

Firm Specific Determinants of Under-Pricing on the Ghana Stock Market

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Abstract

The study provides empirical analysis of the initial and after-market short-run IPO returns over the period 1990-2009. The results show that firms on the Ghanaian stock market on average are under-priced on the initial trading day by 8.43%. The regression analysis also reveals that age, cost of debt, hot market, leverage and industry are the main determinant of under-pricing on the Ghanaian stock market.

Key Words: *IPO, Determinants, Ghana, Stock Market, Under-Pricing.*

Introduction

The going public decision is one of the most complex and important decisions in a firm's life as the firm matures from one stage to another. An Initial Public Offering (IPO) of equity is the first public offering of equity and typically the first offering of any security undertaken by a firm. IPO is defined as shares issued by a formerly private company that has decided to issue shares to the public for the first time. It does not only satisfy the immediate capital requirement of the firm but also paves a way for the firm to make subsequent public offering of equity and other corporate securities. Thus, going public allows the firm access to the public capital market for the first time in its life and hence may have important implication for a firm's product market performance as well.

IPOs are normally characterised by significant abnormal returns on the first day of trading and this abnormal returns comes as a result of under-pricing of IPOs (Khurshed and Mudambi (2002). A number of reasons explain why IPOs are underpriced, however, one of the most common and the most observed reason for under-pricing is that of adverse selection which is due to information asymmetry problems. According to Benevensite and Spindt (1989), in an efficient market, the first day of trading is supposed to be the fair value of IPOs but the offer price is considered to be set below the fair value leading to underpricing in IPOs and exhibiting positive AIR in the short run. There is considerable amount of literature on the subject of underpricing of IPOs, particularly on common stocks. Existing studies done on the topic include: Nueberger and Hammond (1974), Bear and Curley (1975), Ibbotson (1975), Reilly (1977)] on the US market and Davis and Yeomans (1976), and Buckland et al (1981)] for the UK market.

In Asia, studies include [Dawson (1987); McGuinness (1992); and Sullivan and Unite (1999)]. Studies on the anomaly have been documented in over 30 countries as indicated by Loughran, et al (1994) and Ritter (1998) as well as many others as cited in Osei *et al* (2010).

A well-documented and heavily researched phenomenon associated with the valuation of IPOs is that the IPOs are underpriced (Ibbotson, 1975). Because the closing price and the offer price are determined by the markets and the underwriters on the issuing date, several studies have tried to identify potential sources for this valuation discrepancy, such as partial adjustment of information learned during the registration period (Lowry and Schwert, 2002), buying positive analyst coverage (Cliff and Denis, 2004), ownership structure (Ljungqvist and Wilhelm, 2003) and behavioural explanations such as investor sentiment (Ljungqvist et al 2006) and prospect theory (Loughran and Ritter, 2002). Despite these explanations for “money left on the table,” the large magnitude of the *positive* initial return remains a conundrum in the literature (Ljungqvist, 2007). Evidence shows that there are considerable price movements during the initial days of trading on the markets but how large and to what extent still remain a question that needs to be answered.

Ibbotson (1975) argues that, there are indications that IPO prices increase considerably on the first day of trading leaving sizeable amount of money left on the table. Researchers have documented several theories to argue that underpricing of IPO is an equilibrium phenomenon in an efficient capital market which indicates that IPO underpricing is deliberated by issuers and underwriters for a number of reasons. Beatty and Ritter (1986) argues that, issuers were pressurized to underprice their IPO to attract investors. Another school of thought also belief that issuers strategically underprice their IPO to signal positive prospects of the firm (Allen and Faulhaber, 1989).

However, according to Loughran and Ritter (2002) determinants of IPO underpricing level vary from firms specific factors some includes profitability, size and industry, market condition, to investor behaviors. Empirical proof shows that the relationship between IPO underpricing and its determinants are not the same across countries and time frame. For instance according to Michaely and Shaw (1994)) hiring prominent underwriters was considered a good way to reduce underpricing level before 1980's but recent studies shows that prestigious underwriter are associated with higher level of underpricing.

This paper extends literature on underpricing on the GSE, a frontier market with high information asymmetry, low information efficiency and tin trading. Even though previous studies have empirically documented the existence of underpricing (Osei et al 2010), to the best of our knowledge no studies have been carried on to examine the firm's specific factors that influence underpricing on the Ghana Stock Market. This paper there for examine the variables that causes underpricing based on a sample of 35 firms listed on the GSE over the period 1990-2009. The rest of the paper is organized as follow. In section 2, we discuss the empirical and theoretical framework underlying IPO and underpricing, a description of the data and methodology is presented in section 3. Section 4 presents the analysis and the discussion of the result. Section 5 ends the study with conclusions.

Literature Review

The theory of efficient markets suggests that the price of the newly issued stock will quickly adjust to reflect the available set of relevant information (Fama, 1970). The persistence of under-pricing has raised questions about what happens when firms go public. The decision to go public is one of the most important issues in corporate finance. Even in countries with developed capital markets like the United States, some large companies such as United Parcel Service or Bechtel are not public. In other countries, like Germany and Italy, publicly traded companies are the exception rather than the rule, and quite a few private companies are much larger than the average publicly traded companies. These cross-sectional and cross-country differences indicate that going public is not a stage that all the companies eventually reach, but is a choice, begging the question of why some companies choose to use public equity markets and some do not (Pagano et al., 1998).

Underpricing denotes the positive spread between the opening price on the first trading day and the offer price, scaled by the offer price. The resulting number indicates how many times the respective shares are underpriced. If this number is equal to zero, the firm's shares are called fully-priced. If the number has a negative sign, the firm's shares are called overpriced. The opening price on the first trading day is often interpreted as the intrinsic value of the firm's shares. However, Keasy and McGuiness (1995) discuss several reasons why the simple definition of underpricing is inappropriate to measure the foregone proceeds. For example, underpricing defined as spread between the opening price on the first trading day and the offer price, scaled by the offer price does not consider the costs which uninformed outside investors have to carry to receive shares.

There are a number of theories that document the underpricing phenomena, one is information asymmetry, according to Allen and Faulhaber (1989) underpricing is used as a means to shrink the information break between different parties involved in the IPO process, they belief in the "winner's course" hypotheses, which state that, underpricing intends to reward the informed investors for revealing private information. The ex-ante uncertainty hypotheses also suggest that the uncertainty surrounding the IPO outcomes around listing can induce an IPO underpricing. The signalling theory advocate that, high quality firms use underpricing to signal their quality to raise funds in the future with more favourable conditions through seasoned equity offering.

A study by Habib and Ljungqvist (2001) documents that underpricing is a proxy for expensive marketing expenditures. Using a data set of IPOs from 1991 to 1995, they report that an extra dollar left on the table reduces other marketing expenditures by a dollar. Islam and Ali (2010) examined the Dhaka stock market and concluded that, the offer size and the size of the firm are positively related to the degree of a firms shares being underpriced but age and timing of the issue do not have any significant impact on the degree of underpricing. According to Loughran and Ritter (1994) the size of a firm and its market to book value ratios are one of the considerable indicators that impact returns generated by IPO's. Loughran and Ritter again document that, the firm's size, trade volume and share price do have a relevant impact on the aftermarket liquidity. Some studies argue that, the firm's size and operating performance do have a major influence on the post IPO shares performance. On the contrary, Sahoo and Rajib (2010) argued that age, price to book value and promoters retention had no significant impact on the performance of the IPO's hence under-pricing is higher in smaller firms than bigger firms.

A study by Sarra et al (2011) documents that, age, size of the firm and the offer size do not have any impact on the level of under-pricing, they argue that Tunisian investors rely on other indicators rather than on the firms characteristic disclosed in the IPO prospectus, however, according to Gasbarro et al (2003) he argues that information disclosed in the prospectus such as cash flows and sales are positively related to the level of initial under-pricing on a sample of Mauritius IPO's. Previous studies have documented a negative relationship between under-pricing and the size of the firm. This means that, well-built firms are less likely to experience underpricing (Ibbotson et al 1994). Finkle (1998) argues that larger firms with more diversified product lines and monitoring proceedings have better access to investment capital and resources, which is very important for the firm's profitability and survival. A recent study by Kiymaz (2000) and Bhabra and Pettway (2003) argue that firm's size is usually negatively associated to its risk.

Data and Methodology

Estimation of the level of Underpricing

Following Otchere (2010), we measure underpriced using three methods:

First the degree of under-pricing, defined as the difference between the offer price and the first closing price, is estimated as:

$$IR_i = (P_{it} - E_i) / E_i * 100\% \dots\dots\dots(1)$$

where IR_i is the initial return of firm i , $P_{i,t}$ is the closing price of firm i on the first trading day and E_i is the offer price of firm i . The above unadjusted initial returns do not take into account changes in the overall market. Secondly we estimate market-adjusted under-pricing as:

$$MIR_t = (P_{it} - E_i) / E_i - (M_t - M_{t,0}) / M_{t,0} * 100\% \dots\dots\dots(2)$$

where MIR is the market adjusted initial return, M_t is the value of the major market index on the first trading day of the IPO and $M_{t,0}$ is the value of the market index on the IPO offering date. An alternative estimate of the level of under-pricing based on log returns is presented as follows:

$$LIR_t = \ln(P_{it}/E_i) - \ln(M_t/M_{t,0}) * 100\% \dots\dots\dots(3)$$

we therefore hypothesis that there is a relationship between IPO and underpricing

Estimation of the determinants of under-pricing

Multiple regression was employed to find out factors that significantly affect under-pricing on the Ghana stock market. The model is described below:

$$IAR_t = a_0 + a_1 SIZE_{it} + a_2 AGE_{it} + a_3 ROA_{it} + a_4 INVST_{it} + a_5 GROWTH_{it} + a_6 HOTMKT_{it} + a_7 INDUSTRY_{it} + \varepsilon$$

Where

Empirical Results and Analysis of IPO and Under-pricing

The abnormal initial returns (AIR) of IPOs have being well documented by a lot of studies. From the perspective of Benveniste and Spindt (1989), the first trading market price is assumed to be the fair value of the IPO firm; however, IPO prices are normally set below their fair value hence exhibiting positive AIR in the short run. The offer price and the first day trading price determine the initial return of IPOs together. There is said to be an information asymmetry in the primary market and investors face high uncertainties for investing in IPOs. So IPOs need to be underpriced. At the same time, the optimistic investors will drive the first day trading price above the fair value in a market with short sales constraints and IPOs may be overvalued in the secondary market. Ruud (1993) argues that new issues may be initially correctly priced, but that the observed positive price jumps in the aftermarket are due to underwriters' price support in order to maximize the probability of placing all shares or to avoid legal liability. Table 1 descriptive statistics of under-pricing. The initial unadjusted and adjusted abnormal returns and the IPO statistics are reported in the table 1 below.

Table 1: Initial Unadjusted and Adjusted Abnormal Returns and the IPO Statistics

statistics	IR(market unadjusted)	MIR(market adjusted)	LIR(log of IR)
Mean	0.0843	0.0652	0.0646
median	0.0333	0.0277	0.0281
maximum	1	0.7368	0.6757
Minimum	-0.4	-0.5397	-0.6416
% Positive	0.5714	0.6286	0.6286
Standard Deviation	0.2286	0.2348	0.2348
Standard Error	0.0386	0.0397	0.0397
T-stat	2.1823	1.6427	1.6277

The average score of under-pricing for the stock exchange IPOs using the Initial Returns model was 8.43% (t- statistic =-2.1823) recording a significance level of 5%. The market adjusted and the log returns both recorded 0.0652 and 0.0646 (t-stat=1.643 and 1.628) respectively. The median IPO was significantly undervalued at 0.033%. Similar result was obtained when we used the market adjusted initial returns and

the log returns to calculate the level of under-pricing, however the later two methods documented a much smaller value as compared to the initial returns method. This result is corroborated by Otchere (2010), Logue (1973) and Osei (2010). From the result shown above, the study recorded the highest under-pricing of 100% experienced by Mechanical Llyod company with an issue price of GH0.005 and the lowest of -40% by cocoa processing company. The differences of under-pricing between these two groups are highly significant. Using a dataset of 35 Ghanaian IPOs from 1990 through 2009, It appears that IPOs on the GSE is associated with high initial returns on the first day of trading hence agreeing with the under-pricing phenomena.

The Determinants of Under-Pricing

The variables that the study employed in the regression to explain the level of under-pricing of IPOs includes: firm's size, age, ROA, investment, growth opportunities and industry. Industry is a dummy variable taking the value of 1 if the firm is in the financial industry and 0 if otherwise. The result of the regression using different measures of under-pricing are reported in table 5.5 below

Estimates of Under-Pricing

This table present the cross sectional regression of the determinants of the level of under-pricing on the Ghanaian stock market. The dependent variable is under-pricing as measured by the different modes employed in this study. The symbols ***, **, and * indicate significance at the 1%, 5% and 10% respectively.

Cross Sectional Regression of the Determinants of the Level of Under-Pricing on the Ghanaian Stock Market.

variable	MIR		LIR		IR	
	coefficient	t-stat	Coefficient	t-stat	coefficient	t-stat
C	0.4353	2.1135**	0.4484	2.4336**	0.3904	2.4336
AGE	-0.0058	-2.8436***	-0.0055	-2.5668**	-0.0021	-2.5668
COSTDBT	0.2460	1.9023*	0.2349	1.7765*	0.0404	1.7765
HOTMKT	-0.1362	-1.9562*	-0.1458	-2.0732**	-0.0796	-2.0732
INDUSTRY	-0.1620	-1.9843*	-0.1423	-1.7681*	0.0332	-1.7681
LEV	-0.2966	-1.6596	-0.3177	-1.7217*	-0.3747	-1.7217**
ROA	0.0246	0.1665	0.0253	0.1580	0.0375	0.1580
SIZE	-0.0211	-0.9307	-0.0236	-1.1215	-0.0276	-1.1216
Adjusted R²	0.1779		0.1654		-0.0419	
F-statistic	2.0513		1.9625		0.8046	
Prob(F-stat)	0.0848		0.0982		0.5908	
observations	35		35		35	

Age measures the operating performance prior to going public. Theory has it that older firm's exhibit lower ex-ante uncertainty as compared to younger firms, hence indicating a negative relationship between under-pricing and age. From the analysis above age recorded a coefficient of -0.0058 and -0.0055 (t-stat= -2.844 & -2.5668) for both MIR and LIR respectively at a significant level of 1 % and 5% respectively. Under-pricing appears to be a tool in minimising unsuccessful IPOs; hence issuers lower their prices when they perceive future price volatility to be high. This may have a positive effect on uninformed investors to buy therefore, the higher the ex-ante uncertainty, the more the under-pricing needed to attract buyers hence implying a positive relationship between volatility and under-pricing.

The study uses cost of debt and leverage to measure the level of volatility on the market. From the above tables cost of debt recorded positive coefficients for all the three methods at a significant level of 10% for both MIR and LIR. The coefficient for the IR was not significant at 10% or below. On the contra to our

expectation leverage recorded a negative relationship to under-pricing. Leverage recorded a coefficient of -0.3177 & -0.3747 for both LIR and IR at a significant level of 10% and 5% respectively. Suggesting that if investors perceive that the level of debt in a firm is too high they would not like to patronise more of the firm's issues hence putting less pressure on the initial day of trading leading to lower under-pricing of the issues

The coefficient of the industry documented a negative relationship to under-pricing at -0.1620 and -0.1428 (t-stat= -1.9843 & -1.768) for both MIR and LIR respectively at a significant level of 10% for both estimates. This implies that the level of under-pricing in the financial industry is not high when compared to other industries on the stock market. Hot market indicating the season of the offering recorded a negative coefficient of -0.1362 and -0.1457 for both MIR and LIR at a significant level of 10% and 5% respectively. The result implies that in period of hot market issuers take advantage of the season and overpriced their securities. The R^2 of 34.5%, 33.72% and 17.26% for the MIR, LIR and IR respectively suggests that the model explains a small portion of the variability in the level of under-pricing of the stock exchange. The regression estimates also recorded an F-stat of 2.0513, 1.9625 and 0.8046 respectively at a significant level of 10% for both MIR and LIR; however IR was not significant at 10% or below.

Conclusion

The study provides empirical analysis of the initial and after-market short-run IPO returns over the period 1990-2009. The study employed multiple regression method to run between the dependent variable and independent variables to determine their relationship or effect on IPOs. The results show that firms on the Ghanaian stock market on average are under-priced on the initial trading day by 8.43%. The regression analysis also reveals that age, cost of debt, hot market, leverage and industry are the main determinant of under-pricing on the Ghanaian stock market.

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