

Initial Performance of IPOs and the Bankruptcy Risk: A Comparison of Internet Firms and the Traditional Firms

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Abstract

This study examines whether Internet Firms' IPOs have more of a tendency to fail than Traditional Firms' IPOs. IPO issue has long been known as an interesting yet complicated topic to explore. There are heated debates on whether Internet Firm IPOs outperform or underperform Traditional Firm IPOs. In other words, whether investment risks associated with Internet Firms are different than Traditional Firms? Should investment decision-making process be different for Internet Firms than Traditional Firms? In this study, Internet Firms are defined as companies that are providing goods and services through Internet. Furthermore, all other types of companies are considered as Traditional Firms. The Z-score formula for predicting bankruptcy of Altman (1968) was utilized. Then the two-way factorial ANOVA was conducted with the type I error as 0.05 to test the Z-Score across 12 quarters from January 2012 to December 2014. The findings revealed that both Internet Firms and Traditional Firms generally had similar risks as no one type of firms showed significantly higher risks than the other.

Keywords: IPOs; Internet Firms, Traditional Firms; and Z-Score Altman Model

1. Introduction

One of the major ways to raise capital to support firms' operations, investments and other activities is to go public. It is widely observed that going public is becoming one of worldwide trends nowadays. However, the IPO process brings various challenges and opportunities for both offering firms and investors (Barbagallo, 2014). Consequently, understanding performance trends of IPOs could open more comprehensive understanding for investors, practitioners and researchers. In this paper, we hope that this research would encourage other scholars and experts to explore further on risks and opportunities that are associated with Internet Firms as the business world is rapidly changing, contents and facts included in financial statements of modern business world have significantly changed.

There are considerable amount of research on investors' decision making and their rationale on IPOs (Aggarwal & Rivoli, 1990; Anlin, Roger & Kuei-Ling Pan, 2002; Dominic, Sunil & Kenton, 2003; Hanley, 1993; Weber & Willenborg, 2003). Previous studies were applied various models such as Market Model and Fama-French Three-Factor Model to identify better ways to invest in IPOs. However, it is clearly proven that financial crisis are recurring and many investors find themselves dumbfounded as many sophisticated investors also find themselves in a big hole of losses from the financial crisis (Goldman & Sosin, 1979; Rajan, 2008). For an example, the 2008 finance crisis made a considerable influence on the stock market throughout the world. As a result, many investors were seriously worried and afflicted when most of US stock indexes in 2009 fell down to the lowest floor in the last 15 years. The investors' confidence on the US stock market had decreased dramatically, which caused many firms to stay away from IPOs (Fuhrman, 2012). Yet, some experts hoped for a re-bounce in US stock market like Stephen Wood, chief market strategist at Russell Investments. He noted that this crisis has just been the creative destruction to create good stories for IPOs (Wood, 2010). But, this was just an expectation when most of the European economics went into the recession subsequently. During 2009 – 2010, there were significantly low IPO activities as Sham Gad (2011) indicated that "The IPO market basically died during the 2009-2010 recession because stock valuations were low across the market. IPO stocks couldn't justify a high offering valuation when existing stocks were trading in value territory, so most chose not to test the market". Soon, as Stephen Wood hoped, in 2011, IPO activities started to gain momentum. In 2011, there were 338 IPOs and 24 of the 338 IPOs were Internet Firm IPOs according to Renaissance Capital (2011). Therefore, this study investigates the bankruptcy risk on the Internet Firms IPOs from January 2012 to December 2014. The two-way factorial ANOVA was conducted with the type I error as 0.05 to test the Z-Score across 12 quarters from 2012 to 2014. The results showed that there was no statistical significant difference in the total of Z-score between Internet Firms and Traditional Firms (p-value of main effect and interaction effects > 0.05). Particularly, the one-way ANOVA also was conducted with the type I error as 0.05 to test the Z-score in detailed information across 12 quarters from 2012 to 2014. The results showed that there was no statistical significant difference in the total of Z-score between Internet Firms and Traditional Firms in every quarter (all of the p-values > 0.05). The results showed that both Internet Firms and Traditional Firms generally had similar risks as no one type of firms showed significantly higher risks than the other.

Based on our best knowledge, this paper is to be the first to compare the bankruptcy risk both Internet Firms and Traditional Firms. The results of this paper can provide helpful information to investors in evaluating the risk of internet firms.

The rest of the study is organized as follows. Section 2 examines literature review, Section 3 presents the model and methodology, Section 4 discusses data, Section 5 evaluates the findings and finally, Section 6 concludes the study.

2. Literature Review

2.1 *The underpricing and lack of information*

Many of the previous studies mainly concentrated on IPOs in the bull markets such as IPOs in during dot-com era (early 1990s) and housing bubble era (early 2000s) (Aggarwal & Rivoli, 1990). Consequently, they implied that if IPO shares were highly attractive and investors would make a significant profit in the early aftermarket (Aggarwal & Rivoli, 1990). In other words, the underpricing of IPOs based on the information asymmetry in the issuance market, which may not reflect genuinely stocks. In terms of efficient pricing and risk assessment, however, IPO firms are characteristically different from firms that have a public trading history; there is a lack of information concerning IPO firms, and therefore potentially greater uncertainty associate with their valuation (Weber & Willenborg, 2003). This suggests that financial models and investment decision-making process may not be correctly considering factors.

2.2 *IPOs' Initial Performances*

Based on the research of Anlin, Roger and Kuei-Ling Pan (2002), by applying Market Model and Fama-French Three-Factor Model to measure Taiwan's IPO trends from 1992 to 1994, they supposed that the short-term performance of IPOs tends to be poor, but is regarded as normal return pattern for an ordinary asset in long-term. However, there are different results in other findings such as Jelic, Saadouni and Briston (2001), which showed that Malaysian IPOs with high long-term return up to 3-year after listing (1980-1995); Dominic, Sunil and Kenton (2003) stated that IPOs in Mauritius (1989-1998) are underpricing the initial performance but it is good in the long term.

By contrast, many other findings examined that IPO long-run performance is worse than the market performance. For example, the two-year holding period return of American IPOs findings of Hanley (1993) showed that IPO long-run performance is poor (1983 – 1987); long term post-IPO performance (1998 – 2007) declines when compared to peers and the market (Vance & Mascarenhas, 2014); the three-year holding period of Americans from 1988 - 1991 was supposed to be poor (Carter, Dark & Singh, 1998); Kooli and Suret (2004) also find the underperformance in Canadian's IPOs (1991 – 1998); or even there are a negative long - run Spanish abnormal stock returns (1987 – 1997) that existed in the IPO aftermarket (Alvarez & Gonzalez, 2005). It seems that the underpricing of IPOs has just been a short-run phenomenon (Ritter, 1991).

2.3 *The international comparing trends of previous researches*

Previous research also focuses on comparing the performance of many IPO groups, which help create necessary assumptions to the literature. These groups usually depend on the needs of the domestic stock market such as the trends of “A-share and B-share IPOs”, which has been regarded as typical differentiation of China. Chen, Firth and Kim (2000) had showed differences and economic factors, which determine the trends of these IPO groups (1992 – 1995). Another comparison is often a concern in the market, which is the “Private Equity-backed Firms' IPO vs Non-private Equity-backed Firms' IPO” (Van Frederikslust & Van der Geest, 2001). Or the “Privatization IPOs and Non-privatization IPOs” is also an emerging topic of the stock market such as the findings of EO Lyn and Zychowicz (2003) in Poland and Hungary (1991 – 1998); or Choi and Nam's (1998) short-term performance findings with 185 privatization IPOs from 30 countries over the period from 1981 to 1997. One more comparison, the “Family - owned Business and Non-family Business IPOs” is one of the emerging trends of many researchers such as Peter et al. (2005); Ehrhardt and Nowak

(2001); Mazzola and Marchisio (2002). Regarding to IPOs in USA, a famous study of a finance researcher group: Krishnan, Ivanov, Masulis and Singh (2011) raised a special IPO group – Venture Capital Reputation, which is very popular in American IPOs (1993-2004).

2.4 Previous researches on Internet Firm IPOs – one of popular yet intriguing issues

Refer to Internet Firm IPOs, Bartov, Mohanram and Seethamraju (2002) and Hand (2000) had previous research on the valuation of Internet Firms after IPOs. They found that “Net firms’ lack of profitability has its roots in their huge investments in intangible marketing brand assets aimed at rapidly seizing a dominant market-share position” (Hand, 2000). Botman, Roosenboom and Goot (2004) also showed that “market value is negatively related to net income in the Internet bubble period before April 1, 2000 in both European and U.S. IPO markets”. On the other hand, some researchers supposed that this kind of company tended to hurriedly “go public to grab market share. Internet Firms are buying other Internet Firms at a furious pace” (Schultz & Zaman, 2001). As a result, the after IPO market would exist non-surviving and surviving firms. The survivors are “associated with lower risk, higher underwriter reputation, higher investor demand, lower valuation uncertainty, higher insider ownership retention, a lower NASDAQ market level, and a higher offer-to-book ratio” (Botman, Goot & Giersbergen, 2004). However, this kind of firm IPO is always potentially faced with risks such as being acquired or going into bankruptcy (Botman, Goot & Giersbergen, 2004). In other words, there seemed to be tantalizing parallels among the Internet crash, the Internet bubble and the recent financial crisis (Bhattacharya, Demers & Joos, 2010).

Generally, there were many differences in short-term and long-term IPO performances from countries, years and analyzed samples. Therefore, this paper tends to focus on the performances of American IPOs yet in a special perspective – the performance of Internet Companies, which were supposed to have good IPOs in 2011 and compares them with Traditional IPOs whether Internet Firm IPOs or Traditional Firm IPOs has more of a tendency to fail. Moreover, researching these Internet IPOs’ performances would help identify earlier warning signals about the failure risks and limiting losses for investors.

3. Methodology

This study defines Internet Firms and Traditional Firms based on the types of goods and services that each firm provides. The term “Internet Firm” is defined as firms that offer goods and services that are intangible and based on the Internet. In other words, a firm’s core business model is based on Internet platform is considered as Internet Firm such as Facebook, Yelp or Google. The term “Traditional Firm” is defined as the other firms. As a result, this study uses data on 17 Internet Firm IPOs and 17 typical Traditional Firm IPOs, which offered their first public offering on the major U.S. stock exchanges in 2011 (NASDAQ and NYSE).

This study utilizes the Altman Z-score to examine whether Internet Firms’ IPOs have more of a tendency to bankrupt than Traditional Firms’ IPOs.

There are a lot of interests in development of corporate bankruptcy prediction models, yet there is a lack of documentation concerning the firm-specific factors that are associated with IPO firm failure (Demers and Joos, 2007). As a result, this study considers the Altman Z-score model (Altman, 1968) as a suitable application to compare the performance of two kinds of firm. The Altman Z-Score was found to be 72% accurate in predicting bankruptcy for more than two years.

The original Z-score formula was as follows:

$$Z = 1.2T_1 + 1.4T_2 + 3.3T_3 + 0.6T_4 + 0.99T_5$$

Where T_1 = Working Capital / Total Assets measuring liquid assets in relation to the size of the firm, T_2 = Retained Earnings / Total Assets measuring profitability that reflects the firm's age and earning power, T_3 = Earnings before Interest and Taxes / Total Assets measuring operating efficiency apart from tax and leveraging factors; it recognizes operating earnings as being important to long-term viability, T_4 = Market Value of Equity / Book Value of Total Liabilities adding market dimension that can show up security price fluctuation as a possible red flag, T_5 = Sales/ Total Assets, is a standard measure for total asset turnover.

The Interpretation of Altman Z-Score:

- If $Z > 2.99$ -“Safe” Zones. The company is considered ‘Safe’ based on the financial figures only.
- If $1.81 < Z < 2.99$ -“Grey” Zones. This zone is an area where one should ‘Exercise Caution’.
- If $Z < 1.81$ -“Distress” Zones. Probability of Financial insolvency or bankruptcy is Very High.

We prefer to utilize the original Altman Z-score formula than other models to measure both Internet and Traditional Firms. It is supposed that the T_5 should be excluded to minimize the effects of manufacturing-intensive asset turnover (Intania & Nugroho, 2014). However, this study tends to concentrate on the meaning of asset turnover, which shows that one asset unit creates the amount of sales.

As a result, the original Z-score is expected to be more comprehensive and effective. The first variable (T_1) is a good indicator of a firm's ability to control the operating performance in the next few months. The second ratio (T_2) is a good indicator of how in debt the firm is and whether it has a history of profitability. The third ratio (T_3) is to measure the efficiency in that it indicates how many cents the firm generates in earnings for every dollar of assets it owns. The fourth ratio (T_4) is a fluid measure of the market's value in the firm (external performance). The fifth ratio (T_5) is nearly the same with the third one but it tends to focus on the effectiveness of using sale and operation costs.

3.1 Data

As mentioned earlier, this study chooses 34 IPOs in 2011, which consist of 17 Internet Firms (out of 24 Internet IPOs in 2011) and 17 Traditional Firms (see Table 1). In 17 Internet Firms' IPOs in 2011, bankrupted firms and acquired firms were excluded. The database contains financial figures of 12 quarters from January 2012 to December 2014 and obtained from <http://bear.warrington.ufl.edu/ritter/ipodata.htm> and companies' websites, which is based on the Z-score model. The Market Value of Equity is equal to the average price of each quarter multiplied by the number of shares at the same time.

4. Findings

4.1 Descriptive Statistics

Table 2 and 3 are the summary statistics of the variables in this study. The mean of Z-Score of internet companies is a greater than the mean of Z-score of traditional companies. In addition, the standard deviation of Z-score of internet companies is higher than the standard deviation of Z-score of traditional companies. This may suggest internet companies are more volatile during this period.

Table 1. List of Sample Companies

Firms	Type	Stock Exchanges	Code
Zynga	Internet Company	NasdaqGS	ZNGA
Groupon	Internet Company	NasdaqGS	GRPN
CornerStone Ondemand	Internet Company	NasdaqGS	CSOD
Angie's list	Internet Company	NasdaqGS	ANGI
Linkedin	Internet Company	NYSE	LNKD
Zillow Inc	Internet Company	NasdaqGS	Z
Michael Kors Holdings	Traditional Company	NYSE	KORS
Skullcandy Inc	Traditional Company	NasdaqGS	SKUL
Spirit Airline Inc	Traditional Company	NasdaqGS	SAVE
GNC Holdings Inc	Traditional Company	NYSE	GNC
Delphi Automotive PLC	Traditional Company	NYSE	DLPH
Pacific Drilling S.A	Traditional Company	NYSE	PACD
21Vianet Group	Internet Company	NasdaqGS	VNET
Carbonate Inc	Internet Company	NasdaqGS	CARB
Demand Media	Internet Company	NYSE	DMD
Renren	Internet Company	NYSE	RENN
Solazyme	Internet Company	NasdaqGS	SZYM
Chef Warehouse	Traditional Company	NasdaqGS	CHEF
Ubiquiti Networks Inc.	Traditional Company	NasdaqGS	UBIQ
Homeaway Inc.	Internet Company	NasdaqGS	AWAY
Yandex N.V	Internet Company	NasdaqGS	YNDX
DemandWare	Internet Company	NYSE	DWRE
Bazaarvoice, Inc.	Internet Company	NasdaqGS	BV
Brightcove	Internet Company	NasdaqGS	BCOV
Yelp Inc.	Internet Company	NYSE	YELP
First Connecticut Ban. Inc	Traditional Company	NasdaqGS	FBNK
RPX Corp.	Traditional Company	NasdaqGS	RPXC
C&J Energy Services	Traditional Company	NYSE	CJES
Nationstar Mortgage	Traditional Company	NYSE	NSM
Rexnord	Traditional Company	NYSE	RXN
Renewable Energy	Traditional Company	NasdaqGS	REGI
Matador Resources Firm	Traditional Company	NYSE	MTDR
Forum Energy	Traditional Company	NYSE	FET
EPAM Systems	Traditional Company	NYSE	EPAM

Notes: These 34 companies went public in 2011 in NYSE and NASDAQ. We chose 34 typical companies for the suitable samples, which also meet the demand of the Z-Score Altman Model. We chose 17 typical Internet companies out of 24, which do not consist of bankruptcies and acquired companies, because acquired companies have been influenced by parent companies.

Table 2. Z-Score Descriptive of Internet Companies

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Q42014	10.02	1.89	63.30	-0.67	17.76	2.35	5.12
Q32014	12.37	2.66	84.61	-3.00	22.75	2.54	6.50
Q22014	12.30	3.04	89.15	-0.93	22.81	2.85	8.53
Q12014	14.70	4.41	109.65	0.28	26.97	3.11	10.50
Q42013	13.62	4.55	89.79	0.61	22.85	2.77	8.06
Q32013	14.53	4.01	72.75	0.65	21.21	1.97	3.13
Q22013	10.67	3.38	48.34	0.01	14.94	1.89	2.62
Q12013	9.64	2.76	38.87	-0.28	12.36	1.64	1.62
Q42012	9.31	5.29	37.13	-0.16	10.22	1.66	2.42
Q32012	12.13	6.30	63.54	-0.05	15.72	2.51	7.14
Q22012	12.89	9.25	60.02	0.10	14.70	2.31	6.31
Q12012	14.20	9.57	66.97	0.35	16.13	2.47	7.12

Note: The Z-Score of 17 Internet Firms based on 5 variables was calculated for 12 quarters (E.g.: Q12012: Quarter 1 year 20012), which is from January 2012 to December 2014.

Table 3. Z-Score Descriptive of Traditional Companies

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Q42014	4.60	2.39	22.01	0.15	5.85	2.09	4.25
Q32014	5.07	2.52	24.81	0.24	6.52	2.19	4.77
Q22014	5.45	2.57	28.50	0.22	7.37	2.38	5.81
Q12014	6.04	2.76	29.33	0.22	8.26	2.02	3.31
Q42013	5.78	2.81	27.88	0.14	7.74	2.07	3.64
Q32013	5.51	2.79	28.79	0.11	7.44	2.40	5.87
Q22013	4.66	2.58	26.37	0.06	6.62	2.66	7.43
Q12013	4.58	2.30	30.55	0.30	7.33	3.17	10.87
Q42012	4.16	2.40	26.47	0.32	6.24	3.20	11.29
Q32012	4.28	2.33	20.02	0.32	5.07	2.19	5.25
Q22012	5.02	2.50	21.36	0.23	6.21	1.86	2.60
Q12012	5.71	2.62	25.73	0.32	7.33	2.10	3.77

Note: The Z-Score of 17 Traditional Firms based on 5 variables was calculated for 12 quarters (E.g.: Q12012: Quarter 1 year 20012), which is from January 2012 to December 2014.

4.2 The fairness of IPO opportunities

The independence of observation was assumed. However, the assumption of normality and homogeneity were not met. As a result, the two-way factorial ANOVA is robust. The assumption of Sphericity was not assumed hence the Huynh-Feldt data was preferable (see Table 4).

Table 5 shows the results of the one-way ANOVA with the type I error as 0.05 to test the Z-score in detailed information across 12 quarters from January 2012 to December 2014. The results showed that there was no statistical significant difference in the total of Z-score between Internet Firms and Traditional Firms in every quarter (all of the p-values > 0.05).

The results showed that both Internet Firms and Traditional Firms generally had similar risks as no one type of firms showed significantly higher risks than the other. However, the mean plot diagram showed that the Z-Scores of Internet Firms were not as solid as Traditional Firms with a high fluctuation. And the total Z-Scores of Internet Firms have many high numbers (outliers), which determined this fluctuation such as LinkedIn, Zillow Inc, Renren, Yandex N.V, DemandWare, and Yelp, Inc. As a result, we reviewed the development of variables in the Z-Score model to understand what happened and determined the above results.

Additionally, the mean plot in Figure 1 showed that the new Z-scores of Internet Firms are lower than Traditional Firms by a considerable amount. It showed that the external performance made significant influences on the general performances of Internet Firms.

Table 4. Tests of Within-Subjects Effects for Z-Score

	Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Time	Huynh-Feldt	571.257	2.028	281.731	2.183	0.12
Time * Type	Huynh-Feldt	185.073	2.028	91.274	0.707	0.50
Error(Time)	Huynh-Feldt	8373.522	64.885	129.051		

Note: The result of two-way Factorial ANOVA showed that there is no main effect and interaction effect in Z-Score between Internet IPOs and Traditional IPOs.

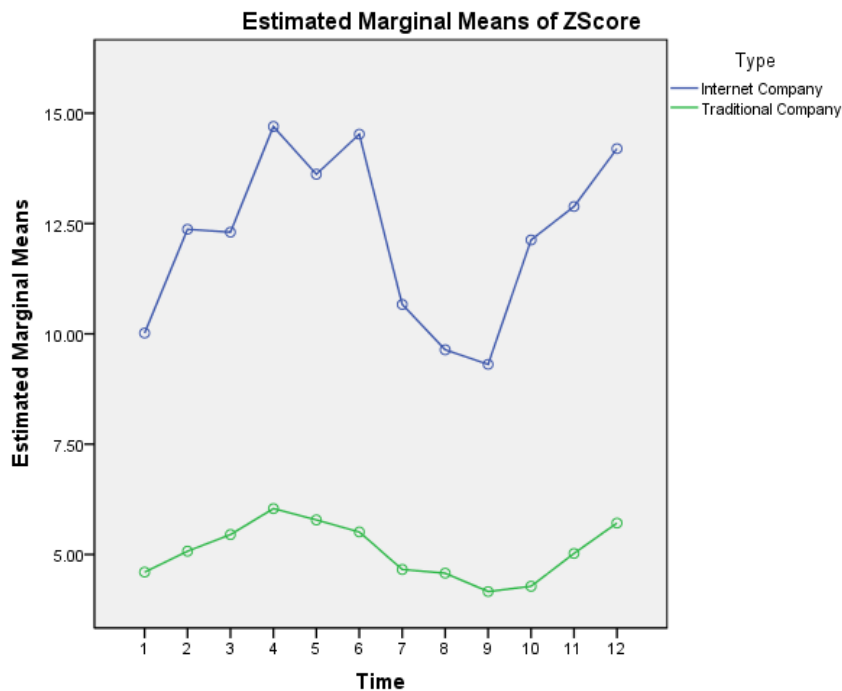


Figure I. Mean Plot Estimated Marginal Means of Z-Score

Table 5. One-way ANOVA for Z-Score

		Sum of Squares	df	Mean Square	F	Sig.
Q42014	Between Groups	249.506	1	249.506	1.427	0.241
	Within Groups	5595.612	32	174.863		
	Total	5845.118	33			
Q32014	Between Groups	452.277	1	452.277	1.615	0.213
	Within Groups	8962.189	32	280.068		
	Total	9414.467	33			
Q22014	Between Groups	399.257	1	399.257	1.39	0.247
	Within Groups	9192.181	32	287.256		
	Total	9591.437	33			
Q12014	Between Groups	637.452	1	637.452	1.602	0.215
	Within Groups	12731.572	32	397.862		
	Total	13369.023	33			
Q42013	Between Groups	521.734	1	521.734	1.793	0.19
	Within Groups	9312.785	32	291.025		
	Total	9834.519	33			
Q32013	Between Groups	690.93	1	690.93	2.736	0.108
	Within Groups	8079.812	32	252.494		
	Total	8770.743	33			
Q22013	Between Groups	306.617	1	306.617	2.296	0.139
	Within Groups	4272.778	32	133.524		
	Total	4579.395	33			
Q12013	Between Groups	217.955	1	217.955	2.112	0.156
	Within Groups	3302.81	32	103.213		
	Total	3520.765	33			
Q42012	Between Groups	225.319	1	225.319	3.14	0.086
	Within Groups	2296.017	32	71.751		
	Total	2521.336	33			
Q32012	Between Groups	523.63	1	523.63	3.837	0.059
	Within Groups	4366.975	32	136.468		
	Total	4890.606	33			
Q22012	Between Groups	525.372	1	525.372	4.128	0.051
	Within Groups	4072.561	32	127.268		
	Total	4597.934	33			
Q12012	Between Groups	611.879	1	611.879	3.9	0.057
	Within Groups	5020.362	32	156.886		
	Total	5632.242	33			

Note: The result of One-way ANOVA showed that there was no any statistical significant difference in the Z-Score between Internet IPOs and Traditional IPOs across 12 quarters from 2012-2014 (E.g.: Q12012: Quarter 1 year 20012).

4.3 The differences after IPOs

4.3.1 High Market Value and Low Total Liabilities

We explored that the T4 (Market Value of Equity / Book Value of Total Liabilities) of many Internet Firms are very high. It seems that many Internet Firms have a good market value and a very low liability. This information partly showed that the demand of Internet-firm stocks is often high in the market, which made the market value often remained high. One more reason, most of the Internet Firms do not need to initially invest in buildings and factories, which make the total liabilities not high. However, this paper does not tend to compare the performances of manufacturer and non-manufacturer. We destroyed the distribution of T4 in

the Z-Score Model and we conducted a one-way ANOVA with a new Model:

$$Z = 1.2T_1 + 1.4T_2 + 3.3T_3 + 0.6T_4 + 0.99T_5$$

The independence of observation was assumed. And the assumption of normality was and homogeneity was met. Table 6 summarizes the result of One-way ANOVA. It showed that there was a statistical significant difference in the new Z-scores between Internet Firms and Traditional Firms. Additionally, the mean plot showed that the new Z-scores of Internet Firms are lower than Traditional Firms by a considerable amount (see Figure 2). It showed that the external performance made significant influences on the general performances of Internet Firms.

Table 6. One-way ANOVA for the new Z-Score without T_4

		Sum of Squares	df	Mean Square	F	Sig.
Q42014	Between Groups	16.03	1.00	16.03	16.56	.000
	Within Groups	30.98	32.00	0.97		
	Total	47.00	33.00			
Q32014	Between Groups	18.31	1.00	18.31	14.40	.001
	Within Groups	40.69	32.00	1.27		
	Total	59.00	33.00			
Q22014	Between Groups	12.00	1.00	12.00	12.97	.001
	Within Groups	29.60	32.00	0.93		
	Total	41.60	33.00			
Q12014	Between Groups	11.64	1.00	11.64	13.80	.001
	Within Groups	27.00	32.00	0.84		
	Total	38.64	33.00			
Q42013	Between Groups	11.29	1.00	11.29	12.60	.001
	Within Groups	28.67	32.00	0.90		
	Total	39.95	33.00			
Q32013	Between Groups	12.69	1.00	12.69	13.61	.001
	Within Groups	29.85	32.00	0.93		
	Total	42.55	33.00			
Q22013	Between Groups	12.49	1.00	12.49	16.12	.000
	Within Groups	24.80	32.00	0.78		
	Total	37.30	33.00			
Q12013	Between Groups	12.16	1.00	12.16	15.75	.000
	Within Groups	24.69	32.00	0.77		
	Total	36.85	33.00			
Q42012	Between Groups	11.24	1.00	11.24	14.66	.001
	Within Groups	24.54	32.00	0.77		
	Total	35.78	33.00			
Q32012	Between Groups	11.14	1.00	11.14	13.83	.001
	Within Groups	25.77	32.00	0.81		
	Total	36.91	33.00			
Q22012	Between Groups	11.28	1.00	11.28	15.54	.000
	Within Groups	23.24	32.00	0.73		
	Total	34.52	33.00			
Q12012	Between Groups	9.42	1.00	9.42	15.99	.000
	Within Groups	18.86	32.00	0.59		
	Total	28.29	33.00			

Note: The result of One-way ANOVA showed that there were statistical significant differences in the Z-Score without T_4 between Internet IPOs and Traditional IPOs across 12 quarters from 2012-2014 (E.g.: Q12012: Quarter 1 year 20012).

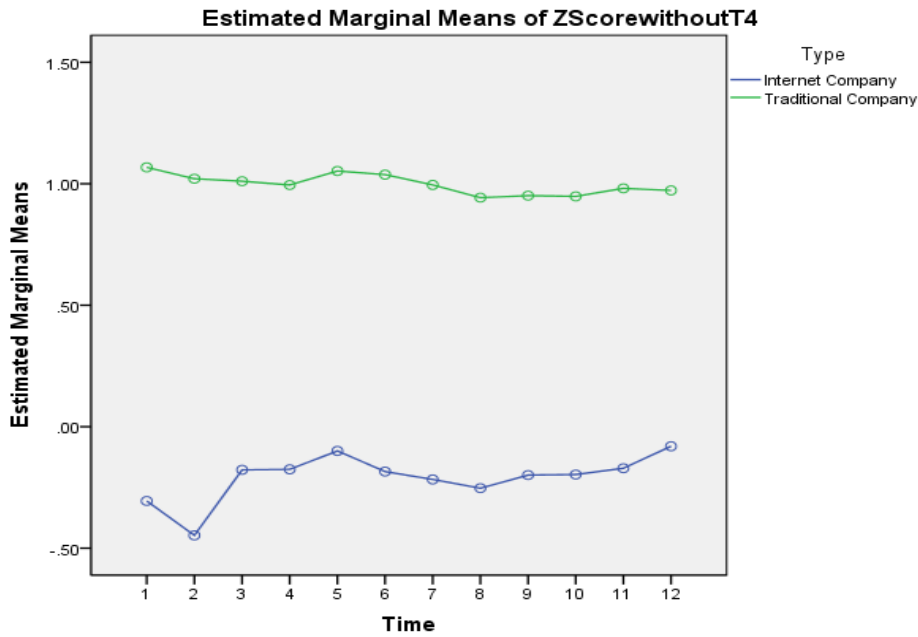


Figure 2: Estimated Marginal Means of Z-Score without T_4

4.3.2 The Low Internal Profitability T_3 (ROA)

On the other hand, the profitability based on ROA (T_3 : EBIT/Total Asset) proved that the internal performance of Internet Firms were worse than those of Traditional Firms after IPOs.

The independence of observation was assumed. Additionally, the assumption of homogeneity was met. However, the assumption of normality was not met. As a result, the One-way ANOVA is robust. As can be seen from Table 7 Internet Firms not only have a downtrend after three years but also are lower than Traditional Firms (depends on the mean plot). A One-way ANOVA was conducted to test differences in ROAs between Internet Firms with Traditional Firms. It showed that there was a statistical significant difference in the trend of ROA between the two kinds of firms. The Internet Firms had a negative trend of EBIT, which influenced on the results of ROA.

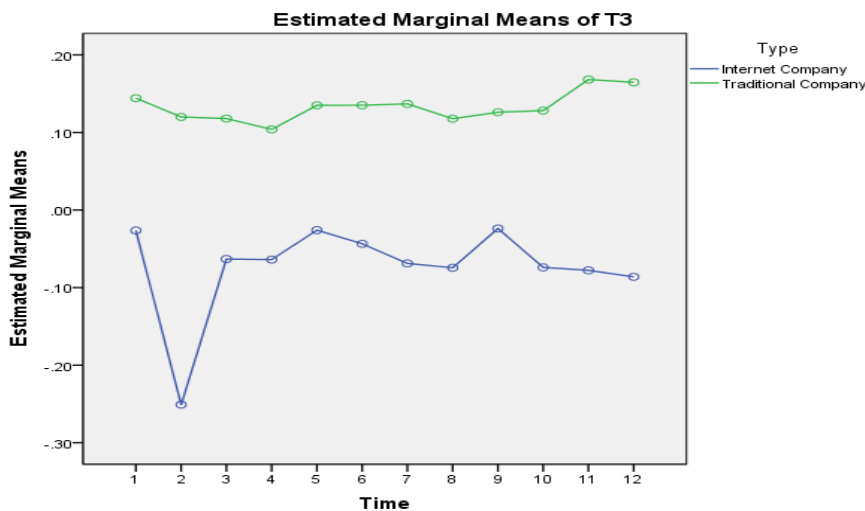


Figure 3: Estimated Marginal Means of T_3 (ROA)

Additionally, the mean plot from Figure 3 showed that the new Z-scores of Internet Firms are lower than Traditional Firms by a considerable amount (see Figure 3). It showed that the external performance made significant influences on the general performances of Internet Firms.

 Table 7. One-way ANOVA for the Variable T_3

		Sum of Squares	df	Mean Square	F	Sig.
Q42014	Between Groups	0.25	1.00	0.25	13.91	.001
	Within Groups	0.57	32.00	0.02		
	Total	0.82	33.00			
Q32014	Between Groups	1.17	1.00	1.17	3.54	.069
	Within Groups	10.57	32.00	0.33		
	Total	11.74	33.00			
Q22014	Between Groups	0.28	1.00	0.28	16.68	.000
	Within Groups	0.53	32.00	0.02		
	Total	0.81	33.00			
Q12014	Between Groups	0.24	1.00	0.24	17.73	.000
	Within Groups	0.43	32.00	0.01		
	Total	0.67	33.00			
Q42013	Between Groups	0.22	1.00	0.22	13.21	.001
	Within Groups	0.53	32.00	0.02		
	Total	0.75	33.00			
Q32013	Between Groups	0.27	1.00	0.27	12.02	.002
	Within Groups	0.72	32.00	0.02		
	Total	0.99	33.00			
Q22013	Between Groups	0.36	1.00	0.36	20.77	.000
	Within Groups	0.55	32.00	0.02		
	Total	0.91	33.00			
Q12013	Between Groups	0.31	1.00	0.31	16.31	.000
	Within Groups	0.62	32.00	0.02		
	Total	0.93	33.00			
Q42012	Between Groups	0.19	1.00	0.19	8.94	.005
	Within Groups	0.68	32.00	0.02		
	Total	0.87	33.00			
Q32012	Between Groups	0.35	1.00	0.35	14.83	.001
	Within Groups	0.75	32.00	0.02		
	Total	1.10	33.00			
Q22012	Between Groups	0.51	1.00	0.51	16.11	.000
	Within Groups	1.02	32.00	0.03		
	Total	1.54	33.00			
Q12012	Between Groups	0.53	1.00	0.53	24.14	.000
	Within Groups	0.71	32.00	0.02		
	Total	1.24	33.00			

Note: The result of One-way ANOVA showed that there were mostly statistical significant differences in T_3 between Internet IPOs and Traditional IPOs (except for Q32014) across 12 quarters from 2012-2014 (E.g.: Q12012: Quarter 1 year 20012).

4.3.3 Potential risks of negative Retained Earnings

It is the variable T_2 : Retained Earnings / Total Asset that created potentially risks for these Internet Firms compared to Traditional Firms. Another One-way ANOVA was also conducted to explore statistical significant differences in T_2 (Retained Earnings / Total Asset) between Internet Firms and Traditional Firms across 12 quarters. The independence of observation was assumed. However, the assumption of normality and homogeneity were not met. As a result, the One-way ANOVA is robust in Table 8.

Additionally, the mean plot from Figure 4 showed that the new Z-scores of Internet Firms are lower than Traditional Firms by a considerable amount (see Figure 4). It showed that the external performance made significant influences on the general performances of Internet Firms.

Table 8. One-way ANOVA for the Variable T_2

		Sum of Squares	df	Mean Square	F	Sig.
Q42014	Between Groups	12.160	1	12.160	21.349	.000
	Within Groups	18.226	32	.570		
	Total	30.386	33			
Q32014	Between Groups	10.057	1	10.057	26.585	.000
	Within Groups	12.105	32	.378		
	Total	22.162	33			
Q22014	Between Groups	8.038	1	8.038	20.384	.000
	Within Groups	12.618	32	.394		
	Total	20.656	33			
Q12014	Between Groups	8.461	1	8.461	20.420	.000
	Within Groups	13.260	32	.414		
	Total	21.721	33			
Q42013	Between Groups	8.473	1	8.473	18.168	.000
	Within Groups	14.925	32	.466		
	Total	23.398	33			
Q32013	Between Groups	8.626	1	8.626	19.168	.000
	Within Groups	14.400	32	.450		
	Total	23.026	33			
Q22013	Between Groups	8.043	1	8.043	20.582	.000
	Within Groups	12.505	32	.391		
	Total	20.548	33			
Q12013	Between Groups	8.184	1	8.184	20.615	.000
	Within Groups	12.704	32	.397		
	Total	20.888	33			
Q42012	Between Groups	7.924	1	7.924	19.020	.000
	Within Groups	13.332	32	.417		
	Total	21.257	33			
Q32012	Between Groups	7.504	1	7.504	19.089	.000
	Within Groups	12.578	32	.393		
	Total	20.082	33			
Q22012	Between Groups	7.152	1	7.152	21.669	.000
	Within Groups	10.562	32	.330		
	Total	17.714	33			
Q12012	Between Groups	6.521	1	6.521	23.602	.000
	Within Groups	8.841	32	.276		
	Total	15.362	33			

Note: The result of One-way ANOVA showed that there was statistical significant differences in T_2 between Internet IPOs and Traditional IPOs across 12 quarters from 2012-2014 (E.g.: Q12012: Quarter 1 year 20012).

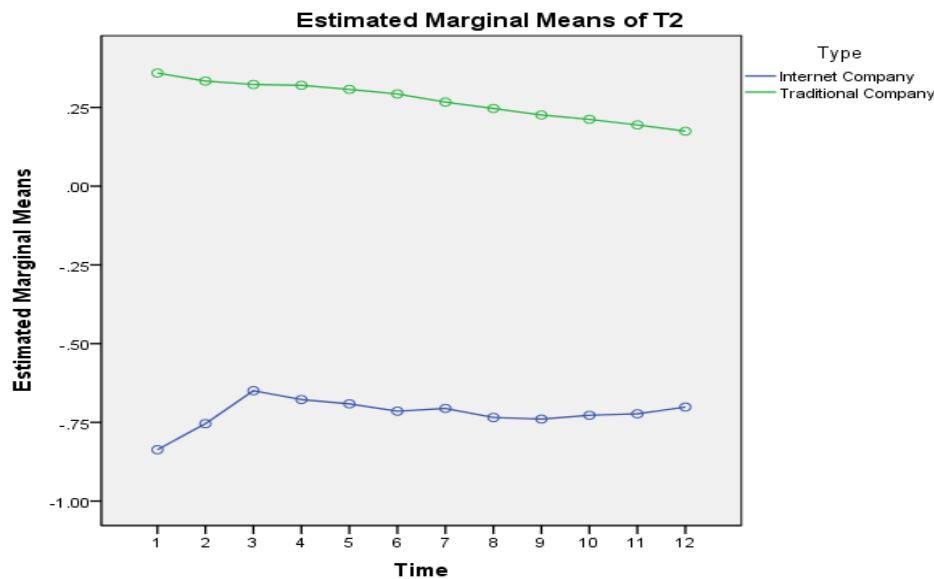


Figure 4: Estimated Marginal Means of T_2

4.4 Discussions

The results of this paper indicated that there was no statistical significant difference in the total Z-score between Internet Firms and Traditional Firms after IPOs. Based on the total Z-score, Internet Firms tend to outperform than Traditional Firms. However, the performance fluctuation of Internet Firms seems to be high. This fluctuation indicated a high volatility, which means high risk. One of the significances in Z-score results is that there is a considerable influence of the Variable T_4 , which referred to the external performance. An extra One-way ANOVA was conducted to explore influences of the internal and external elements through the new Z-score model without T_4 . It showed that the internal performance of Internet Firms were not as good as Traditional Firms; although, there was a statistical significant difference in the internal performance development trends between two groups of firms, Internet Firms have an uptrend and Traditional Firms have a downtrend. This may be an indication that there might be other external influences such as high expectation or hype meaning that blow the Internet IPO bubble bigger, make them better than what they have. This can make IPOs attractive to investors who are looking for new opportunities in the market. This is another topic that could be explored further in the future research.

Some potential risks and concerns about the uptrend of Internet Firms appeared when we continued to test other Variables. There were statistical significant differences in T_2 and T_3 between both groups.

Considering T_3 , there were statistical significant differences in all of the quarters between two groups except Q32014. Moreover, there was a downtrend of ROA of Internet Firms and the EBIT of them were not high or even negative (11 out of 17). It indicates that the profitability of Internet Firms is not as good as Traditional Firms.

For variable T_2 consideration, there were statistical significant differences in all of the quarters between two kinds of firms. There was an uptrend of T_2 across 12 quarters; however, there was a downtrend of Retained Earnings (13 out of 17). It may suggest that they have some potential risks in internal performances. It also reflected the problems of the internal performance of Internet Firms.

Generally, the findings showed that the development of Internet Firms seems to be more risky than traditional firms. The first reason is that the EBIT and retained earnings of these firms were not high, or even negative. It means that the internal performances of these firms were not as good as expected. The longer this goes on and a firm has a negative retained earnings balance, the more it is a concern, because this means firm leaders haven't figured out how to improve profitability (Kokemuller, 2015). On the other hand, internet firms also had limited expansion policies because of the negative retained earnings. In addition, negative retained earnings suggested that they have had only a security or a safety from their cash; and each new quarter with a net loss they would reduce retained earnings.

The second reason is that the market prices of these firms were so high as compared to their internal performance or overvalued. It seems that there has been an increasing demand, which created an Internet stock bubble. However, their liabilities were not too high because they did not need to invest in fixed assets, which could be considered as a competitive advantage. Another competitive advantage of this kind of firm is that they have good external marketing policies, especially Internet advertisement policy. It is obvious that with more than 80% of the population have used Internet in USA (based on Internetsociety.org in 2014). However, their EBITs are usually low or even negative, compared to Traditional Firms. However, this competitive advantage has considerably supported for the external performance, this may explain why, investors are attracted to Internet stocks.

5. Conclusion

It seems that Internet Firms' IPOs have more of a tendency to fail than Traditional Firms' IPOs. Although the external performance of Internet Firms IPOs was better, which partly highlighted the external policies; the internal performance of Internet Firms was not as good as Traditional Firms. Additionally, the market value partly played an important role in overestimating the whole performance of these firms. This is also the brand value of Internet Firms, which make the fluctuation of these stocks relatively high. It would be suitable for short-term investments, which tend to make profit from surfing the stock-waves. On the other hand, it would be very risky if someone would like to have long-term interests. Generally, there were not many differences between the performances of Internet Firms IPOs and Traditional Firms' IPOs. The main difference could be the performance trend (focus on internal or external performances). The results of the one-way ANOVA with the type I error as 0.05 to test the Z-score in detailed information across 12 quarters from January 2012 to December 2014 showed that there was no statistical significant difference in the total of Z-score between Internet Firms and Traditional Firms in every quarter (all of the p-values > 0.05).

This study has some limitations such as the effectiveness of Z-scores Altman Model and the Sampling to call for an improvement and argued for appropriateness of this study. However, we reasonably concluded that this is reasonable model to test our assumptions and for the purpose of this study, which is to encourage other scholars and experts to visit and explore this topic. Also, the number of samples sizes and close approximate of IPOs could obscure the results noted in this paper. Once again, this research is conducted to initiate urges and interests to other scholars to develop better understanding of rapidly changing business world. As such, we believe that these limitations and implications can be mitigated in the future researches.

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