

IPO Price Performance in Emerging African Capital Markets: Empirical Evidence from Nigeria

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Abstract

This study explores the research gap arising from scanty documented studies in empirical findings and theoretical arguments on initial public offerings' (IPOs) price performance in emerging African capital markets. Employing equally-weighted average and the split-half reliability test, the study finds that equity IPOs are underpriced by 4.9 per cent, and IPO returns concentrate and stabilize within the sixth and tenth trading days in the deregulated Nigerian capital market. Regression analyses show that IPO volumes, offer size, the age of the firm before IPO, issuers' prospects and underwriters' reputation are not robust IPOs price determinants, unlike market conditions and syndicate underwriting. There is no significant relationship between initial returns on equity IPOs and long-run price performance of the offers. The study implies that differences in regulatory framework of capital markets define the degree of IPO initial underpricing and long-run price performance; and accentuates that local conditions are critical structuring elements of IPOs' price performance and predictions.

1. Introduction

Considerable research has been carried out on initial public offerings (IPOs) in capital markets of different regions of the world. In all the findings, IPOs are almost always priced "off the line" (Burrowes and Jones, 2004). That is, they are often mispriced. As a unique sector of the primary market, IPOs are situated in terms of risk and potential return. Young and Zaima (1986) remarked that the IPO market is much more volatile than the market for publicly traded firms. By their nature, IPOs go up, or they go down. They are rarely stable. With empirical evidence from 39 countries (see appendix I)¹, average initial returns ranged from 6.5 per cent in Austria to 164.5 per cent in China as at December, 2007 (Loughran, Rydqvist and Ritter, 1994 (updated in 2007)). Though, on the average, initial return on IPOs is positive the world over, there is evidence of a wide variations based on individual issues, industries, countries and time (Ritter, 1998). Most of the empirical patterns associated with the phenomena surrounding IPOs' price performance revolve around the theories of IPOs' underpricing in capital markets with various degrees of development and diverse regulatory institutional regimes (Tsangarakis, 2004).

The documentation of these findings in advanced capital markets is quite remarkable. However, in a sample of 973 IPOs spanning between 1988 and 1998 in Europe, Schuster (2003) found that the

¹The figure for average returns on Nigeria is a weighted average comprising initial returns from Ikoku's (1998) findings and the findings of this study which was used by the authors for update.

favourable performance of IPOs was accounted for by emerging markets that made up 28 per cent of the sample. Thus, “emerging countries are the areas for growth in the world economy, and are the areas for great development and learning.” (Tanzer, 2008p. 26). However, the volume of published research on IPO in Africa is still extremely low, and as shown in Loughran, Rydqvist and Ritter (1994), the coverage is almost exclusively on South Africa and Nigeria. Even so, the latest internationally published information from Nigeria and South Africa were up to 1993 and 1991 respectively. This is in spite of the fact that “Africa is so critically important within the emerging markets community and indeed the world community.” (Tanzer, 2008p. 26).

Thus, research gaps exist in the literature regarding the IPOs’ price performance in emerging capital markets in Africa. It has become an international concern to help the affected jurisdictions to identify these gaps and come up with specific steps to address the issues involved (Tanzer, 2008). There is therefore a strong need for research work in the area in emerging African countries. These gaps constitute some of the major reasons why meaningful comparisons between IPO price performance in the developed and emerging African capital markets remain very difficult. There is therefore a strong need for research work in the area in emerging African countries. Properly put to use, the outcome of successful researches could stabilize the IPO market for the benefit of both issuers and underwriters (Chen and Ritter, 2000). More comprehensive research emphases need to be laid on the emerging capital markets in Africa to balance empirical findings and theoretical arguments on IPO pricing across countries and regions. This is more pertinent now that globalization has made cross-border listing the vogue. Africa’s representation in current research and development on IPOs is therefore imperative. As a way of narrowing the research gap, this study examines IPOs’ price performance in an African emerging capital market, with data from the deregulated Nigerian capital market ranging from 1995 to 2006.

The Nigerian capital market offers a unique opportunity for such study for several reasons. First, unlike developed economies, IPO market in Nigeria is in the early stage of development and has many of the features of weak form efficiency that typifies emerging capital markets. Secondly, IPOs have been playing an enviable evolving role of corporate restructuring and consolidation strategies in the economy in recent time. Thirdly, in recognition of the enviable role of IPO in the economy, the Nigerian government lowered the tax rate on shares from 20% as contained in the Capital Gains Tax Act of 1967 to 10% in 1996. It was also for the same reason that the Second-tier Securities Market (SSM), with less stringent conditions for listing, was established in 1985 to encourage small firms to go public in Nigeria. Fourthly, Nigeria’s Securities Exchange Commission (SEC) is the second Securities’ Commission in Africa,

after that of South Africa, to be enlisted into the elite club of International Organization of Securities Commission (IOSCO) as an appendix “A” signatory. This underscores the fact that Nigeria’s capital market regulatory body is fully compliant with international best practices and standards, a development that situates the market for cross-border listing and makes the availability of pertinent IPOs’ price performance information in the Nigerian capital market a global concern. In addition, Nigeria is currently serving as the secretariat of African and Middle East Regional Committee of IOSCO, making its contribution important for the future of the region. Tanzer (2008p. 25)) noted that “Nigeria is such an important capital market within the region and ... very influential ... that people look up to Nigeria, especially on leadership on some of the issues concerning the region.”

2. Theories of Initial Underpricing of IPOs

Shares of companies going public for the first time are often mispriced on their first day trading (Burrowes and Jones, 2004). Mispricing is caused by either setting the offering price too low or the investors systematically overvaluing the IPOs on the first trading day (Sahi and Lee, 2001). A review of existing researches on IPOs by Certo, Daily, Dalton and Roengpitya (2003) suggested little consensus regarding those factors associated with underpricing, though their meta-analysis of published studies revealed a number of significant relationships. Schertler (2002) empirically analyzed the determinants of a sample of firms that went public on the Neuer Markt between 1997 and 2000, and of a sample of firms that went public on the Nouveau Marche between 1996 and 2000 where the result showed that the determinants for underpricing the two samples were substantially different. Despite the fact that no complete explanation is available on this underpricing phenomenon, several theories have been advanced to shed light on the possible underlining factors. Though not mutually exclusive, these theories focus on the behaviour of different IPO participants such as investors, issuers and issuing houses.

2.1 Winner’s Curse

Rock (1986) developed the “winner’s curse” hypothesis to explain the underpricing phenomenon in terms of information asymmetry among the different IPO participants including investors, the issuing firm and the underwriter. Ritter (1998) reasoned that the typical investor faces a winner’s curse because he only gets the shares which informed investors do not want because of adverse selection problem. Thus, issuers set lower prices for the IPOs to compensate the less informed investors sufficiently for the bias in the allocation of new shares to encourage them to participate at all.

Consistent with the winner's curse hypothesis, Michaely and Shaw (1994) demonstrated that in markets where investors know, a priori, that they do not have to compete with informed investors, IPOs are not underpriced. Durukan (2002) confirmed the existence of winners curse hypothesis on the Istanbul Stock Exchange. Ritter and Welch (2002), however, noted in their findings that asymmetric information is not the primary driver of many IPOs phenomena and rather suggested explanations from non-rational and agency conflict.

2.2 The Market Feedback

This theory is also known severally as dynamic information acquisition theory, bookbuilding theory or information gathering theory. During bookbuilding, the lead investment banker canvasses for potential investors and determines the demand curve for the offer. Underpricing is necessary to solicit information from investors about potential interest. Since investors are naturally inclined to bid lower during the marketing phase, there is a trade off between leaving little money on the table and selling out all the available issues. This leads to “partial adjustment” where the lead issuing house gathers that the issue is valued at a price other than that contained in the initial prospectus.

IPOs, which the offer price is revised upwards, will be more underpriced than those for which the offer price is revised downwards (Ritter, 1998). Empirical evidence from Loughran and Ritter (2002) confirmed that IPOs that were underpriced most were those where the offer prices were revised upwards from what had been anticipated at the time of filing the initial price range. Corwin and Schultz (2005) found strong evidence that offer prices are more likely to be revised in response to information when there is a syndicate of more underwriters, and especially more co-managers.

2.3 Information Cascades

This has to do with the effect of gathering information about a new issue by investors. Brunnermeier (2006) illustrated how herding or informational cascades can be used to explain interesting empirical observations in stock markets. Information cascades or “herding” assumes that potential investors base their decisions not only on their own information about the issue, but also on whether or not other investors earlier approached are purchasing the offers. These early investors are usually assumed to have informational advantage about the issue and so serve as an indication that the offer will perform well in the market because younger stocks react asymmetrically to good news (Depken, 2001). Conversely, if one important investor defects, other investors may well follow and the issue may be undersubscribed because the market reacts more quickly to bad news than it does to good

news (Marshall and Walker, 2002). This is sometimes called a “herd mentality” or “the bad wagon hypothesis.” The negative abnormal returns at the lockup expiration period are consistent with information cascades and herding theory (Brau, Carter and Christophe, 2004). The budget allocated to public offerings has doubled in recent times in an attempt to disseminate even information to all stakeholders to reduce herding and informational cascades (Heldenberg and Scoubeau, 2005).

Amihud, Hauser and Kirsh (2002) have found evidence to accept the cascade hypothesis in a test on a sample of 284 IPOs in the Tel Aviv Stock Exchange between 1989 and 1993. Schuster (2003), however, reported that there are mixed empirical support for the cascade hypothesis.

2.4 The Signaling Prospects

Welch (1989) presented a signaling model in which high-quality firms underprice an IPO in order to obtain a higher price at seasoned offerings. Underpricing is therefore a means which high quality-firms use to distinguish themselves from low quality firms as they “leave a good taste in investors’ mouths” (Ibbotson, 1975). It also assumes that in subsequent seasoned offerings, investors would readily go for the offers. In a cross-section of European IPO market, Schuster (2003) underlined the role of underpricing as a signal of firm quality. His findings further revealed that the quality of the underpricing signal is best in cold markets that are characterized by less noise. Cook and Officer (1996) provided empirical evidence that reissuers tend to have superior performance relative to nonreissuers and that firms that reissue within one year of the initial offering tend to have greater levels of underpricing relative to nonreissuers. However, Michaely and Shaw (1994) did not find empirical support for the signaling models that try to explain why firms underprice. Instead, they found that firms that underprice more go back to the reissue market less frequently, and for lesser amounts, than firms that underprice less.

2.5 Lawsuit Avoidance/Safety Net Model

Capital markets the world over are highly regulated. In Nigeria, section 45 (3) of Investment and Securities Act 1999 stipulates, inter alia, “...anyone who made the invitation ... is liable on conviction to pay compensation to any person who deposited money with the public company having relied on the advertisement or circular, for any loss they may have sustained...” Burrowes and Jones (2004) predicted that firms could underprice to prevent significant losses on an IPO, which could lead to litigations. Underpricing is therefore one of the ways of reducing the frequency and severity of future legal

liabilities. However, it has been observed that Finland, which has no known records of securities lawsuit cases, have as much underpricing as those with such known cases (Ritter, 1998).

2.6 Issuing House's Monopsony Power

Mather, Ramsay and Steen (2000) have proved empirically that in Australia, any unfavourable information relating to the performance of an issuing firm before going public is usually withheld from the public, especially if it is not legally required. There are indications that this accounting practice is common globally. Issuing houses capitalize on the informational advantage which they have thereby making less marketing efforts and ingratiating themselves with buy-side clients. In order to do this, the issuing houses issue the offering price below its "true price", which is defined as the equilibrium offering price when the issue house expends its best effort. Loughran and Ritter (2002) have shown that most of the money left on the table comes from minority of IPOs. After all, underwriting is an insurance against the possibility of poor investor response to a security issue (Ekineh, 2000).

Furthermore, Hoberg (2005) has provided empirical evidence that high underpricing underwriters have more market share, and are more profitable. This is consistent with Shiller's (1990) "impresario" hypothesis of underpricing whereby underwriters choose a lower offering price because they know that the cumulative profit of underpricing by less transparent means will be higher than maximizing revenue for the single event. The desire to receive indirect compensation from buy-side clients was prevalent during the boom in internet's IPOs in the late 1990s (Schuster, 2003). Hanley and Wilhelm (1994) findings suggested that institutional investors captured a large fraction of the short-run profits associated with IPOs. Ritter (2002) revealed that in the USA, underwriters have acknowledged that in the 1990s, IPOs were being allocated to investors partly, and sometimes mainly, because of past and future commission business on other trades that depended upon the amount of money that is being left on the table.

However, Muscarella and Vetsuypens (1989) rejected this hypothesis because, according to their findings, when investment bankers go public, they underprice themselves as much as other IPOs of similar size.

2.7 Underwriter's Reputation

Consistent with Kadiri's (2000) assertion that the success or failure of any issue depends on the degree of professionalism exhibited by the various parties involved in the issue, Ekineh (2000) believed that overpricing or underpricing might depend largely on professional competence of the underwriter.

In consonance with Carter and Manaster's (1990) findings, Michaely and Shaw (1994) have shown that IPOs underwritten by reputable investment banks experience significantly less underpricing and perform significantly better in the long-run. Ritter (2002) hypothesized that if underwriters were not able to reward their clients satisfactorily, issuers might choose to hire underwriters with a reputation for leaving less money on the table. Furthermore, Loughran and Ritter (2004) have documented that allocations of hot IPOs to the personal brokerage accounts of issuing firm executives created an incentive to seek rather than avoid underwriters with a reputation for severe underpricing. However, Aggarwal and Klapper (2003) found that underwriter reputation is less important when a firm is backed by venture capital.

2.8 The Ownership Dispersion

New issues may be purposely underpriced as a way of generating excess demand in order to have a large number of small shareholders. Ownership dispersion tends to increase the liquidity of the market for the stock, as well as make it more difficult for outsiders to challenge management. Harjoto and Garen (2005) established that after the IPO, management attains only a fraction of the benefits of good governance, so has an incentive to let inside ownership erode. Hence, Aggarwal and Klapper (2003) have noted that firms doing IPOs are particularly motivated to have the "appropriate" ownership structure so that it can serve as a signaling device to the market. According to Derrien (2005), since individual investors' demand is positively related to market conditions, large individual investors' demand leads to high IPO prices and large initial returns. Burrowes, Feldmann, Feldmann and MacDonald's (2004) study found that greater percentage of the firm's shares in public hands results to greater underpricing.

However, Hill (2006) has provided compelling evidence that IPO underpricing does not arise from efforts to determine the ownership structure of the post IPO firm and rather suggested that research be directed elsewhere other than IPO underpricing to affect post IPO ownership structure.

2.9 Underwriter's Price Support

An investigation by Ruud (1993) revealed that underwriter price support or stabilization accounts for the distribution of initial returns in USA between 1982 and 1983. The findings also predicted that a large percentage of stocks should experience positive initial and short-term abnormal aftermarket returns because underwriters remove price support over time. Chen and Ritter (2000) argued that the high average spread and the concentration of spreads at seven percent in the USA in the

late 90s and early 2000s was consistent with strategic pricing on the part of investment bankers as a way of sustaining high profitability and avoiding competition on fees.

2.10 Corporate Short-Term Thinking Effect

Depending on the demand for the offer, there is always a strong incentive for issuers and underwriters to focus on just maximizing their issue proceeds and therefore thinking short-term regardless of the impact on the business' long-term viability. Speculators often capitalize on the issuer myopia. Likening the process to a game, Gracia (2004) argued that:

In a game with very high stakes on the first round, ... the time horizon will necessarily be very short, and in a free-market economy where competition is ruthless and the rule is that the winner takes all, the players' thinking process is thus bound to be focused on the very short term.

Corporate short-term thinking effect could be one of the main underpinnings behind the IPO underpricing phenomenon.

Boabang (2003) had confirmed the existence of short-term trends in the aftermarket prices of the IPOs and pointed to the existence of short-run investor overreaction in the installment receipt IPO market as an instance. In a sample of constrained stocks over the period of 1988 to 2002, Asquith and Ritter (2005) found that short-sale constrained stocks, defined by high short interest and low institutional ownership, have significantly lower abnormal stock returns than unconstrained stocks. Brunnermeier (2006) used two models to show that this short-run focus of investors not only affects the stock price but also can potentially affect corporate decision-making contending that if corporate managers care about the stock market value, then corporate decision making also becomes short-sighted.

2.11 Influence-Seeking

Ikoku (1998) inferred that influence-seeking is a major determinant in explaining the underpricing of new issues because privatized initial public offerings (PIPOs) are more underpriced because managers in the public sector (bureaucrats) usually have no significant ownership interest in contrast to managers or entrepreneurs in the private sectors. They therefore dispose parastatals at give-away prices to attract oversubscriptions and then allot these shares to favoured ones who may be in positions to vote in or support the administration. This model conjectures that bureaucrats underprice shares in order to create additional consumers' surplus for the benefit of shareholders and

then try to capture this contrived surplus in pecuniary and non-pecuniary terms. The non-pecuniary benefits of underpricing are termed influence. This also explains why PIPOs are usually more underpriced than IPOs. The highest reported initial returns of 256.9 per cent from China were influenced by PIPOs (Ritter, 2003). Findings by Ritter (2002) had confirmed that this practice of managers rewarding their buy-side clients with underpriced share allocations might be extended to influential politicians as well.

2.12 Business Cycles in IPO Activity

This is a situation whereby the observed issuing activity exhibits significant, recurrent, and to some extent, predictable variations over time. Pastor and Veronesi (2005) tested and concluded that market conditions are the most important factor in the decision to go public. This is in congruence with Derrien's (2005) findings that IPOs cluster at equity market peaks and that in cold markets, firms substitute introductions for IPOs. He established that individual investors' demand is positively related to market conditions. This confirmed Ritter's (1991) claim that firms take advantage of windows of opportunity which, according to Welch (2000), are determined by factors such as the general stock market condition (like the NSE All-Share Index and market capitalization index in Nigeria), the industry market condition (best measured by a relevant, self-constructed index), the frequency and size of all IPOs in the financial cycle, and the frequency and size of industry IPOs in the financial cycle. In a cross-section of European IPO returns, Schuster (2003) summarized the characteristics of hot issues with certain industry classes, dominated by specific underwriters and companies for which issuing equity is always the least favoured choice of financing. The concentration of hot IPO market in certain classes of industries is in line with capital demand hypothesis (Buttimer, Hyland and Sanders, 2005).

With data from new listings on the New York Stock Exchange (NYSE) during 1926 to 1962, Loughran and Marietta-Westberg (2004) established the cumulative evidence which strongly suggested that managers possess timing ability in choosing when to list their clients' new stock. This is in congruence with Loughran, Ritter and Rydqvist's (1994) evidence that companies successfully time their offerings for periods when valuations are high. This is also in harmony with Ritter's (1991) observation that there is a substantial variation in the year-to-year and across industries' performance, with companies that went public in high-volume period receiving low returns in the long-run. There are several advantages to trading new listings if the timing is correct. According to Nipperess (2006), by using IPOs cycle analysis, project price swings can be anticipated, far ahead by employing time cycle analysis or astroanalysis.

3.0 Data and Methodology

3.1 Data Source and Collection

Data from firms that made public offerings on common stock IPOs between 1995 and 2006 were collected from the SEC. The data was restricted to initial IPOs issued by subscription or private placements to the public, and subsequently traded on the floors of the NSE. The data included the type of issue, number of shares offered, value of shares offered, offer prices, the dates the firms went public and the underwriters of the issue. The dataset excludes seasoned IPOs, rights and bonus issues, spin-offs, units' issues, as well as IPOs of industrial debentures and government bonds. The dataset also excluded the public offerings of firms which were merely introduced to the NSE after consolidation through mergers or acquisitions. This was due to the reasoning that the offerings of such firms were not strictly new as all, or some members of the group, would have traded their stock on the NSE earlier. For data that filtered into the dataset, there was no discrimination between firms with low (penny stock) or high offer prices.

The trading information of the selected IPOs from both the main board and the SSM was obtained from the NSE. Specifically, the data was obtained from the electronic dataset of the Research Department of the SEC. This source was found to be the most reliable considering the nature of the data. These included the firm name, date of admission for trading of new shares, and the daily post-IPO closing stock prices from which the first ten days, and the first, second and fifth years', closing prices were obtained. The data selected were those appearing on the electronic dataset from 1995 to 2006 for the first time. The first day a stock appeared on the electronic dataset was regarded as its first trading date. Supplementary data, including the classifications of companies by sectors and the dates of incorporation of the companies were also obtained from the 2006 Factbook of the NSE.

3.2 Measures of IPOs' Average Returns

Initial returns on IPOs are typically calculated from the percentage change in the offer price to the first closing price in the aftermarket, and taking an equally-weighted average across the sample to arrive at the mean. This implicitly assumes that the size of the issue is unrelated to the demand for allocations, and that the volume of sales of the initial offers on the first-trading day is not taken into consideration. However, Leite (2003) criticized this approach its implications for comparison across offering methods, time periods, security type and country. It also implies that inferences based on equally-weighted returns may be misleading. As a result, several studies have chosen to adjust the results obtained in their IPOs returns analyses using suitable benchmarks to provide results that are also

sensitive to movements, which may occur in the market or any of the macroeconomic variables. Ikoku (1998) argued that the unadjusted market returns is “raw” and contended that adjusted returns are more meaningful when compared to the performance of other issues in the market.

Variety of models can be used to measure price performance of stock, and given valid assumptions and perfectly measured inputs, not all of the models may produce the same value. Yetman (2001) noted that IPO firm characteristics and limited information availability affect the ability of a particular model to provide a relevant value in an IPO setting. This is because most of the studies employing such adjustment techniques focus on examining the level and reasons of underpricing. Secondly, the choice of a benchmark is often subjective and differing results may be obtained depending on which benchmark is used. Moreover, Burrowes and Jones (2004) established that in reality, results obtained from short-term analysis are less problematic as market volatility is filtered by the relatively short period involved. Even though long-term abnormal returns may not be robust to alternative methodologies, Loughran and Ritter (2002) argued that because various methodologies use different weighting schemes, the magnitude of abnormal returns should differ, though in a predictable manner.

The limitations of equally-weighted averages model highlighted above notwithstanding, it is employed by most of the known IPO price analyses. For example, almost all the average returns in the 39 countries reported by Loughran, Ritter and Rydqvist (1994) and Ritter (2003) employed this model. Using the same model is much more literally conducive for creative comparisons and contrasts. Moreover, using weighted average would have implied that the exact numbers of issues traded in the secondary market are known. However, the requisite data was not available at the time of this research. This study therefore adopted the model of equally-weighted averages to measure the IPO average returns in the both in the short and long terms.

The equally-weighted average model is specified as:

$$AR_{IPO} = \frac{\sum_{i=1}^n x_i}{n}$$

Where AR_{IPO} is the equally-weighted average return and $x_1 \dots x_n$ are the computed IPO returns, and n is the number of observations.

3.5.3 Difference of Means

The split-half reliability test, also known as test of internal consistency, is used to test the differences of means between the first five trading days and the next five trading days; and those of the initial trading day and the long-run returns. The usefulness of this model is that one form of data is divided into two

comparable halves based on defined criteria. The desired characteristics of the data are then tested for significance (Anastasi, 1969p.80). The statistical test of differences of means (Harper, 1982p.182) is then utilized to test for the significance of the two identified halves. The tests were based on the standard error and the t statistic of the differences of the means. The two-tailed significance of the differences at 95 percent significant level is employed. The model is specified as follows:

$$\bar{d}(x_1-x_2)=\sqrt{((\bar{\sigma}^2x_1/n_1)+(\bar{\sigma}^2x_2/n_2))}$$

where $\bar{d}(x_1-x_2)$ is the standard error of the means of differences, n_1 is the sample size with $\bar{\sigma}^2x_1$ as the standard deviation of one of the halves, and n_2 is the sample size with $\bar{\sigma}^2x_2$ as the standard deviation of the other half.

This model is used to test the early concentration of IPOs returns on the first ten days. The split will be based on the averages of the first five trading days, and the next five trading (sixth to tenth) days. This test has been considered significant following Burrowes and Jones' (2004) observation that the initial share price movements are concentrated within the first five days of trading, and that subsequent movements are minimal in the short-term as share prices tend to level off.

3.3 Regression Models

Regression models employ the measures of ordinary least square (OLS). Several studies have adopted the regression models to ascertain the relationships of identified variables in IPO performance analyses. It is a common econometric method that is widely used to derive estimates of the parameters of economic relationships from statistical observations with fairly satisfactory results (Koutsoyiannis, 2005p.48). The multilinear regressions models were also used test for autocorrelations and the goodness of fit. The a priori expectation of the model is presented as:

$$IR_{IPO} = \beta_0 + \beta_1 \text{LogFirm}_{Age} + \beta_2 \text{IPO}_{Size} + \beta_3 \text{IPO}_{Demand} + \beta_4 \text{IPO}_{Market Condition} + \beta_5 \text{ISSUER}_{Prospect} + \beta_6 \text{Underwriter}_{Reputation} + \beta_7 \text{Syndicate}_{Underwriting} + \epsilon$$

Accordingly, the simple linear model is employed to test the influence of initial IPO returns on long-run IPO returns (IR_{IPO}) as follow:

$$IPO_{Year1} = \beta_0 + \beta_1 IR_{IPO} + \epsilon$$

3.4 Measures of IPOs' Initial Returns

Initial returns are calculated as the price change measured from the initial offering price to the market price on the first trading day (Ritter, 1998). Therefore, the first trading day return for an individual stock is measured as:

$$IPOR_{DAY1} = ((P_1 - P_0) * 100) / P_0$$

where $IPOR_{DAY1}$ is the first trading day stock returns; P_0 is offer price; and P_1 is the closing market price on the first day of trading of the stock.

3.5 Measures of Long-Run IPOs' Returns

Long-run is a period of at least one year. Long-run returns are measured from the market price at the end of the first day of trading (Ritter, 1998). Following from this definition, the annual stock returns are measured as:

$$IPOR_{YEAR1} = ((P_{YEAR1} - P_1) * 100) / P_1$$

where: P_1 = the closing market price on the first day of trading of the stock, and P_{YEAR1} = the closing market price on the on the first anniversary (or the next trading day following) of the stock.

It is important to note that Ritter (1998), like most others (see Kim and Ritter, 1999), used nonissue and preissue comparables in appraising the long-run IPO returns. This study does not follow this procedure due to non available of data for nonissues and preissues for comparison. Another reason for not including nonissue comparables is the subjectivity that is usually inherent in the choice of nonissue and preissue comparables (Kim and Ritter, 1999). Another problem associated with comparables is that many idiosyncratic factors are not captured by industry multiples unless various adjustments for differences in growth and profitability are made. Consequently, absolute values of returns will be ascertained. This may be affected by inflation due to the time period involved in their evaluation.

3.6 IPO Price Determinants

This study adopts seven identifiable explanatory variables to test for their robustness in influencing the pricing of IPOs in the deregulated Nigerian capital market. Their inclusion was due to emphasis on them in the IPOs literature and the availability of data.

Firm Age: Several studies, including Aggarwal and Klapper (2005) demonstrated the robustness of the age of the firm to its initial pricing behaviour. The firm age is measured as the number of years a firm stayed in operation before going public. The firm age as measured in number of years is a relationship that is a constant elasticity type. This makes it necessary to convert the constant elasticity relationship in a convenient form that would bring out the cause-effect relationship. The appropriate transformation for the estimation of the constant elasticity form with the logarithms of the variables makes the application of ordinary least square to the linear transformation reasonable (Koutsoyiannis, 2005p.137). Our proposed proxy for firm age is denoted by the log of years of its existence since incorporation.

IPO Size: Derrien (2005), among others, attested to the influence of IPO size on its pricing. Pastor and Veronesi (2005) corroborated this finding. In all instances, the IPO size was represented by the volume of the offer. That is, the number of shares offered to the public, or placed privately, for subscription. Volume has been considered as essential stock price determinant. According to Osaze (2000p.111), "it takes volume to move prices and ensure activity in the market since volume has been determined to be a measure of the intensity of investors' emotions and price reactions." This study adopts this definition of IPO size.

IPO Demand: The effect of demand on price in a deregulated economy is obvious. A priori, it is expected that the higher the demand, the higher the price would be. It is therefore reasonable to assume that the level of demand of the issue is likely to affect its subsequent trading and returns at the Exchange. The subscription level is measured as the percentage of the subscription of the issue to the total number of the issues to the offer. This study adopts the percentage of IPO offer subscription level for demand proxy.

Market Condition: There are two discernible IPO market conditions. These are "hot" and "cold" market conditions. The most frequently used definitions of "hot" and "cold" IPO market conditions are based on volume (Loughran and Ritter, 1995; and Helwege and Liang, 2001). However, Ibbotson and Jaffe (1975) and Ritter (1984) employed the definition of "hot" and "cold" based on the level of underpricing. Therefore, cycles exist in both volume and the average initial returns of IPOs. The periods of high average returns and rising volume are known as "hot issue" markets (Ritter, 1998). In Schuster's (2003) research work, a market is considered to be in a hot condition in any year the average return is greater

than the median returns for that year. It is regarded as cold if the returns are less than the median for that year.

This study favours the IPO price-based definition mainly due to the distortion volume-based definition may cause in the Nigerian situation. This is because the highest number of companies that went public during the research period was made up of banks. The volumes of most of the banks' offerings were impelled by regulation other than market forces. The average median price employed for the determination of the hot and cold market conditions is that of the whole sample due to the fact that some years contained too little sample sizes. Dummy variables are used as market condition proxy. Any offer whose average was more than the sample median was assigned the value of 1 while the value of 0 was assigned if otherwise.

Issuer Prospect: Issuer prospect is the variable that indicates the firm's intention to offer subsequent issues. This is also known as signaling in IPO literature. Loughran and Ritter (2002) posited that underwriters leave money on the table by underpricing for the purpose of signaling their status in order to attract more investors to their subsequent offers. Ljungqvist and Williams (2005) confirmed this postulation in subsequent studies.

This research used dummy variables for the issuer prospect proxy. Where a firm made subsequent public offerings within our research period, it was assigned the value of 1. This applied whether issue is a supplementary subscription or rights issues, within our research period. The value of 0 is assigned if otherwise.

Underwriters' Reputation: There are very distinct advantages with doing an IPO through a reputable broker/dealer. An IPO done through a reputable brokerage firm usually allows for larger offerings and more assurance that an underwriting can get completed. Bartov, Mohanran and Seethamrajuh (2002) proved empirically that issuing firms signal their prestige by going for reputable underwriters that package a more reliable prospectus. Klein (1996) had earlier shown that a reputable issuing house results in a higher valuation of IPOs and greater investor confidence. While the sale of the securities through a broker will cost a percentage of the offering, it is usually well worth the additional costs to insure the completion of the offering and the aftermarket.

Underwriter reputation is measured by the market share of the underwriter. This is represented by the ratio (measured in percentage) of the underwriter to the total number of their competitors

appearing on the sample IPOs in the study. Where a syndicate of underwriters is involved in an issue, the sum of their ratios is taken as the proxy of underwriter's reputation for the offer.

Syndicate Underwriting: A major factor in using a brokerage firm with a substantial client base for the underwriting is that the firm may get other brokerage firms involved in the underwriting (a syndicate) and they all continue to take a position in the stock long after the offering is completed, thus maintaining a market for the stock. According to Corwin and Schultz (2005), IPO syndicate underwriting has become critical to pricing, information production and underwriter competition. It is more likely to result in revised analyst coverage and additional market makers' followers. Even in Nigeria, it has become fashionable for most firms going public to engage a syndicate of underwriters to underwrite the offer. This is done probably to ensure a fair pricing of the offer and to influence the investors' buying habits. This study also tests for the robustness of syndicate underwriting. The proxy for this variable is 1 where an IPO offer is underwritten by a syndicate and 0 where the offer is underwriting by a single issuing house.

4.0 Results

4.1. Initial Average Returns of Equity IPOs

Statistics on Table 1 show that the average initial return is 4.9 percent. The student's t-statistic is 2.143 at 95 per cent confidence level. Therefore, equity IPOs are underpriced in the Nigerian capital market. This result is a confirmation of Ritter's (1998) finding that new issue underpricing phenomenon exists in every nation with a stock market, although the amount of the underpricing varies from country to country. The result implies that for every IPO issued, on average, 4.9 per cent of the expected proceeds is left on the table for investors. Strikingly, this result is also substantially less than the 15.6 per cent and 21 per cent average result reported by Ikoku (1998) in respect of IPOs and PIPOs respectively from the Nigerian equity market from 1989 to 1993. IPO average returns are considerably different in a regulated capital from those of the deregulated capital market. This implies, therefore, that IPOs are more underpriced in a regulated capital market. Apparently, differences in regulatory framework define the practice and status of IPOs in capital markets of the world.

Table 1
Descriptive Statistics of IPOs Average Returns

Sample Size	51.00
Average Returns	4.88
Median	3.23
Maximum	55.80
Minimum	-44.41
Quartile 1	0.00
Quartile 2	3.23
Quartile 3	5.55
Quartile 4	55.80
Standard Deviation	16.28
$t_{0.05}$	2.14
Kurtosis	3.74
Skewness	0.58
Weighted Average	0.96

Figure I
Histogram of IPO Returns

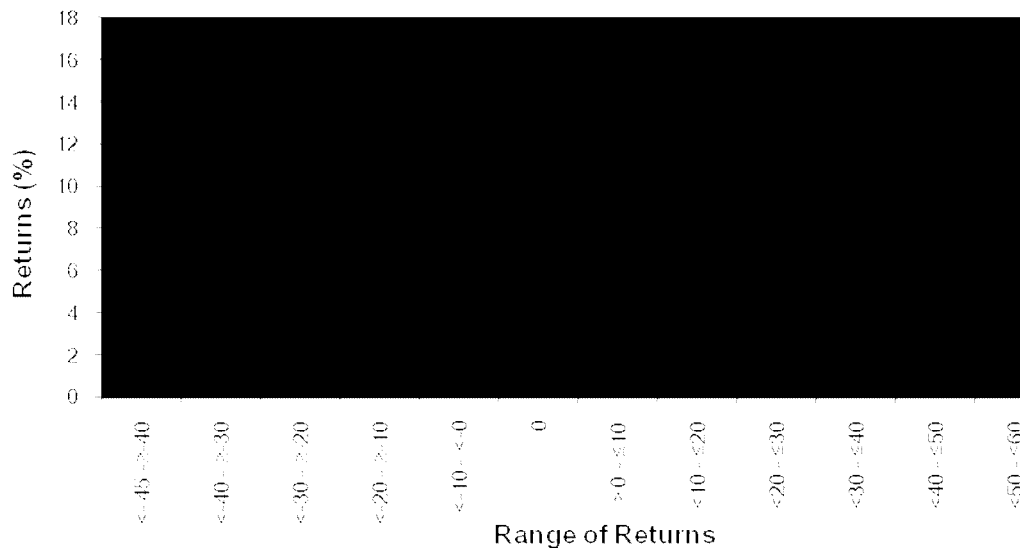


Table 2
Initial Average Returns
Panel A: The Overall Initial Average Returns of IPOs

Year	No. of IPOs	Average (%)	Volume (m)	Value (Nm)
1995 – 2006	51	4.9	87714.73	224846.08
<u>Panel B: The Initial Average Returns of IPOs by Years</u>				
Year	No. of IPOs	Average (%)	Volume (m)	Value (Nm)
1995	5	4.9	317.69	313.64
1996	2	5.4	50.00	75.00
1997	-	-	-	-
1998	7	7.4	2,460.78	2,455.11
1999	7	0.5	2,160.68	3,106.35
2000	-	-	-	-
2001	-	-	-	-
2002	2	0.0	459.64	1,008.20
2003	4	6.9	5,340.00	10,700.00
2004	8	-7.8	35,142.60	68,744.82
2005	9	9.1	23,902.34	54,682.46
2006	7	16.1	17,881.00	83,760.50
1995 – 2006	51	4.9	87,714.73	224,846.08
<u>Panel C: Initial Average Returns of IPOs by Sectors</u>				
Sector	No. of IPOs	Average (%)	Volume (m)	Value (Nm)
Agriculture	1	0.0	159.64	798.20
Aviation	2	2.4	1,620.00	2,430.00
Banking	23	5.3	67,888.21	146,529.14
Breweries	1	0.0	200.00	180.00
Chemical & Paints	2	7.2	70.00	87.00
Conglomerates	1	-19.0	8,000.00	60,000.00
Engineering Technology	1	14.3	40.00	48.00
Hotel & Tourism	1	0.0	650.00	2,600.00
Industrial /Domestic Products	1	0.0	88.40	48.18
Insurance	11	1.4	4,623.80	4,250.72
Managed Funds	1	28.6	7.19	3.60
Maritime	1	15.4	600.00	1,320.00
Mortgage Houses	1	42.9	3,000.00	5,400.00
Petroleum (Marketing)	1	4.5	60.00	90.00
Printing & Publishing	2	3.1	40.49	60.74
Road Transportation	1	0.0	667.00	1,000.50
The Entire Economy	51	4.9	87,714.73	224,846.08

Figure I depicts the grouped distribution of initial returns of equity IPOs in Nigeria. Out of the sample of 51 observations, 9 (17.6%) observations have negative returns, 15 (29.4%) observations have zero returns, while 27 (52.9%) observations have positive returns. In other words, on the average, investors are likely to make positive returns in about 53 % of their investments in equity IPOs in Nigeria. It also signifies that issuers do not leave money on the table in about 47% of the offerings. Issuers shortchanged investors by overpricing their IPOs in about 18% of the issues.

Table 2 is a panel data of the distributions of average returns by years and by industries. The Table shows that while the highest average return of 16.1 per cent was experienced in 2006, the lowest average return of -7.8 was recorded in 2004. There were no IPO issues in 1997, 1999 and 2000. On the other hand, the highest underpricing of 42.9 is recorded by the mortgage sector. IPOs from the conglomerates sector are overpriced. This is not surprising as they were the blue chips on the Nigerian capital market prior to banks' consolidation. The agricultural sector has a zero return.

Figure II
Initial Returns of IPOs by Industrial Sectors



4.2 IPO Price Determinants

The regression analysis recorded the results shown in Table 3. The analysis indicates that IPO volume, demand, age, issuer prospects, and underwriters' reputation are not significant at 95 per cent confidence level while market conditions and syndicate underwriting are statistically significant at 95 per

cent confidence level. This is a manifestation of country-specific dynamics of IPOs price performance in different environmental contexts.

Table 3
Results of Regression on IPO Price Determinants

	Coefficient/(t-Statistic)
Intercept	-6.911 (-1.141)
Volume	0.0016 (0.475)
Demand	0.0019 (0.060)
Age	0.05783 (0.28)7
Syndicate Underwriting	-16.044 * (-2.586)
Market Condition	19.636 * (3.721)
Issuer Prospect	8.604 (1.701)
Underwriters' Reputation	-0.0222 (-0.034)
R	0.729
R-Square	0.532
Adjusted R-square	0.383
F-Statistic	**3.569
Durbin-Watson	2.065

The figures in parentheses are t-statistics while * and ** indicate significance at 95 per cent and 99 per cent confidence levels respectively.

The R^2 indicates that the explanatory variables accounted for about 53 per cent of the factors that influence IPO price. This concurs with Knof and Teall's (1999) studies in suggesting that other factors such as information asymmetries must explain at least part of the IPO underpricing phenomena. Schwert's (2002) work concluded that the factor that seems to explain unusual volatility best is technology, not firm size or the immaturity of the firm. This could signify that a lot of IPO price changes may not be rooted in fundamentals and that trading decisions are not necessarily based on research support. The F-statistic of the regression is significant at 99 per cent confidence level. This indicates that the regression is valid at that level of confidence. Durbin Watson statistic of 2 is statistical evidence that there is no serial autocorrelation in the function.

4.3 Concentration of Early IPO Returns

Burrowes and Jones (2004) postulated that IPO returns tend to concentrate on the first five trading days. This was confirmed by Lowry, Officer, and Schwert (2007) who also proved that the early volatility of IPO returns is substantial, fluctuates dramatically over time, and is considerably larger during the “hot” IPO markets. To test this hypothesis, the average returns for the first ten trading days were computed and split into two equal halves of five trading days each. The statistical difference of averages of the two splits was tested by using the split-half technique. The two halves were made up of the average of the first five trading days (1st to 5th trading days), and the other half was made up of the next five trading days (6th to 10th trading days). The difference of means between the two halves was then tested for statistical significance. The statistics is as presented in Table 4.7.

The difference of average returns of the pairs is -19.2. That is, the average mean of trading days six to ten is more than that of days one to five by 19.2 per cent. Since the computed standard error of 4.724 is greater than theoretical standard error of 2.776 at 95 per cent confidence, the difference is significant.

Table 4
Split Half Tests Results

	First Half	Second Half	Pairs Differences
Sample size	51	51	51
Mean	12.88	22.648	-9.17
Standard Deviation	4.727	2.186	2.697
t Statistic			-7.603
Standard Error			4.724
Correlation Coefficient			0.96

The smaller standard deviation in the second half of the split of returns after the first five days is statistical evidence of relative stability. That is, more stabilized higher returns are observed after the first five trading days. The volatility of returns is higher in the first five trading days with the standard deviation of 4.727 against 2.186 in the next half. This implies more stability in the second half. This finding also confirms the significance of cascade or herding theory whereby potential investors base their decisions on the actions of established investors (Brunnermeier, 2001 and Welch, 1992), and that younger stocks react asymmetrically to good news (Depken, 2001).

Krigman, Shaw and Womack (1999) had demonstrated that large, supposedly informed, traders "flip" IPOs that perform the worst in the future, and that IPOs with low flipping generate abnormal returns over the first six months beginning on the third day, therefore proving that flipping is predictable. Clearly, aftermarket returns is substantially higher than initial returns. Informed investors employ a strategy that makes price discovery in the premarket cheaper by withholding information so as to compete in the aftermarket with the rest of the informed public (Busaba and Chang, 2002). The import of this finding is that IPOs aftermarket transactions are more lucrative for the more informed investors, usually the institutional investors.

4.5 Influence of Initial Returns on Long-Run Returns of Equity IPOs

Ritter (2003) questioned the chances of long-term performance of IPOs been just the consequences of initial mispricing because it is difficult to separate out bad luck from ex ante overvaluation. This study tested for the influence of initial returns on the long-term performance of IPOs by regressing initial returns on the long-run returns. The regression (shown in table 4.10) shows that this is not significant at 95 per cent confidence level. Therefore, the hypothesis that initial returns influence the long-run performance of IPOs is rejected at 95 per cent confidence level. The regression results for the second and fifth years' returns (also shown in table 4.10) are also not significant at 95 per cent confidence level. The R^2 indicates that initial returns account for IPO long-run returns very poorly. This implies that initial returns of equity IPOs have no significant effect on long-run returns in the Nigerian capital market. This finding supports Ritter's (1991) conclusion that there is a substantial variation in the underperformance year-to-year and across industries, as well as different capital markets.

Table 5
Regression of Initial Returns on Long-run Returns

Period	Average Returns	Coefficient/ (t-Statistic)	R^2	F-Statistics	Standard Deviation	Sample Size
Year 1	15.4	-0.137 (-0.311)	0.003	0.097	39.0	37
Year 2	15.8	-0.607 (-0.843)	0.022	0.711	53.9	33
Year 5	25.7	0.86 (0.791)	0.023	0.626	91.6	29

Note: Parentheses contain t-statistics

The finding implies that issuers can maximize their proceeds from IPOs without losing out in the long-run in the Nigerian capital market. Firms can therefore take advantage of windows of opportunity by

making offers during the hot markets as has been found by Loughran, Ritter and Rydqvist (1994), to maximize the IPO proceeds. This may also explain the prevalence of seasoned offerings in the Nigerian capital market, especially in the banking sector where the long-run returns are always on the rise. This anticipation of the continuous rise in aftermarket returns of IPOs in the long-run rather seems to be responsible for the oversubscription of subsequent offerings. Zenith Bank Plc, for instance, made three seasoned offerings between 2005 and 2007 and all of the offerings were oversubscribed. Several banks and companies in other industries have continued to successfully make seasoned offerings in the Nigerian capital market.

This finding debunks the findings in several capital markets that long-term underperformance is highly associated with initial underpricing of IPOs. The underlying assumptions usually include the fact that the IPO mispricing will be smoothed in the long-run as the public and private information about the company earlier hidden by issuers and underwriters gradually become available.

Conclusion

The research results have revealed several findings. Equity IPOs are marginally underpriced by 4.9 per cent in the Nigeria capital market. It is inferred that IPOs are more underpriced in a regulated capital market. The ratio of IPO underpricing, normal pricing and overpricing is 9:5:3 respectively. Market conditions, syndicate underwriting and issuers' prospects are not robust to IPOs price determination in Nigeria while IPO volume, offer size, the age of the firm before IPO and underwriters' reputation indicate significant influence on IPO initial returns. These variables account for only 53 per cent of the influences on IPO price. IPO returns concentrate and stabilize within the sixth and tenth trading days. The results indicate no significant evidence that equity IPOs underperform in the long-run in relation to initial returns neither have it significant evidence of influence of initial returns of equity IPOs on its long-run performance.

Following from the research findings and the interpretations thereof, the main contributions to knowledge by this study include: (i) the postulation that differences in regulatory framework define the degree of IPOs' initial underpricing and long-run price performance; (ii) the identification of country-specific dynamics of IPOs' price determinants; and (iii) the accentuation of local conditions as critical structuring elements of IPOs' price performance and predictions.

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APPENDIX I
International Insights into Equally Weighted Average Initial Returns

Country	Source	Sample Size	Time Period	Avg. Initial Return
Australia	Lee, Taylor & Walter; Woo; Pham; Ritter	1,103	1976-2006	19.8%
Austria	Aussenegg	96	1971-2006	6.5%
Belgium	Rogiers, Manigart & Ooghe; Manigart DuMortier; Ritter	114	1984-2006	13.5%
Brazil	Aggarwal, Leal & Hernandez	62	1979-1990	78.5%
Canada	Jog & Riding; Jog & Srivastava; Kryzanowski, Lazrak & Rakita; Ritter	635	1971-2006	7.1%
Chile	Aggarwal, Leal & Hernandez; Celis & Maturana	55	1982-1997	8.8%
China	Chen, Choi, and Jiang (A shares)	1,394	1990-2005	164.5%
Denmark	Jakobsen & Sorensen; Ritter	145	1984-2006	8.1%
Finland	Keloharju	162	1971-2006	17.2%
France	Husson & Jacquillat; Leleux & Muzyka; Paliard & Belletante; Derrien & Womack; Chahine; Ritter	686	1983-2006	10.7%
Germany	Ljungqvist; Rocholl; Ritter	652	1978-2006	26.9%
Greece	Nounis, Kazantzis & Thomas	363	1976-2005	25.1%
Hong Kong	McGuinness; Zhao & Wu; Ljungqvist & Yu; Fung, Gul, and Radhakrishnan; Ritter	1,008	1980-2006	15.9%
India	Marisetty and Subrahmanyam	2,713	1990-2004	95.4%
Indonesia	Hanafi; Ljungqvist & Yu; Danny	265	1989-2003	20.2%
Iran	Bagherzadeh	279	1991-2004	22.4%
Israel	Kandel, Sarig & Wohl; Amihud & Hauser	285	1990-1994	12.1%
Italy	Arosio, Giudici & Paleari; Cassia, Paleari & Redondi; Vismara	233	1985-2006	18.2%
Japan	Fukuda; Dawson & Hiraki; Hebner & Hiraki; Pettway & Kaneko; Hamao, Packer, & Ritter; Kaneko & Pettway; Ritter	2,458	1970-2006	40.1%
Korea	Dhatt, Kim & Lim; Ihm; Choi & Heo; Ng; Ritter	1,115	1980-2006	58.4%
Malaysia	Isa; Isa & Yong; Yong	350	1980-2006	69.6%
Mexico	Aggarwal, Leal & Hernandez	37	1987-1990	33.0%
Netherlands	Wessels; Eijgenhuijsen & Buijs; Jenkinson, Ljungqvist, & Wilhelm; Ritter	181	1982-2006	10.2%
New Zealand	Vos & Cheung; Camp & Munro; Ritter	214	1979-2006	20.3%
Nigeria	Ikoku; Achua	114	1989-2006	12.7%
Norway	Emilsen, Pedersen & Sættem; Liden; Ritter	153	1984-2006	9.6%
Philippines	Sullivan & Unite; Ritter	123	1987-2006	21.2%
Poland	Jelic & Briston; Ritter	224	1991-2006	22.9%
Portugal	Almeida & Duque; Ritter	28	1992-2006	11.6%
Singapore	Lee, Taylor & Walter; Dawson; Ritter	441	1973-2006	28.3%
South Africa	Page & Reyneke	118	1980-1991	32.7%
Spain	Ansotegui & Fabregat; Alvarez Otera	128	1986-2006	10.9%
Sweden	Rydqvist; Schuster; Simonov; Ritter	406	1980-2006	27.3%
Switzerland	Kunz, Drobotz, Kammermann & Walchli; Ritter	147	1983-2006	29.3%
Taiwan	Chen	1,312	1980-2006	37.2%
Thailand	Wethyavivorn & Koo-smith; Lonkani & Tirapat; Ritter	447	1987-2006	36.9%
Turkey	Kiyamaz; Durukan; Ince	282	1990-2004	10.8%
United Kingdom	Dimson; Levis	3,986	1959-2006	16.8%
United States	Ibbotson, Sindelar & Ritter; Ritter	15,490	1960-2006	18.0%

Source: Loughran, T., Ritter, J. R. and Rydqvist, K. (1994). Initial Public Offerings: International Insights. *Pacific-Basin Finance Journal*, vol. 2, pp. 165-199. Updated November, 2007, available at <http://bear.cba.ufl.edu/ritter/pbritter.htm>