AGE AT IPO, SG&A (SELLING, GENERAL & ADMINISTRATIVE) STICKINESS AND SUSTAINABLE FUTURE PERFORMANCE OF BIOTECH COMPANIES

Namryoung Lee, Korea Aerospace University

ABSTRACT

This study looks into the link between the IPO timing, post-IPO performance, and other company features. First, the relationship between sustainable future performance and IPO age is investigated. The results reveal a positive correlation, suggesting that the older the IPO, the better the post-IPO performance. On the other hand, other characteristics of a specific industry or a company are likely to have a varied impact on this relationship, necessitating more investigation. This study looks at biotech, which is one of the high-tech sectors. And SG&A stickiness signaling is investigated as a specific business characteristic since it is an important aspect to consider, particularly for companies that invest heavily in R&D. The results confirm that biotech companies benefit from early IPO. Furthermore, companies with SG&A stickiness signaling have sustained future performance, even if their IPO is rapid, according to the findings. The findings also point to a connection between SG&A stickiness signaling and future performance, as with prior research findings. Overall, the findings imply that evaluating an IPO age and post-IPO success should be done in light of the company's characteristics.

Keywords: Age at IPO, Sustainable Future Performance, Biotech Companies, SG&A Stickiness.

JEL Classification: M41.

INTRODUCTION

Initial public offering (hereafter, IPOs) is an important source of funding for businesses. According to Gill & Walz (2016), a company's initial public offering (IPO) is a significant strategic turning point. It goes without saying that high-tech companies that engage heavily in Research and Development (hereafter, R&D) - for example, biotech companies - are always in desperate need of financing. Particularly in the biotech business, despite lackluster performance companies are increasing their R&D spending. Since 2020, the COVID pandemic has further spurred this trend. Over the last five years, global top 10 biotech businesses' $70 billion budget has climbed to $96 billion in 2020 and most of this is R&D budget. IPOs are crucial for start-up technology companies because they provide a source of money for market entry while also allowing R&D to continue (Pagano & Zingales, 1998). For this reason, biotech start-ups, in comparison to non-biotech companies, are eager to go public as soon as possible.

Biotech companies that are already listed must, of course, raise funds through capital increases and other means. The biotech business is known for being a "*discrete product technology*," in which one technological breakthrough leads to the creation of a single new product (Cohen et al., 2000). One of the most important sources of long-term competitive advantage is technological competency, which may be achieved through R&D investment

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(Coombs & Bierly, 2006). The biotech sector is a typical knowledge industry, with fierce rivalry and a focus on technological innovation abilities (Liebeskind et al., 1996). According to Qian et al. (2012), it is suggested that high-tech businesses investing a higher level of R&D than the market expectation immediately before a capital increase is a signal from management, resulting that the negative share price reaction was reduced at the time of the rights issue announcement. In contrast, non-high-tech companies' overinvestment in R&D prior to capital increases was perceived as an inefficient investment based on managerial over-optimism, which exacerbated the negative disclosure effect.

Meanwhile, there are differing viewpoints on the appropriate age for an IPO. Because of numerous benefits that an IPO provides, Young businesses that have yet to make a profit are frequently able to get listed (Jain et al., 2008). According to Ritter (2021), companies in the biotech industry have had faster IPOs than companies in other areas. Concerns regarding post-IPO sustainable firm performance feed the debate over the ideal moment for an IPO. The findings of studies have been varied. Many studies have found that older IPOs perform better in the years after their initial public offering. (Clark, 2002; Ritter, 1991; van der Goot et al., 2009; Wagner & Cockburn, 2010; Jain et al., 2008). On the other hand, according to several research, the younger a firm is at the time of its IPO, the better its post-IPO success would be. (Banerjee et al., 2016; Andriansyah & Messinis, 2016).

The success of public offerings may be largely reliant on the industry (Ritter, 1991; Clark, 2002). Previous research that divided the sample into non-technology and technology companies found that the results were generally consistent, "*young technology companies performed better*" (Clark, 2002; Ritter, 1991). As Pagano & Zingales (1998) found, IPOs are critical for new technology businesses because they provide a source of money that allows them to continue to engage extensively in R&D. In this regard, by differentiating biotech and non-biotech enterprises, this study compares and analyzes the association between age at IPO and sustainable future performance. Additionally, an examination of the association among IPO age, SG&A stickiness, and future sustainable performance is also carried out. Anderson et al. (2007) discovered that during periods of declining sales, an increase in the SG&A to sales ratio had a favorable connection with future profit. SG&A stickiness at periods of declining sales can be linked to positive future prospects, thereby speeding up IPOs (Lee, 2021). From the perspective of their findings, this study link SG&A signaling to post-IPO sustainable performance. The remainder of this paper is laid out as follows. The theoretical background, the literature review, and the development of the hypotheses are all covered in Section 2. Section 3 discusses research samples and methodology. Section 4 addresses descriptive statistics, correlations, and regression results. Section 5 discusses the findings. The final section includes a summary and conclusions.

THEORETICAL BACKGROUND, LITERATURE REVIEW, AND HYPOTHESIS DEVELOPMENT

As going public not only allows companies to raise funds, but also increase public awareness, the performance of a company following an IPO has piqued people's interest. Studies on the association between IPO age and post-IPO success have found varying results. A company's performance after being listed may vary depending on the company's age. Some studies have shown that young companies' initial public offerings (IPOs) resulted in disappointing post-IPO performance (Jain et al., 2008; Ritter, 1991). According to some research, older companies have a low chance of failure and a high likelihood of success (Hensler et al., 1997; Clark, 2002; Loughran & Ritter, 2004; Engelen & van Essen, 2010; Wagner & Cockburn, 2010). Hensler et al. (1997) argue that as the company gets older, the probability of insolvency after being listed decreases. Clark (2002) proves that older firms

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have better 3-year post-IPO stock returns. Wagner & Cockburn (2010) find that an additional year of pre-IPO existence enhances the chances of a company surviving by about 3%.

An initial public offering (IPO) can assist emerging companies in obtaining financial resources and overcoming the risk of being new (Certo et al., 2001; Singh et al., 1986). Therefore, in contrast to the widely held belief that older companies perform well after their IPOs, new evidence has recently emerged that contradicts this belief. According to several research, the younger a firm is at the time of its IPO, the better its post-IPO success would be (Andriansyah & Messinis, 2016; Banerjee et al., 2016; Schultz & Zaman, 2001). Andriansyah & Messinis (2016) show that the age of a company has a negative impact on its financial performance, such as profit margin. According to Banerjee et al. (2016), Companies that have achieved an IPO first will have higher investment, more growth and improved profitability after being listed. They also argue that going public as soon as possible is ideal for firms with high growth potential. Younger IPO companies can usually outperform by gaining first-mover advantage (Schultz & Zaman, 2001).

Also, the performance of a company after its IPO might vary depending on the industry. The long-term performance of public offerings is heavily influenced by the industry (Ritter, 1991). As a result of the differing mechanisms in the technology and non-technology industries, the performance after the IPO may provide considerably different results. For the technology and non-technology company samples, the correlation between IPO age and post IPO performance is significant (Clark, 2002). Clark (2002) finds that younger technology companies show better post IPO performance. However, for non-tech companies, the older the IPO age, the better the post IPO stock performance.

Meanwhile, R&D expenditures are eventually included in selling, general, and administrative (SG&A) expenses unless they are capitalized. In this context, the cost effectiveness of SG&A involving R&D spending is frequently examined. While there are some unfavorable viewpoints on SG&A spending linked to agency problem (Chen et al. 2012; Ang et al., 2000; Lev & Thiagarajan, 1993; Baumgarten et al. 2010), there are also some positive viewpoints. Qian et al. (2012) confirm that the market evaluates R&D spending differently depending on the industry. They claim that high-tech companies investing more in R&D than the market expects right before a capital raise is a signal from management, whereas non-high-tech companies' overinvestment in R&D prior to capital increases is deemed inefficient investment based on managerial overconfidence.

SG&A costs have also been shown to have favorable effects in other studies. (Anderson et al., 2007; Baumgarten et al., 2010; Banker et al., 2011). Baumgarten et al. (2010) show that while SG&A expenses have disadvantages, they also offer benefits up to a point. Anderson et al. (2007) argue that the company's future performance improves as SG&A spending grow. Homburg & Nasev (2008) suggest that it may have a positive influence on future profit, although an increase in SG&A expenses may have a negative impact on current profit.

As with R&D expenditures, SG&A expenses which can include R&D spending have a different impact depending on the industry (Banker et al., 2011). SG&A spending, according to Banker et al. (2011), has a beneficial influence on a company's return on investment for up to seven years after the expenditure, albeit industry variances exist. Intangible investment attributes can help SG&A spending have a favorable influence on future performance (Chen et al. 2012; Enache & Srivastava 2017; Banker et al. 2019).

The degree to which costs reduce when sales decrease rather than increase when sales increase is referred to be SG&A stickiness. The SG&A stickiness is known to be affected by managerial opportunistic incentives for the sake of managers' own interests or agency conflict between managers and shareholders (Chen et al., 2012; Dierynck et al., 2012; Kama & Weiss, 2013). They argue that an increase in the SG&A to sales ratio indicates ineffective cost

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control management. On the other hand, the SG&A stickiness can be driven by managerial cost adjustments. Over-adjusting costs may be avoided by management (Subramaniam & Weidenmier, 2003; Banker & Chen, 2006; Calleja et al., 2006). Or the cost stickiness increases as the manager's confidence in future profitability grows (Anderson et al., 2003; Chen et al., 2013; Banker et al., 2014). Anderson et al. (2003) also show that SG&A stickiness signal could indicate that managers expect future sales to increase.

Based on these prior research, this study investigates the impact of a company's age at IPO on its sustainable future performance, and whether it has a different impact on a biotech company's sustainable future performance. Furthermore, this study also examines whether the correlation between a company's age at IPO and its sustainable future performance can be altered, if the SG&A stickiness signal is present. For the entire business, age at IPO may have a positive relationship with a company's future performance, as previous investigations had acquired the majority opinion. However, a certain industry (biotech)'s characteristics or SG&A stickiness signal may have a different effect on this correlation. Therefore, the following hypotheses are established in this study.

Hypothesis 1: *Age at IPO is positively correlated with sustainable future performance.*

Hypothesis 1.1: *In biotech companies, the relationship between age at IPO and sustainable future performance is different than in other industries.*

Hypothesis 1.2: *The SG&A stickiness signaling will have an impact on the association between IPO age and sustainable future performance.*

RESEARCH DESIGN

Sample Selection

This study makes use of financial data from KIS-DATA, a database developed by Korea Investors Service, Inc., that was made available between 2001 and 2019. Only non-financial companies listed on the Korean Stock Exchange (KSE) with a fiscal year ending on December 31 are included in the sample.

To mitigate the impact of outliers, the top and bottom 1% of all continuous variables are winsorized, the study includes 24,016 firm-year observations. Biopharma or biotech companies account for 7.69 percent of the sample companies. The sample's industry distribution is seen in Table 1.

Table 1
SAMPLE DISTRIBUTION BY INDUSTRY

Industry	Number of Firms Years	%
Agriculture / Fishing / Forestry / Mining	118	0.40
Manufacturing	17,593	58.91
Electricity / Environment / Water supply	314	1.05
Construction	925	3.10
Retail / Wholesale	2,439	8.17
Transportation / Warehousing	500	1.67
Lodging / Restaurants	75	0.25
Broadcasting / Communication / Publication	2,286	7.66

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Computer / Information / Medical	1,020	3.42
Leasing / Real Estate / Renting	71	0.24
Biopharma/Biotech	2,296	7.69
Others	2,225	7.45
Total	29,862	100

Regression Model and Variable Measurement

For the study of Hypotheses 1, the OLS model is utilized using sustainable future performance as the dependent variable. The following is the regression model.

$$PERSROA_{i,t+1} = \alpha + \beta_1 AGE_{i.t} + \sum \alpha_j X_j + \sum \alpha_k IND_k + \sum \alpha_l YEAR_l + \varepsilon_{i,t} \quad (1)$$

Where $PERSROA_{i,t+1}$ denotes the persistence of Return on Asset (ROA), which is a proxy for sustainable future performance. The analysis uses the following regression model to get PERSROA and use the coefficient β_1 as the measure of ROA persistence. By dividing net income by total assets, the return on assets (ROA) is computed.

$$ROA_{i,t+1} = \alpha + \beta_1 ROA_{i.t} + \varepsilon_{i,t} \quad (2)$$

$AGE_{i,t}$ is the natural logarithm of age at IPO in order to normalize the distribution and eliminate the impact of existing outliers. For Age at IPO, the year of the IPO is subtracted from the year of the company's establishment.

$X_{i.t}$ is the other factor influencing firms' performance. We first include leverage, which is calculated by dividing total liabilities by total assets. Size is also controlled. Size is measured as the natural log of total assets. Investment, which is calculated by subtracting land and CIP (construction in progress) from fixed assets, is controlled. Also included are Sales growth, changes in sales = $(sales_t - sales_{t-1})/sales_{t-1}$, and OCF, operating cash flows divided by assets. YEAR is the year dummy variable, and IND is the industrial sector dummy variable, specified by the one-digit Korea Standard Industry Code.

The following regression model is used to examine Hypotheses 1.1.

$$PERSROA_{i,t+1} = \alpha + \beta_1 AGE_{i.t} + \beta_2 AGEbio_{i.t} + \sum \alpha_j X_j + \sum \alpha_k IND_k + \sum \alpha_l YEAR_l + \varepsilon_{i,t} \quad (3)$$

AGEbio is age at IPO for biotech firms.

To test Hypotheses 1.2., the following model is used.

$$PERSROA_{i,t+1} = \alpha + \beta_1 AGE_{i.t} + \beta_2 AGESGA_{i.t} + \sum \alpha_j X_j + \sum \alpha_k IND_k + \sum \alpha_l YEAR_l + \varepsilon_{i,t} \quad (4)$$

AGESGA is the interaction between age at IPO and SG&A stickiness signal. SG&A stickiness signal is a dummy variable which is coded as 1 if spending on SG&A expenses increases despite a drop in sales, and 0 otherwise.

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EMPIRICAL RESULTS

Descriptive Statistics and Correlations

The descriptive statistics for the main variables are shown in Table 2. The mean (median) for PERSROA is 0.0124 (0.0126). The mean (median) for age is 2.5193 (2.5650). The mean (median) for *AGEbio* is 0.2005 (0). The mean (median) for *AGESGA* is 0.6925 (0). The means (medians) for LEV, SIZE, INV, GROW, and OCF are 0.4174 (0.4149), 18.5631 (18.3706), 0.1665 (0.1365), 0.1249 (0.0364), and 0.0507 (0.0490), respectively.

Table 2
DESCRIPTIVE STATISTICS

Variables	Mean	StdDev	Median	Q1	Q3
PERSROA	0.0124	0.0018	0.0126	0.0122	0.0132
AGE	2.5193	0.7202	2.5650	2.0794	2.9957
AGEbio	0.2005	0.7418	0	0	0
AGESGA	0.6925	1.1781	0	0	1.6094
LEV	0.4174	0.2116	0.4149	0.2481	0.5698
SIZE	18.5631	1.4818	18.3706	17.5760	19.3288
INV	0.1665	0.1358	0.1365	0.0611	0.2396
GROW	0.1249	0.5947	0.0364	-0.0658	0.1926
OCF	0.0507	0.1038	0.0490	-0.0017	0.1059

Note:
PERSROA : persistence of Return on Asset
AGE : the natural logarithm of Age at IPO; Age at IPO is defined as the year of the IPO minus the year of founding
AGEbio : the interaction between *AGE* and biotech dummy variable
AGESGA : the interaction between *AGE* and SG&A stickiness signal
LEV : total liabilities divided by total assets
SIZE : natural logarithm of total assets
INV : investment, (fixed assets-land-cip) is divided by total assets
GROW : sales growth, the changes in sales = $(sales_t - sales_{t-1})/sales_{t-1}$
OCF : operating cash flow divided by total assets

Table 3 displays the pairwise correlations. Significant positive correlations are observed between sustainable future performance and age at IPO. For biotech businesses, there are significant negative correlations between sustainable future performance and age at IPO, as well as between sustainable future performance and age at IPO for companies that demonstrate SG&A stickiness signal when sales decline. The variance inflation factors (VIFs) for all variables less than 10 and mean VIFs of 1.11 are computed to test for multi-collinearity. There are no issues with multi-collinearity.

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Table 3
CORRELATIONS

Variable	PERSROA	AGE	AGEbio	AGESGA	LEV	SIZE	INV	GROW	OCF
PERSROA	1.0000								
AGE	0.0791*	1.0000							
AGEbio	-0.0490*	0.1596*	1.0000						
AGESGA	-0.1808*	0.1448*	-0.0212	1.0000					
LEV	-0.2375*	0.0733*	-0.0556*	-0.0307*	1.0000				
SIZE	0.1141*	0.1282*	-0.0938*	-0.0089	0.0682*	1.0000			
INV	0.0150*	0.0618*	0.0098	-0.0272*	0.2889*	0.0973*	1.0000		
GROW	0.1085*	-0.0434*	0.0142*	-0.3499*	0.0539*	0.0091	0.0184*	1.0000	
OCF	0.5258*	0.0098	-0.0658*	-0.1298*	-0.1187*	0.0583*	0.1414*	0.0744*	1.0000

Note:
See Table 2 for variable definitions. * $p < 0.05$

Regression Results

Table 4 illustrates the findings of the OLS regression for the relationship between sustainable future performance and age at IPO. The results of Model 1 support the hypothesis 1. The findings suggest that age at IPO has a strong positive relationship with future performance ($p < 0.01$).

On the other hand, the results in Model 2 illustrate that the correlation between sustainable future performance and age at IPO is significantly negative. The findings back up Hypothesis 1.1 and show differences in age at IPO and post-IPO performance between industries, as has been shown in earlier studies. The results demonstrate that age at IPO for biotech companies is significantly negatively related with sustainable future performance ($p < 0.1$).

As can be seen in the results in Model 3, sustainable future performance and age at IPO for the companies with SG&A stickiness signaling are significantly negatively correlated. The findings supports Hypothesis 1.3, "*SG&A stickiness signaling will have an impact on the association between IPO age and sustainable future performance*."

The control variables, SIZE, GROW, and OCF – are significantly positively associated with sustainable future performance in all models. LEV and INV are significantly negatively with sustainable future performance in all models. Clustered robust (year) regression results in Table 5 remained consistent with the OLS results, for the main explanatory variables.

Table 4
REGRESSION RESULTS: SUSTAINABLE FUTURE PERFORMANCE - AGE AT IPO

Variables	Expected Sign	Dependent Variable: Sustainable Future Performance		
		Model 1	Model 2	Model 3
Constant	?	0.0098 *** (55.13)	0.0098 *** (55.26)	0.0100 *** (56.72)
AGE	+	**0.0001 *** (12.44)**	**0.0002 *** (13.26)**	**0.0002 *** (15.60)**
AGEbio	-	-	**-0.0001 *** (-5.69)**	-
AGESGA	-	-	-	-0.0002 *** **(-22.46)**
LEV	-	-0.0018 *** (-41.68)	-0.0018 *** (-41.99)	-0.0018 *** (-42.63)

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SIZE	+/-	0.0001 *** (21.07)	0.0001 *** (20.59)	0.0001 *** (20.53)
INV	+/-	-0.0006 *** (-8.95)	-0.0006 *** (-8.92)	-0.0006 *** (-9.04)
GROW	+	0.0003*** (17.90)	0.0003*** (18.05)	0.0001*** (9.50)
OCF	+	0.0080 *** (97.90)	0.0080 *** (96.94)	0.0078 *** (95.26)
Industry dummies		Included		
Year dummies		Included		
F value		460.41 ***	448.99 ***	469.18 ***
Adjusted R^2		0.3500	0.3507	0.3608
N		29,862	29,862	29,862

Note:
See Table 2 for variable definitions.
t-values are shown in parentheses. * p < 0.10 ** p < 0.05 *** p < 0.01

Table 5
CLUSTERED ROBUST REGRESSION RESULTS: SUSTAINABLE FUTURE PERFORMANCE - AGE AT IPO

Variables	Expected Sign	Dependent Variable: *Sustainable Future Performance*		
		Model 1	Model 2	Model 3
Constant	?	0.0098 *** (19.39)	0.0098 *** (19.44)	0.0100 *** (19.73)
AGE	+	**0.0001 *** (9.18)**	**0.0002 *** (9.63)**	**0.0002 *** (14.38)**
AGEbio	-	-	**-0.0001 *** (-6.88)**	-
AGESGA	-	-	-	-0.0002 *** **(-16.89)**
LEV	-	-0.0018 *** (-24.00)	-0.0018 *** (-24.71)	-0.0018 *** (-24.60)
SIZE	+/-	0.0001 *** (5.72)	0.0001 *** (5.64)	0.0001 *** (5.69)
INV	+/-	-0.0006 *** (-7.89)	-0.0006 *** (-7.77)	-0.0006 *** (-7.83)
GROW	+	0.0003*** (2.80)	0.0003*** (2.81)	0.0001* (1.74)
OCF	+	0.0080 *** (33.55)	0.0080 *** (33.95)	0.0078 *** (33.99)
Industry dummies		Included		
Year dummies		Included		
Adjusted R^2		*0.3508*	*0.3515*	*0.3616*
N		*29,862*	*29,862*	*29,862*

Note.
See Table 2 for variable definitions.
t-values are shown in parentheses. * p < 0.10 ** p < 0.05 *** p < 0.01

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DISCUSSION

As indicated in the regression analysis findings, all of the hypotheses stated in this study are found to be validated after examination. First, in line with the findings of numerous prior research, according to an analysis of the entire sector, companies that take longer to IPO do better in the long run. The results could be related to the fact that established companies have less uncertainty about future success and can readily eliminate information asymmetry prior to the IPO, as van der Goot et al. (2009) indicate. The findings are also consistent with prior research findings that older businesses have a low risk of failure and a high possibility of success (Hensler et al., 1997; Clark, 2002; Loughran & Ritter, 2004; Engelen & van Essen, 2010; Wagner & Cockburn, 2010).

On the other hand, the findings reveal industry-specific variations in IPO age and post-IPO success. Related previous studies have shown that young technology companies have shown better performance after IPO. The results illustrate that the age of a biotech company when it goes public is strongly correlated with its sustainable future performance. They clearly show that quicker IPOs perform better following IPOs in high tech - in this case, the biotech business. This finding backs with prior research that suggests a company's performance following an IPO varies by industry (Ritter, 1991; Clark, 2002). These findings also support prior research that suggests a company's quick IPO might be beneficial to post-IPO performance in some ways (Andriansyah & Messinis, 2016; Banerjee et al., 2016; Schultz & Zaman, 2001).

Another outcome of the investigation is consistent with previous studies that asserted the positive aspect of SG&A stickiness signaling (Anderson et al., 2003; Chen et al., 2013; Banker et al., 2014). The findings demonstrate that companies with SG&A stickiness signaling have a significant negative association between sustainable future performance and age at IPO. In other words, the younger the IPO age, the better the long-term future performance for firms with SG&A stickiness signaling. The SG&A stickiness signaling might imply that management anticipate more sales in the future, as Anderson et al. (2003) argue. In general, while a hasty IPO in a less mature state may have a negative impact on the company's post-IPO performance, in the case of a company with an SG&A stickiness signal, a quick IPO is ultimately linked with confidence in the company's future profitability growing, resulting in good performance.

CONCLUSIONS

An IPO for unlisted firms and a capital increase for existing listed companies are both routinely utilized to raise the necessary funds. Particularly because a private company's IPO solves its financial dilemma, many private companies try to accelerate the IPO. According to Gill & Walz (2016), companies' initial public offerings (IPOs) represent a significant strategic turning point.

Emerging enterprises can overcome the danger of being new in addition to obtaining financial resources (Certo et al., 2001; Singh et al., 1986). As a result, there have been studies that show how effective IPO is. By establishing first-mover advantage, IPO companies may usually outperform (Schultz & Zaman, 2001; Andriansyah & Messinis, 2016; Banerjee et al., 2016).

Nevertheless, numerous prior studies have shown that when immature companies hurry to IPO, their post-IPO performance is dismal (Ritter, 1991; Hensler et al., 1997; Clark, 2002; Loughran & Ritter, 2004; Jain et al., 2008; Engelen & van Essen, 2010; Wagner & Cockburn, 2010).

However, rather than assessing all industries at once, it is vital to study the features of each industry and examine them independently. Pagano & Zingales (1998) find that emerging

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technology companies benefit from IPOs because they provide a source of funding to help them increase their market entry effectiveness while continuing to invest in R&D. R&D investment is undeniably important for biotech businesses in the high tech industry. The amount classified as SG&A if the amount of R&D expenditure is not capitalized can be huge when compared to other industries.

Based on the findings of prior research, several hypotheses were developed and tested in this study. First, the assertion made in a number of prior research that IPO age is positively connected with post-IPO success was re-verified using sustainable future performance variable.

However, even if the first hypothesis above is applicable to the industry as a whole, a single industry such as the bio industry may exhibit different aspects due to its specificity. The second goal of this study was to see if the relationship between age at IPO and long-term future success in biotech companies differed from that in other industries. This was proven by the findings of the investigation. Sustainable future performance of biotech companies was significantly negatively associated with age at IPO. The results are in line with previous studies that have focused on the benefits of quick IPO for high-tech companies. (Ritter, 1991; Pagano & Zingales, 1998; Clark, 2002).

Third, if an IPO's performance varies by industry, the IPO's success may be influenced by another facet of the business. As another feature, this study used SG&A stickiness signaling. In the same way that earlier research have shown that SG&A stickiness signaling has favorable implications for future performance (Anderson et al., 2003; Chen et al., 2013; Banker et al., 2014), this study found that companies with SG&A stickiness signaling have sustainable future performance, even when their IPO is swift.

There is a limitation in that the study did not explore several things in more depth, however, in conclusion, the findings of the study imply that judging an IPO only on the basis of its age is biased, and that it should be examined in light of industry sectors or company characteristics.

Future study can be conducted by correlating the time to IPO with other variables, such as the SG&A stickiness motive, and so on.

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