for most firms in Singapore. Oh and Kim (2001) also found no significant relationship between the abnormal returns and the free cash flow levels of firms for the information technology investment announcements.

On the other hand, Ghosh, Harding and Phani (2008) analyzed the banks' value gains when the Reserve Bank of India signaled a policy liberalization facilitating acquisition of private sector banks, and found that these abnormal returns are associated with a bank's potential for takeover. They discuss that one cause of the valuation gains associated with liberalization is the expected gain from a reduction of agency costs.

The primary aim of this study is to evaluate the market reactions to investment announcements from the Turkish capital market perspective and to investigate the relationship between the market reaction to investment decisions and firm characteristics. In line with this aim, the cross-border investment announcements of firms indexed on the Istanbul Stock Exchange (ISE) are obtained for the period of 2003-2007. Around these announcement periods, the relationship between the abnormal returns of firms and firm characterisics such as investment opportunities and free cash flow is analyzed. This study adds to present literature by presenting an evaluation of the effects of investment announcements on capital markets, and of free cash flow hypothesis and investment opportunities hypothesis from the Turkish capital market perspective.

The remainder of this paper is organized as follows. Section 1 contains a description of the data set and the research methodology employed in this study. Section 2 provides the empirical results of the research. The last section summarizes the paper and offers some concluding remarks.

1. Methodology

The sample of this study consists of Turkish listed firms which announced cross-border investments during the period from 2003 to 2007. Data on cross-border investments are obtained from the Istanbul Stock Exchange (ISE) database. In this database, there are company news files for 411 companies between 1998-2008 period. For each of these 411 files, the cross-border investment announcements made during the period from 2003 to 2007 were researched. The search was conducted by means of keywords

such as investment, country names where the firms invest. The investment announcements subject to this research are the cross-border investment announcements made by Turkish listed firms. Although the cross-border countries are Georgia, Armenia, Iran, Iraq, Syria, Greece, and Bulgaria, investments in these countries did not provide enough data for the research. For this reason, the announcements of investments in Azerbaijan, Ukraine, Romania, Moldova and Russia were included in the study regarding their locations, investment potential, and also effects on research design.

The announcement dates are an important point for measuring the abnormal returns as the market response in the study. Although there are investment decisions for which the announcements were published later on ISE database, the investment decisions (by the Board of Directors) and publishment of their announcements (announcement date on ISE) generally occurred on the same day. Assuming the investment decisions are quickly obtained by the information users, the date of the corporate assembly by the Board of Directors when the investment decision was made is taken as the announcement date (day 0). After this process, 65 cross-border investment announcements by 38 firms were obtained. Table 1 shows the distribution of the announcements according to the countries where the investment was made and the year of the announcements.

Table 1. Sample distribution of investment announcements

Years						
Countries	2003	2004	2005	2006	2007	Total
Azerbaijan	1	2	0	2	1	6
Bulgaria	3	1	1	1	2	8
Georgia	1	0	1	0	0	2
Iraq	0	0	1	1	0	2
Romania	0	1	2	4	1	8
Russia	4	10	9	4	7	34
Syria	0	0	0	0	1	1
Ukraine	0	0	1	0	1	2
Greece	1	0	0	0	1	2
Total number of announcements in each year	10	14	15	12	14	65

The variables of the study are determined following the similar studies of Chen, Chung and Chung (2001; 2006) and Oh and Kim (2001; 2006). The explanatory variables used to examine the effects of firm characteristics on market response are pseudo q, cash flow ratio, firm size, debt ratio, dividend yield and the variability of daily stock returns. Data on these variables are obtained from the ISE database. Table 2 represents the description of the explanatory variables used in the study.

Table 2. Data description

Explanatory variables	Description of the variables
Pseudo q	The average pseudo q for the fiscal year prior to the announcement = Market value of the firm's assets / Book value of the firm's assets Market value of assets = Book value of assets - The book value of common equity + The market value of common equity
Cash flow ratio	Cash flow ratio for the fiscal year prior to the announcement = Operating income before depreciation – Interest expense – Taxes – Preferred dividends – Common dividends / Book value of total assets
Firm size	Announcing firm's market value of assets for the year preceding the announcement
Debt ratio	Debt ratio for the year preceding the announcement = 1 – (Book value of equity / Book value of total assets)
Dividend yield	The announcing firm's dividend price per share for the year preceding the announcement
The variability of daily stock returns	Announcing firm's average variance of daily returns during the period of T = -110 and T = -10 (T= -110 indicates 110 days prior to the announcement day)

The market response to cross-border investment announcements by Turkish listed firms was measured calculating the abnormal returns of the announcing firms. The abnormal returns were calculated using the market adjusted returns model as shown in the following equation:

$$AR_{jt} = R_{jt} - R_{mt},$$

where AR_{jt} is the abnormal return for firm j on day t, R_{jt} is the rate of return for firm j on day t, and R_{mt} is the rate of return on the market portfolio on day t. ISE National-All Index was used to calculate the market returns. The prices for firms' stocks and the ISE National-All Index are obtained from the Istanbul Information Communication Systems (IBS Software) database.

The average abnormal return (AAR_t) is calculated as the sample mean for the announcement period:

$$AAR_t = \sum_{j=1}^{N} AR_{jt} / N.$$

The cumulative average abnormal return for the announcement period (CAR) was calculated as follows:

$$CAR_{t1,t2} = \sum_{t1}^{t2} AAR_t,$$

where t_1 is the beginning trading day and t_2 is the ending trading day for the period.

2. Empirical results

2.1. The market reaction to investment announcements. Table 3 shows the market response to the investment announcements of firms listed on the ISE. As stated before, the market reaction is measured through the calculation of abnormal returns by employing the market adjusted returns model. Panel A presents the average abnormal returns on announcement date (t = 0) and on surrounding days, t-values for the abnormal returns and p-values for their significance.

On the announcement day (t = 0), a statistically significant average abnormal return is not observed, although it is discovered around the announcement period. Accordingly, the average abnormal return on day after the announcement date (t = 1) is 0.825% and statistically significant at 1% level. As can be seen from the table, statistically significant negative abnormal returns of 0.4% and 0.6% are observed on days t = -7 and t = -9, respectively.

Panel B in Table 3 shows the cumulative average abnormal returns (CARs) for different windows around the announcement period. For example, (-3, 0) is the window for three days before the announcement to the announcement date, and the cumulative average abnormal return for this window is -0.32%. According to the results, the two-day announcement period (days 0 to 1) accounts for most of the gain. The cumulative average abnormal return for this window is observed as 0.87%, statistically significant at the 10% level. Similarly, cumulative abnormal return for the window (-1, 1) is 1.14% and marginally significant.

These empirical results show that there is a reaction to the cross-border investment announcements of listed firms in Turkish capital markets. In other words, the announcements of investments in nearby countries of Turkey are associated with statistically significant and positive abnormal returns. These results are similar to those found by Chen, Chung and Chung (2001) for Taiwanese investments in China, by Ding and Sun (1997) for foreign direct investments of Singaporean firms, by Jones et al. (2004) for investment announcement of UK firms, and by Kim et al. (2005) for capital investments of Korean firms.

Table 3. Abnormal returns around the investment announcements

Panel A. Average abnormal returns			
Day	Average abnormal return (%)	t-value	p-value
-10	-0,063	-0,199	0,843
-9	-0,596	-2,529***	0,014
-8	0,176	0,451	0,654
-7	-0,439	-2,591***	0,012
-6	0,223	0,833	0,408
-5	-0,109	-0,383	0,703
-4	0,120	0,429	0,669
-3	-0,196	-0,710	0,480
-2	0,206	0,692	0,492
-1	0,270	0,869	0,388
0	0,054	0,174	0,862
1	0,825	2,675***	0,009
2	-0,335	-1,156	0,252
3	-0,348	-1,416	0,162
4	-0,294	-1,134	0,261
5	-0,063	1,180	0,242
6	-0,596	-1,376	0,174
7	0,176	1,073	0,287
8	-0,439	0,873	0,386
9	0,223	1,097	0,277
10	-0,109	-0,947	0,347
Panel B. Cumulative average abnormal returns			
Day	CARs (%)	t-value	p-value
-3, 0	0,324	0,617	0,539
-2, 0	0,530	0,939	0,351
-1, 0	0,334	0,552	0,583
0, 1	0,878	1,863*	0,067

Table 3 (cont.). Abnormal returns around the investment announcements

Day	CARs (%)	t-value	p-value
0, 2	0,543	1,050	0,298
0, 3	0,195	0,361	0,719
-1, 1	1,148	1,708*	0,092

Note: *** 1%, ** 5%, * 10% significance levels.

2.2. The effects of firm characteristics on abnormal returns. Table 4 presents the results of the regression analyses of the abnormal returns. Because of the data availability, two firms are excluded from the analysis, remaining 63 observations. Three regression models are developed to analyze the effects of firms characteristics on the announcement-period cumulative abnormal returns. Because using different windows to analyze the significance of the window effect is common in event studies (Oh and Kim, 2001, p. 153), the CARs in two different windows are used as dependent variables ((1, 2), (0, 2)). For each of these windows, three regression models are developed. Model 1 is formed to test the investment opportunities hypothesis. In Model 2, the significance of free cash flow in explaining the market reaction is tested. In addition to investment opportunities and free cash flow, the explanatory variables of firm size, debt ratio, dividend per share and variability in daily stock returns are included to develop Model 3.

The mathematical expression of Model 3 is:

$$CAR_i = \alpha + \beta_1 q_i + \beta_2 FCF_i + \beta_3 FS_i + \\ + \beta_4 DR_i + \beta_5 DY_i + \beta_6 VSR_i + \varepsilon_i,$$

where *i* is an individual firm; *CAR* is the cumulative abnormal return during the event period; *q* is a dummy that takes a value of one for firms with a pseudo *q* that exceeds one and zero otherwise; *FCF* is the level of free cash flow; *FS* is the firm size; *DR* is the debt ratio; *DY* is the dividend yield per share; *VSR* is the variability in daily stock returns.

The first model is developed to investigate the effects of investment opportunities of firms, which is formulated as a dummy variable, on abnormal returns, as stated above. The dummy variable that takes a value of one for firms with a pseudo *q* that exceeds one and zero otherwise, is used following Chen, Chung and Chung (2001), Szewczyk, Tsetsekos and Zantout (1996). Accordingly, firms with high *q* value have good investment opportunities while those with low *q* value have poor investment opportunities.

When Panels A and B of Table 4 are compared, it can be stated that the coefficients of *q* for both windows are not significant statistically. In other words, the variable of pseudo *q* is not associated with the abnormal returns and the analysis doesn`t produce the results supporting the investment opportunities hypothesis. Spesifically, the market reaction to the investment announcements of firms with better investment opportunities is not different from that of firms with poor investment opportunities for Turkish capital markets.

The second model is developed to separately test the free cash flow hypothesis. The regression analysis generates statistically significant results for the first window (1, 2), although it is not strong. The coefficient of the free cash flow is positive and significant at 10% level. When the window for the dependent variable changes (in Panel B), it is observed that the results are not statistically significant. The results are also in contrast with the hypothesis which predicts a negative relationship between the cumulative abnormal returns and the free cash flow levels. In this framework, it can be said that there is little support for the free cash flow hypothesis in Turkish capital markets. In other words, there is little statistical relationship between the market reaction to investment announcements and free cash flow levels of firms. This result is also consistent with the findings of previous studies (Chen, Chung and Chung, 2001; Ding and Sun, 1997; Jones et al., 2004; Kim et al., 2005).

Table 4. The results of the regression analysis of the abnormal returns

Panel A. Regression analysis of CARs during the period of t = (1, 2)			
Variable	Model		
	1	2	3
Intercept	1,584 (1,298)	0,349 (-0,479)	-1,564 (-0,257)
Pseudo *q* dummy	-1,277 (-0,960)		-0,926 (-0,665)
Cash flow		5,137 (1,568)*	2,638 (0,801)
Firm size			0,424 (0,597)
Debt ratio			-0,502 (-0,401)
Dividend per share			0,023 (1,742)*
Variability in stock returns			-0,163 (-2,438)***
Adjusted R^2	-0,001	0,023	0,145
F-value	0,921	2,458*	2,753**
Number of observations	63	63	63

Table 4 (cont.). The results of the regression analysis of the abnormal returns

Panel B. Regression analysis of CARs during the period of t = (0, 2)			
Variable	Model		
	1	2	3
Intercept	2,254 (1,720)*	-0,175 (-0,220)	4,022 (0,601)
Pseudo *q* dummy	-2,008 (-1,406)		-1,348 (-0,881)
Cash flow		4,421 (1,237)	1,906 (0,526)
Firm size			-0,114 (-0,146)
Debt ratio			-1,067 (-0,774)
Dividend per share			0,023 (1,578)*
Variability in stock returns			-0,166 (-2,255)**
Adjusted R^2	0,015	0,008	0,118
F-value	1,976	1,530	2,381**
Number of observations	63	63	63

Note: *** 1%, ** 5%, * 10% significance levels.

The third model includes the variables of pseudo *q* and cash flow as well as firm size, debt ratio, dividend yield per share and variability in daily stock returns. In Panel A, for the two day announcement period of (1, 2), the coefficient of determination (Adj. R^2) is approximately 15% which means that this model explains over 15% of the variation in abnormal returns. Also, the explanation power of the model is significant at 5%. In addition, in Panel B, for the three day announcement period of (0, 2), the explanation and significance levels are similar to those in Panel A. When the variables and their coefficients are examined, it can be seen from the table that the coefficient of *q* variable and the variable of free cash flow still do not produce any significant results.

The rationale for why the firm size is included in the model is that the information assymmetry increases with the increase in firm size, therefore there would be an inverse relationship between the market reaction to the investment announcement and firm size (Chen, Chung and Chung, 2001, p. 306). However, the results do not support this presumption. Following Chen, Chung and Chung (2001, p. 307) another two variables included in the model are debt ratio, as an alternative for free cash flow, and the dividend yield as an alternative for investment opportunities. The analysis doesn`t generate a significant relationship between the abnormal returns and the debt ratio. However, the results of the analysis show that the coefficient of the dividend yield per share is significant at 10% level. Because this finding is not strong enough statistically, it can be seen as a supporting result for the first model which examines the investment opportunities hypothesis.

The last explanatory variable, which is the variability in daily stock returns, is included in the model as an alternative for free cash flow. This variable has been employed to measure risk in finance and indicates the extent of a firm's uncertainty about the stream of future cash flow (Oh and Kim, 2006, p. 23). In this manner, the investment announcements are expected to affect firms with a high degree of uncertainty more than firms with a little degree of uncertainty. Therefore, a positive relationship between the investor reaction to the new investment announcements and the variability in daily stock returns is expected. According to the results of the analysis, there is a negative and statistically significant relationship between the abnormal returns and the variability in daily stock returns. However, the direction of the relationship is not as expected in the presumption of this study.

In general, the results of regression analysis can be said to show that the abnormal returns around the announcement period are not influenced by the investment opportunities and the free cash flow levels that firms have. However, dividend yield per share which is an alternative measure of the pseudo *q*, and the variability in daily stock returns which is used as an alternative for free cash flow are found to explain the variability in the abnormal returns around the announcement period significantly.

Conclusion

This paper attempts to provide an understanding of the market reaction to the investment announcements and firm characteristics which would affect the market reaction in the Turkish capital market. In this manner, 65 cross-border investment announcements by Turkish listed companies during the 2003-2007 period have been investigated. The abnormal returns around the announcement period have been analyzed to measure the market reaction. Overall, the analyses provide mixed results some of which support the previous studies and some of which add interesting empirical findings to literature.

Although any significant abnormal returns are not found on the announcement day (t = 0), negative abnormal returns before the announcement period (t = -7 and t = -9) and positive abnormal returns on the day following the announcement (t = 1) are observed to be statistically significant. The findings related to the excess returns are consistent with those of previous studies. In conclusion, it can be said that the market

reacts positively to the cross border investment announcements of listed firms in Turkish capital market.

Furthermore, regression analysis has been employed to test the firm characteristics which would have an impact on the direction and strength of the abnormal returns around the announcement period. The findings show that the market response to the investment announcements is not associated with the investment opportunities and free cash flow levels of firms. According to these findings, it could be stated that the investment opportunities hypothesis and the free cash flow hypothesis are not supported for the cross border investment announcements of Turkish firms.

In addition, the abnormal returns are not explained by the variables of firm size and the debt ratio. On the other hand, the test of the dividend per share and the variability in daily stock returns are found to be related to the abnormal returns around the announcement period.

Generally, these empirical results provide further insights into the effects of the investment announcements for both investors and firms in the Turkish capital markets. In addition, this study produced the empirical results which would guide to the future studies on the behavior of Turkish capital markets.

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