Proceedings of Conference on Business Venturing, Spring 2018
April. 5, 2018, pp.183-185

The Effects of Online Search on IPO Stock Prices

강형구, 배경훈, 신정아
한양대학교 경영대학
전성민*
가천대학교 경영대학

Abstract

Online search has recently become a popular business research field not only because the search volume is used to predict demand, but also consumer search history is effective to predict product prices and investment returns. This study analyzes the relationship between the Internet search volume of IPO stocks and their post-IPO stock returns in Korean Exchange. We find that the lower the amount of Internet search for stocks before IPO, the higher the stock returns after IPO both in short and long-term. Similar results are shown for excess returns over benchmark stocks. This finding suggests that IPO stocks with low investors' attention based on the Internet search volume may be undervalued.

Ⅰ. Introduction

Online search on IT (Information Technology) platforms has recently become a popular business research field not only because the search volume is used to predict demand (Choi and Varian 2012), but also consumer search history is effective to predict product prices and investment returns(Wu and Brynjolfsson 2009; Da et al. 2011; Luo et al. 2013). The objective of this study is to clarify the relationship between the Internet search and the related stock returns in the context of stock market.

We construct the data sets for this study, using the online search data from one of the largest online search services in Asia and information on IPO stocks and their post-IPO stock returns in the security market. We obtain the data of 87 companies that went public in the year of 2016, referring Fn Data Guide and KRX. We analyze daily search volume on a daily basis in 2016.

Our results show that the lower the amount of Internet search for stocks before IPO, the higher the stock returns after IPO both in short and long-term. Similar results are shown for excess returns over benchmark stocks. This finding suggests that IPO stocks with low investors' attention based on the Internet search volume may be undervalued.

Ⅱ. Literature Review

Leung et al.(2016) investigated correlated searches-that is, search related to multiple items-to understand return behaviors of a cluster of stocks. This research builds on this work to understand investor attention and information diffusion among supply chain partners using correlated searches and use that information to predict stock returns among those partners.

Stock returns of economically linked firms such as supply chain partners are correlated because of related fundamentals(Hong et al. 2007) and profits(Menzly and Ozbas 2010). It is then expected that investors must pay attention to all stocks in the supply chain and information diffuses quickly in the market. However, because of limited attention and investor specialization, it is possible that the information diffuses slowly in the market(Hong et al. 2007) and across economically linked assets(Menzly & Ozbas 2010). This slow information diffusion can lead to a lagged return correlation between supply chain partners, which in turn can be used to predict the current returns of a focal firm(Menzly & Ozbas 2010).

* smjeon@gachon.ac.kr

Furthermore, investor attention can vary across supply chain partners over time. High investor attention across supply chain partners can represent a higher level of information diffusion that would lead to return comovement-i.e., returns tend to move together in the same direction-for such stocks in the same time period(Barberis et al. 2005).

Agarwal et al.(2017) use online cosearches of stock as a proxy for the extent of information diffusion across supply chain related firms. We identify publicly traded supply chain partners using Bloomberg data and construct cosearch networks of supply chain partners based on the weekly coviewing pattern of these firms on Yahoo! Finance. Chen et al.(2018) focus on information diffusion and investigate the relationship between firm co-mentions and return co-movement, as well as the mediating role of search co-attention.

Ⅲ. Data and Methods

To analyze the implication of search volume data specifically on IPOs, the data for each company that went public in the year 2016 in Korea have been collected from the Fn DataGuide database and the KRX(Website: http://kind.krx.co.kr/listinvstg/listingcompany.d`o?method=searchListingTypeMain). The sample data consists of 87 companies. This sample size also includes 10 re-listings and 5 transfer listings. Relevant information, such as offer price, opening price, and closing price, have also been retrieved from the Fn DataGuide database.

Daily search volume data of each company spanning from day -10 to day +10 from the IPO date have been gathered from the Naver DataLab (Website: http://datalab.naver.com/). Search volume was used as a measure for indicating potential retail investors' attention towards the IPO companies. Regarding the search volume information, the Naver DataLab provides relative search volume values within the selected time period. The search volume data are daily and the value 100 would indicate the highest search volume amount within the given time period.

Initially, the IPO companies were grouped based on the average search volume. Then, the average daily stock price returns were calculated for each group. Closing price was used for daily, weekly, and monthly returns. Every fifth day was used for weekly price data, and 20 days gap for monthly closing prices. Natural log (Return) was used for deriving cumulative return. This calculation would provide a general understanding of IPO stock performance based on search volume data prior to IPO.

Furthermore, for each IPO stock, a group of other listed companies with similar market capitalization and PBR values were identified. This benchmark group was used for comparing the IPO stocks' relative market performance.

Other variables, such as log (OpeningPrice/OfferPrice) and log (ClosingPrice/OpeningPrice) were used. When some companies' offer prices were not available, the value for OpeningPrice/OfferPrice was set as 0 to handle such exceptions. Definitions of the variables used are provided in Table 1.

<Table 1. Variable Description>

Variable	Definition
Variables related to stock price analysis	
Ln (Return), Log(Rt1), Log(Rt6)	Log of Daily Returns (e.g. Daily Rt1 = Closing Price of Day 1 / Closing Price of Day 0)
Excess return over benchmark	Log of (Daily Return of IPO Stock minus the average return of benchmark groups)
Ln (OpeningPrice/OfferPrice)	Log of Opening Price (on the day of the IPO) / Offer Price
Ln (ClosingPrice/OpeningPrice)	Log of Closing Price / Opening Price (both on the day of the IPO)
Variables related to Search Volume (Naver)	
SV	Search Volume
SV_Mean	Mean search volume value on that given day
SV_Std	Standard deviation of all the search volume data on that day
SV_Median	Median search volume observed on the given day
SV_Max No	The number of maximum search volume (100) observed on that day
N	The number of observations available on that day (excluding cases where the relative search volume was not provided, thus set to 0)

Ⅳ. Preliminary Results

For each of the IPO stocks, once the stocks have been categorized into five groups based on the average search volume data prior to the IPO date, returns were calculated using closing price data.

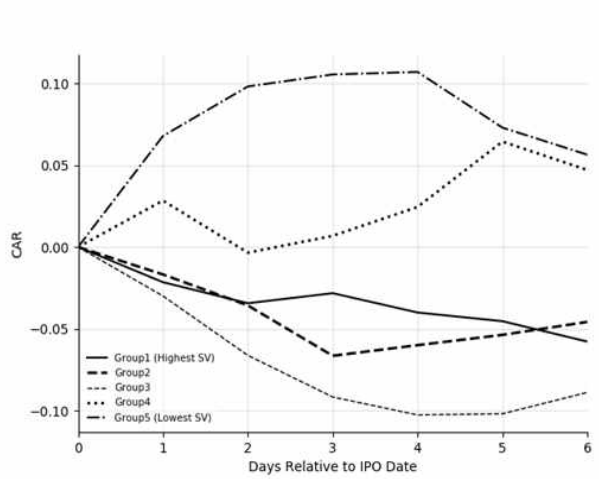
To specify, a jump size was chosen as -10 day to -1 day, where search volume data within that jump size period was gathered for each company. Then, based on the average search volume of the companies, they have been put into five groups where group 1 has the highest average search volume. According to these groups, the average stock price returns for day 1 to day 6 post-IPO have been calculated.

In addition, closing prices from the day of the initial public offering until day six have been gathered to calculate the

stock price returns. Natural Log(Rt1) to Log(Rt6) have been used to measure cumulative returns for each group.

Companies that have been searched the most prior to IPO meant that they have received much more attention than those with smaller search volume. Prior to data analysis, it was expected that the higher the potential investors' interest towards the IPO, the more likely it was for those stocks to result in lower performance. On the other hand, companies that people have paid less attention pre-IPO would likely perform better in terms of return values.

Figure 1 shows the cumulative return results of stocks grouped according to search volume data from both gender. In regards to the cumulative return leading up to day 6 post initial public offering, group 4 and 5, which received less attention from the public prior to IPO, have shown better performance in stock price returns. On the other hand, groups 1, 2 and 3 that have had higher interest from the public resulted in gradual decrease in cumulative returns up to day 6.



<Figure 1> cumulative Return Stocks Grouped According to Search Volume Data

Ⅴ. Discussions

This paper was aimed at identifying the relationship between search volume data of IPO stocks and their market performance post-IPO. Based on the short-term daily cumulative return, it was found that stocks with higher search volume showed gradual decrease in cumulative return. On the contrary, stocks that received lower interest from potential investors prior to IPO showed higher performance in cumulative returns. This indicates a negative relationship between search volume and return of IPO stocks.

While this relationship becomes less apparent in longer term, the general trend of stocks with lower search volume showing better performance compared to stocks with higher search volume holds true.

References

Choi H, & Varian H. R.(2012). Predicting the present with Google trends. *Econom. Record,* 88(1), 2-9

Da ZHI, Engelberg J, Gao P (2011). In search of attention. J. Finance 66(5), 1461-1499

Luo X, Zhang J, & Duan W(2013). Social media and firm equity value. *Inform. Systems Res.* 24(1), 146-163

Leung, A., Agarwal, A., Konana, P., & Kumar, A.(2016). Network analysis of search dynamics: The case of stock habitats. *Management Science*

Hong H, Torous W, & Valkanov R(2007). Do industries lead stock mar?kets? *J. Financial Econom.* 83(2), 367-396

Menzly L, & Ozbas O(2010). Market segmentation and cross-pre?dictability of returns. *J. Finance* 65(4), 1555-1580

Barberis N, Shleifer A, & Wurgler J(2005) Comovement. *J. Financial Econom.* 75(2):283-317

Agarwal, A., Leung, A.C.M., Konana, P., & Kumar, A.(2017) Co-search attention and stock return predictability in supply-chains. *Inf. Syst. Res.* 28 (2), 265–288

Chen, K., Luo, P., Liu, L., & Zhang, W.(2018). News, search and stock co-movement: Investigating information diffusion in the financial market. *Electronic Commerce Research and Applications* 28, 159-171

Wu L, & Brynjolfsson E.(2009). The future of prediction: How Google searches foreshadow housing prices and sales. Proc. Thirtieth Internat. Conf. Inform. Systems, 1-14