

Determinants of initial public offer pricing in Kenya

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Abstract

This research investigated determinants of Initial Public Offer (IPO) pricing in Kenya. The authors explored the extent to which investor sentiment, post-IPO ownership retention, firm size, board prestige and age of the firm affect IPO pricing of firms listed on Nairobi Stock Exchange between 1st January, 1994 and 31st December, 2008 in Kenya. Secondary literature was used and data was analysed using both descriptive statistics and multiple regression analysis. Average under pricing of 49.44% was observed in Kenyan IPOs for the period under study. The R^2 was 24.56%, and in all the estimated model coefficients, the p -values were greater than .05, implying that the variables tested do not significantly influence the IPO offer price at 5% significance level. The study concluded that public information disclosed in the prospectus is insignificantly mirrored in IPO offer prices and that rational theory cannot explain the effect of investor sentiment in IPO market in Kenya.

Keywords:

Initial Public Offerings

Under pricing

Underpinning

Initial Public Offerings (IPO) involve problems regarding price discovery due to uncertainties regarding aggregate demand and the quality of the issuer. Bensveniste and Spindt (1989) posit that issuers can feign themselves to investors as high eminence than they are. Derrien (2005) agrees that pricing of IPOs is a daunting task due to obscurity of discovering an appropriate comparable firm.

Extant research mainly in developed countries has documented the extent of under pricing of IPOs without identifying the main factors involved in setting the IPO offer price. Many researchers such as Cornelli (2004), Ibbotson (1975), Ljungqvist (2006) and Purnanandan and Swaminathan (2003) have presented evidence that IPOs are underpriced. Under pricing refers to the percentage difference between the offer price and the first day closing price (Paleari and Vismara, 2007). Under pricing is a loss to the issuing firm because it is a loss of money that could be utilised for profitable investment opportunities. This phenomenon contradicts one of the major purposes for companies going public, which is to raise funds to support expansion of the firm. In addition, it also contradicts efficient market hypothesis, which postulates that security prices fully reflect all publicly and privately available information. As compared to developed markets the number of companies going public in Kenya was low. For example, a study by Daily (2005) shows that more than 773 firms went public in the United States between 1996 and 1997. According to Ngugi and Njiru (2005) only three companies were listed on NSE between 1980-1989 while between 1990 and 1999

only 9 companies were listed, four of which were part of the ongoing privatization process of government parastatals. Between 2000 and 2008 only 9 companies were listed on NSE. Further, the study by Ngugi and Njiru (2005) shows there has been a considerable number of companies delisted from trading on NSE. The subject of IPO pricing in Kenya has remained unexplored despite its importance.

Statement of the Problem

Previous literature has focused primarily on IPO under pricing phenomenon (Ljungqvist, 2006; Ljungqvist and Wilhelm, 2003; Purnanandan and Swaminathan, 2003; Ritter and Welch, 2002) as a performance gauge. Daily (2005) argue that IPO offer pricing, which is a key factor in under pricing has remained relatively unexplored in literature. Paleari and Vismara (2007) also agree that although valuation of IPO is a critical subject, only narrow extant research has addressed it. Despite its importance, determinants of IPO pricing have remained unexplored in the Kenyan primary market. Most of previous studies of IPOs are based in developed markets such as the US and Germany. It is intriguing to study IPO pricing in developing markets such as Kenya

The IPO Process

Because of information asymmetry between the issuing firm and investors, issuing company usually hires investment banks to assist in the valuation of the firm. The process of IPO pricing begins at the time the issue is filed. This initial stage involves registering a preliminary prospectus relating to the company and the proposed offering with the authority responsible for regulating the securities exchange. The preliminary prospectus among other things contain all financial data for a company for the past five years with focus on management, and description of the company's target market, growth prospects and competitors.

The prospectus is then filed with securities exchange authority. Because most issues are too large for one underwriter to effectively manage, the lead underwriter usually invites other investment bankers to participate in joint distribution of the offering. The syndicate investment banks will then gather conditional offer from clients, usually institutional investors to determine initial demand for the offer. Before meeting with potential investors, the lead underwriter determines the offer price band within which the offer price is most likely set.

The next step is the book-building process, during which company management meets institutional investors during the road show at different cities. The road show will create awareness among the investors and will act as a basis for price revision. Welch and Ritter (2002) argue that book-building process involve the creation and measurement of demand while at the same time act as a basis for price revision through collection of indications of interests from potential investors. The actual setting of offer price occurs after the securities exchange authority has given a green light to go ahead. The issuer and lead underwriter will then hold a price meeting at which offer price is agreed upon (Welch and Ritter, 2002). It is believed that the final price is set after the market closes on the day before the offering.

Significance of Security Pricing

Pricing of new instrument in corporate finance is a critical decision. Koop and Li (2001) identified three roles played by valuation including its significance in corporate control transactions; the need for firms going public to value their stocks; and its significance in determining capital structure of the firm. Mispricing of securities leads to problem of uncertainties in the capital market. Where one party to a transaction has quality information more than the other party, a market for lemon arises (Akerlof, 1970). Akerlof argues that this problem leads to a situation where quality assets are driven out of the market because the

owners of quality assets are not willing to sell at lower price demanded by buyers. Buyers will seek risk premium to compensate them for taking risk.

Objectives of the study

The general objective of this research was to determine factors determining IPO pricing in Kenya. The specific objectives of were to: determine how investor sentiment affects the pricing of IPO in Kenya; investigate the extent to which post-IPO ownership retention affects IPO pricing in Kenya; establish the effect of the size of the IPO firm on its pricing in Kenya; find out the extent to which board prestige of the issuer affects the pricing of IPO; and determine the extent to which age of the firm affects IPO pricing in Kenya.

Research Hypotheses

H1: Investor sentiment will be positively associated with IPO offer price.

H2: The proportion of ownership retained by IPO-firm entrepreneurs will be positively associated with IPO offer price.

H3: The size of the IPO firm will be positively related to the IPO offer price.

H4: The board prestige of the issuer firm will be positively associated with IPO offer price.

H5: There will be a positive relationship between IPO offer price and age of the IPO.

Determinants of IPO Pricing

Investor Sentiment

A widely used measure of investor sentiment is the performance of stock market index prior to the offering. Baker and Wurgler (2007) observe that investor sentiment is a belief about future cash flows and investment risks that is not justified by the facts at hand. Behavioural finance literature shows that investor sentiment results from noise trader sentiment where

noise traders suffer a sequence of psychological biases such that their trading behaviour cannot be explained by rational expectation theory (Barberis, Huang and Thaler, 2006). Behavioural biases have become popular for explaining asset pricing that are inconsistent with a rational decision-making framework (Cornelli 2005). According to Brown and Cliff (2005) excessive optimism drives asset values above fundamental.

Ljungqvist (2004) argue that investors are willing to pay premium in excess of their rational belief if sentiment is biased towards newly issued stocks. Ljungqvist, Nanda, and Singh (2003) also agree that investor sentiment affects the pricing of IPO, but posit that since noise traders are wealth constrained, the issuer must price IPO below the price noise traders are ready to pay to induce informed investors. According to Baker and Wurgler (2007), stocks of low capitalised, younger and growing firms are prone to investor sentiment because they are harder to arbitrage and are difficult to value, thus increasing chances of improper valuation.

Post-IPO Ownership Retention

Post-IPO ownership retention may play a role in valuation process of IPO. Ofek and Richardson (2001) show a positive relationship between IPO values and post-IPO ownership retention using a downward sloping demand curves for IPO shares. Thus, a higher retention level means that fewer shares will be available for trading and hence IPO prices will increase. According to McBain and Krause (1989) higher valuations are experienced by firms whose pre-IPO shareholders maintain relatively larger ownership positions following the offer. Consistent with Ritter (1984), Bhagat and Rangan (2004) document a positive relation between IPO valuation and post-IPO ownership retention. Habib and Ljungqvist (2001) posit that where owners sell fewer shares at the time of IPO, they are likely to be more tolerant to under pricing (and hence higher offer price) because the benefit of costly monitoring is minimal. Bhagat and Rangan (2004) extending the work of Leland and Pyle (1977) argue that

the entrepreneur taking the firm public retains shares only when he is optimistic regarding future cash flows of the firm. The signalling model of Leland and Pyle (1977) implies that greater ownership retention enhances IPO values.

Firm Size

Extant research shows that firm size has a significant impact on IPO pricing. Ritter (1984) argue that larger firms are easier to value because of ease of forecasting cash flows. The under pricing phenomenon in IPO literature which has been widely debated on in extant research is to a great extent hinged on information asymmetry among investors. According to Rock (1986), to lure relatively uninformed investors, investment bankers under price IPOs to cushion against potential losses experienced by uninformed investors due to Winner's curse. An and Chan (2008) posit that greater uncertainty of the firm's value encourage investors to demand for lower IPO price as an incentive for risk. Teker and Ekit (2003) posit that a firm with larger amount of total assets experience less uncertainty regarding its perpetuity, and hence commanding less under pricing, and hence higher offer price. According to Dalton (2003), the size of the IPO firm has important implication for pricing as it is an important determinant of stability of the firm.

Board Prestige

Following the bankruptcy of Enron in 2001, the effectiveness of board of directors has become a debatable issue. According to Gillan and Martin (2007) the bankruptcy of Enron was as a result of failure by the firm's board to understand risks associated with the firm's strategy coupled with conflicts of interests to execute their role as monitors. According to Daily (2005) outside board member is a prestigious assignment. Certo (2001) argue that IPO firm gains legitimacy through prestigious board of directors. According to Dalton (2003) directors holding additional board positions posses exposure benefits. Korn and Baum

(1999) argue that directors' association with other companies via board service enhance the prestige of the IPO firm.

According to Shivdasani (1993) prestigious board is a signal of effective control and enhances the value of the firm going public. Davis and Mizruchi (1999) argue that board prestige is an important signal to potential investors. Jensen (1993) posits that board of directors play a crucial role in internal control systems of the firm. Effective control has the effect of enhancing value of the firm and hence higher offer price. Daily (2005) argue that where an IPO firm posses prestigious board, the underwriter is likely to offer a narrow offer price band and a higher offer price.

Age of the Firm

IPO firms are subject to uncertainties regarding quality of the firm because of missing track record and lack of public scrutiny. In order to compensate investors for value uncertainty, investment bankers discount IPO offer prices (Beatty and Ritter, 1986; Rock, 1986). According to Carter (1998), older firms have longer operating histories and face less uncertainty. This observation was also echoed by Ritter (1998) who argue that younger firms have shorter operating history and are subject to great deal of uncertainty.

According to Daily (2005), because of greater uncertainties surrounding the prospects of younger firms, underwriters apply greater offer price spread and lower offer prices as compared to older firms with larger operating history. According to Kim and Ritter (1999) it is difficult to forecast future cash flows of younger firms due to missing track records. Ritter (1984) observe older firms are subject to less uncertainty, and because under pricing is compensation to uncertainty, investment bankers attach higher value to IPOs of older firms.

Theoretical Underpinning

Rock (1986) argues that investors in the capital market possess differing levels of quality information, given the missing track record of the firm. Because of information unevenness, extant research has relied on signalling theory for investigating determinants of IPO firm performance (Certo 2001). Signalling theory postulates that IPO firm managers strive to reveal the firm's value to outsiders through favourable information so as to maximise the share price (Certo 2001). Firms reveal their value through prospectus to show their potential and growth opportunities. This study was guided by signalling theory, complemented by the resource based theory of the firm. The resource based theory of the firm postulates that a firm nurtures resources to differentiate itself from its competitors. This theory complements the signalling theory (Daily 2004). IPO firms during the book building process strive to induce institutional investors and investment banks that it merits investing in its shares.

Methodology

The sample of 13 IPOs covers 87% of the 15 companies listed on NSE between 1st January, 1994 and 31st December, 2008. Data was collected from NSE database, company IPO prospectus and websites of investment banks. Company prospectuses were obtained from Capital Market Authority (CMA) of Kenya library. Investment firms, firms with cross-listings and firms with missing information were excluded from the companies listed on NSE for the period under study. As a result, two companies were excluded, resulting to 13 sample companies with an effective response rate of 87%.

Model Specification

STATA was used to estimate the following multiple regression:

$$P_0 = \beta_0 + \beta_1 \text{INVS} + \beta_2 \text{PIPOW} + \beta_3 \text{LnFSIZE} + \beta_4 \text{BPREST} + \beta_5 \text{LnAGE} + \varepsilon$$

Where P_0 : Offer price as obtained from the prospectus of IPO firms.

INVS: Investor sentiment was measured by an average of three months NSE-20 share index prior to IPO offer month.

PIPOW: Post-IPO ownership retention was obtained as a fraction of total ownership retained by original entrepreneurs.

LnFSIZE: Firm size was measured as the natural logarithm of total assets reported on the balance sheet of the financial year preceding the IPO year.

BPREST: Board Prestige was measured as the total number of external directors.

LnAGE: Age of the IPO firm was measured using the natural logarithm of one plus firm age ($\text{Ln}(1+\text{AGE})$). The age of the firm is the difference between the offer firm's IPO year and the founding year.

β_0 is the intercept; and reflects the constant of the equation.

β_i is the sensitive coefficient of each independent variable ($i = 1, 2, 3, 4, 5$).

ε is the error term.

Study Results

Sectoral Classification of the Sample Companies

("Insert Table 1 about here")

In Table 1, the companies listed on NSE were classified into four sectors. This classification is based on sectoral classification by the NSE. The table shows that majority of the companies listed on the NSE between 1st January, 1994 and 31st December, 2008 were from industrial and allied sector (38.46%), followed by commercial and services (30.77%). The companies in the finance and investment sector constituted 23.08% while companies in the agricultural sector comprised 7.69% of the companies listed. The fact that industrial and allied, and commercial and services sector had the highest percentages of companies listed could be attributed to availability of growth opportunities for firms in these sectors.

Ownership Characteristics

("Insert Figure 1 about here")

In Figure 1, we provide a pie chart showing ownership characteristics of the companies listed on the NSE between 1st January, 1994 and 31st December, 2008. The pie chart shows that most of the companies (53.85%) listed on NSE were privately owned prior to IPO. Publicly owned companies were 38.46% while quasi public companies were 7.69%. The reason why majority of the companies listed were privately owned prior to IPO could be attributed to resource constraints of the private sector and the need to expand to take advantage of growth opportunities. The need to privatise parastatals to enhance efficiency could explain why public (government-owned) companies constituted the second largest number of companies listed.

Variation in the Number of Companies Listed Annually

("Insert Figure 2 about here")

In Figure 2, we show that during some years none of the companies are listed. The highest number of companies listed was experienced in 2006. The number of IPOs listed on the NSE fluctuated between zero and four. The observations in Figure 2 were not surprising. These were consistent with previous researches (Pastor and Veronesi, 2005; and Yung 2008) that IPOs come in waves. The fluctuations in the number of IPOs could be attributed to fluctuations in investor sentiment and companies taking advantage of windows of opportunities. According to Baker and Wurgler (2007) demand for IPO is sensitive to investor sentiment and this explains why IPO volume fluctuates over time.

Level of Underpricing

(“Insert Table 2 about here”)

Underpricing is defined as the percentage change between the price at which the firm’s stock was offered (offer price), and the stock’s first day trading closing price. In Table 2, we show that all the companies surveyed were underpriced, save for one company. Kengen had the highest underpricing of 236.13% while Mumias sugar had initial return of zero. Firestone East Africa was the only company that had a negative initial return -1.41%. Consistent with findings in extant research (Ljungqvist, 2006; Ljungqvist and Wilhelm, 2003; Purnanandan and Swaminathan, 2003; Ritter and Welch, 2002; and Sohail and Raheman, 2009) the underpricing phenomenon was also found in Kenyan IPOs. The averaging under pricing was found to be 49.44%. However, this level of under pricing was found to be higher as compared to findings in other countries. Ljungqvist (1997) using a sample of 180 firms found IPO under pricing in Germany to be 9.2%, far less than that of Kenyan IPOs. One reason why Kenyan IPOs experienced relatively higher initial returns may be their size and age, coupled by underdeveloped nature of the Kenyan primary market which together imposes

greater uncertainty. On the basis of classical economic theory, IPO under pricing is rational and is based on information asymmetry.

Regression Results

Using STATA, the following multiple regression analysis was estimated.

$$P_o = \beta_0 + \beta_1 INVS + \beta_2 PIPOW + \beta_3 LnFSIZE + \beta_4 BPREST + \beta_5 LnAGE + \varepsilon$$

The fitted regression model is presented as follows:

$$P_o = -7.367331 - 0.0014685 INVS + 15.91009 PIPOW + 0.7151691 LnFSIZE - 2.009067 BPREST + 3.712994 LnAGE$$

(0.798)
(0.611)
(0.446)
(0.642)
(0.314)

(0.328)

The coefficients' p -values are given in the parenthesis. In all the estimated model coefficients, the p -values were greater than .05 (i.e. $p > .05$) implying that the variables tested do not significantly influence the IPO offer price at 5% significance level. Also since the coefficient for board prestige (BPREST) and investor sentiment (INVS) are negative, this means that BPREST and INVS negatively relate to the IPO offer price i.e. the higher the BPREST and INVS, the lower the IPO offer and vice versa. The fitted model was diagnosed and found that the regression was not statistically significant at 5% significance level (regression p -value = .7980 > .05). This shows that the combination of these factors (explanatory variables) does not significantly affect the response variable (IPO offer price). Further, R-square = 24.56%, implying that the explanatory variables accounted for 24.56% of the response variable.

Although the effects of explanatory variables captured in the model are insignificant, these findings are informative, as they intrigue significant questions regarding factors underwriters take into account when pricing IPOs, and the relevance of IPO prospectus. Apart from one market factor, INVS, the other four factors are firm-specific variables disclosed in prospectus. They are intended to signal the value of IPO firm to potential investors and help

mitigate uncertainties surrounding IPO firm due to missing track record as a result of limited public disclosure prior to going public.

On the basis of these findings, high value firms are unable to distinguish themselves from low value firms as far as firm-specific explanatory variables captured in the model are concerned. The regression result is consistent with the findings of preceding studies such as Daily (2005) and Loughran and Ritter (2002). Daily (2005), for example, found no relationship between IPO offer price and firm-specific information disclosed in prospectus, inconsistent with the Efficient Market Hypothesis, Signalling Theory and Resource Based View of the firm. Loughran and Ritter (2002) found that IPO price only partially incorporate publicly available information. The regression output showed R-square value of 24.56%. This implies that there could be other factors that contribute to the remaining 75.44% in explaining the variation in IPO offer price in Kenya.

Conclusions

This study investigated the determinants of IPO pricing in Kenya. It was intended to investigate the extent to which the identified explanatory variables affect the explained variance in the dependent variable, the offer price. The data collected was presented using descriptive statistics and analyzed using multiple regressions. The findings show that majority of the companies listed were from industrial and allied sector (38.46%), followed by commercial and services (30.77%), finance and investment (23.08%), and agriculture (7.69%). Of the sample companies, 53.85% were privately owned prior to IPO, while 38.46% were publicly owned and 7.69% were quasi-public.

Abnormal initial returns were also observed among the sample companies. Save for Firestone East Africa which experienced negative initial returns of -1.41% and Mumias Sugar with initial returns of zero, the other entire sample companies experienced positive initial

returns. The average under pricing was found out to be 49.44%. The average offer price was Ksh. 10.97 with an average of first day trading closing price of Ksh. 16.74.

In all the estimated model coefficients, the p -values were greater than .05 ($p > .05$), implying that the variables tested do not significantly influence the IPO offer price at 5% significance level. R^2 was 24.56%, which means that the explanatory variables accounted for only 24.56% variation of the response variable. Inconsistent with the hypothesized signs, the investor sentiment (INVS) and board prestige (BPREST) were negatively related to IPO offer price.

The IPO pricing in Kenya is inconsistent with Efficient Market Hypothesis, as evidenced by under pricing phenomenon. Efficient Market Hypothesis postulates that security price reflects all publicly and privately available information. Unfortunately, investment banks in Kenya under price IPOs and investors are able to make abnormal returns on the first day of trading through flipping. Of the explanatory variables captured in the model, none is significantly related to the IPO offer price. For all the estimated coefficients, p is greater than .05. The unexpected negative sign for investor sentiment implies that the effect of investor sentiment on security pricing in Kenyan IPO market cannot be explained by rational theory. The result was consistent with the findings of Daily (2005) and Beatty and Ritter (1986) that publicly available information disclosed in prospectus is of very little relevance. This has been evidenced by the insignificant coefficients of the explanatory variables and the low level of the overall goodness of fit of the model. The R^2 of 24.56% implies that a major proportion of the variation in the IPO offer price is explained by factors outside the model.

Recommendations

Despite the insignificance of the model in explaining the variation in the IPO offer price, this research should be informative because the findings are consistent with intriguing findings of

limited prior research regarding the relevance of IPO prospectus in guiding investors in making rational investment choice. Although this research is to some extent Kenyan-specific, the findings help clarify preceding empirical IPO research regarding which factors determine IPO pricing. Since publicly available information provided in the prospectus have little relevance, then the potential for the regulatory authorities to protect potential investors is curtailed. Therefore, securities exchange regulatory authorities need to review the disclosure requirements for firms going public.

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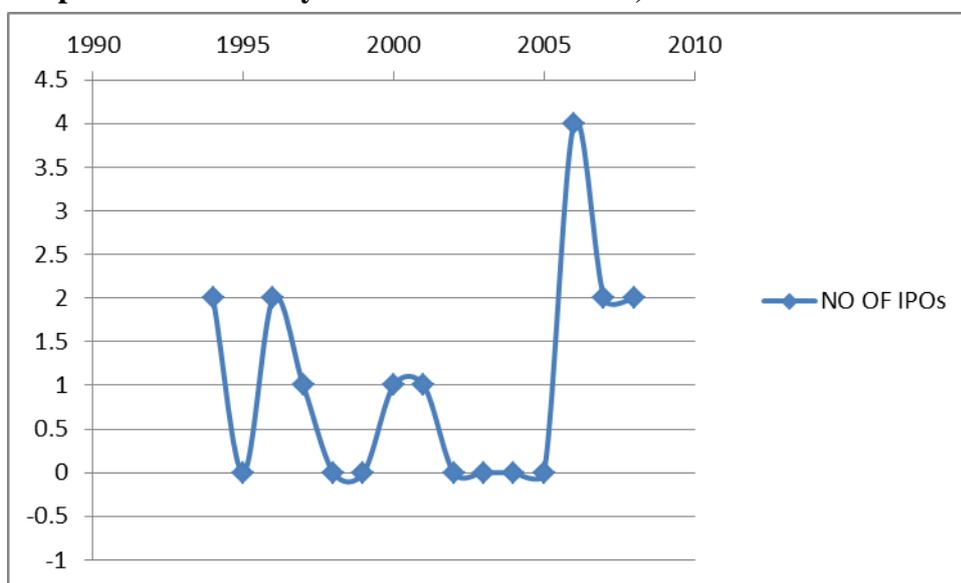
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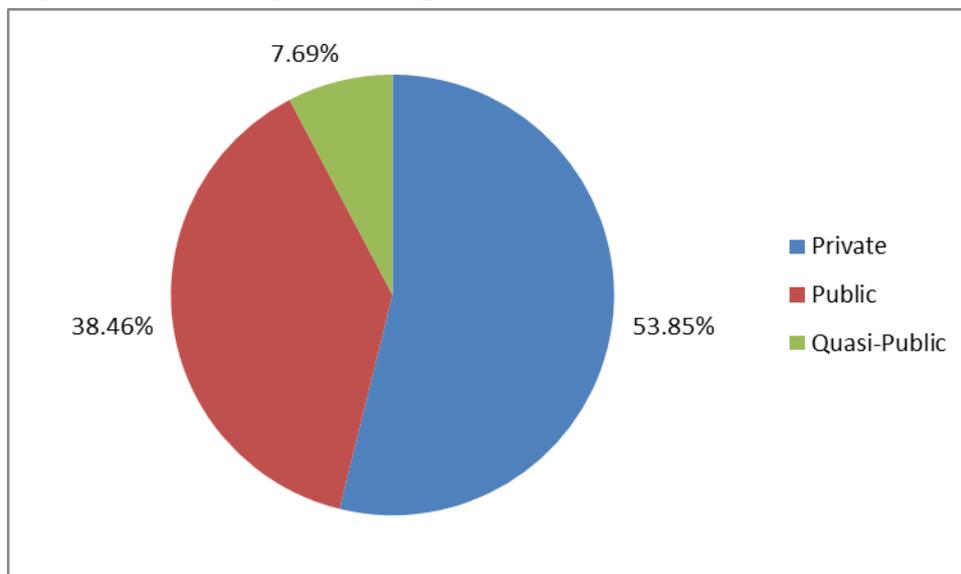
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Figure 1: A scatter diagram showing the variation in the number of IPOs each year for the period 1st January 1994 to 31st December, 2008



Source: Survey data (2009)

Figure 2: Percentages of Companies listed on NSE in terms of ownership type



Source: Survey data (2009)

Table 1: Sample of Companies classified by sector

Sector	Number of companies listed	Percentage of the companies listed (%)
Agriculture	1	7.69
Commercial and Services	4	30.77
Finance and investment	3	23.08
Industrial and allied	5	38.46
TOTAL	13	100

Source: Survey data (2009)

Table 2: Level of underpricing of Kenyan IPOs for the period 1994-2008

Company	IPO YEAR	Offer price(P _O) (Ksh.)	First day trading closing price(P _I) (Ksh.)	Underpricing $\frac{P_1 - P_0}{P_0} \times 100\%$
Co-Operative Bank	2008	9.50	10.45	10.00
Safaricom	2008	5.00	7.35	47.00
Kenya Re	2007	9.50	16.00	68.42
Access Kenya	2007	10.00	13.45	34.50
Eveready	2006	9.50	11.00	15.79
Scangroup	2006	1.45	15.00	43.54
Kengen	2006	11.90	40.00	236.13
Mumias Sugar	2001	6.25	6.25	0.00
Athi River Mining	1997	12.25	12.60	2.86
Kenya Airways	1996	11.25	12.55	11.56

Rea Vipingo	1996	10.50	12.00	14.29
National Bank of Kenya	1994	10.00	26.00	160
Firestone East Africa	1994	35.50	35.00	(1.41)

Source: Survey data (2009)