Small and Medium Business and Investment Decision

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Abstract

We explore the association between small and medium business and investment decision. Specifically, we empirically examine whether small and medium business shows different level of investment efficiency relative to other firms. Our result indicates that small and medium business, when compared to other firms, shows lower investment efficiency so that small and medium business exhibits less potential for long-term growth. Thus, based on this finding, we conclude that the relative lack of investment funds and specialties in investment areas is the primary source of poor investment efficiency of the small and medium business, since such elements are the core inputs when enhancing firms' investment efficiency. Given the importance of small and medium business in the economy, our research might provide useful implications to the policy makers.

Keywords: Investment Decision, Investment Efficiency, Small and Medium Business

1. Introduction

This paper investigates the potential association between "Small and Medium Business" (hereafter, "S and M business") and investment decision. More specifically, we empirically examine whether the level of investment efficiency of S and M business is different from that of other firms.

Investment decision is the core part of the firms' (or managements') policy through which the firms might maximize their value[7]. Accordingly, for the purpose of enhancing the understandability of firms' investment behavior, many prior literatures have conducted a number of relevant researches[1,5,6,8,9,12,18]. However, exploring the firms' investment decision directly can be limited, since related information about managements' investment decision is private[10,17,19]. Correspondingly, most of the extant studies adopted an indirect approach. That is, based on logical assumptions, they provide various determinants of investment decision. Given this evidence, providing additional determinants of the firms' investment decision might increase the understanding about the firms' investment policy. To address this issue, by focusing on the efficiency aspect of investment decision, we empirically examine whether S and M business exhibits different investment behavior compared to other firms. With regard to the firms' investment, S and M business has two unique characteristics when compared to other firms.

First, S and M business has difficulty raising investment funds, since the information asymmetry between S and M business and investors is relatively large[3,14,15]. For example, analysts often do not provide their forecast information about S and M business, thereby limiting the information environment of investors.

Second, S and M business lacks specialties in investment areas (e.g., human resources specialized in investment part). Given that sufficient investment

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funds and specialties in investment areas are the key determinants affecting the firms' investment efficiency, we expect that S and M business would show lower level of investment efficiency when compared to other firms.

In order to empirically examine this research question, we use Korean data for the fiscal years of 2011-2013. Our specific result is as follows. We find that the investment efficiency of S and M business is low relative to other firms. This implies that either the relative difficulty in raising investment funds or lack of specialties in investment areas or both are the prominent sources of poor investment efficiency of the small and medium business, since such determinants are the key inputs when increasing firms' investment efficiency. In other words, on the basis of our result, we demonstrate that S and M business possesses less potential for long-term growth owing to either difficulty in raising investment funds or lack of specialties in investment areas or both.

This paper provides useful information to the market participants. Investors assess the efficiency of firms' investment as a key determinant of their investment strategies and portfolios. Consequently, recognizing the negative association between S and M business and investment efficiency, investors might make advanced decision in choosing their investment opportunities. This, in turn, could substantially affect the efficient allocation of scarce resources among competing stocks. In addition, our research stresses that policy support for the S and M business is strongly required with respect to the firms' investment. This is because the portion of S and M business accounts for a significant part of the national economy. Hence, given the importance of small and medium business in the economy, our research urges the policy makers to provide its support related to investment funds or specialties in investment areas that might facilitate the improvement of investment efficiency of S and M business.

The remainder of this paper is organized as follows.

- Section 2 develops our hypothesis based on the prior researches.
- Section 3 describes our research method and sample selection.
- Section 4 presents our empirical results and finally we conclude in Section 5.

2. Hypothesis Development

2.1 General Format

When the firm performs its investment opportunities which generate positive present value, the investment efficiencies of the firm increases. Thus, given that the firm identifies and performs every investment opportunities of the firm, its investment efficiency shows optimal level. In the neo-classical framework, if the firm increases its investment level until the marginal benefit and marginal cost of investment is equal, the firm's investment efficiency is optimized[1,5,9].

In the meantime, extant researches have provided evidence that firms' investment efficiency often deviates from its optimal level and examines the possible explanations of the firms' behavior. The relevant studies are so extensive that it is hard to review comprehensively. Therefore, we briefly discuss the researches separated into two main streams.

First, they show that the manager's individual incentives deteriorate firm's investment efficiency. For example, manager has incentives to build his empire that generates the investment level higher than optimal level. According to prior studies, manager's private incentives explain the various phenomenon related to firm's lower investment efficiency.

Second, many literates examine the potential economic determinants of investment efficiency. Specifically, they find that a number of firm's economic factors explain substantial parts of firm's investment behavior. For instance, larger firms show relatively higher investment efficiency since those firms possess abundant resources such as investment experts.

However, as far as our knowledge, there has not been an evidence which shows whether S and M business can be a potential determinant of firm's investment efficiency. Given the fact that S and M business plays an important role in the economy, it is worthwhile to investigate the effect of S and M business to firm's investment efficiency.

A number of prior literatures suggest that S and M business shows two distinctive properties compared to other firms. First, S and M business is subjected to restriction in acquiring investment funds. This is because the information asymmetry between S and M business and interested party is relatively large[3,14,15]. For instance, S and M business has fewer specialists in accounting, thereby limiting both the quantity and the quality of accounting information. In addition, financial analysts, the most prominent information intermediaries who communicate financial information to the capital market, seldom provide their forecast information regarding S and M business. Consequently, this deteriorates the information environment of market investors.

Second, with respect to S and M business, specialties in investment areas are relatively insufficient. For example, professionals in investment parts playing the important roles in investigating, analyzing, and evaluating the firm's investment opportunities are scarce.

Taken together, S and M business possess two unique characteristics in terms of firm's investment decision. Since, both adequate investment capital and specialists in investment decision are the critical elements influencing the firms' efficient investments, we expect that the level of investment efficiency of S and M business will be lower when compared to other firms. Thus, our hypothesis is as follows.

H: The level of investment efficiency of S and M business will be relatively low compared to other firms.

3. Research Design

3.1 Measurement of Investment Efficiency

A number of prior literatures in finance and economics investigate firm's investment behavior. More specifically, they attempt to identify the determinants which affect firm's investment decisions. As a result, relevant studies provide numerous empirical evidences and generated the following model.

$$INV_t = a_0 + a_1Q_{t-1} + a_2Q\_QT2_{t-1} + a_3Q\_QT3_{t-1} + a_4Q\_QT4_{t-1} + a_5CF_t + a_6GROWTH_{t-1} + a_7INV_{t-1} + e_t \quad (1)$$

where:
INV_t = the capital expenditure in year t = cash outflows from investment activity in year t/tangible asset in year t-1;
Q_{t-1} = Tobin's Q in year t-1 = the market value of assets in year t-1/the book value of assets in year t-1;
Q_QT2_{t-1} (Q_QT3_{t-1}, Q_QT4_{t-1}) = Q_{t-1} times a dummy variable that equals 1 if Q_{t-1} is in the second (third, fourth) quartile of its industry-year distribution;
CF_t = cash flows from operations in year t = the cash flows from operations in year t/the tangible assets in year t-1;
$GROWTH_{t-1}$ = the natural log of total assets in year t-1/total assets in year t-2.

As in prior literatures, we measure the investment efficiency by estimating the error term of the above model. Specifically, we identify the amount of excess investment that deviates from the amount that is expected

from the firm's investment opportunities (Q_{t-1}), based on the extant finance and economic studies related to firm's investment decisions[4,5,11]. Since the linear association between investment and firm's investment opportunities is suggested by model of investment, Modigliani and Miller[4] show that firm's investment behavior is determined solely by the firm's investment opportunities given that a firm operates in the perfect capital markets. In addition, Hayashi[5] develops the theoretical model which shows that under certain conditions marginal q is equivalent to average Q. This, in turn, leads to the generally employed formulation above.

Also, we allow the variation in the relationship between investment (INV_{t-1}) and Tobin's Q (Q_{t-1}). This is because the adjustment costs are not constant and thus the association between investment and Tobin's Q varies according to Tobin's Q^2. Therefore, we include incremental coefficients for the quartiles of Tobin's Q in Equation (1).

Cash flows from operations (CF_t) are included in Equation (1) to control for the effects of internal financing capability. Lastly, in order to lessen the potential measurement error in Tobin's Q and the omitted variables problem, we include asset growth ($GROWTH_{t-1}$) and prior year's investment (INV_{t-1}), respectively, in Equation (1)[16].

In sum, the independent variables mentioned so far explain the expected amount of the firm's investment that is normal (or optimal). Consequently, the error term of Equation (1) identifies the amount of excess investment which deteriorates the firm's investment inefficiency. To estimate the excess investment, we estimate the Equation (1) by industry and year using Ordinary Least Squares (OLS). Excess Investment ($ExcessINV_t$) is defined as follows:

$$ExcessINV_t = INV_t - E[INV_t] \quad (2)$$

where $E[INV_t]$ is the expected amount of investment.

For example, if the Excess INV is positive, it shows that the firm's investment level is higher than the normal amount, i.e., over-investment. Since over and under-investment both lower the investment efficiency, we define our investment efficiency variable (IE_t) as absolute value of ExcessINV.

$$IE_t = |ExcessINV_t| \quad (3)$$

Therefore, if the value of IE is relatively large, it implies that firm's investment efficiency is relatively low.

3.2 Regression Model

To test our hypothesis, we use the following regression model.

$$IE_t = b_0 + b_1 SMDM_t + b_2 SIZE_t + b_3 MB_t + b_4 TANG_t + b_5 LTDEBT_t + b_6 CFO\_S_t + b_7 CFF\_S_t + b_8 CFI\_S_t + b_9 DV_t + b_{10} LOSS_t + ID + YD + e_t . \qquad (4)$$

where:

IE_t = the level of investment efficiency in year t;

$SMDM_t$ = a dummy variable that equals 1 if the firm is S and M business;

$SIZE_t$ = the natural log of market value of equity in year t;

MB_t = the market value of equity in year t/the book value of equity in year t;

$TANG_t$ = the non-current assets in year t/the total assets in year t;

$LTDEBT_t$ = the long-term debt;

CFO_S_t = the cash flows from operation in year t/the sales in year t;

CFF_S_t = the cash flows from financing in year t/the sales in year t;

CFI_S_t = the cash flows from investment in year t/the sales in year t;

DV_t = a dummy variable that equals 1 if the firm pays dividend in year t;

$LOSS_t$ = a dummy variable that equals 1 if the operating income in year t is negative;

ID = the industry dummy;

YD = the year dummy.

The variable of interest is SMDM which identifies whether the firm is S and M business. Since we demonstrate S and M business that exhibits lower level of investment efficiency relative to other firms, we expect the coefficient of S and M business to be positive. Based on the prior researches, we also include a number of control variables to lessen the omitted variables problems.

First, cash flows from operations relative to sales (CFO_S), cash flows from financing relative to sales (CFF_S), and cash flows from investment relative to sales (CFO_S) provides information about the relation between the accruals quality and cost of capital[13]. Thus, we control those variables. Second, according to [7], firms size (SIZE), firm growth (MB), asset tangibility (TANG),

market leverage (LTDEBT), dividend policy (DV), and loss (LOSS) is closely related to the firm's investment decision. Third, in order to mitigate the industry and year fixed effects, we control the industry dummy (ID) and year dummy (YD).

3.3 Samples

Our sample period begins in 2011 and ends in 2013. We collect the financial data for companies listed in Korea Stock Exchange (KSE) and Korea Securities Dealers Automated Quotation (KOSDAQ). More specifically, our sample is constrained with respect to the following criterion.

- We only cover non-financial firms.
- We only cover firms whose fiscal years end in December.
- We exclude observations when there are missing variables which are necessary for our empirical analysis.
- We winsorize the highest 5% and the lowest 5% of the samples based on each variables to lessen the effect of outliers.

Finally, the number of our final sample is 3,549 firm-years.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics for our samples.

Table 1. Descriptive statistics (N = 3,549)

Variables	Mean	Std. Dev.	Min	Max
IE	0.553	0.722	0.020	2.867
SMDM	0.438	0.496	0.000	1.000
SIZE	18.235	1.178	16.495	20.863
MB	1.253	0.861	0.329	3.484
TANG	0.528	0.169	0.233	0.836
LTDEBT	18.432	1.131	16.699	20.917
CFO_S	0.054	0.107	-0.165	0.285
CFF_S	0.028	0.128	-0.189	0.378
CFI_S	-0.083	0.135	-0.441	0.150
DV	0.540	0.498	0.000	1.000
LOSS	0.282	0.450	0.000	1.000

1) Refer to section 3.2 for the definitions of all the variables in Table 1.

Investment Efficiency (IE) shows a positive mean (0.553), indicating that firm's level of investment efficiency is not normal (or optimal) on average. The mean of dummy variable which identifies a firm is S and

M business or not shows 0.438. This indicates that about 44% of our samples is classified into S and M business. Firms size (SIZE), firm growth (MB), asset tangibility (TANG), and market leverage (LTDEBT) are on average positive (18.235, 1.253, 0.528, and 18.432, respectively). The sample distributions of the variables explained so far as well as the other variables are consistent with extant researches.

4.2 Main Results

Table 2 presents the result of multivariate regressions of investment efficiency on S and M business.

Table 2. Multivariate regression of investment efficiency on S and M business

Variables	Coeff	t-value
Intercept	1.691***	6.08
SMDM	0.085***	3.04
SIZE	-0.027*	-1.81
MB	0.084***	5.04
TANG	0.026	0.36
LTDEBT	0.000**	-2.00
CFO_S	0.207	1.43
CFF_S	0.401***	3.06
CFI_S	-0.130	-1.06
DV	-0.020	-0.75
LOSS	-0.002	-0.07
Year effect	Included	
Industry effect	Included	
Adj. R²	0.203	
F-value	57.42***	
N. of Obs.	3,549	

1) ***, **, and * indicate significance level at less than 1 percent, 5 percent, and 10 percent, respectively. 2) Refer to section 3.2 for the definitions of all the variables in Table 2.

The estimated coefficient of SMDM is positive and significant (Coefficient = 0.085, t-stats. = 3.04). This result is consistent with our expectation implying that the level of investment efficiency is different between S and M business and other firms. In addition, this finding suggests that S and M business is likely to reveal less capability for long-term growth owing to the impaired investment efficiency. Regarding control variables, most of the variables show consistent results with prior researches. For instance, firm growth (MB) is positively associated with investment efficiency.

5. Conclusion

In this paper, we empirically investigate the potential association between S and M business and investment decision. More specifically, we explore whether the level of investment efficiency of S and M business is different from other firms.

The result shows that the level of investment efficiency of S and M business is relatively low compared to other firms. This implies that S and M business might reveal less capability for long-term growth due to impaired investment efficiency. Also, this finding is consistent with our expectation, supporting that the relative lack of investment funds and specialties in investment areas is the key source of poor investment efficiency of the S and M business.

S and M business accounts for a significant portion of the Korean economy. Therefore, this paper with our research might provide useful implications to the policy makers. For example, policy makers might set a law which facilitates the capital lending to S and M business.

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