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The effects of spread on abnormal return: Evidence from Tehran Stock Exchange

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A B S T R A C T

Spread plays essential role on market liquidity on any stock market. A high gap between bid and ask price may reduce the likelihood of trading activities while a small gap between bid and ask increases the chance of trade execution. In this paper, we present an empirical investigation on the effect of spread on abnormal return. The proposed study collects the necessary information from official statements as well as historical data over the period 2009-2013 reported on Tehran Stock Exchange to examine the relationship between spread and unusual firm performance. Using regression analysis, the study has determined a meaningful relationship between abnormal return and spread.

1. Introduction

Spread plays essential role on market liquidity on any stock market (Amihud & Mendelson, 1986). A high gap between bid and ask price may reduce the likelihood of trading activities while a small gap between bid and ask increases the chance of trade execution (Perrakis & Zhong, 2015). There are literally many studies on measuring the impact of spread on firms' performances (Amihud & Mendelson, 1989). Mishra et al. (2009) in a survey reported that the bid-ask spread changes substantially around the board meeting dates. They also reported that the actual number of transactions by insiders could increase following the board meetings. Moreover, according to Mishra et al. (2009) there seems to be a significant relationship between spread and the number of insider trades surrounding the board meeting dates. Demirovic et al. (2015) investigated whether accounting data could be reflected in the market-based measures of credit risk and therefore may have no role in describing variations in the credit spread on corporate bonds. They implemented a sample of over 11,000 firm-quarter observations with matched equity, bond and accounting data and reported that equity volatility and Merton's distance-to-default could outperform accounting variables in describing variations in the credit spread. Moreover, accounting variables were incrementally informative in describing variations

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in the credit spread when considered in conjunction with market-based measures. They concluded that the profitability ratio was by far the most incrementally informative accounting variable.

Glosten and Harris (1988) developed and used a method for forecasting a model of the bid/ask spread. The spread was split into two components, one due to asymmetric information and the other according to inventory costs, specialist monopoly power, and clearing expenses. The model was examined using NYSE common stock transaction prices over the period 1981–1983. Cross-sectional regression analysis was then applied to build relationship time-series estimated spread components to other stock characteristics. They could not reject the hypothesis that significant amounts of NYSE common stock spreads were due to asymmetric information.

Desai et al. (1998) investigated changes in trading activity around stock splits and their impact on volatility and the adverse-information component of the bid-ask spread. Even after controlling for microstructure biases, they reported a substantial increase in volatility after the split. Changes in total volatility and in its permanent component in their survey were associated positively with changes in the number of trades. This implies that both informed and noise traders could contribute to changes in trading activity. In addition, while the adverse-information component of the spread increased unconditionally after the split, the change was negatively associated with the change in trading activity. They recommended that a crucial determinant of liquidity changes after a stock split was the success of the split in attracting new trades in the security.

Weber et al. (2009) investigated the antecedents and consequences in developing countries of generating a national stock exchange, a core technology of financial globalization. They studied local conditions and global institutional pressures in the rapid spread of exchanges since the 1980s and tried to find out on how conditions at the point of adoption could influence on exchanges' subsequent vibrancy. They reported that international coercion was related to more ceremonial adoption.

2. The proposed study

In this paper, we present an empirical investigation on the effect of spread on unusual return on assets. The proposed study collects the necessary information from official statements as well as historical data over the period 2009-2013 reported on Tehran Stock Exchange to examine the relationship between spread and unusual return on assets. The proposed study considers the following to calculated the spread,

$$BA(SPREAD_{i,t}) = \left(\frac{AP-BP}{(AP+BP)/2}\right)100 \quad (1)$$

where $BA(SPREAD_{i,t})$ is a dependent variable, which represents the difference between bid (BP) and ask (AP) prices. In addition, unusual asset return ($AR_{i,t}$) is determined by $AR_{i,t} = R_{i,t} - R_{m,t.}$ The study also uses $RISK_{i,t}$ to measure the systematic risk, which is calculated by measuring the beta associated with each firm. $EFE_{i,t}$ determines the error between actual and predicted earnings, $DP_{i,t}$ represents dividend per share, $LEV_{i,t}$ is associated with leverage, which is calculated as a ratio of total liabilities on total assets, $SIZE_{i,t}$ calculates the size of the firm, which is measured by taking natural logarithm on total assets, $GROWTH_{i,t}$ represents the relative growth of the firm and this is calculated by measuring the ratio of market value of equities to book value of the firm and finally, $EQ_{i,t}$ states earning quality, which is measured by the ratio of operating cash flow divided by operating profit. The proposed study uses the following regression analysis to study the relationship between abnormal return ($AR_{i,t}$) and spread.

$$AR_{i,t} = \beta_0 + \beta_1 BA_{i,t} + \beta_2 RISK_{i,t} + \beta_3 EFE_{i,t} + \beta_4 EQ_{i,t} + \beta_5 LEV_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 GROWTH_{i,t} + \beta_8 DP_{i,t} + \varepsilon_{i,t.} \quad (2)$$

3. The results

We first present the results of linear regression model for examining any relationship between spread and firm performance. Table 1 presents the results of our survey.

Table 1
The summary of regression technique on Eq. (2)

variables	Non-standard β		Standard	t-value	Sig.	Collinearity Statistics	
	β	Std. Error	β			Tolerance	Variance inflation factor
Intercept	- .755	1 .239		- .610	.542		
BA	.113	.022	.581	5 .136	.000	.714	1 .400
RISK	- .049	.016	- .139	-2 .967	.003	.941	1 .062
EFE	.024	.041	.027	.586	.558	.955	1 .047
EQ	.000	.033	.000	- .011	.991	.952	1 .050
LEV	1 .563	.641	.118	2 .437	.015	.876	1 .141
SIZE	- .254	.091	- .155	-2 .798	.005	.670	1 .493
GROWTH	.062	.043	.067	1 .438	.151	.947	1 .056
DP	.195	.153	.059	1 .280	.201	.971	1 .030

Adjusted R-Square = 0.605, Durbin-Watson =1.992, F-value = 4.995 (Sig. = 0.000)

According to the results of Table 1, F-value is equal to 4.995 and it is statistically significant, which means the relationship between independent and dependent variables are linear. In addition, Durbin-Watson ratio is equal to 1.992, which indicates that there was no auto-correlation among residuals. Moreover, adjusted R-Square is equal to 0.605, which means the independent variables represent approximately 61% of the changes on dependent variable. Finally, there is a positive and meaningful relationship between unusual return as dependent variable and spread as independent variable (t-value = 5.136, Sig. = 0.000). Therefore, the main hypothesis of the survey has been confirmed and we can conclude that there was a meaningful relationship between abnormal return and spread.

In order to examine the relationships between of the size of firm performance and spread, we have decided to categorize the performances in three groups of small medium and large. Table 2 shows the results of our survey,

Table 2
The summary of some statistics associated with small/medium and large firms

Group	Observations	Mean	Standard deviation	Mean error
Small	157	95 . 864673	59 . 5572274	4 . 7531842
Medium	157	98 . 629645	61 . 7491958	4 . 9281223
Large	157	89 . 913051	62 . 2507993	4 . 9840528

We perform a statistical test among three groups of the firms and Table 3 presents the summary of our findings.

Table 3
The summary of t-student test among different pairs of observations

Group	t-value	df	Sig.	Mean difference	Upper limit	Lower limit
Small	20 .169	156	.000	95 .8646726	86 .475767	105 .253578
Medium	20 .014	156	.000	98 .6296451	88 .895187	108 .364104
Large	18 .040	155	.000	89 .9130512	80 .067617	99 .758485

According to the results of Table 3, the mean performance for three groups of small, medium and large scale firms is different and we can conclude that spread for different sizes of return has had various impacts on earnings.

4. Conclusion

In this paper, we have presented an empirical investigation to study the relationship between spread and abnormal return for selected firms from Tehran Stock Exchange. The study has gathered the necessary information from official statements reported officially on exchange website. We have also used regression technique to examine the relationships. The results have indicated a positive and meaningful relationship between firm's abnormal return and spread. The results of this study are consistent with other findings. Fang et al. (2009) studied the relationship between stock liquidity and firm performance and reported that firms with liquid stocks had better performance as measured by the firm market-to-book ratio. To identify the causal effect of liquidity on firm performance, they studied an exogenous shock to liquidity—the decimalization of stock trading—and described that the increase in liquidity around decimalization could improve firm performance, which is somewhat the same as the result of this survey.

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