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The Underpricing Phenomenon of IPO: Prediction of Upcoming IPOs in Uzbekistan

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Abstract: Within the framework of this scientific work, an attempt was made to generalize and analyze the existing studies of foreign authors on the problem of the phenomenon of underpricing, to identify the most common world experience and unique characteristics. Based on the identification of key factors and drivers of underpricing, the most significant parameters of underpricing of initial public offerings were identified in relation to two past initial public offerings and future public offerings. Prior to this article, no factorial or other type of analysis of the underpricing of initial public offerings has been carried out in Uzbekistan. Based on a bibliographic analysis of foreign studies on the problem of the phenomenon of underpricing, seven main factors and five hypotheses were identified that presumably influence the underpricing of initial public offerings of companies.

In the course of the study, factors that have a significant impact on the occurrence and size of underpricing of company shares on the first day of trading were identified, the significance of these factors was assessed, and recommendations were given for the practical use of the study's findings in upcoming initial public offerings.

Key words: initial public offering, lost capital, long-term underperformance, Signal theory, ownership concentration, information asymmetry, reputational capital..

INTRODUCTION

An initial public offering (IPO) is an important step in the development of a company. With the help of this tool, the company not only acquires the status of a public company but also receives many benefits and advantages. Among them, one can highlight access to the capital of a wide range of investors, obtaining an assessment of the company's market value and increasing its capitalization, improving its image, prestige, and reputation of the company.

An IPO is the first public offering of a company's shares, during which the company releases its shares on the market for the first time and a wide range of investors buy them [11].

A distinction is made between an Initial Public Offering, carried out in order to raise additional funds for the company, and a Secondary Public Offering, during which venture capitalists and company founders sell part of their existing shares [6].

Often the primary and secondary offerings are combined so that one or more existing shareholders decide to reduce the number of shares they hold and at the same time raise funds by issuing new shares to develop the company. Often access to capital is considered easier, especially when the issuer has attractive features and the market clearly sees that the funds will help the company's financial development. On the contrary, the sale of existing shareholdings is sometimes viewed with suspicion by investors, especially when the sale leaves the shareholder with no stake in the company [12].

As noted earlier, an IPO is one of several main ways to raise funding for a company.

The most popular method of obtaining funds is a bank loan due to its simplicity and speed of attraction. In addition, the company is not required to publicly disclose information, which is an advantage of this method. However, obtaining a bank loan requires collateral, the value of which, as a rule, exceeds the amount of the loan itself. The main disadvantage is the need to return the borrowed funds and often at high-interest rates. In addition, debt financing instruments lead to an increase in the financial burden and debt servicing costs [13].

The second way to attract financing is promissory notes and bonds. Issuance of corporate promissory notes and bonds is an effective and fairly simple tool for raising funds without collateral. In addition, when a bond issue is issued, management retains full control over the company. However, the interest on loans is paid at the end of the term and, as a rule, at a high-interest rate. The disadvantages of this source of financing in a similar way include raising funds for a certain period and the need to pay coupon income [13].

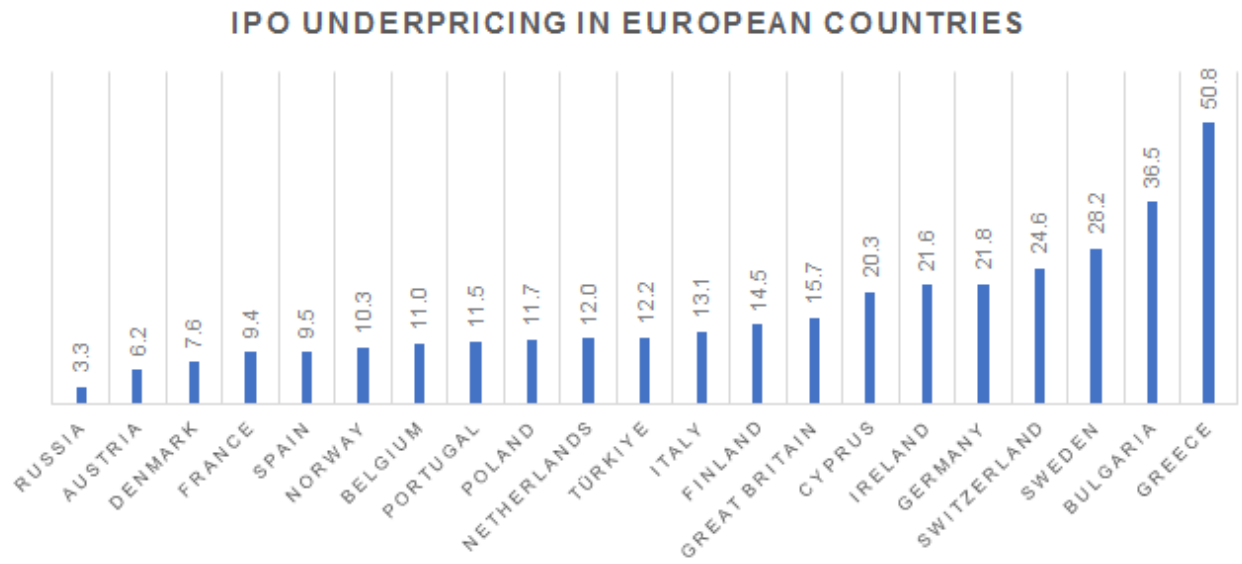
Shareholders' own funds can also be considered as an alternative way of investing. This source of financing has the following advantages: no debt encumbrance, the direct interest of shareholders in the development of the company, and ease of attraction. However, as a rule, shareholders' funds are not always enough to achieve the company's large-scale goals, for example, such as entering the international market [17].

Various approaches are used to evaluate the effectiveness of IPO results, and one of them is to measure the amount of underpricing of shares during an IPO. Underpricing of shares is one of the anomalies inherent in IPOs and occurs when the closing price of the first day of trading exceeds the offer price of shares. As a result of the underpricing of shares, the amount of capital attracted through an IPO is reduced compared to the potential, thereby reducing the effectiveness of entering the stock exchange as a tool for attracting investments.

An underpricing of a company's shares occurs when the company and the underwriting bank value the placed block of shares lower than the formed market price. In other words, the placement of underpriced shares leads to an increase in the value of the placed package and, accordingly, the capitalization of the company on the first day of trading [15].

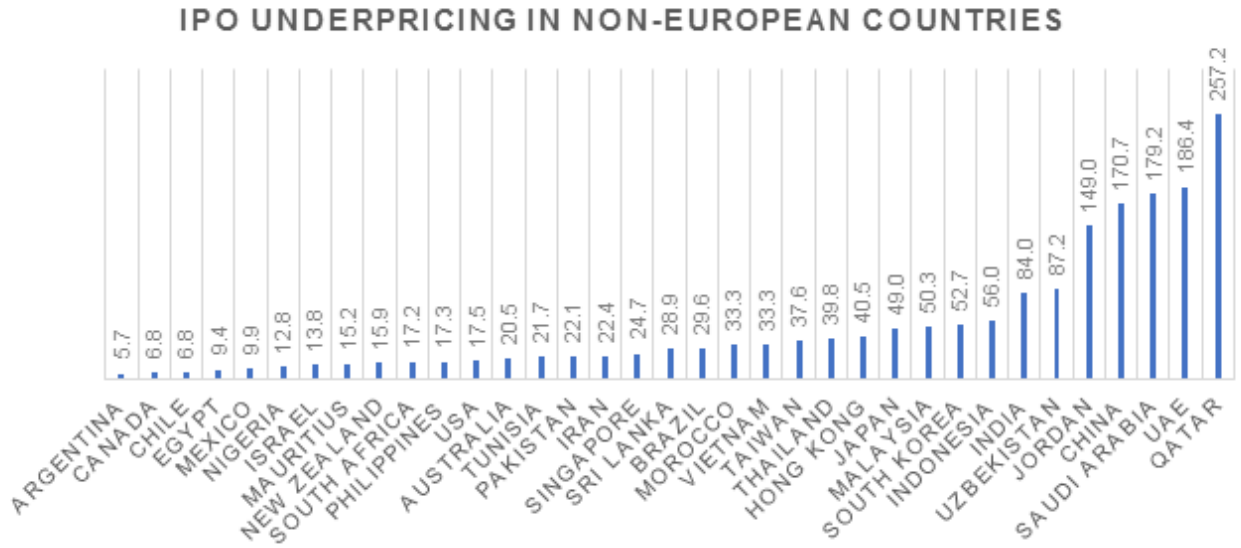
For example, in the United States, the average underpricing is about 11%, if you do not take into account the point of average underpricing during the so-called "Dot-com bubble" when stocks rose by 66% on the first day. In Uzbekistan, the average value of underpricing is still quite higher than in many other countries. (See Fig. 2).

The IPO underpricing phenomenon exists in all countries and stock markets, but the degree of underpricing varies. Fig. 1 and Fig. 2 show the average underpricing of IPOs in different countries.



[Source: Loughran, Ritter, Rydqvist Initial Public Offerings: International Insights (Updated July 22, 2022)]

Figure 1. Underpricing of IPO in European countries



[Source: Loughran, Ritter, Rydqvist Initial Public Offerings: International Insights (Updated July 22, 2022)]

Figure 2. Underpricing of IPO in non-European countries

As you can see, Uzbek issuers face a high underpricing of IPOs in comparison with other non-European countries.

LITERATURE REVIEW

The most covered topic of research in the field of IPO is a block of research from the perspective of investors. It examines three common anomalies in an IPO:

- undervaluation during placement (underpricing);
- reduced return on investments at the IPO stage in the long term (long-term underperformance);

- activation of firms' IPOs during boom periods (hot issue markets).

A large number of works have also been devoted to the study of the IPO underpricing phenomenon, explaining the underpricing of shares at the time of placement from the standpoint of analyzing various factors that affect the underpricing, such as the age and size of the company, industry affiliation, underwriter reputation, etc.

Among the most famous, one can single out the work of Ritter [26], who, using the example of an analysis of 1,028 companies that placed shares in the period from 1977 to 1982 in the United States, showed that the average level of Underpricing of the value of shares of «small» companies is much higher (43.7 %) compared with the level of underpricing of shares of «large» companies (7.7%). Similar results were also obtained and published by Megginson and Weiss [23], and Ljungqvist and Wilhelm [20], who used the size and age of the company as the main proxies to explain the IPO underpricing phenomenon.

The earliest study of IPO underpricing in the existing literature was conducted in the 1960s. Then Reilly and Hatfield [25] examined a limited data set of 53 new stock offerings for the period 1963-1965. The results of the study showed that over 50% (31 shares) of issues outperformed the market in the short term, earning an average return of 18.3% over the market. The study observed superior returns on new issues by analyzing returns on the first Friday, the fourth Friday, and one year after issuance. However, as the authors note, the study did not guarantee the correctness of the hypotheses, since the IPOs were carried out during a hot market period when the demand for initial issues was much higher, and also, the excess returns were marked by the returns of the Dow Jones index, which is a price-weighted index.

Thus, Ritter and other researchers showed a positive relationship between underpricing and the age (size) of the company: the «younger» and «smaller» the company, the more likely it is that the value of the company's shares will be underpriced during the placement. This fact is explained by the asymmetry of information (investors are more aware of the fair value of large and established companies in the market and do not have sufficient information on small and start-up companies).

Researchers Benveniste, Busaba, and Wilhelm [4] in their studies propose a model based on the issuer's industry specialization. The logic of the model presented by the authors is that the information uncertainty regarding the placement price depends on the industry component and the receipt of information by investors on various industries. In particular, the researchers found that the profitability on the first day of trading after the IPO of companies belonging to the high-tech industry (pharmaceutical, computer, electronic, etc.) is higher than the profitability of companies belonging to the «standard» industry. From the point of view of researchers, this is explained by the fact that investors are differently aware of the financial stability and risks of companies belonging to a particular industry.

In relation to this group of theories, it is necessary to briefly note a block of studies that consider the phenomenon of underestimating IPOs from the point of view of the level of borrowing by the issuing company. However, researcher Su [31] comes to a completely different conclusion. He received a result indicating a positive relationship between the level of borrowing and the underpricing of IPOs. At the same time, the researcher, on the contrary, considers companies with a high level of borrowing as riskier and less stable, believing that the level of uncertainty regarding the prospects of such companies is much higher, which leads to the purchase of shares at an IPO at underpriced prices.

Quite a few attempts have also been made to explain the reason for the Underpricing of the value of shares during the initial offering from the position of the underwriter's prestige. Among the most famous are the works of Booth and Smith [6], Beatty and Ritter [2], and Titman and Truman [33], in which researchers point out a negative relationship between the level of the underwriter's reputation and the underpricing of shares during the initial offering. From the point of view of researchers, the involvement of prestigious underwriters by the issuing company is associated with investors with lower investment

risks and the need to obtain additional information. As a result, underwriters with a high reputation act as an intermediary, reducing information asymmetries and sending a positive signal to investors.

A similar model is proposed by Carter and Manaster [9]. In their research, they build on the work of Rock [28], which argues that the shares of the initial offering are riskier, therefore, investors in the initial offering will demand a higher yield (lower prices). Less risky and more stable companies with good prospects can eliminate information asymmetries by using prestigious underwriters. At the same time, the researchers propose a metric that evaluates the prestige of the underwriter, and also determines the negative relationship between the prestige of the underwriter and the amount of underpricing of shares during the initial offering.

This model was later tested by Carter, Dark, and Singh [8], who also found that underpricing of stocks at placements is not high for companies placed by prestigious underwriters. The paper makes an updated estimate of the previous metric and determines that it is very significant in explaining the IPO underpricing.

At the same time, there are empirical studies that refute this hypothesis. For example, Beatty and Welch [3], examining a sample of 823 companies that placed shares between 1992 and 1994, found that the dependence of the underpricing on the prestige of the underwriter changed sign from negative (in the 1970s–1980s) to positive (in the 1990s).

Underpricing during placement infringes on the interests of current shareholders, as they either sell their shares to new shareholders at a lower price, or dilute their stake when new shares are issued, and the value of their shares turns out to be lower after the issue. The company also receives a smaller amount of funds in the placement, which reduces its resource base for development.

DATA SOURCE AND RESEARCH METHODOLOGY

Analysis and synthesis, scientific abstraction deduction, classification, generalization, comparative, theoretical interpretation, and analytical methods were used in the methodology of this article, as a result of the bibliographic study, the problems of «public placement of shares», the factors affecting them and the prospects for further development were identified.

The information used in the article is mainly obtained through two sources: the official web pages of the “Tashkent” Republican stock exchanges and joint-stock companies. The focus of this article is the experience of the joint-stock companies «Kvarts» and «Jizzakh Plastmassa», which for the first time in the history of Uzbekistan held an IPO in 2019-2020. The price of offering shares, the opening and closing prices of trades, and other data are taken from the official websites of the companies.

DISCUSSION

To date, several theories have been created for underestimating the value of shares during placement. They can be divided into seven factors:

Factor №1. Theory of adverse selection.

The basic assumption underlying this model is the presence of information asymmetry between informed and uninformed investors, the existence of a «winner’s curse». The adherent and author of this theory is Rock [28]. According to his work, informed investors are aware of the fair value of newly issued shares that are not currently traded on the markets and will subscribe to shares only when the shares are underpriced, that is, their value will be below fair value. In this model, when an IPO is overpriced, only uninformed investors will subscribe to shares, as they, being uninformed, subscribe to almost every first public offering. However, when an IPO is underpriced, both types of investors will subscribe to shares and, in the event of excess demand, share rationing may be introduced. Uninformed investors will thus receive proportionately fewer «good» stocks and more «bad» stocks compared to informed investors. Rock called this situation «the winner’s curse».

As a result, over time, uninformed investors are repelled from participating in the market for shares of a new issue until the offer price falls far below the expected sale price of the issue to compensate for the « prejudgment», «bias» in the distribution of shares. Simply put, the main takeaway from this model is that informed investors benefit from underpriced stocks in order to attract more uninformed investors since informed investors alone do not have enough money to buy the entire issue. They know how much the newly issued shares are really worth, create demand for them from uninformed investors, and later sell their pre-purchased discounted shares in the secondary market.

The main problem with the Rock model is that in real life it is difficult to understand which investor is informed and which is not. Also unclear is his assumption of rationing by the underwriter in the event of excess stock demand, in which informed investors crowd out uninformed investors in relation to «good» stocks, thus using IPO underpricing to spur bidding from uninformed investors. In real life, an IPO is often characterized by excess demand, and oversubscription, so there is no need to attract uninformed investors. Koh and Walter [18], using 63 IPOs from 1973 to 1987 in the Singapore stock market, showed that 90% of these IPOs were characterized by excess demand. In such circumstances, there is no incentive to attract additional investors.

However, despite the above criticism of Rock's work, his article has scientific applications. Ritter [26] applied the Rock Hypothesis to explain the underpricing of stocks in a «hot market» (a «hot market» is a period when many companies in a short period of time tend to go public and compete with each other for investors' money) in 1980 in the US, when initial IPO returns averaged 48%, compared with an average initial return of about 15% for IPOs from other periods. Ritter argued that the underpricing of new issues is cyclical: in some periods, the underpricing is on average higher, and in others, lower. During a hot market, IPOs are characterized by underpricing that investors expect, and potential issuers accordingly expect higher average initial returns from IPOs and therefore lower prices, while at the same time more companies want to go public to raise more money than in other periods. At the same time, IPO volumes also become higher during the "hot market". In general, we can say that the underpricing of an IPO depends on the period in which the company goes public.

Factor №2. The theory of underpricing of the value of shares when placed as an underwriter's insurance against «legal consequences» (legal liabilities).

Tinic [32] explored IPO underpricing as a form of insurance against lawsuits and litigation. He argues that the so-called «Securities Act» of 1933 (The United States Securities Act of 1933) requires investment banks to conduct «due diligence» - a procedure for forming an objective view of the investment object among investors and other interested parties both through the prospectus and through the entire so-called «registration statement» - a set of documents that are submitted to the US Securities and Exchange Commission (SEC) before the IPO and includes, among other things, the prospectus. All errors, omissions, and misprints in this set of documents directly affect the well-being of the investment bank - buyers of shares of the initial issue have the right, in the event of the above shortcomings and information that does not correspond to reality, to demand compensation from any person who signed the «registration statement», or from any a member of the board of directors and any partner of an investment bank, from any auditor, appraiser, consultant and investment banker associated with the issuance of these shares. The maximum amount of compensation to the investor is equal to the offer price, as well as the costs of the investor for litigation and any amount of monetary sanctions imposed by the court on the investment bank. Moreover, this Law expands the obligations of an investment bank to investors to the extent that the bankruptcy of an investment bank will not save the bank's employees who participated in the initial issue procedure from further sanctions. Therefore, the investment bank and the issuer are interested in lowering the price of an initial offering share in order to reduce the volume (in monetary terms) of potential litigation from investors in the event of an unsuccessful IPO and associated reputational losses.

Tinic decided to prove his theory by checking whether IPOs after 1933 were more underpriced than before 1933 before the Law was passed. Another prediction is that after the introduction of this Law, IPOs of speculative (high-risk) companies that hired "second-tier" investment banks (so-called "boutiques") as underwriters should be more underpriced than IPOs of promising companies whose underwriters were "bulge-bracket" investment banks (the most prestigious, large-scale and experienced investment banks), which have low costs for potential future litigation compared to second-tier investment banks. These predictions have been empirically tested on a sample of IPOs before and after the 1933 Act. Tinic made a grouping of investment banks: the first group - «bulge-bracket» banks, the second - banks of the «second tier», «boutiques». He found that the average initial excess return of the post-1933 sample was 11.06%, significantly higher than the pre-1933 IPO sample return of 5.17%. For data before 1933, no significant relationship was found between the range of underpricing values and the quality of the investment bank, while for data after 1933, a significant difference was found between «bulge-bracket» banks (6.16%) and «boutique» (14.27%). These results confirm Tinic's hypothesis.

Factor №3. The theory of reputational capital.

Vos and Cheung [34], cited above, put forward the idea that the reputational capital of investment banks is the main cause of underpricing in IPOs. According to this theory, investment banks are afraid of potential loss of reputation if they charge at or above market level (fair value), underestimating the potential excess returns that investors can earn.

Generally speaking, Beatty and Ritter [2] and Tinic [32] considered the reputation of investment banks as a factor influencing the underpricing of IPOs, but Tinic considered only legal aspects in the case of investor claims against the issuer and investment bank, bank and associated reputational losses, but did not consider reputation as a factor in undervaluing an IPO separately from legal aspects.

The earliest studies of the relationship between underwriter reputation and underpricing began in the early 1970s. Logue [21] reported significant differences in average initial returns between prestigious investment banks and boutiques. He studied 250 IPOs over the period 1965-1969 using investment bank reputation as a dummy variable along with 10 other explanatory variables in multiple regression and found that bank reputation was significant to determine underpricing. IPOs brokered by prestigious investment banks are more carefully priced. In addition, prestigious banks require lower commissions (in percentage terms) than «boutiques». The author also suggested that the participation of the «top» underwriter in the placement of the issuer's shares signals investors about the low risk of the upcoming issue. He suggested that small companies could hire such an underwriter, and pay him more fees in absolute terms, in order to maximize the issue price and minimize the initial difference in share price valuation by investors who prefer IPOs of large companies with a long history.

In general, the data available to date suggests that the participation of prestigious underwriters in the IPO provides additional assurance to investors and may reduce underpricing. The main word is "may", because there are different data on this subject, depending on the period of observation. For example, Ritter [27] argues the opposite for a sample of IPOs from the 1990s—their underpricing increases with investment bank "prestige".

Factor №4. Signal theory.

It is also called a «signaling theory». The basic assumption underlying this theory is that the issuer has an informational advantage over investors. This model assumes that promising and successful companies inform investors about themselves through certain signals, such as underpriced stocks.

Leland and Pyle's [19] created one of the first signaling models describing the issuer underpricing function in the IPO process. They argued that the retention rate - the number of shares held by the original owners of a company - could be a strong signal of a company's value to investors. This idea is very similar to the theory of principal-agent conflict: if the original owners have a majority of the shares

in their hands, this means that they will continue to continue to manage this successful IPO company, which removes the agency problem and gives investors additional confidence and motivation to buy shares. The disadvantage of their model is that there is relatively little empirical evidence.

Titman and Trueman [33] extended the Leland and Pyle model slightly and suggested that the standing, reputation, and credibility of the issuer are also used as a signal by investors. The authors argued that successful issuers are willing to pay large fees to auditors to check and confirm their financial performance and that this is a good signal for investors.

Grinblatt and Hwang [14] explored signaling through the supply price and capital stock. The owner of the company, after undervaluing the shares, subsequently sells the remaining share of the capital at a higher price and thus achieves greater portfolio diversification.

However, the signaling theory rejects some of the fundamental principles of the IPO. For example, with the exception of cases when the underwriter enters the IPO, it is not the issuer who distributes shares and sets the price on his own, he does not interact with the market, but the investment bank, which has a reputation and money at stake. Too underpriced the issuer's shares - lost future customers. Moreover, the assumption that subsequent issues compensate the issuer for the initial underpriced issue should be based on the assumption that the markets are inefficient, due to which the investor will not choose similarly risky, but cheaper shares of other issuers, but will choose exactly the same company, which underpriced the initial issue, and its shares are more expensive than the shares of other issuers with the same risk. The investor has no motivation to pay compensation to the issuer for signaling.

The signal model and its extensions still have some very controversial points. For example, typically issuers are required to hold 50% plus 1 share of their shares in order to control the company and must sell more than 25% of the shares to outside investors. Under such restrictions, the number of shares available to investors varies from 26% to 49%, while the retention rate is in the range of 51% to 74%. Most IPOs have a retention rate of 60-70% [35], which is not enough to signal.

Factor №5. The theory of concentration of property.

According to the signal theory, one of the main signals for investors is the concentration of ownership: the issuer uses the level of retention as an indicator of the quality of the issue. This theory, despite the lack of empirical evidence, has an interesting explanation: the high concentration of ownership in the hands of the original owners suggests that they are unwilling to give outside investors a large share of future positive cash flows. Another explanation for the relationship between ownership structure and initial underpricing has been proposed by Brennan and Franks [7]. They argue that the original owners are underestimating the value of their company's IPO shares in order to get more bids for preferred shares.

The connection between underpricing and concentration of ownership is especially noticeable in emerging markets. The ownership structure is a much more important indicator in corporate finance in emerging markets than in developed markets. In developing country markets, owners are more likely to be managers in their companies and seek substantial control over the company. In addition, more liberal regulation makes it easier for large shareholders to pursue personal gain at the expense of minority shareholders. Ownership concentration has also been used as a variable for some phenomena, such as a company's operating behavior compared to other companies. The authors argue that, in the absence of strict regulation, a high level of ownership concentration leads to lower initial IPO returns, as the market accurately judges the ability of the majority shareholder to pursue personal gain with ease and impunity. This situation is unfavorable for minority shareholders. Regulation usually intensifies after major crises - this may serve as a basis for further research into the relationship between ownership concentration and initial IPO returns.

Factor №6. Principal-agent model.

The basic assumption underlying this model is that the underwriter has an informational advantage over the issuer. An adherent of this model is Baron [1], who argues that underwriters have relatively greater and more advanced information about the potential demand for new shares than issuers, and underwriters' marketing efforts are not observable. The offer price of the issue in such conditions will be lower than it would be in the absence of information asymmetries and/or problems with monitoring the activities of the investment bank. Thus, almost consciously, issuers allow underwriters to undervalue their shares. However, it is not clear in this paper why the issuer does not choose an investment bank that records the pricing of share issues in more detail. In other words, the question of why underpricing is not eliminated by competition between investment banks has not been explored. Also, Baron's model is not supported by significant empirical evidence.

Muscarella and Vetsuypens [24] tested Baron's model by examining 38 investment bank IPOs without the purchase of an intermediary underwriter (in these cases the issuer and underwriter were the same) that went public from 1970 to 1987. These banks also participated in the distribution of their own IPOs. It was assumed that by undervaluing shares, the investment bank also underestimates itself, having received less profit, which is unprofitable for it, so there should not be an underpricing in such cases. Information asymmetries and monitoring problems should disappear in these cases, but statistically significant underpricing, comparable to other companies IPOs, was still present in these «do it yourself» first public offerings.

Factor №7. The theory of IPO pricing mechanisms.

The basic assumption underlying this model is that the mechanism for setting the price of shares of the first public offering (auction mechanism, fixed price mechanism, book building) affects the Underpricing of the value of IPO shares.

The IPO auction mechanism (the second name is the «Dutch auction») is the procedure for the first public offering, in which the offer price of shares is set by collecting applications for shares from investors and determining among the applications the highest price at which the entire offer of shares can be sold. The application of each investor is, as a rule, two indicators: the number of shares and the price at which he is ready to purchase shares.

The fixed price mechanism is the IPO mechanism that was most widely used in the early and mid-20th century in the UK and the US. The fixed price mechanism was characterized by:

1) Setting a fixed offer price without subsequent adjustment for demand from investors.

2) Proportional distribution of shares in case of excess demand (excessive subscription).

3) The inability of investment banks to own the issuing company [10].

Currently, this mechanism is practically not used by issuers. In the US, in particular, book-building is the main IPO pricing mechanism. Underwriters explain the spread of the book-building procedure in the world by the fact that foreign investors (especially American ones) refuse to participate in auction procedures because they are less familiar with them. Foreign investors also dislike the fact that the auction procedure does not give them an advantage over «regular» investors in the allocation of shares, unlike the book-building procedure, which gives them a «better allocation» on the part of the underwriter. Therefore, companies seek to attract investors using the book-building procedure.

Thus, book-building is used in two situations: firstly, large companies issue shares on the stock exchange, seeking to attract foreign investors. Secondly, even small companies tend to attract investors.

Book-building is an IPO pricing mechanism in which the issuer and the underwriter choose the "price range" of the issue. Next, a "road show" is held, when the company and the underwriter present themselves to institutional investors and collect "non-bidding" indicators of interest, which help to understand what price investors are more interested in (determine the approximate price and quantity

demanded). When the book-building period ends, the issuer and underwriter set the price based on the interest received from investors during the roadshow. Once the price is set, the underwriter distributes the shares.

The issuing company can evaluate the effectiveness of the IPO by comparing the number of funds raised in the IPO with the originally planned amount. Thus, if the planned or even larger amount of funds is attracted, then the IPO was successful and the goal of raising capital was achieved.

FINDINGS

The phenomenon of IPO underpricing is the rise in stock prices after their placement. IPO underpricing is defined as the percentage difference between the price at which the IPO shares were sold to investors (the offer price) and the price at which the shares are subsequently traded on the market (the closing price of the first trading day). [20]

A company's shares are considered underpriced when the closing price of the first day of trading exceeds the offer price. [16]

A high underpricing of an IPO is considered undesirable for the issuing company, since the amount of capital raised through an IPO is reduced compared to the potential, thereby reducing the effectiveness of going public as a tool for attracting investments.

Table 1. Company data to test hypotheses

Companies	Date of company establishment (number of days between the IPO date and the founding date of the company)	The value of the opening price of the UCI index on the day of the IPO	Companies' IPO expenses (in relation to the net proceeds from the IPO ($))	The number of funds raised ($)
JSC Kvarts [17]	8463	+1.32	25,2 [17]	683 981,8
JSC Jizzakh Plastmassa	8755	-1.18	6,2*	122 963,6

* - this amount was calculated as an average of 5% of the net proceeds from the IPO

Based on the study of several research papers, we selected some IPO underpricing hypotheses to analyze the level of underpricing of IPO companies in Uzbekistan. All data for testing the hypotheses of IPO JSC Kvarts and JSC Jizzakh Plastmassa were taken from the official websites of the company.

Hypothesis 1: There is a negative relationship between company age and underpricing.

Rationale: As with technology companies, younger companies tend to have shorter financial histories and greater risk. It is logical to assume that due to less transparency and, accordingly, greater asymmetry of information, the Underpricing of the value of shares in the placement of «younger» companies is greater than that of companies with a long operating history. Moreover, underpricing is positively correlated with the level of uncertainty about the company's value - it is much more accurate to determine the value of a company with a large array of data about it over a long period than about a «newcomer» to the market.

Data: The age of the company was calculated as the number of days between the IPO date and the company's founding date. The year of the foundation of the company was taken from the official websites of JSC Kvarts and JSC Jizzakh Plastmassa.

So, according to the Charters, both companies were founded almost at the same time: JSC Kvarts on January 31, 1995, and JSC Jizzakh Plastmassa on June 28, 1996. We have chosen the auction dates after the end of the book-building as the date for the IPO. The IPO date of JSC Kvarts is April 4, 2018 (8463 days from the date of the company's incorporation), and JSC Jizzakh Plastmassa is on March 13, 2020

(8755 days from the date of the company's incorporation). Since startup companies (young companies) did not enter the stock market with their IPOs, it will not be possible to test this hypothesis for correctness. In our case, we found out that this hypothesis does not yet work in Uzbekistan.

Hypothesis 2: The opening price of the national stock index on the IPO day is positively correlated with the underpricing values.

Rationale: High UCI values are indicative of hot market periods in which stock underpricing, according to [26], is greater than during cold market periods.

Data: The value of the opening price of the UCI index on the IPO day for each company was obtained from the official website of the Republican Stock Exchange «Toshkent».

During the IPO days of JSC Kvarts and JSC Jizzakh Plastmassa, the opening price of the UCI index was +1.32 and -1.18 respectively. This indicator makes it possible to conclude that the value of the national index does not matter when underestimating the IPO. However, perhaps the international and most popular stock market indices may indicate a positive correlation with underpricing values.

Hypothesis 3: A company's IPO costs are inversely related to underpricing.

Rationale: The more a company spends on commissions to all intermediaries, the less willing it is to undervalue its stock.

Data: Data on companies' IPO spending was found on the websites of JSC Kvarts and JSC Jizzakh Plastmassa.

Based on world experience, the biggest IPO expenses are the remuneration of the underwriter, which, on average, receives from 2 to 8% of the number of funds raised. In addition, there are also expenses for exchanges, brokers, investment consultants, etc. In the case of companies in Uzbekistan, the cost of conducting an IPO amounted to 25.2 (4%) and 6.2 (5%) thousand US dollars, respectively. These figures did not confirm the correctness of the hypothesis in cases of IPOs of Uzbek companies. In our opinion, spending up to 5% of the number of funds raised is not strongly correlated with the underpricing of the IPO.

***Hypothesis 4:* Underpricing is in direct proportion to the number of funds raised.**

Rationale: The law of demand. The lower the price, the greater the demand. However, there may be different elasticity, so the hypothesis needs a simple check of whether such a phenomenon exists or not.

Data: Data on the volume of funds raised by companies in the IPO were found on the website of JSC Kvarts and JSC Jizzakh Plastmassa and the website of the Republican Stock Exchange Toshkent.

The volume of funds raised in the first IPO amounted to more than 650 thousand dollars, with the sale of only 54% of the total volume of shares issued at the IPO. In the second IPO, the volume of funds raised amounted to less than 150 thousand dollars, with the sale of 35% of the total volume of shares issued at the IPO. Here it is possible to confirm the correctness of the hypothesis since in the first case the number of funds raised exceeded the second case.

Hypothesis 5: Underpricing is inversely related to the underwriter's reputation.

Rationale: Logue's work [21]. The higher the reputation of the underwriter, the more carefully he carries out all procedures, the less uncertainty and risk for investors, and the less they require a "risk premium".

Data: Data on which underwriters carried out the company's IPO was found on the official website of the Republican Stock Exchange «Toshkent». Thus, the National Bank of the Republic of Uzbekistan was the underwriter of the first IPO in Uzbekistan, and Portfolio Investment was the underwriter of the IPO JSC Jizzakh Plastmassa. However, based on this data, it is not possible to analyze the reputation of underwriters. In our opinion, dozens more IPOs in Uzbekistan will be needed to test the hypothesis.

Nevertheless, we would like to draw your attention to the indicators by which it will be possible to assess the reputation of an underwriter.

Consider possible ways to measure the reputation of an investment bank, proposed by researchers in various works.

1. Using official underwriter "prestige" ratings published by research companies [9]. The authors measured an underwriter's reputation based on the bank's position in the underwriter hierarchy in «tombstone announcements» published in The Wall Street Journal. This document contains information about the upcoming placement and a list of underwriters included in the syndicate. The reputation of a bank directly depends on its place in this hierarchy: the most prestigious underwriters are located in category A and further down in descending order. Reputation was calculated based on all available «tombstone announcements» for a certain period.

2. Classification of the reputation of banks in accordance with market share, calculated on the basis of the total volume of IPOs conducted by the bank in dollar terms (revenue) divided by the number of IPOs conducted [15], [22].

3. Classification based on the number of IPOs [31]

4. The classification of the reputation of banks is based on the amount of capital of each bank participating in the IPO.

RESULTS

The relative deviation of the trading closing price on the first day from the placement price is calculated as the difference between the closing price and the placement price. Thus, the following formula for the underpricing of shares can be proposed [15]:

$$\boldsymbol{Underpricing} = \frac{\boldsymbol{Close\ price - Placement\ price}}{\boldsymbol{Placement\ price}} \quad \textbf{(1)}$$

Using the formula (1), we will check the Underpricing of two placements of companies in the Republic of Uzbekistan. For a clearer understanding of the underpricing of the shares of JSC Kvarts and JSC Jizzakh Plastmassa, the names of the companies have been renamed in the formula as A and B, respectively.

In the case of JSC Quartz, the underpricing of shares is calculated as follows:

$$Underpricing\ A = \frac{0{,}64 - 0{,}27}{0{,}27} = \frac{0{,}36}{0{,}27} = 1.33\ or\ 133.3\%$$

In the case of JSC Jizzakh Plastmassa, the share underpricing is calculated as follows:

$$Underpricing\ B = \frac{0{,}44 - 0{,}31}{0{,}31} = \frac{0{,}13}{0{,}31} = 0.41\ or\ 41.1\%$$

Table 2. IPO underpricing data of Uzbek companies

Companies	Book-building (placement) price, $	First-day close price (after IPO), $	Change of the price, $	Change of the price, %
JSC Kvarts	0,27	0,64	+0,37	133,3
JSC Jizzakh Plastmassa	0,31	0,44	+0,13	41,1

It is important to note that in the IPOs of JSC Kvarts and JSC Jizzakh Plastmassa, shares were issued only by the state stake in the amount of 10% and 25%, respectively.

In the case of JSC Kvarts, the order book was formed in the range of $0.27 to $0.83. However, although there were bids at $0.83 per share, at the end of the subscription campaign the underwriter decided to satisfy all bids at $0.27 per share, as there was not enough bidding and the public offering was only for 54% completed.

In the case of JSC Jizzakh Plastmassa, the order book was formed in the range of $0.31 to $2.77, but despite the increased interest from the population and residents of the country, the shares were bought at $0.31 each. On average, the underpricing of companies in Uzbekistan is 87.2%.

However, two conducted IPOs are not enough to test the hypotheses using econometric analysis, which is why we decided to test the upcoming IPOs using other author's hypotheses, namely, the company's reputation among the local population, the goals of the IPO, the share offer price (Table 3).

Consider the above hypotheses in the context of past and upcoming IPOs.

Hypothesis 1. There is a positive relationship between the company's reputation among the local population and underpricing (the higher the company's authority, the greater the likelihood of underpricing).

In our case, in the past two IPOs, the company's credibility played a very important role in undervaluing the stock. So JSC Kvarts is a more reputable company compared to JSC Jizzakh Plastmassa, as the company has a monopoly status, and is the only company in Central Asia that produces glass and glass products. Based on this, in our opinion, the hypothesis of a positive relationship between the company's authority and underpricing is confirmed by the correctness, that is, the higher the company's authority, the higher the underpricing indicator. In the case of upcoming IPOs, the most reputable companies are JSCB «Uzmilliybank», JSC «Uzbekinvest», JSC «Uzagrosugurta», JSC «Uzmetkombinat», JSC «Uzautomotors», JSC «Uzbekneftegaz», JSC «Uzavtosanoat», JSC «Uztransgaz» and JSC «Uzbekistan Airways» (the rating is presented in Table 3).

Hypothesis 2. Underpricing is directly dependent on the purpose of the IPO (the better the purpose of the IPO, the greater the likelihood of underpricing).

In both cases, the companies planned to expand production by building new workshops. In the case of JSC Kvarts, in our opinion, the project was more attractive, as it was planned to build a new workshop, which would increase production capacity by several times. Among the upcoming IPOs, the best projects, in our opinion, will be the projects of JSC «Uzmetkombinat», JSC «Uzautomotors», JSC «Uzbekneftegaz», JSC «Uzavtosanoat», JSC «Uztransgaz» and JSC «Uzbekistan Airways», which plan to expand opportunities through IPO (targets are presented in Table 3).

Hypothesis 3. There is a negative relationship between the IPO offer price of shares and underpricing (the higher the offer price, the lower the probability of underpricing).

In the case of the JSC Kvarts IPO, the shares were offered at prices ranging from $0.27 to $0.83. On the day of the auction, all bids were satisfied at the minimum price, as there was not enough interest in the company's shares. However, on the very first day of trading after the IPO auction, the share rose in price and amounted to $0.64 per share. Also, in the case of JSC Jizzakh Plastmassa, the order book was formed in the range from $0.31 to $2.77, but in this case, the orders were satisfied with the lowest offer price. In upcoming IPOs, taking into account the solvency levels of the population, those companies that offer a good minimum price per share will win. All shares offered over $5 per share, in our opinion, are doomed to minimal underpricing, possibly overvaluation. So, for example, the shares of JSC «Uzmetkombinat», JSC «Uzautomotors», JSC «Uzbekneftegaz», JSC «Uzavtosanoat», JSC «Uztransgaz» and JSC «Uzbekistan Airways», as shares of a giant company, are expected to be worth more than $ 5 during the formation order book. However, in these cases, the probability of underpricing is very minimal, since the population will not be able to buy shares at such a price, and the probability of revaluation is very high

since it is almost impossible to resell expensive shares in the speculative market of Uzbekistan (the estimated offer price is presented in Table 3).

Table 3. Upcoming IPOs underpricing prediction

Upcoming IPOs of companies	The authority of the company among the population (5-point scale)	Goals of the IPO (Modernization - M, Expansion - E, Financial aid - F)	Current market price ($)	Estimated offer price ($)	Estimated first-day close price after IPO ($)	IPO underpricing intuitive prediction
Financial sector						
JSCB «Kishlok kurilish bank»	*4*	*F*	*0,01*	*0,1-0,3*	*0,13-0,4*	*<30%*
JSCB «Aloqabank»	*4*	*F*	*0,004*	*0,2-0,5*	*0,25-0,7*	*<35%*
JSCB «Agrobank»	*4*	*F*	*0,06*	*0,2-0,4*	*0,25-0,5*	*<25%*
JSCB «National bank»	*4*	*F*	*N/A*	*0,3-0,5*	*0,35-0,6*	*<25%*
JSCB «Mikrokreditbank»	*4*	*F*	*0,01*	*0,1-0,2*	*0,2-0,3*	*<35%*
JSC «Universalsugurta»	*4*	*F*	*0,012*	*0,2-0,3*	*0,25-0,3*	*<30%*
JSC «Alskom»	*3*	*F*	*0,13*	*0,3-0,5*	*0,4-0,7*	*<45%*
JSCB «Uzmilliybank»	*5*	*F*	*N/A*	*0,4-0,7*	*0,45-1,0*	*<40%*
JSC «Uzbekinvest»	*5*	*F*	*N/A*	*0,5-1,0*	*0,65-1,3*	*<30%*
JSC «Uzagrosugurta»	*4*	*F*	*0,36*	*0,5-0,8*	*0,65-1,0*	*<35%*
Other sectors						
JSC «Uzmetkombinat»	*5*	*E*	*0,67*	*5,0-10,0*	*7,0-12,0*	*<20%*
JSC «Uzautomotors»	*5*	*E*	*N/A*	*9,0-18,0*	*10,0-20,0*	*<10%*
JSC «Uzbekneftegaz»	*5*	*E*	*N/A*	*7,0-15,0*	*8,0-17,0*	*<15%*
JSC «Uztemiryolkonteyner»	*3*	*M*	*4,1*	*5,0-10,0*	*6,0-13,0*	*<30%*
JSC «Uzbekgeofizika»	*3*	*M*	*0,026*	*0,3-0,5*	*0,35-0,7*	*<30%*
JSC «Uzavtosanoat»	*5*	*E*	*N/A*	*10,0-15,0*	*11,0-16,5*	*<10%*
JSC «Uztransgaz»	*5*	*E*	*2,73*	*5,0-10,0*	*5,5-11,5*	*<15%*
JSC «Kurilishmashlizing»	*3*	*F*	*0,23*	*0,5-0,8*	*0,6-1,0*	*<25%*
JSC «Uzbekistan Airways»	*5*	*M*	*N/A*	*3,0-8,0*	*3,3-9,0*	*<15%*
JSC «Uzbekiston pochtasi»	*3*	*M*	*0,17*	*2,0-5,0*	*2,4-6,25*	*<25%*

Based on the data in Table 3, we came to the conclusion that an underpricing of an IPO is possible only when the offer price (price range) is an acceptable norm for the population. All reputable companies in Uzbekistan within the framework of the IPO will offer shares with a very expensive markup for the population.

Summing up, we can say that many different theories of underpricing the value of shares during placement give directly opposite results. ***Underpricing continues to be a completely unexplained phenomenon.***

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