The Impact of Corporate Investment Announcement on Stock Prices: Based on the Companies Participating in the Korean Internet-only Banks

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Abstract. This study examines the responses of market participants to the company's investment disclosure, focusing on companies that apply for preliminary authorization as Internet-only banks between 2015 and 2019. The analysis results of this study are summarized as follows. First, when the preliminary approval application date is the event date, the negative average abnormal return was statistically significant on D+4 days. This can be interpreted negatively by investors who discover that companies have participated in Internet-only banks that are distinct from their original business activities. Second, when the announcement date is an event date, the average abnormal return appeared to be a significant positive on the announcement day, while it occurred to be a significant negative on the next day. In order to identify this, the approved consortium and the non-approved consortium were classified. In the case of companies participating in the approved consortium, the average abnormal return positively surged on the announcement day, but the average abnormal return negatively plunged on the day after the announcement. This is judged as a result of investors' perception of the information that the preliminary approval has been approved as short-term good news. In contrast, in the case of companies participating in the non-approved consortium, the average abnormal return negatively occurred on the announcement day and continued to be negative until D+4. It is the result of investors' perception of the information that the preliminary approval was not approved as a short-term bad news. Multiple regression analysis was used to identify factors that influence the relationship between investment decision disclosure and firm value. The leverage ratio is found to be a variable affecting the abnormal return only in the approved consortium, and beta and MB is found to be variables affecting the abnormal return in both the approved and the non-approved consortium. On the other hand, the responses of investors were analyzed by targeting 81 companies contained in the financial industry according to the major classification of the Korean Standard Industrial Classification. As a result, the average abnormal return

appeared negative 5 days before the application date for preliminary approval. It can be said that investors perceive the information as an innovative event in which Internet-only banks appear as a new and strong competitor in the financial sector. This study confirms that the Korean capital market is an efficient market in which information is delivered to investors quickly and immediately, as positive abnormal returns appear on good news and negative abnormal returns appear on bad new on the event day.

Keywords: Internet-only bank, investment announcement, average abnormal return, firm value, event study

1. Introduction

Recently, the Internet-only bank in Korea was created for the first time as the Fintech policy led by the government was implemented in earnest. The launch of the K-bank as the first Internet-only bank in Korea is an innovative event in which a new competitor appeared in the financial sector 25 years after the establishment of Pyeonghwa Bank in 1992 (Park et al., 2018). Although it has been a long time since Internet-only banks were launched, research on internet-only banks has not been conducted from a business point of view as it mainly focuses on the current status and implications, legal issues, development plans, financial consumers, and the banking industry (Kim et al., 2018; Jang et al., 2019; Koshksaray et al., 2022). Companies promote growth through investment, and this investment can take in many forms, including new businesses, expansion of existing facilities, and mergers and acquisitions (Reuer et al., 2007). Companies invest to create a virtuous cycle structure that produces higher profits by generating a higher return on investment and reinvesting profits back into assets for growth (Souder et al., 2010).

How will the capital market react when a company announces a new business or investment? Assuming that the capital market is efficient, stock returns will rise if the published information is good news and fall if the information is bad news (Healy et al., 2001; Collins et al., 2021). Studies on the effect of investment disclosure on stock prices have been conducted for a long time, but it is reported that there is no disclosure effect on the event day except for the study by Kim et al.(2016). Therefore, the purpose of this study is to determine how investors' reactions to the quality of information disclosed on capital investment decisions for a new business affect the firm value.

This study examines the following contents. First, this study examines the reactions of market participants by setting the date of application for preliminary approval to the Internet-only bank as the event date. When a company announces its participation in an investment decision, that is, an Internet-only bank, investors' reactions in the capital market will differ depending on the management's motivation for investment decisions. The company's investment disclosure will be perceived as good news for investors, and thus will respond positively, from the perspective of

firm value maximization, which values such an investment decision as the goal of maximizing shareholder wealth.

Second, the date on which the Financial Services Commission of Korea announced preliminary approval for Internet-only banks is used as the event date in this study, and the reactions of market participants are examined by dividing the companies into those that have received preliminary approval and those that have not. Market participants will respond positively to companies that have received preliminary approval by recognizing it as good news, whereas the opposite result is expected for companies that have not received preliminary approval.

Third, as Internet-only banks are expected to have a significant impact on the overall financial industry through various ICT-based platforms, this study examines the responses of market participants for companies involved in the financial industry on the application and announcement date, respectively (Jung et al., 2016). The emergence of Internet-only banks is expected to have a significant impact on the financial environment in Korea. With the introduction of Internet-only banks, changes in financial services are expected, such as relieving time and space constraints on financial transactions, increasing convenience and benefits for consumer payments, and expanding medium-rate loans to low-credit users.

Fourth, we use the multiple regression analysis to determine the factors that influence the relationship between corporate investment decisions and firm value. The investment type of a company is largely divided into two categories. The first is to create synergies through investments related to the company's main business, and the second is to disperse risk by investing in sectors unrelated to the company's main business (Ra et al., 2012). Ra et al. (2012) classified investment cash outflows in the cash flow statement to distinguish whether they are related or not. In this study, companies participating in Internet-only banks are broadly classified into financial and non-financial businesses, and companies in the financial industry are classified as related investments, while companies in non-financial businesses are classified as unrelated investments (Christensen et al., 1981; Jung 2007).

This paper is structured as follows. Chapter 2 examines previous studies regarding the relationship between corporate investment disclosure and stock price, while chapter 3 discusses sample selection and research methodology. The next chapter 4 describes the results of empirical analysis using the designed methodology, and the last chapter 5 summarizes the overall discussion.

2. Literature Review

A study on the effect of investment decision disclosure on abnormal return of the stock is as follows. McConnel and Muscarella (1985) selected 685 companies that disclosed facility investment between 1975 and 1981 as a sample, then divided the entire sample into two small samples, public and general companies, and conducted an event study on the stock price of common stock (McConnell et al., 1985). As a

result, in the case of general companies, when the disclosed facility investment amount increased (decreased) than planned, the abnormal return on the disclosure day also increased (decreased), which was statistically significant. Moreover, the impact of investment disclosure on stock prices was analyzed by dividing the corporate group into high-technology and low-technology groups (Chan et al., 1990). The R&D increase announcement in the high-tech group showed a greater excess return than the non-high-tech group. When reviewing the market-adjusted abnormal return on facility investment announcements of 402 British companies between 1991 and 1996, it was found that, although not large, excess returns were occurring (Jones et al., 2004).

In Korea, there are not many studies related to the importance of research topics, and the results of the analysis are not consistent. Shim (1995) examined abnormal returns before and after the date when 81 companies disclosed facility investments for two years from 1992 to 1993, and confirmed the determinants that affect abnormal returns through regression analysis (Shim 1995). According to his research, it was analyzed that the disclosure effect of facility investment does not exist on the date of disclosure in the Korean stock market. In the regression analysis in which the cumulative abnormal returns were analyzed as the dependent variable and growth opportunity, information asymmetry, technology intensity, and market conditions as explanatory variables, there was no significant relationship between growth opportunity and information asymmetry variable. Technology intensity and market conditions both had a significant positive and negative relationship with the cumulative abnormal returns. Accordingly, a company's facility investment disclosure has a positive impact on stock prices during the economic expansion phase.

Choi and Kim (1996) examined the effect of investment decision disclosure with a sample of 197 domestic manufacturers for 5 years from 1988 to 1992. There was no significant abnormal rate of return on the day of disclosure, but a significant positive relationship appeared 4 days before disclosure. Facility investment information was leaked before the date of disclosure and appropriate countermeasures were needed. As a result of analyzing the relationship between facility investment and firm value, it was found that the higher the operating performance and the higher the owner-manager's stake, the more positive the stock price was.

Ki and Choi (2006) analyzed the average excess return for manufacturers listed on the KOSPI and KOSDAQ from 2001 to 2005, respectively (Ki et al., 2006; Ki et al., 2006). After analyzing 272 stock market investment disclosures, it was discovered that similar to the previous study, there was no significant effect on the disclosure date, but investors perceived the facility investment disclosure as a good signal two days before the disclosure and had a positive effect in the short term (Ki et al., 2006). In the regression analysis the abnormal returns 2 days before and 2 days after disclosure were set as dependent variables and analyzed, respectively. A negative relationship with the investment size was consistently significant, revealing that the

smaller the investment size, the more positive the stock price. On the other hand, as a result of analyzing each of the 367 companies listed on the KOSDAQ by the market risk-adjusted rate of return model and the average adjusted rate of return, all facility investment disclosures had no significant effect on the disclosure date, and rather negative (-) relationship was found to be significant (Ki et al., 2006). The regression analysis in which the average abnormal return was set as the dependent variable demonstrated that the higher the return on equity(ROE), the lower the investment amount to capital, the higher the firm value.

Kim et al. (2012) observed the stock price response of KOSPI 200 companies before and after the investment announcement date for a 4-year sample period from September 2007 to August 2011. As in the previous domestic studies, no significant cumulative abnormal returns were observed on the first day before and after the announcement date. However, significant negative cumulative abnormal returns were observed 5 days before and after the announcement date and 20 days before and after the announcement date, showing a different pattern from previous domestic studies. In addition, in the regression analysis to analyze the determinants of firm value, it was found that managers' ownership ratio, company size, and return on equity were significant variables.

In addition, Kim et al. (2016) extended the research period of Kim et al. (2012), covering a sample period of 14 years from 2001 to 2013, in which a total of 409 companies disclosed investment decisions for facility and resource development, 1,216 case was analyzed. Unlike previous studies, the abnormal return was found on the disclosure date, and the cumulative abnormal return were all significant in the event period of 11 days, 5 days, and 3 days before and after the disclosure date. In particular, the cumulative abnormal return was the highest in 3 days (±1) before and after the announcement date. As a result of a regression analysis analyzing the cumulative abnormal return for the period of the disclosure date [-1, +1] as a dependent variable, volatility and momentum variables, which are information asymmetric variables, were found to be significant. In other words, the investment decision of a company positively affects the stock price, and the degree of influence is determined by the information asymmetry between the company and the market, not by the financial characteristics of the company.

In a study examining the information effect of disclosure on the status of domestic companies' facility investment and corporate investment decision-making from 2004 to 2014, the cumulative excess return measured from the -3 day to the disclosure day was significantly positive (Cho et al., 2016). According to report, capital market investors regard facility investment disclosures as a positive sign.

3. Methodology

3.1. Data and sample

The Financial Services Commission received applications for preliminary approval from September 2015 to December 2019 for about four years for the establishment of Inter-only banks and announced approval. According to the Financial Services Commission, the companies by the consortium that participated in the 1st, 2nd, and 3rd applications for preliminary approval are as follows in Table 1.

Table 1: List of companies by consortium

NO.	Consortium	List of companies*
1	K-Bank(20)	KT, Hyosung ITX, Posco ICT, Bridge Tec, KICC Mobile leader, GS Retail. Hyundai Ezwell, Danal, Hanwha Life, Infovine, KG Inicis, KG Mobilians
	Kakao Bank(11)	Kakao, Yes24, Kona I, Korea Investment Holdings
	I-Bank(15)	Interpark, GS shop, BGF Retail, SK Telecom, Hyundai Marine & Fire Insurance, IBK, NHN, Galaxia Moneytree, Korea Electric Certification Authority
2	Kiwoom Bank(28)	Kiwoom Securities, Daou Tec, Saramin HR, KICA, KEB Hana, SK Telecom, Hana tour, SK Securities, KICC, Afreeca TV, SCI Information Service, Heerim Architects & Planners
	Toss Bank(8)	Hanwha Investment & Securities, Korea Electronic Certification Authority
	AnyBand Smart Bank	-
3	Toss Bank(11)	KEB Hana, Hanwha Investment & Securities, Korea Electronic Certification Authority
	Soso Smart Bank	
	Familiar Smart Bank	

( ) indicates the number of companies participating in the consortium and only
*Note: only listed companies in Korean capital market

As shown in Table 1, a total of 46 companies from three consortia like K-Bank, Kakao Bank and I-bank participated in the first application for preliminary approval. In the second application, a total of 36 companies applied to Kiwoom Bank, Toss Bank, and AnyBand Smart Bank consortium. Finally, 11 companies from three consortia(Soso Smart Bank, Toss Bank, and Familia Smart Bank) applied in the third application. However, AnyBand Smart Bank was rejected because the relevant application documents were insufficient and Familia Smart Bank voluntarily withdrew due to insufficient documents. Finally, K-Bank and Kakao Bank were

selected in the first round, and Toss Bank was selected in the third round. Currently, three Internet-only banks have been established and are in operation.

The following Table 2 shows the number of companies listed on the KOSPI and KOSDAQ market among the companies participating in the individual consortium, and analysis data of this study is used.

Table 2: The number of sample

Market Consortium		KOSPI	KOSDAQ	Total
1	K-Bank	4	9	13
	Kakao Bank	2	2	4
	I-Bank	5	4	9
2	Kiwoom Bank	5	6	11
	Toss Bank	1	1	2
3	Toss Bank	1	1	2
Sum		18	23	41

3.2. Research method

Unlike previous studies, this study used the event study method to examine the effect on stock prices of companies participating in Internet-only banks. Based on the findings, we conduct a multiple regression analysis using the company's financial variables to investigate the factors that influence the stock price response to investment disclosure.

3.2.1. Event study

Event study is a research methodology that evaluates the impact of company-specific events such as dividends, capital increase, mergers and acquisitions, and profit disclosure on the stock price of the company MacKinlay 1997). Since Fama et al. (1969) used it to prove the efficient market hypothesis (EMH) through the analysis of the information effect of the stock split announcement on the New York Stock Exchange, it has been the most frequently used empirical research in the field of finance and accounting.

The following Fig. 1 shows a timeline for an event study including the estimation window and the event window.

Here, the event date is divided into the application date and the announcement date. In fact, both the results of the application for preliminary approval and the results of the selection by the Financial Services Commission were announced after the stock market closed on the day before the event. However, in the study, the date was classified based on the closing time of the stock market, so it was considered to be announced on the event date.

To check whether an abnormal return exists before or after the announcement date, it is necessary to check whether there is a difference from the actual return after

measuring the normal return of an individual company. There are several methods for calculating the abnormal return such as the market-adjusted return model, mean-adjusted return model, and market-and-risk adjusted return model. However, it is reported that there is little difference in the results depending on the method (Brown et al., 1980; Brown et al., 1985). Therefore, this study estimates the abnormal return using only the market model.
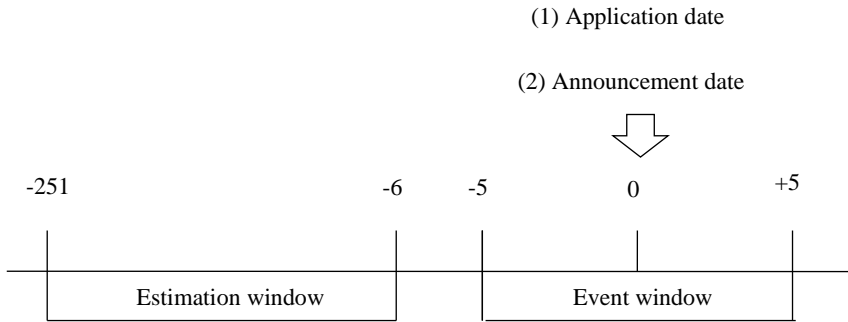
(1) Application date

(2) Announcement date

Fig. 1: Window of event study

The abnormal return of a stock can be obtained by subtracting the expected return from the realized return of the stock as shown in Equation (1) (Lee et al., 2010).

$$AR_{i,t} = R_{i,t} - E(R_{i,t}) \tag{1}$$

First, a market model such as Equation (2) is used to obtain the expected return of the stock. The estimation period for estimating the parameters of the market model was set to [-251, -6] and each parameter is calculated based on the historical rate of return of individual companying during this period.

$$R_{i,t} = \alpha_{i,t} + \beta_{i,t} R_{i,t} - \varepsilon_{i,t} \tag{2}$$

Where, t = -250, ⋯, -6

Next, the abnormal return is calculated as in Equation (3) by matching the realized return and the expected return of the event window [-5, +5].

$$AR_{i,t} = R_{i,t} - \alpha_{i,t} + \beta_{i,t} R_{i,t} \tag{3}$$

Where, t = -5, ⋯, +5

In addition, the daily average abnormal return for N sample companies averaged by day during the event period is as shown in Equation (4) below, and the cumulative average abnormal return from time 1 to time 2 is expressed in Equation (5) and same.

$$AAR_t = \frac{1}{N} \sum_{t=1}^{N} AR_{i,t} \tag{4}$$

$$CAR(t_1, t_2) = \frac{1}{N} \sum_{t=t_1}^{t_2} AAR \tag{5}$$

3.2.2. Multiple regression

Using the significant abnormal returns calculated through the event study, the determinants affecting the relationship between the company's investment decision and the firm value are identified. Based on the study of Kim et al. (2012), multiple regression analysis models are established as shown in the following Equation (6).

$$AR_t = \alpha + \beta_1 OCF_{t-1} + \beta_2 LEV_{t-1} + \beta_3 Biz_{t-1} + \beta_4 Beta_{t-1} + \beta_5 Size_{t-1} + \beta_6 MB_{t-1}$$
$$+ \beta_7 ROA_{t-1} + \beta_8 Mkt + \varepsilon_i \qquad (6)$$

where, AR: abnormal return on D-0 and D-1

OCF: operating cash flow/sales

LEV: total liability/total asset
Biz: financial business-1, non-financial business-0
Beta: individual company risk
Size: ln(total asset)
MB: market-to-book value
ROA: net income/total asset
Mkt: KOSPI-1, KOSDAQ-0

Operating cash flow, leverage ratio and business are used as explanatory variables. Here, Biz is a dummy variable. If the main operation is finance, 1 is given and if the main operation is not the financial business, 0 is given. According to Fama and French (1992, 1993), beta, company size, market value/book value, and total return on assets are used as control variables (Fama et al., 1992; Fama et al., 1993). Finally, the market is a dummy variable. If the company belongs to the KOSPI market, 1 is given and if the company belongs to the KOSDAQ market, 0 is given.

4. Empirical Analysis

4.1. Application date

Table 3 and Fig. 2 show the average abnormal return and the cumulative abnormal return for an 11-day event window. There is no significant change in AAR and CARs for 6 days up to the event day. Interestingly, 4 days after the event date, the AAR is -1.239% at the 5% significance level. Although the CAR is not statistically significant, they continue to show a negative result from -5 day to -1 day. Investors consider the fact that a company has participated in Internet-only banks to be bad news rather than good news because they cannot precisely predict how the event will be received (Wiles et al., 2009).

Table 3: AAR and CAR for the application date

Day	AAR		CAR	
	%	t-statistics	%	t-statistics
-5	-0.566	-1.018	-0.566	-1.018
-4	-0.316	-0.567	-0.882	-1.121
-3	0.483	0.869	-0.399	-0.414
-2	-0.185	-0.332	-0.583	-0.524

-1	0.148	0.267	-0.435	-0.350
0	0.909	1.634	0.474	0.348
+1	-0.177	-0.317	0.298	0.202
+2	-0.202	-0.362	0.096	0.061
+3	0.368	0.661	0.464	0.278
+4	-1.239	-2.228**	-0.775	-0.441
+5	-0.387	-0.696	-1.163	-0.630

*** $p<0.01$, ** $p<0.05$, * $p<0.1$
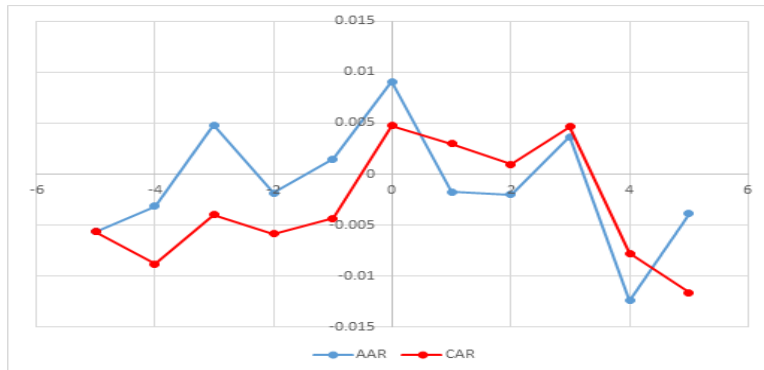
Fig. 2: Changes in AAR and CAR before and after the application date

4.2. Announcement date

Table 4 and Fig. 3 show the AAR and the CAR from event day -5 to event day +5. Unlike the application date, the AAR is 1.033%, which is significant at the 10% level on the event day. However, the AAR is -1.244% on the day after the event, which is significant at the 5% level. After that, although both AAR and CAR are not statistically significant, they continue to be negative from +2 day to +5 day. Therefore, the information is immediately and promptly delivered to investors, resulting in positive results on the event day and negative results on the day after the event.

Table 4: AAR and CAR for the announcement date

Day	AAR		CAR	
	%	t-statistics	%	t-statistics
-5	0.314	0.556	0.314	0.556
-4	-0.276	-0.488	0.039	0.048
-3	-0.082	-0.146	-0.044	-0.045
-2	0.194	0.344	0.150	0.133
-1	0.544	0.963	0.694	0.550
0	1.033	1.830*	1.728	1.249
+1	-1.244	-2.204**	0.483	0.323
+2	-0.579	-1.025	-0.095	-0.060
+3	-0.819	-1.451	-0.915	-0.540

+4	-0.587	-1.039	-1.502	-0.841
+5	-0.131	-0.231	-1.632	-0.872

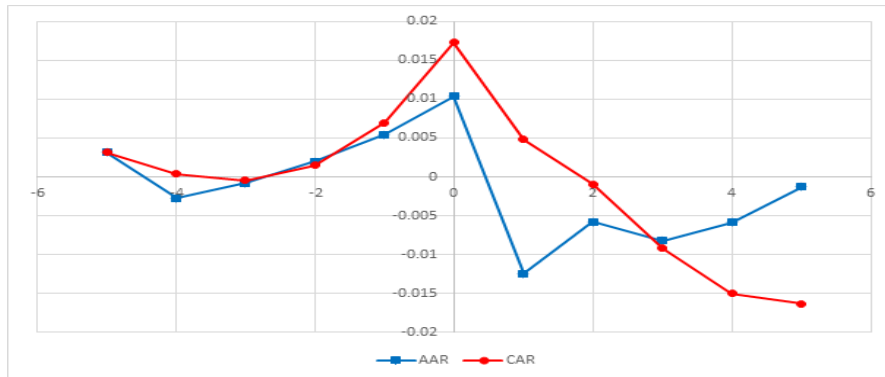**** p<0.01, ** p<0.05, * p<0.1*

Fig. 3: Changes in AAR and CAR before and after the announcement date

In order to identify the mixed positive and negative results, the companies that participated in the approved consortium and those that participated in the non-approved consortium are analyzed separately.

4.2.1. Approved consortium

Table 5 and Fig. 4 show the change in AAR and CAR of companies participating in the approved consortium based on the announcement date of the preliminary approval. AAR has no significant response from -5 day to -1 day, but increases sharply on D-0 and then decreases suddenly on +1 day. On D-0, the AAR is 4.010%, which is significant at 1%, whereas on +1 day, the AAR is 1.662%, which is significant at the 5% level. Although the AAR is not significant, the negative effect continues until +5 day. In other words, a large amount of positive AAR occurs temporarily as investors perceived the information as short-term good news that the preliminary approval for the establishment of an Internet-only bank was approved.

Table 5: AAR and CAR for companies in the approved consortium

Day	AAR		CAR	
	%	t-statistics	%	t-statistics
-5	0.028	0.034	0.028	0.034
-4	-0.475	-0.580	-0.447	-0.386
-3	-0.035	-0.043	-0.482	-0.340
-2	-0.001	-0.002	-0.483	-0.295
-1	0.348	0.425	-0.135	-0.074
0	4.010	4.900***	3.875	1.933*
+1	-1.662	-2.031**	2.212	1.022
+2	-0.840	-1.027	1.372	0.593

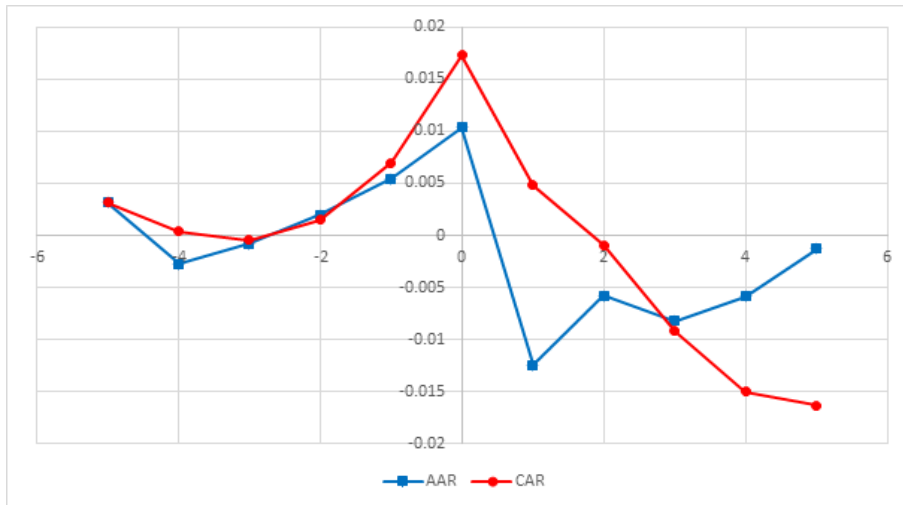| +3 | -1.231 | -1.504 | 0.141 | 0.057 |
| +4 | -0.866 | -1.059 | -0.725 | -0.280 |
| +5 | -0.629 | -0.769 | -1.354 | -0.499 |

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Fig. 4: Changes in AAR and CAR in the approved consortium

4.2.2. Non-approved consortium

Table 6 and Fig. 5 show the changes in AAR and CAR of companies participating in the non-approved consortium as of the announcement date. AAR does not show any significant response from -5 day to -1 day but sharply decreases on D-0. On the event day, the AAR is -1.537%, which is significant at the 5% level. After that, the negative AAR continues to occur, although it is not significant until +4 day. As a result, investors perceived the information that companies had not been approved for preliminary approval as bad news in the short-term.

Table 6: AAR and CAR for companies in the non-approved consortium

Day	AAR		CAR	
	%	t-statistics	%	t-statistics
-5	0.561	0.906	0.561	0.906
-4	-0.104	-0.167	0.457	0.522
-3	-0.123	-0.199	0.334	0.312
-2	0.363	0.586	0.697	0.563
-1	0.714	1.152	1.411	1.018
0	-1.537	-2.481**	-0.126	-0.083
+1	-0.884	-1.426	-1.010	-0.616
+2	-0.353	-0.569	-1.363	-0.778
+3	-0.464	-0.749	-1.827	-0.983
+4	-0.346	-0.558	-2.172	-1.109
+5	0.300	0.484	-1.873	-0.911

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

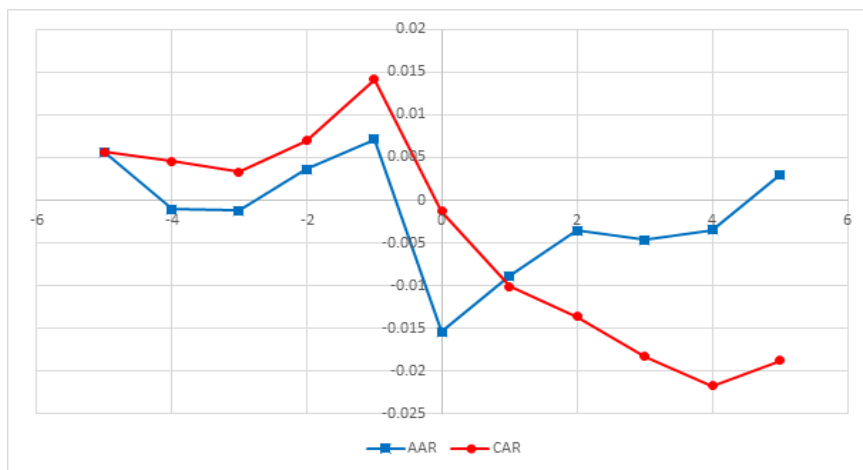
Fig. 5: Changes in AAR and CAR in the non-approved consortium

4.3. Financial industry

Unlike companies that participated in the establishment of an Internet-only bank, it is expected to have a negative impact on the existing financial industry, which will be in a state of market competition. Accordingly, changes in firm value are analyzed for 81 companies included in the financial industry, excluding those participating in the Internet-only bank consortium, in the major classification of the Korean Standard Industrial Classification.

AAR and CAR are analyzed by setting the application date and the announcement date, respectively.

Table 7: AAR and CAR for financial companies on the application date

Day	AAR		CAR	
	%	t-statistics	%	t-statistics
-5	-1.404	-2.322**	-1.404	-2.322
-4	-0.329	-0.544	-1.733	-2.027
-3	0.260	0.430	-1.473	-1.406
-2	0.010	0.016	-1.463	-1.210
-1	0.559	0.924	-0.904	-0.669
0	-0.220	-0.364	-1.125	-0.759
+1	0.284	0.469	-0.841	-0.525
+2	0.105	0.174	-0.736	-0.430
+3	0.097	0.161	-0.638	-0.352
+4	-0.344	-0.569	-0.982	-0.514
+5	0.732	1.211	-0.250	-0.125

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

According to Table 7, the AAR is -1.404% at the 5% significance level, on the -5 day, but there are no significant results after that. Although the results of the analysis based on the announcement date are not presented in a table, both the AAR and CARs are not statistically significant from event day -5 to event day +5 as well. The stock price falls in advance because investors predict that the launch of an Internet-only bank would pose a significant threat to the existing financial industry before applying for preliminary approval.

4.4. Results of multiple regression analysis

Table 8 shows the results of regression analysis performed by using statistically significant abnormal return as the dependent variable before and after the day of the announcement.

Table 8: Result of regression analysis

Var.	Total		Approved		Non-approved	
	AR(D+1)		AR(D+1)		AR(D-0)	
	Coef.	t-value (p-value)	Coef.	t-value (p-value)	Coef.	t-value (p-value)
Con	-0.083	-1.21 (0.237)	-0.115	-1.26 (0.237)	-0.106	-0.50 (0.628)
OCF	0.023	0.58 (0.564)	0.049	1.20 (0.258)	-0.300	1.55 (0.145)
Lev	-0.038	-2.13** (0.041)	-0.047	-2.54** (0.029)	0.101	1.14 (0.275)
Biz	0.003	0.29 (0.774)	0.004	0.31 (0.761)	-0.026	-0.45 (0.657)
Beta	0.007	1.01 (0.322)	0.022	1.96* (0.078)	-0.087	-3.55** (0.004)
Size	0.003	1.40 (0.172)	0.004	1.39 (0.193)	0.004	0.65 (0.528)

MB	-0.009	-1.58 (0.172)	-0.019	-2.55** (0.029)	0.064	2.62** (0.021)
ROA	-0.042	-0.41 (0.124)	-0.099	-0.89 (0.357)	-0.398	-0.84 (0.418)
Mkt	-0.006	-0.69 (0.497)	-0.011	-0.97 (0.357)	-0.028	-0.79 (0.445)
Adj. R2	0.048		0.382		0.300	
F-value	1.26		2.39		2.13	

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In the whole sample, only leverage ratio is found to be significant under 5% level on the day after the announcement for the Internet-only bank. The coefficient value of the leverage ratio is negative, indicating that the smaller the leverage ratio, the larger the abnormal return. In the approved consortium, on the day after the announcement, the leverage ratio and the market-book value ratio significantly showed coefficients of -0.047 and -0.019, respectively. However, beta shows a significantly coefficient value of 0.022. In the non-approved consortium, on the announcement day, beta shows a significantly coefficient value of -0.087, and market-book value ratio shows a significantly coefficient value of 0.064. Other variables such as operating cash flow, Biz, size and ROA are found to be insignificant.

Consequently, leverage ratio, beta and MB are variables influencing abnormal returns for companies approved as Internet-only banks. Beta and MB are variables affecting abnormal returns for companies that have not been approved.

5. Conclusion

5.1. Summary

This study examined the responses of market participants to the company's investment announcement based on the companies that applied for preliminary approval for Internet-only banks in 2015 and 2019 by setting the application date and approval date as the event date. Moreover, changes in firm value were compared to analyze companies engaged in the existing financial industry, which would be in a state of market competition due to the establishment of Internet-only banks. Finally, we examined whether there are financial factors that affect the stock price response to the company's investment announcement.

The analysis results of this study are summarized as follows. First, as a result of the analysis by setting the application date as the event date, a significant negative AAR was found on +4 day. Investors seem to accept the information with a time lag that the company has participated in an Internet-only bank that is different from the company's original business activities, not as good news, but rather as bad news.

Second, as a result of analysis by setting the announcement date as the event date, the AAR was temporarily positive on the announcement date but immediately negative on the day after the announcement. To clearly identify that result, the

approved consortium and the other consortium that was approved were analyzed separately. In the case of the companies participating in the approved consortium, the AAR surged positively on the day of the announcement, but the AAR plunged negatively the day after the announcement. It was discovered that a significant AAR occurred temporarily positively and then declined as a result of investors' perception of the information that preliminary approval was granted as short-term good news. On the other hand, in the case of companies participating in the non-approved consortium, the AAR occurred negatively on the announcement date and continued to be negative until D+4. This is a result of investors' perception of the information that the preliminary approval was not approved as short-term bad news.

Third, investor responses were analyzed separately by application date and announcement date, targeting 81 companies in the financial industry according to the Korean Standard Industrial Classification's major classification. As a result, the AAR appeared negative 5 days before the application date, but there was no significant change before and after the announcement date. It can be seen that investors perceive the information as an innovative event in which Internet-only banks appear as a new and strong competitor in the financial sector.

Fourth, multiple regression analysis was performed to identify factors affecting the relationship between corporate investment decision announcement and firm value by setting AR as dependent variables obtained through the event study. The leverage ratio was found to be a variable affecting the abnormal return only in the approved consortium. Hence, beta and MB were found to be variables affecting the abnormal return in both the approved and the non-approved consortium.

5.2. Contribution and limitation

This study analyzes the responses of market participants to the investment announcement in a new business with a different nature as an Internet-only bank compared to previous studies analyzing the responses of the market participants to the investment disclosure related to facility investment or resource development of individual companies. In addition, this study found that on the announcement date of preliminary approval, positive abnormal returns appeared for good news and negative abnormal returns appeared for bad news, respectively. This means that the Korean capital market is an efficient market in which information is transmitted to investors immediately and quickly, given that market participants' reactions differ markedly depending on the quality of the published information.

The limitations of the study are as follows. First, various analyses could not be performed due to the insufficient number of samples. Second, based on the financial industry, companies participating in Internet-only banks were classified and analyzed into two groups, but no differences were found in terms of business diversification.

Future research should look into how the three Internet-only banks, K-bank, Kakao bank, and Toss bank, are attempting to differentiate themselves, and how this

differentiation affects companies that participate in Internet-only banks. Moreover, in 2021, Kakao Bank was listed on the Korean capital market through an initial public offering(IPO). Based on this, it is thought to be meaningful to examine the responses of investors to companies that participated in Internet-only banks. It will be interesting to compare the results of future studies with those of this study.

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