

Factors Affecting the Initial Return of Initial Public Offerings (IPOs) and IPO Underpricing in the Colombo Stock Exchange

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Abstract

The initial public offering is an important milestone for a company; however, this can be also turned into a reason which causes great wealth loss as well. The purpose of this study is to identify the factors affecting IPO initial return and examine the level of underpricing that prevails in the Colombo Stock Exchange (CSE). The study considers 68 IPOs from 2006 to 2018. The selected factors for the study are ASPI Return, Sector Price/Earnings ratio, Age, Earnings Per Share, Debt Ratio, Net Asset Value, Return on Asset, Price/Earnings Ratio, Debt/Equity Ratio, Offer Price, and Over Subscription Rate. Multiple regression results reveal that ASPI return and over-subscription rate are positively influenced by market-adjusted initial return (MAIR) and offer price is negatively affected. Underpricing analysis revealed that the MAIR and the prevailing level of underpricing is raw initial return equal to 14% and market-adjusted return is 18%. The beverage, food, and tobacco sector, Banking, Finance, and Insurance sector, and diversified holding sector are identified as highly underpriced sectors of CSE. It is recommended that Investors must consider capital market variables and IPO variables for IPO investment decisions regardless of the financial indicators of the company.

Keywords: *Initial public offering, Colombo stock exchange, Underpricing*

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Introduction

Initial Public Offering is generally perceived as an important milestone of a company's lifecycle. It is the process of raising investment capital by a private company or a corporation offering stocks for the first time to the public. IPO allows the firm to access the public equity markets for additional capital necessary to fund future growth. Meanwhile, IPO underpricing has drawn a lot of attention in the recent past research studies undertaken. It is an event that shares of a company go public, and are offered to investors at a price considerably below the price at which they are subsequently traded in the stock market (Jenkinson & Ljungqvist, 2001). The primary adverse consequence of underpricing is the wealth loss faced by the owners due to not selling the shares at a higher price at the Initial Offering. This anomaly is also known as money left on the table (Ritter, 2015). Investment banks also play a major role in IPO underpricing. Investment banks have the incentive of providing high offer prices to the issuer, leading to less underpricing and less money on the table which in return helps the bank grow their market shares in later periods (Fung, Gul, & Hadhkrishnan, 2014). However, to gain higher fees investment banks tend purposefully underprice as well. All IPO issues are governed by the Securities and Exchange Commission of Sri Lanka (SEC) which is the regulating body of stock market activities.

Even though there are lots of research studies conducted for developed markets, it is very important to carry out research in developing markets as well in order to gain a clear idea of IPO underpricing anomaly and to verify the contradictory views on the market. and this contributes to current literature on IPOs, by evaluating the immediate return of IPOs, factors that affect the initial return, and the sectors that prevail high levels of underpricing providing investors with meaningful insights on to base their investment decisions.

In the context of developing markets like Sri Lanka, events such as IPOs can significantly be affected market trends making it impossible to conclude investors on future prices. As a result, there are many research studies conducted in this area trying to interpret market behavior and its impacts on future performance (Wijethunga, 2016; Samarakoon, 2010). However, it is identified that past studies have not captured the time lag between the end date of subscribing period and the first trading day and account for the opportunity cost of the investors and other market changes. In fact, selecting a particular sector to invest in is also problematic. Hence in this study, a thorough analysis will be carried out to identify highly underpriced sectors, and determine the primary factors affecting the initial return and the level of underpricing prevailing in the Colombo Stock Exchange after adjusting for market changes. Hence the objectives are determined as,

- 1) Investigating the factors affecting IPO Raw Initial Return
- 2) Examining the factors affecting on IPO Market Adjusted Initial Return
- 3) Inspecting the level of underpricing that occurs in the CSE Scope

This study contributes to the limited literature available in Sri Lanka on Initial Public Offerings and related factors. Hence the paper is organized as related literature, methodology, results, discussion, recommendation, and examining areas for future research.

Literature Review

Theoretical View

Over the years various theories were constructed by researchers in different periods describing the underpricing anomaly. They are the Winners curse theory or Adverse selection theory, random walk hypothesis, prospectus theory, The Principal-Agent Theory, Lawsuit avoidance theory,



Insider retention theory, and Signaling effect (Rock, 1986; Fama & F, 1965; Kahneman & Tversky, 1979; Baron, 1952; Baron, 1982; Ibbotson, 1975; Logue, 1973; Willenborg, 1999; Karlis, 2000; Ellen, 2004). According to the above theories, it has been found that higher the size of the investment bank, higher the demand for the IPO (signaling effect of investment banks), higher the percentage of shares owned by the insiders leads to an increase in the demand of the share price resulting higher level of underpricing (insider retention theory). According to the Lawsuit avoidance hypothesis, firms that are subjected to higher litigation risks, underprice their IPO issues more to reduce the probability of being sued regarding the IPO.

Empirical View

According to the empirical evidence on IPO underpricing and aftermarket performance, Alberto Dell'Acqua (2015) has identified a significant relationship based on the two tests of the Row Initial Return (RIR) method and the Market Adjusted Initial Return (MAIR) method. Kanja (2014) has suggested that IPO offer is an important determinant of initial return based on the study undertaken in the Nairobi securities exchange. As the factors affecting IPO initial return and underpricing in the Sri Lankan context, Wijethunga (2016) has revealed that IPOs in the Sri Lankan market are underpriced by 68% on Initial Return (IR) and 72% on Market Adjusted Average Abnormal Returns (MAAAR). It was further observed that within seven days MAAAR is higher than one-month and three-month MAAAR. Moreover, it was revealed a higher percentage of IPO underpricing in post-war periods in CSE. Samarakoon (2010) identified that Sri Lankan IPOs are underpriced by 34% and small issues are more underpriced than large issues. Furthermore, he has stated that Investor sentiment or opinion is positively related to underpricing and affects small and large issues similarly.

Bansal and Khanna (2012) revealed that the Firm's age, IPO years, book-building pricing mechanism, ownership Structure, issue size, & market capitalization significantly affect the underpricing and the average level of underpricing was found to be 50%. Based on research conducted in Indonesia Stock Exchange, Mahatidana and Yunita (2017) concluded that underwriter and auditor reputation processes have a negative significant effect on the level of underpricing and firm age, financial leverage, Return on Assets (ROA), Net assets value (NAV) and ownership concentration does not influence the level of underpricing.

Herawati (2017) has considered ROA, Current ratio, Debt to equity ratio (D/E), Total asset turnover, and Earnings per share (EPS) as the financial factors and underwriter reputation, auditor reputation, firm age, and firm size as the non-financial factors affecting on initial return, concluding that non-financial factors do not influence initial returns. Betani and Asghari (2014) have proved that the P/E ratio has a significant influence on the offer price.

With all the information gathered through theoretical and empirical views, this study improves substantially upon the analysis of the level of underpricing in each industry sector while examining the factors affecting initial return.

Methodology

The study falls under the descriptive research category as it explains the factors that influence an IPO's initial return. The population of the study is identified as all the IPOs occurred during the past years in Colombo Stock Exchange. For this study, equity IPOs occurred in the first quarter from 2006 to 2018 are considered to cover all the sectors in the Colombo Stock Exchange. Relevant data are obtained from secondary data sources precisely the CSE official website, annual reports of the companies, prospectors of IPOs, data CD issued by the

Colombo Stock Exchange, and IPO application forms of the companies.

According to the literature review, there are three types of independent variables tested to be influenced by Raw Initial Return (RIR) and Market Adjusted Initial Return (MAIR). They are Capital market variables, Entity variables, and IPO variables (Kanja, 2014; Wijethunga, 2016; Mahatidana & Yunita, 2017; Betani & Asghari, 2014; Bansal & Khanna, 2012). Based on this evidence, hypotheses are developed as well as the conceptual framework is designed as follows.

Developed Hypothesis

H₁ = Assuming that all other factors are controlled, there is a significant relationship

between age, EPS, Debt ratio, NAV, ROA, P/E ratio, D/E ratio and RIR

H₂ = Assuming that all other factors are controlled, there is a significant relationship between age, EPS, Debt ratio, NAV, ROA, P/E ratio, D/E ratio and MAIR

H₃ = Assuming that all other factors are controlled, there is a significant relationship between offer price, oversubscription rate, ASPI return, sector P/E and RIR

H₄ = Assuming that all other factors are controlled, there is no significant relationship between offer price, oversubscription rate, ASPI return, sector P/E and MAIR

Conceptual Framework

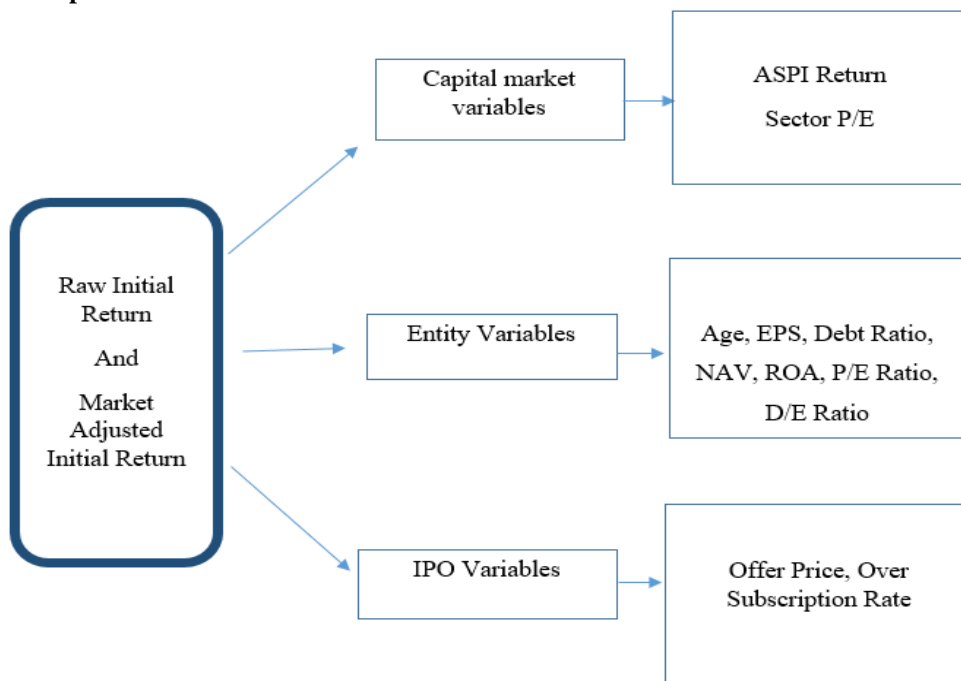


Figure 01: The conceptual framework

Measurement of Variables

Raw Initial Return (RIR)

Raw initial return was calculated using the below equation

$$R_i = \frac{P_{i,1} - P_{i,0}}{P_{i,0}} * 100 \quad (1)$$

R_i is the raw initial return of the security, $P_{i,1}$ is the closing price of the share on the first trading day and $P_{i,0}$ is the issues price of the stock.

$$MR_t = \frac{M_1 - M_0}{M_0} * 100 \quad (2)$$

MR is the market return, M_1 is the closing price of the ASPI on the first trading day and M_0 is the closing price of the ASPI at the end date of the subscribing period.

Market-adjusted Initial Return (MAIR)

$$MAIR_i = R_i - MR \quad (3)$$

Market-adjusted initial return is calculated to account for the changes that occurred between the time lag of the end date of subscribing period and the first trading date. MAIR was calculated as follows.

Subsequently, MAIR was calculated by subtracting the market return from the raw initial return.

Table 01: Measurement of variables

Independent Variable	Description
All Share Price Index Return (ASPI Return)	One-year ASPI return was calculated using ASPI return at IPO date and ASPI return of one year before the IPO date
Sector Price Earning (Sector P/E)	Monthly sector P/E value was taken for each company. i.e., the month of the IPO occurred.
Age	Age of each company in years at the point of IPO issued
Earnings per Share (EPS)	Calculated by dividing the earnings of each company by the number of shares listed.
Debt Ratio	Calculated by dividing each company's assets from debt
Net Assets Value (NAV)	Calculated for each company by subtracting liabilities from assets
Return on Assets (ROA)	ROA is used as an overall measurement of company profitability
Price Earning (P/E ratio)	P/E ratio measures the current share price relative to its earnings
Debt to Equity (D/E ratio)	Calculated by dividing debt from the equity of the company
Offer price	Price offered by each IPO Company
Oversubscription rate	The number of times shares were oversubscribed.

Source: Developed by the researcher

E-views is used to analyze the data set of the study and as the first step, regression analysis is performed for both dependent variables separately to identify the factors that are significantly affected by RIR and MAIR.

Covariance analysis is performed to identify the relationship between the variables and to measure the magnitude of the association between the variables identified. Granger causality analysis is performed to identify the

predictive power of the variables in other words it confirms whether one variable can be used to predict the other variable (predictive power of the variables). This is a two-way analysis. It tests whether dependent variables can predict the independent variables and whether the independent variables can predict the dependent variables. The level of underpricing that prevails in the Colombo Stock Exchange is measured by calculating the underpricing before and after removing the outliers from the model. Finally, sector-wise underpricing analysis is

carried out to identify highly underpriced sectors in the Colombo Stock Exchange.

Findings of the Study

Data analysis of the study consists of two main stages: analysis of the factors affecting RIR, MAIR, and underpricing analysis. Factors that are used to examine the effect on RIR and MAIR are analyzed under three main areas as Capital market variables, entity variables, and IPO variables.

Table 02: Regression results applying Raw Initial Return (RIR) and Market Adjusted Initial Return (MAIR)

Dependent Variables: RIR and MAIR				
Method: Least Squares				
Variable	RIR		MAIR	
	Coefficient	Prob.	Coefficient	Prob.
Coefficient	0.182	0.281		0.431
Offer Price (OFFERP)	-0.009	0.154	-0.013	0.0561*
All Share Price Index Return (ASPIR)	0.258	0.0209**	0.213	0.0687*
Age	-0.001	0.895	-0.002	0.741
Debt Ratio (DR)	0.055	0.765	0.151	0.440
Debt Equity Ratio (D/E)	0.012	0.412	0.017	0.270
Return on Assets (ROA)	0.000	0.984	0.004	0.543
Sector P/E (SECP/E)	-0.002	0.475	-0.003	0.373
P/E Ratio	0.000	0.431	0.000	0.412
Net Assets Value (NAV)	N/R	N/R	0.001	0.265
Oversubscription Rate (OSR)	0.005	0.152	0.006	0.0918*
Earnings Per Share (EPS)	-0.007	0.506	-0.028	0.157
R-squared		0.417		0.427
Adjusted R-squared		0.259		0.252
F-statistic		2.644		2.441
Prob(F-statistic)		0.015**		0.022**

**Variables significant under 95% confidence level, * Significant variables under 90% confidence level

Source: Survey Data

According to the Multiple regression analysis performed using RIR in table 02, results

indicate that only ASPI return is significant at 95% confidence level and all the other



variables are being insignificant. NAV is removed from the model due to the existence of multicollinearity. The R squared value represents the explanatory power of the model and results outline a value of 41.7% indicating that 41.7% of the variation of the initial return is explained by the explanatory variables used in the model (Offer Price, ASPI return, age, debt ratio, D/E ratio, ROA, sector P/E, P/E ratio, oversubscription rate, EPS) and adjusted R squared value is 26% meaning all the variables considered in the model together explains the IPO underpricing approximately by 26%. Further the Results indicate that F statistics is significant under 95% confidence level. Therefore, the overall model is significant, and all the independent variables are jointly influenced on the dependent variable, or in other words, the overall model is fitted.

According to the results based on MAIR in table 02, ASPI Return, and the oversubscription rate are significant at a 90% confidence level. All the other variables in the model are insignificant (age, debt ratio, debt to equity ratio, ROA, sector P/E, P/E ratio, NAV, EPS). The R square value indicates that the independent variables cover the dependent variable by 42%. F statistic is significant under the 95% confidence level proving the overall fitness of the variables to the model. Further, it confirms that all the independent variables are jointly influenced on the dependent variable.

Model Developed based on RIR

$$\text{RIR} = 0.1766 - 0.009\text{OFFERP} + 0.263\text{ASPIR} - 0.0016\text{AGE} + 0.055\text{DR} + 0.012 \text{ D/E} + 0.001\text{ROA} - 0.0024\text{SECP/E} - 0.000\text{PE} + 0.0004\text{NAV} + 0.0048\text{OSR} - 0.018\text{EPS}$$

Based on the developed model, as all considered variables are at zero level exogenous IPO, RIR will be 17%. Moreover, the most influencing variable of the model is ASPI Return. When ASPI return is increased by 1% RIR will be increased by 26%.

The Model Developed based on MAIR

$$\text{MAIR} = 0.140553 - 0.012\text{OFFERP} + 0.213\text{ASPIR} - 0.002\text{AGE} + 0.151\text{DR} + 0.0166\text{D/E} + 0.004\text{ROA} - 0.003\text{SECP/E} - 0.000\text{P/E} + 0.001\text{NAV} + 0.006\text{OSR} - 0.028\text{EPS}$$

When all the considered variables are at zero level, the IPO market-adjusted initial return is 14%. Furthermore, when ASPI Return is increased by 1%, the return is increased by 21% and when the debt ratio is increased by 1%, the return is increased by 15%. These two variables are the most influencing variables as per the model.

According to the developed two models, offer price and initial return are negatively related. ASPI return is also positively related to the initial return, which shows that when the market is performing well there is a high probability to generate a higher return since the ASPI is the most significant variable out of all the variables in the model. Since the company variables do not affect the initial return even a financially strong company may be overpriced on the first trading day and on the other hand, even a company is not highly financially performing (ROA, Debt Ratio, NAV, debt to equity ratio) company may generate higher initial return due to capital market favorability and IPO related factors. The oversubscription rate is also positively related to the initial return meaning when there is a higher demand for the shares inevitably initial return may go up. The age of the IPO Company does not affect the initial return of the company even a company that is in business for a small number of years may attain a higher return.

Diagnostic Tests of Regression Analysis

According to the Durbin-Watson test statistic received as 2.037, it was proven that the model is free from serial correlation. As per the results of the correlogram of residuals test, all the probability values are insignificant, proving that there is no serial correlation exists in the data set. Even under

the second test of the serial correlation, the Breusch-Godfrey Serial Correlation LM Test due to the insignificant Chi-Square value of 0.7266, no serial correlation is accepted. The Breusch-Pagan-Godfrey test is used to examine the presence of Heteroscedasticity in the model, and test results outline that there is no Heteroscedasticity due to the insignificant Chi-Square value of 0.3571. According to multicollinearity test results, the highest considerable percentages (78%) of multicollinearity is shown between EPS and NAV, and the highest P value is given in NAV. Therefore, that variable is eliminated from regression analysis.

Underpricing Analysis

Underpricing occurs when the first-day trading price is high than the offer price. Some companies do this purposefully so their company shares may not be under subscribed. Hence underpricing can be intentional as well as unintentional. Below box plot graphs show the dispersion of underpricing occurred within the selected period. Before adjusting for outliers, level of underpricing is RIR 22% and MAIR 18%.

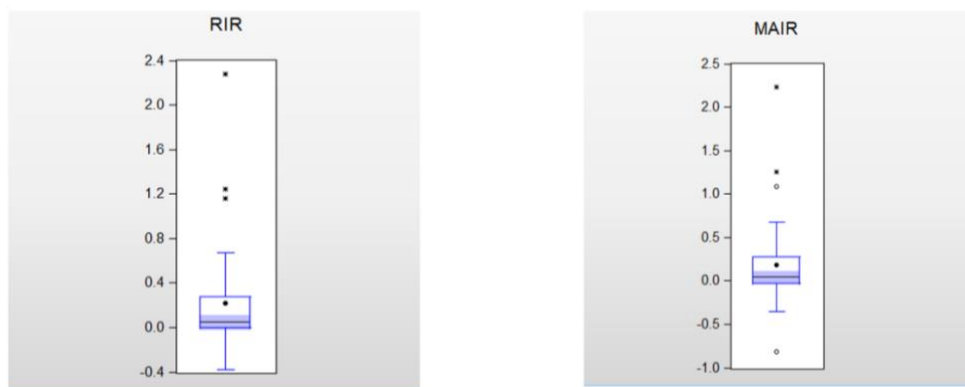


Figure 02: Box plot Graphs for RIR and MAIR before adjusting outliers

After adjusting for outliers, the level of underpricing in RIR is equal to 14% and MAIR is 18%. The researcher has only

removed the largest outliers from the model since removing many outliers may lead to the manipulation of the model.



Figure 03: Box plot Graphs for RIR and MAIR after adjusting outlier

Company Sector-wise Analysis

Table 04: Number of IPO's occurred in each sector

Sector	No of IPO's
Hotels and Travels	5
Power & Energy	7
Land & Property	2
Manufacturing	3
Bank Finance and Insurance	16
Healthcare	1
Diversified Holding	6
Beverage Food and Tobacco	4
Construction And Engineering	1
Services	1
Footwear & Textiles	1
Information Technology	1

Source: Survey Data

From 2006 to 2018 first quarter, sixteen IPOs occurred from the banking, finance, and insurance sectors recording the highest number of IPOs and seven IPOs from the power and energy sector being the second

highest, and six IPOs from diversified holdings. Only one IPO has occurred from sectors such as healthcare, construction and engineering, services, footwear and textiles, and information technology.

Underpricing in Each Sector

Table 05: Underpricing level in each sector

Sector	Under Pricing
Hotels and Travels	-0.00071
Power & Energy	0.14989
Land & Property	0.05000
Manufacturing	-0.00636
Bank Finance and Insurance	0.29998
Healthcare	0.00000
Diversified Holding	0.05591
Beverage Food and Tobacco	0.49205
Construction And Engineering	0.05200
Services	1.25000
Footwear & Textiles	1.16667
Information Technology	0.00000

Source: Survey Data

Out of five companies, two companies in the hotel and manufacturing sector are

overpriced, and in the manufacturing sector, out of three companies only one company is



overpriced, making the average result overpriced in both sectors. The highest level of underpricing exists in the footwear and textile sector at 1.167. However, this value is derived only based on one company (ODEL) hence it can't be concluded that the highest level of underpricing prevails in the footwear and textile sector. The second highest value is recorded in the services sector as 1.25 which also consisted of only one company hence concluding is futile. However, the next sector that gives the highest underpricing value is the beverage, food, and tobacco sector which gives a value of 0.49205 containing four Initial Public Offerings and none of the IPOs are overpriced. The next significantly highest sector is the Bank Finance and Insurance sector which has the highest number of IPOs (16) within the considered period. However, four companies out of these 16 companies are overpriced.

The power and energy sector has also recorded a high level of underpricing at 0.14989. The sector contains altogether seven IPOs including one overpriced company (Vallibel Power Erathna Ltd).

Under the diversified holding sector, the level of underpricing is 0.0559. There are six IPOs in this sector and a very important fact is this sector contains two overpriced companies namely Browns Investments and Softlogic Holdings and the overpricing is -0.04 and -0.38 respectively. Here the -0.38 (Softlogic Holdings) can be considered as an outlier and if this value is removed from calculations underpriced value increases up to 0.71 exceeding the beverage, food, and tobacco sector. The remaining sectors namely land and property, health care, construction and engineering, and information technology carry a very low level of underpriced values as 0.05000, 0.00000, 0.05200, and 0.00000 respectively.

The overall results of the analysis conclude that only capital market variables (ASPI return) and IPO variables (offer price over subscription rate) affect the initial return and

there is no impact from entity variables on the initial return. Accordingly, objective one (1), which was to determine the factors that affect IPO initial return was satisfied. Therefore, the alternatives of **hypotheses 02 and 04 are accepted.**

Discussion and Recommendation

Results of the study conclude that capital market variables (ASPI return), as well as IPO variables (offer price over subscription rate), have a significant influence on IPO. The results found by Bansal and Khanna (2012) in their study is a supporting literature for the results generated. Somehow entity variables do not have a significant influence on initial returns. Though most literature does not support this result generated, still supported the study undertaken by Herawati (2017), studying the effect of financial and non-financial factors on the initial return on the IPO companies in the Indonesia Stock Exchange mentioned that non-financial factors such as underwriter reputation, auditor reputation, firm age, and firm size do not affect the initial return.

When a company reduces the offer price, the initial return will increase and vice versa, ASPI return is also positively related to the initial return, which shows that when the market is performing well there is a high probability to generate higher return since the ASPI is the most significant variable out of all the variables in the model. Therefore, it is recommended to investors look at the current market return and make investment decisions because it is vital for the initial return for the IPO return.

Since the company variables do not affect the initial return even a financially strong company may be overpriced on the first trading day and on the other hand even a company is not well financially performing (ROA, Debt Ratio, NAV, debt to equity ratio) company may generate higher initial return due to capital market favorability and IPO related factors.



And also, when companies decide to go public, they should be concerned about the timing of the IPO because ASPI return of the market will be highly affected by the money left on the table.

The final objective of the study was to determine the level of underpricing that occurs in the CSE and according to the results, raw initial return is 14%, and market adjusted initial return is 18%. Under the sector-wise underprice analysis footwear and textile sector and service sector denoted the highest level of underpricing, however, it is not recommended these sectors as these sectors contained only one IPO from each sector.

Other sectors that consist of a high level of underpricing is the beverage food and tobacco sector and Banking, Finance, and

Insurance sector containing 4 and 16 IPOs respectively which are recommended by the researcher for investment. Another focal point is that in the diversified holding sector there is an outlier that contains a high level of overpricing (Softlogic Holdings). Once the outlier is removed underprice value is increased exceeding the beverage food and tobacco sector value. So, it is recommended that investors need to consider these factors when selecting a sector to invest in.

With the above recommendations, it is vital to discuss some limitations also. The main limitation occurred in the study was the lack of information in identifying the end date of the subscription period of some IPOs. The secondary limitation of the study is not considering investor sentiment and factors such as hot market conditions and timing of IPOs.

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