

Asymmetric information and underpricing of IPOs: the role of the underwriter, the prospectus and the analysts.
An empirical examination of the Italian Situation (*)

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ABSTRACT

Many economists have given birth to extensive empirical and theoretical literature while trying to explain the reasons why companies choose to quote themselves at such a price as to generate underpricing. This paper, dedicated to the Italian situation, intends to examine the consistency of the main theories formulated to explain underpricing. Beginning from the Rock Theory (1986), based on the existence of asymmetric information, we examine the financial instruments that the issuers could make use of or which might be of interest in reducing the degree of uncertainty, and, therefore, the "necessary" extent of underpricing to guarantee the good outcome of the placement. In reality, three main elements have been identified by means of which it is possible to spread information on the subscribing company and so reduce uncertainty in reference to its value and consequently its corresponding underpricing. These are: the issue prospectuses, the analysts' studies and the choice of the dealers responsible for carrying out the placement. These three aspects seem to deserve just consideration due, first of all, to their supposed capability of influencing underpricing itself; and, secondly because they are factors that also have a consistent impact in terms of implications for policy and usual practice. Even though the data demonstrates that as the quality of prospectuses increases there is less variation of underpricing, and that the number of studies produced by analysts are positively correlated with the dimension of the company quoted and with the quality of the prospectuses, we show from the analyses conducted that the variables utilized to estimate the uncertainty ex-ante of the value of the company are not sufficient in themselves to explain the variability of the cross-section of underpricing. In particular, neither the formation of underpricing nor overpricing (that is generated in a third of the total cases) are completely explained.

With regard to the above, it may be necessary to dedicate greater attention to the ways in which the offering price is determined (considering the positive relation between the issuer and the dealers who take care of the placement) and shares allocated (with particular reference to the way the shares are divided between institutional and private investors). However these matters belong to related research fields and are not contemplated in the present paper.

There are other areas of research related to the pricing of newly listed companies, especially with regard to the medium and long term trend (referring to underpricing for periods over a day - covering a range from a week to three months - and long run underperformance), to oversubscription and to the effects of the back up price policy carried out by the purchase syndicate after the quotation has taken place. These are undoubtedly all very interesting topics that certainly have strong policy implications. However, when this study began insufficient data was available, and so these matters will be the object of future work.

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1. Introduction

As generally known, the acronym IPO (Initial Public Offering) is the terminology used to define the offering that a not yet quoted company carries out with the aim of obtaining capital from the equity market. The reason that brings a company to decide to be quoted on the market (the going public decision) is a quite important and highly considered issue in economic literature (¹); we, however, consider the issue outside the goals of the present paper, and will therefore not go into details on the question. What we will rather try to investigate, in the present paper, are the reasons and the possible explanations of why underpricing takes place in IPOs.

In fact, examining the trend of these placements, a very interesting point comes out: the issuing companies (²) (with the related underwriters) probably reduce the prices of their issues on purpose (generating underpricing). As far as demonstrated by previous studies on IPOs in the main countries, there is clear evidence of the existence of the difference between the subscription price and the price registered as soon as the first exchanges have taken place on the secondary market. This evidence seems to be in contrast with what is suggested by the theory: companies in the presence of a perfect and efficient market should not be keen on a “leave money on the table” attitude.

For more than two decades economists have been trying to gauge themselves with the so-called “IPO underpricing puzzle”. One of the first scholars who systematically documented evidence on IPO phenomenon was Ibboston (1975): he found that the average underpricing related to American IPOs in the sixties was given at about 11.4%. Ritter (1984), instead, rated a percentage of 18.8 % for American IPOs carried out between 1960 and 1982 (on a sample of 5000). A second “anomaly” was emphasized by Ibboston and Jaffe (1975) and Ritter (1984): the number of IPOs and the related size of underpricing have a strong cyclic trend in time (³). These authors have, in fact, noted the existence of certain periods (so called “hot issue markets”) in which in the presence of a high number of IPOs there is also a greater average level of underpricing compared to other periods.

Many economists have given birth to broad empirical and theoretical literature while trying to explain the reasons why companies choose to quote themselves at such a low price (compared to their real value) as to generate underpricing. According to the different approaches, underpricing is viewed as a means by which investors are encouraged to accept the offer (because they feel compensated of the risk that they undertake by adhering to the offer), or a way to avoid possible legal disputes with the shareholders, or even a way to avoid the risk of a sudden loss of interest in the securities. Moreover underpricing can also be seen as a way to generate an over-demand of shares so as to create widespread shareholding, therefore protecting the company from hostile

¹ The financial theories give different explanations on the ways, the timing, and on the motivations for which a company chooses to open itself to the market by quoting its own shares. According to the so-called “pecking order theory” (Myers, 1984) a “hierarchical order in the preferences given in the financing of a company” exists; in this hierarchy the resort to equity represents the last resource to make use of. This explains the preference of the companies towards going into debt. According to another approach (Myers-Majluf, 1984), the managers, who generally have more accurate information with respect to the external investor, tend to offer shares only when the market tends to overvalue them. Also, the decision to quote is seen as a moment of the life cycle of the company (Ibboston-Ritter, 1995; Brealey-Myers, 1996) that becomes itself necessary when, according to the dimensions of the company, the investment requested would be too big and not liquid enough if shares were not quoted. Among the vast body of literature which analyzes the reasons why quotations take place, we highlight the following: Chemmanur-Fulghieri, 1997, Pagano-Röell, 1996, Ritter, 1987, Subrahmanyam-Titman, 1998 and, with specific reference to the Italian case: Pagano-Panetta-Zingales, 1997.

² In reality, it would be more correct to talk about “quoting” companies if the offer place with which the IPO is carried out is an OPS and of “selling” companies in the case of OPV or mixed offers.

³ Great attention has been given, in literature, to the so-called “third anomaly” (Aggarwal-Rivoli, 1990; Ritter, 1991; Levis, 1993, Lelux, 1993; Shuster, 1996; Espenlaub-Gregory-Tonks, 1997 and with regard to Italy, Giudici-Paleari, 1999 e Fabrizio-Samà, 1999). This anomaly, defined as “long-run underperformance”, is connected to the trend of the stock exchange prices of the securities of IPO in the average-long term. The empirical evidence demonstrates how, usually, the securities of the newly quoted companies offer average-long term revenues that are lower than those of the market and sometimes even negative revenues.

takeovers⁽⁴⁾.

However, none of these theoretical predictions seem to be sufficient to explain the “anomaly” even in spite of the empirical examination carried out.

This paper, which is focused on the Italian situation, aims to study the relation between some qualitative and quantitative variables with reference to underpricing.

In particular, moving from the Rock Theory (1986), based on the existence of asymmetric information, we examine the financial instruments that the issuers could make use of or which might be of interest, in reducing the degree of uncertainty, and, therefore, the “necessary” extent of underpricing to guarantee the good outcome of the placement. In reality, due both to the legislation and the practices used for all Italian placing, three elements have been identified by means of which it is possible to distribute information on the subscribing company and so reduce uncertainty in reference to its value and consequently its corresponding underpricing. These are: the issue prospectuses, the analysts’ studies and the choice of the dealers appointed to carry out the placement (the dealer plays the role of certification, and with its presence, “spending” its reputational capital derived from its capacity shown over time to optimally fix prices, guarantees also to the non informed investors the convenience of the investment proposed).

These three aspects merit consideration for their supposed capacity to influence underpricing, but also for two other reasons.

On one hand, these are factors that because of the consequences they may produce on the choice of investment and allocation of portfolios of different actors in the market, present implications for policy and usual practice.

On the other hand, these are matters that are strongly influenced by regulatory impediments and by the procedures in force with regards to securities industries - so much so as to assume profiles that substantially differ compared with how much is found in other contexts - and that do not seem to have been the object, at least as far as regards the Italian situation, of particular attention in the literature.

2. Brief survey of the main literature pertaining to the underpricing of IPOs

Almost all the theoretical models developed in the literature for explaining the phenomenon of underpricing of IPOs are based on the hypothesis of asymmetrical information among the various subjects involved in placement (companies, investment banks, external investors). It is, however, possible to make a distinction between the models in which underpricing is an intentional strategy followed by the issuing company, and the models in which underpricing is the result of the interaction and of the contractual relationships between the issuer and the investment bank.

2.1. EXPLANATIONS BASED ON THE BEHAVIOR OF THE ISSUER AND ITS RELATIONS WITH EXTERNAL INVESTORS

⁴ Obviously this possible explanation of underpricing loses its value in the case, typically Italian (on average, the market share placed on the market in the moment of the quotation was, for the companies of the sample examined, lower than 45%), in which the control remains solidly in the hands of one specific subject even after the so-called “opening to the market”.

2.1.1. Rock (1986)

Rock (1986) hypothesizes that there are some investors better informed than others about the prospects and the quality of the companies that place their securities with an IPO. When informed and less informed investors are in competition with each other in the adhesion of the offer, the latter can be faced with the problem of adverse selection: if the offering price is less than the expected value of the shares, the less informed investors will be systematically limited; while in the case in which the offering price is greater than the expected value, the less informed investors will obtain all the requested shares (the so called winner's curse hypothesis). Therefore the expected yield of the non-informed investors (that is, the difference between the expected value and the offering price), conditional on having received all the requested shares, is negative. The non-informed investors anticipate this risk and therefore the issuers must encourage them to adhere to the offer by fixing a placement price systematically lower than the expected value of the shares.

2.1.2. Beatty and Ritter (1986)

Beatty and Ritter (1986) use the model of Rock (1986) to demonstrate how a direct relation can exist between underpricing and the degree of uncertainty in the value of the company. They argue that the more uncertain the expected value of the company the greater the number of investors encouraged to invest in information before adhering to the offer. This renders the problem of adverse selection worse, as is evidenced by Rock for the investors who decide to remain non-informed. In other terms, the more the uncertainty ex-ante of the value of the company, the greater the risk connected to the adhering of the offer for the non-informed investors. The greater risk has to be compensated by a greater expected yield through the fixing of a lower offering price. In the empirical part of the work of Beatty and Ritter, they utilize as proxies of the ex-ante uncertainty: the age of the company, sales revenue (at a constant dollar price) in the last year before the IPO, and the volume of the offer (at a constant dollar price). The same approach is used by Ritter (1984).

2.1.3. Allen and Faulhaber (1989)

Allen and Faulhaber (1989) assume that the companies have information about the quality of their investment projects that is not available to the external investor. The companies with better profit expectation try to draw attention to their better quality by fixing a lower placing price (generating underpricing) by informing the investors of the quantity of shares held back. Placement with underpricing is considered by the external investors as a reliable sign of the quality of the company because only the "good" companies can recuperate the cost of underpricing through successive placements at more favorable prices. In the model of Allen and Faulhaber it is crucial that the uncertainty of the quality of the company is not resolved at the moment of the second placement after the IPO, but lasts up to settlement. However, at the moment of the second placement, the higher quality companies will have a greater probability of being evaluated as good companies by the investors. This model therefore represents a formalization of the original idea proposed by Ibboston (1975), according to which IPOs are underpriced with the aim of consenting successive placements at more favorable prices (the so called "leave a good taste" hypothesis). Therefore one of the empirical implications of the model is that the companies that draw attention through strong underpricing sell only a small part of their shares at the IPO phase and then later return to the market to sell a more substantial quota at more favorable prices.

Moreover, Allen and Faulhaber argue that their model is consistent with the results of Ibboston e Jaffe (1975) and of Ritter (1984), which document the concentration of IPOs with strong underpricing at certain times and in specific sectors (so called "hot issue markets"). In fact they sustain that exogenous shocks in the level of expected profits from specific industrial sectors make more probable an "equilibrium of division" in cases in which the "good" companies draw attention to their quality through substantial underpricing.

2.1.4. Welch (1989)

The model of Welch (1989) is in many cases similar to that of Allen and Faulhaber. Also in this case the company's goal is to maximize total profits during and after the IPO. Welch hypothesizes, however, that there are direct costs (different from underpricing) that poor quality companies must sustain to be able to imitate those of high quality; further, and differing from Allen and Faulhaber, Welch hypothesizes that a quality company can be recognised with certainty in the period between the IPO and the successive offer. If there is a high probability of a low quality company being identified as such before the second placing, the company will have a low incentive to sustain the costs in imitating the high quality companies. If the "good" companies draw attention to their quality through underpricing, the cost of imitation for the "bad" companies becomes even higher; underpricing by "good" companies can then bring about an equilibrium of division in which the "bad" companies show themselves as being bad since they do not have incentives to imitate the behavior of the "good" ones (the costs of imitation being too high with respect to the probability of having been however identified as "bad"). The "good" companies on the other hand minimize the cost of underpricing by sustaining only those which are necessary to induce an equilibrium of division, and then making use of the fact of being reliably ranked as a "good" company for the offer following the IPO. This implies that in the model of Allen and Faulhaber, the good companies might want to place at IPO only a relatively small quota of the company in order to minimize the overall cost of underpricing, then selling at a more favorable price a more substantial quota in a placement following the IPO.

In essence, both Welch's model and Allen and Faulhaber's model predict that underpricing is a mechanism used to facilitate returning to the market in the period after the IPO. Their arguments can therefore be tested empirically and are relevant only for cases in which placements occur in the years immediately after the IPO.

2.1.5. Booth and Chua (1996)

In the model of Booth e Chua (1996) underpricing is the instrument through which the entrepreneur favours an elevated dispersion in the post-IPO ownership structure of the company, which will bring about greater liquidity of the securities and a lower cost of capital for the company. Underpricing consents to obtaining an elevated oversubscription and therefore allows the shares to be distributed among a greater number of new shareholders (eventually limiting single investors that request greater volumes of shares). Booth e Chua hypothesize that investors have to sustain the cost relative to the acquisition of information about the quality of the company and that the cost for acquiring the information by the marginal shareholder is greater since investors with the lowest cost for information (for example institutions) are attracted first, followed by those with higher costs for obtaining information. In this model underpricing allows the investors to recuperate information costs sustained in the evaluation of the quality of a company; therefore to generate a high oversubscription and attract a greater number of subscribers, it is necessary to have underpricing which is proportionally greater. Underpricing then serves to compensate the investors ex-post for information costs sustained ex-ante (that is, before taking advantage of the offer). Underpricing is then positively correlated with the cost of information in the evaluation of a company. In the empirical part of the work, Booth and Chua utilize the dimension of the offer, the mechanism of placement (best effort or fixed price re-offer), and the quality of the underwriter as proxies of the level of information costs.

2.1.6. Brennan and Franks (1997)

The explanation of underpricing proposed by Brennan and Franks is in some way similar to that of Booth and Chua (1996): underpricing - and the consequent oversubscription - are mechanisms used

to encourage a post-IPO ownership structure which is sufficiently scattered and which will impede emerging shareholders with large quotas of shares who are keen to monitor the management (the so called “reducing monitoring hypothesis”). Brennan and Franks bring out empirical evidence relative to the fact that in placements where there is a high oversubscription (obtained due to elevated underpricing) the investors that ask for higher quantities of shares are systematically limited to avoid their accumulating an important block of shares. Brennan and Franks show in fact that in the case of oversubscription the allocation of shares comes about in a discretionary manner by the underwriter (in agreement with the issuer) - and not following a prefixed rule like the repartition pro-quota - in such a way as to obtain a post-IPO share distribution which is as scattered as possible. Brennan and Franks show that there is a positive correlation between underpricing and the degree of diffusion of ownership in the years after IPO. They find that there is a negative correlation between underpricing and the post-IPO quota of the managers/shareholders in control. This evidence is consistent with their hypothesis on underpricing: in fact, the lower the post-IPO quota of the controlling shareholder (or the greater the quota sold off in the IPO phase), the greater his incentive to use underpricing to favor the dispersion of the shareholding and protect his rights and the connected private benefits that derive from it.

2.2. EXPLANATIONS BASED ON THE RELATIONSHIP BETWEEN THE ISSUER AND THE INVESTMENT BANK

2.2.1. *Baron and Homstrom (1980) and Baron (1982)*

Baron and Homstrom (1980) point out the potential conflict of interests that exist between issuer and underwriter: the latter is motivated to fix a low placement price in order to reduce the cost and work of the marketing and distribution of securities phase, while the issuer is interested in maximizing revenues of placement. However Baron and Homstrom note that strong competitiveness in industrial investment banking should minimise the problem evidenced. Furthermore they characterize a contractual framework between issuer and investment bank based on remuneration of the latter that holds the placement price explicitly in consideration and that in this way lessens the brokerage problem.

In Baron's model (1982) the underwriter is in possession of information of the potential demand and on the state of the market, to which the issuer has no access (information generated, for example, from market activity and from the collection of indications of interest in the phases preceding the offer); furthermore the issuer cannot observe the work of the underwriter in the marketing activity and in the distribution of shares, as assumed also by Baron and Homstrom (1980). In this context of asymmetrical information and moral hazard, Baron characterizes the optimal contract between issuer and underwriter showing how it can be convenient for the first to delegate the choice of the offer price to the underwriter; however the underwriter must be compensated for the use of his information on the state of the market used to fix the offering price. The appropriate incentive necessary to resolve the problem between issuer and intermediary is such that the optimal offering price is different from the first best solution that is obtained in the absence of asymmetric information and the scarce observability of the work of the underwriter.

2.2.2. Benveniste and Spindt (1989)

Beneviste and Spindt (1989) consider offers placed through firm commitment, where in the phase preceding the fixing of the price the underwriter carries out the marketing of the IPO by collecting the so called “indications of interest” on the part of the investors that regularly participate in IPO placements (typically institutional investors). In this phase the investors contacted voluntarily choose to subscribe to non-binding adhesions revealing their request schemes. Benveniste and Spindt argue that this phase of pre-marketing of the IPO can give an important informative advantage to the underwriter in defining the offering price and in maximizing the total earnings for the company. The problem is that the investors in possession of more accurate information must be encouraged to reveal this correctly in the marketing phase of the IPO; in order for this to be possible the underwriter must fix a mechanism for the allocation of shares and a final price that guarantees a greater expected profit for those who correctly reveal their own information with respect to those who do not. One of the implications of the model of Benveniste and Spindt is given by the fact that the offering price must be lower than the price of equilibrium that incorporates information of all the participants of the market, in order to guarantee a positive profit to the investors who correctly reveal their request scheme.

2.2.3. Booth and Smith II (1986)

The model of Booth and Smith is based on the presence of asymmetrical information between issuer and external investors. The issuer uses the underwriter as a certifier for the price of placement to draw attention in a reliable manner to the quality of the company. In fact, in order to be able to fix a price of placement that reflects the effective value of the company the underwriter has to invest in information; if he does not, instead, behaving in an opportunistic manner, he would increase his own profit over the short term but would lose in terms of reputational capital. The necessity to preserve his own reputational capital in order to continue to operate and maintain his market share in successive placements is a guarantee of the fact that he will have few incentives to behave in an opportunistic manner.

3. Criteria for construction of the data set and a description of the sample

The *data-set* utilized for analysis is that represented by IPOs of the companies quoted in the ten year period 1988-1998, on the official market via an offer to the public (77 companies); consequently the following have been excluded:

- operations that resulted in quotations on the second market;
- transfers from the second (*Mercato ristretto*) to the official market (*Mercato ufficiale*);
- operations that have taken place following particular operations (mergers and/or splits) and that concerned companies already quoted;
- quotations that have come about without an offer (that is, quotations of bank securities that were already distributed among the public).

The data source is made up of: informative prospectuses deposited in the Consob archives, the Primark databank (ex Datastream), the “notices” of the Italian Stock Exchange S.p.A. (and, previously, from the Council to the Exchange), the Shareholder Registry and studies on already quoted companies⁵.

As mentioned, based on this criteria, 77 companies that were quoted in the official market during

⁵ These studies, which might or might not be monographs are sent to CONSOB by Italian authors as is Law 5553/91 and voluntarily by the non resident intermediaries and, generally, contain forecasts on the trend of the companies and indications of whether to buy or sell.

the period under consideration were selected. It seems opportune to mention that the reduced size of the sample, together with the difficulty of obtaining the necessary information⁽⁶⁾, above all for the older operations rendered empirical verification more difficult in the Italian situation for some of the theoretical hypotheses formulated to explain underpricing. Furthermore the results have not always been statistically significant even though being in accordance with the theoretical forecasts - this is again due to the reduced size of the sample. On the other hand, the number of observations could be increased by going further back in time, but analyzing excessively long time periods would mean risking "ruining" data that could owe part of its variability to motivations external to the model for underpricing that we wish to examine and that, instead, would be due to changes in the legislative outline and the economic context in which IPOs have been carried out.

The frequency of admissions per year (Table 1) shows a non-uniform trend. The periods in which the greater number of listing admissions have been concentrated are those which represent the biennium 1988-1989, in which 16 companies were admitted to the stock exchange, and that from 1995 to the present, that has seen the admittance of 50 companies to the stock exchange list.

[- Table 1 -]

In accordance with what has been found for the Italian market in preceding studies (Pagano-Panetta-Zingales, 1998) and as shown in Fig. 1, a confirmation of the existence of the phenomenon of the so called "hot issues market" is revealed (Ibboston-Jaffe, 1975 and Ritter, 1984); in other words, the quotations of the new companies seem to be concentrated in certain periods (the two-year period 1988-89 and starting from 1995), and furthermore characterized by a higher level of underpricing with respect to the average (around 11.1%).

⁶ By way of example, it has not been possible to take into consideration the variable of oversubscription, because the data relative to the outcome of the offer was not always available, just as we were forced to limit the time of the studies produced by the analysts, available only from 1996. Also the data relative to the stabilization activity (in the period of post-quotation) exercised by the members of the placement syndicate was not available in sufficient quantity to conduct analysis. Therefore we were forced to give up our research on this phenomenon which, however, seems to be important in the formation of underpricing.

⁸ To calculate the value of underpricing, the difference between the issuing price and that of the first day of exchange has been corrected by the variation of the index of the market that came about in the same period. Measuring of the underpricing for the *i*th security is therefore defined as follows :

$$U_{it} = \ln(P_{it}/P_{io}) - \ln(I_t/I_o)$$

where: P_{io} : the price of the offer per share

P_{it} : price per share at the instant t , with $t=1$ st day of exchange

I_o : the market index (MIB) on the day of the offer;

I_t : index of the market (MIB) at the instant t as is described above.

For the present work we chose to measure, according to the above-mentioned formula, underpricing for one day. In fact, it is possible to measure underpricing in different ways (one can measure the underpricing not corrected for the variation in the market index - absolute performance- and that corrected, which we chose, that measures the relative performance; also in merit of the time period with respect to that used in calculating underpricing various choices are possible: one can measure underpricing of one day, one week, three months..). The reasons for the choice lie in the theoretical approach followed essentially in an extension of the model of Rock. In fact, if underpricing is justified as an instrument to overcome asymmetrical information, we have to remember that, under the hypothesis for efficient markets, asymmetrical information is non-existent for the companies that are quoted, and therefore, measuring underpricing during the periods following the starting of quotation does not seem justified. Furthermore, extending the period on which underpricing is calculated (for example up to a month), could cause influences to be felt from the trend of the market or from the events that regard the company but were not considered at the moment of quotation not because of the existence of asymmetrical information but, more simply, because they were not yet known (in that they still had to be produced). In reality, the fact that in the most recent operations the placing price is not decided ex-ante and as such reported in the prospectus, but, instead, is determined by the demand that is developed considering also the data furnished by the prospectus itself, might indicate that, it would be opportune to look at this measurement with underpricing calculated for a longer time (for example a week, which for the securities examined, always applying the correction for MIB, is equal to about 10.8%). In fact, in the hypothesis of share placement whose

Nevertheless, there have been some negative moments of the market (characterized by the depreciation of the prices of the securities) which have been accompanied by a reduction in the number of IPOs .

[**- Fig. 1 -**]

These considerations seem to be confirmed, given the facts in Table 2. In fact, with regards to the capacity of the issuer to take best advantage of the “window opportunity” offered by the market, on average, in the three months preceding the IPO, the market registered an increase (3.38%).

The average value of the underpricing of the IPOs examined is equal to 11.1% in line with that found in other countries (¹⁰). This seems particularly relevant in that it differs notably from the results of previous studies conducted on IPOs in Italy. In particular, Aletti-Banfi (1985), observed the new share issues in the period 1974-84, finding that the “newly listed”, on average, registered a slight positive performance on the first day of quotation while a few months after the quotation the tendency was reduced. However, such results appear to be not very significant and difficult to compare with the present situation because on one hand the revenue from securities are not corrected for market revenue - a circumstance rendered more significant by the fact that the time lapse between the closure day of placement and that of the beginning of the negotiation day was extremely wide (over one year in three cases) - and, on the other hand, a good part of the sample examined was placed on the market in a period in which mutual funds were not operative, which play an important role in the formation of the price trend of the shares. Instead, Cherubini-Ratti (1991) found, for the 69 companies quoted between 1985 and 1989 in their sample, a consistent underpricing (of which the average varies, according to the measure used, between 25 and 30%) that is found to increase with the dimension of the issue, while the smaller the dimension of the company that carries out the IPO the greater the probability that it will later return to the market to raise more capital. Also Giudici-Paleari (1999) found, for 135 companies quoted between 1985 and 1988, a higher value of underpricing (20.337 %), even when corrected by the market index; however, the existing difference between this measure of underpricing and that brought to light from the sample examined, seems to be explained the performance of IPOs of 1985 and 1986 (respectively, 61.208% and 26.627%) which show a different institutional framework, adoption of different techniques in placement and a particular economic situation.

Another significant aspect is the tendential reduction in the average age of the company at the moment of quotation, an element that is explained by the increasing number of medium and small companies that, since 1995, have been admitted to the Exchange and which are at the initial phase of their life cycle. Also, observing the relation between the value of the offers of IPOs and the

price is fixed through a book building procedure, it is more difficult to hypothesize that the pricing of the first day can be formed on the basis of variables that were not available in the moment that the placement price was formed. However, supporting the choice of concentrating the attention on a particular day of the underpricing, previous studies do not show substantial differences between the level of underpricing at one week and the level of underpricing at the day chosen. This tendency is confirmed by the data brought out by the sample observed (average underpricing for one day, one week, for one month and for three months, corrected for the MIB, measure respectively 11.1%, 10.8%, 7.6% and 6.3%) and from a recent study of the Italian situation, see Giudici-Paleari, 1999. We however took into consideration the phenomenon through a dummy variable that identifies the strategy used for determining the placement price (fixed price re-offer instead of book building).

⁹ In apparent contrast with what has been reported, it is to be underlined that the period from 1988 to 1990, while being characterized by a substantially positive phase in market trend, presents a progressive reduction in the number of IPOs. In reality, the phenomenon might be explained through the above period being considered a “tail” of the preceding two-year period, characterized by an expansion of the market and by a considerable number of quotations (more than 60).

¹⁰ For a detailed study on the empirical part of underpricing in IPOs in different markets, see Table 2.1, pag. 26, Jenkinson-Ljungqvist, 1996.

capitalization of the market over several years, it can be noted, with the exception of privatization, how the inflow of the newly quoted has been substantially contained (¹¹). In analyzing some of the companies in the sample and their relative operations of placement of securities, and by comparing the quota kept by the major shareholder (calculated on post-IPO capital,

[- Table 2 -]

which considers eventual increases of capital formed at the same time as at admission to quotation) with that held by the same after three years, it can be seen in Table 2 how substantial reductions do not appear (average values are respectively 55.32% and 50.8%).

Nevertheless, considering that in the three years following IPOs around 20 companies "returned" to the market (through either an OPV or increases in capital), it does not seem that the theories that explain underpricing in terms of the intention to subsequently return to the market to sell off the rest of their equity holding at a more convenient price (¹²) - the so called "leave a good test hypothesis" (Ibboston, 1975) - can be rejected even if, they surely do not represent, at least in the Italian situation, an explanation in itself sufficient to justify the presence of underpricing in the IPOs.

It seems to be interesting that the quota given up by the controlling shareholder with respect to pre-IPO capital is 11.24% on average. This value is considerably higher than that (5.2%) found for Italy, by Pagano-Panetta-Zingales (1998) for IPOs between 1982 and 1992. This seems to indicate a major relevance, in the motivations that encourage quotation, of the will of the previous controller to diversify his own portfolio. (In reality, it is necessary to read the data in light of the privatization operations that, being included in the sample, have, with their weight, surely contributed to raising the value, but are moved by different motivations. In this case, in fact, the objective of diversifying the portfolio is itself not relevant, since the explicitly and previously declared intention is to sell off, even if not all in one go, the whole of the holding; in fact, recalculating the data after having excluded those IPOs connected with the process of privatization, the percentage goes down, even if only marginally, to 9.98%).

Always regarding the motivations that bring companies to quotation (selling off rather than diversifying or looking for new money to use in the company), it might be of interest to stop to examine, even briefly, the ways in which the offer connected with the IPO comes about (table 3). In the majority of the cases we find a mixed offer (OPV and OPS) in 46 cases out of 74; only 7 cases were OPV while the other 21 cases were OPS. Given that a company can make use of an OPS to find new financial resources (in this case the old controller will see his own quota decreased only because of the effect of dilution due to the increase in capital), while an OPV represents an opportunity for the controller to free himself (in part, more often, or completely), freeing resources that can be used in other ways (diversification), the theory postulates that in the second case (and to a lesser extent for mixed offers) it would be correct to expect higher levels of underpricing due to the negative message given to the market through the disinvestment. Instead, analyzing the different levels of underpricing associated with the different ways of carrying out the offer, the results that are revealed seem to put into question the relevance of this variable (the way the offer is made) in determining the level of underpricing.

¹¹ Such evidence has a possible theoretical explanation in the models based on the asymmetry of information: through underpricing there is the possibility to draw the attention of the market to a company's quality, and this assumes particular relevance in the hypothesis in which it is thought that a company may have to turn again to the stock market to accumulate capital (a bettering condition). Welch (1989).

¹² In essence, based on this theory, the controller would accept carrying out a partially underpriced issue because he already has intentions of selling the rest of his own equity shares. When underpricing is used at IPO the company gives a good impression to the market regarding the possibility of making earnings with its stock capital with the acquisition of securities of that company; consequently, on the occasion of the following sales, the entrepreneur should be able to easily place the rest of his shares at a more convenient price and without having to make further discounts.

[- Table 3 -]

Another significant element that emerges from the analysis of the data is that regarding the role of closed-ended funds and various venture capitalists. Even though these figures were, at the moment of quotation, present in less than a third of the companies in the sample (24 cases out of 77), their average quota was 38.46%, which indicates their non marginal role in the opening of the company to the market (Table 2).

4. The quality of prospectuses

a) The hypothesis

As previously illustrated, in the literature (Rock 1986) underpricing was held to represent a sort of compensation requested by the uninformed investors for adhering to the offer; such compensation would be a remuneration for the risk in the trading of securities with operators in possession of additional or better information.

The informative prospectus that must accompany the offer of the securities of the quoting company represents one of the channels through which the company might reduce the uncertainty of the correct evaluation of its own securities, and spread information about its structure, its financial situation, its commercial position and its prospects for growth.

According to the model of Rock we can say that, all things being equal, the more information the public can make use of, the more the level of underpricing would be expected to decrease to such a level as to attract investors (in reality, a good quality informative prospectus, rich in information, is also the result of the underwriter's activity, but this aspect will be examined later). That is to say that, considering the same hypothesis, the variable "quality of the prospectuses" should be negatively correlated to underpricing. In fact, a high quality informative prospectus reduces, under the same conditions, the *ex-ante* uncertainty on the value of the company, and in agreement with the model of Rock (1986) the risk for the non informed investors that subscribe to the offer is reduced and, therefore, the discount on the price of the offer is reduced (underpricing) which the offering company must carry out in order to attract also the non informed investors. Finally, the quality of the prospectus can be assumed also as a proxy for the quality of the company and its management, denoting a greater propensity to opening toward the market and transparency, which indicates a more evolved "financial culture".

b) Criteria followed for the determination of the degree of quality of the prospectuses of IPOs

The prospectuses contain a minimal set of information fixed by law (law approved by the Consob deliberation no. 11125 of 22nd Dec. 1997). However, on examining the prospectuses, it was found that there is non-uniformity in terms of informative content and in reference to the degree of the analysis contained. In particular, it was observed that there has been a constant evolution of the informative content of the prospectuses in terms of the increasing amount of data present in them, which is presented in an increasingly concise way so as to be immediately comparable and more easy to read.

This evolution has been caused both by requests on behalf of Consob's offices and changes in the securities industry. In fact, since 1994 there has been an increase of the main financial foreign intermediaries in the operation of placement, and a more frequent orientation towards the offer of foreign institutional dealers. This opening to the foreign market, and the competition derived from it, has brought about the adoption of informative standards in use in the most financially evolved

countries in which the culture of information on the market is well established.

The evolution in question has profoundly conditioned the “quality” (both “absolute”, and, given its importance over a 10 year comparison period, “relative”) of the prospectuses in terms of their concrete capacity to inform the investors on the real value of the company offering shares.

In reality, to determine the “quality” of a prospectus we examined thirteen variables that were not present in all the prospectuses and, when found are quoted with quite a different degree of depth. This information is relevant in determining the motivations which brought a company to quotation and to the evaluation that the pre-IPO controller (the best informed investor on the prospects of the company) has of the present and future evaluation of the company. The variables taken into consideration were:

- 1) if OPS, the destination of the revenue of the operation, or if OPV, the motivation of the selling;
- 2) the description of the expenses and research & development activities;
- 3) the description of the last investments carried out in the last accounting periods;
- 4) the description of the company’s strategy;
- 5) information on the market shares and on the main competitors;
- 6) the non consolidated financial reports;
- 7) description of the fiscal position (such as outstanding jurisdictional contentions, etc.);
- 8) description of the outstanding civil and criminal lawsuits;
- 9) indications of the existence of agreements with unions;
- 10) indications of the potential situations of conflict of interest for the administrators (side activities conducted outside of the company, interests in special operations carried out by the issuer);
- 11) indications of the employees' participation in profit and capital;
- 12) a summary table of the ownership structure pre- and post-IPO;
- 13) indications of the total commissions for the placement.

For each IPO, the value 1 was assigned to each of the thirteen points listed above if that factor was present in the prospectus in an exhaustive, clear and detailed manner. The sum of the points attributed (0 or 1) to each of the above items examined ¹³, determines a quality indicator of the prospectus, with a rank between 0 and 13 (the higher quality prospectus will achieve a higher score, to the maximum of 13).

c) Description of the results

From the analysis of the *ranks* attributed to the prospectuses of the IPOs carried out in the period 1988-1998 (all the 77 IPOs were taken into consideration), it emerges that the quality of the prospectuses, in the period observed, constantly increased (figure 2). This leads us to conclude that it is wrong to assume that there is a constant “ideal level” of quality of the prospectus.

This circumstance seems to be relevant also because it shows that a prospectus that was previously ranked as a quality prospect might, at present, not be considered so anymore if compared to the average quality of the more recent prospectuses (but this would tend to “undervalue” the quality of the prospectuses of the first part of the sample). Therefore, it was thought to be to divide the period observed into two sub-periods, verifying if the underpricing of the nth IPO of each sub-period is correlated with the variance of the rank of the nth prospectus from the average value of the ranks of the sub-periods of reference.

¹³ Obviously, the choice to give the same “weight” to each of the items is as arbitrary as was their selection, but no other solution was found to overcome this limit because even the idea of attributing a different value to all the different items would have been equally difficult. In fact, even if one can imagine that the different information contribute in a non uniform way to the completeness of the prospectuses, it is not easy to express the specific circumstances in a certain and unilateral way.

[- Figure 2 -]

In reality, it is possible to identify two sub-periods characterized by average qualitative values of the prospectuses which are considerably different (respectively, on average, around 7, and more than 12) and, in the second period, by a reduction of its variability. Within certain discretionary margins, it is even possible, in 1994, to identify a breaking point between the two sub-periods (1988-1994 and 1995-1998). After that date, in fact, following the IPOs due to the privatization process (INA and IMI), there was more use made, in the placement procedures, of foreign high quality intermediaries and a greater call towards the foreign institutional investors (¹⁴) (the offers to the public were often accompanied by reserved offers to the institutional investors; and with regards to these offers, a part was expressly reserved to foreign institutional investors). These circumstances, along with certain modifications in the regulatory framework made by Consob (eg. provisions on transparency of the company's agreements introduced by legislative decree no. 332 of 1994) seem to have contributed, in a substantial way, to a general raising of the "informative" quality of the prospectuses as defined in the present work.

The choice of the year 1994 as a "critical" year, suitable to discriminate the two sub-samples (and, therefore, to pick out a point of structural instability of the variable observed - the quality of prospectuses), is confirmed also by the results of Chow's test that gives, for 1994, an F significance at a level of confidence of 5% (¹⁵) ($F_{2,67}=3.378$).

The significance test carried out on the differences between the averages of the quality of the prospectuses calculated for the two sub-periods (respectively 7.46 and 12.64 if calculated on all 77 IPOs) also confirms the statistical significance of their diversity ($t=41.94374$).

Furthermore, a positive correlation (even if not significant), between the quality variable and the observed underpricing, is found for both of the sub-periods. Nevertheless, examining each single item determining the quality of the prospectus and the frequency with which they are present in the studied prospectuses (table 4), it can be noticed how none of them is always present and how the general increasing quality of prospectuses in time (one must keep in mind that, dividing the sample into two sub-periods, Panel A from 1988 to 1994 and Panel B from 1995 to 1998, the average value of the quality of prospectuses changes from 7.46 to 12.64) is associated with a more consistent presence of all the points considered.

In particular, in the second time period (Panel B), six of the items are present in all the prospectuses examined and four others are missing only once. Further, the increase of the frequency with which each item is present (which goes from a minimum of slightly more than 4% to a maximum of 72%), is more than 40% in more than seven cases.

[- Table 4 -]

It is also evident how a greater dispersion of the level of underpricing is associated with the lower quality prospectuses and how the average level of underpricing tends to decrease when the level of the quality of the prospectuses increases (fig.3).

¹⁴ In reality this process was started by Credit and Comit's privatization but this financial operation is out of the consideration of this paper due to the fact that it concerned already quoted securities and did not generate an IPO.

¹⁵ In reality, to verify that the choice of the two sub-periods, suggested by the mentioned changes that came about in the industry of placements, was the optimum, we divided the main range period into various couples of sub-periods, taking, progressively, as reference the years from 1990 to 1996; successively, for each pair of regressions, using the squared sums of the residuals, the value of the F - test was calculated, finally choosing the couple that had the highest value.

[- Fig. 3 -]

More generally, and consistent with the theoretical forecasts, one finds a negative correlation between the rank of the prospectus and underpricing (-0.13274); this value indicates how an appreciable decrease in underpricing presents itself when the quality of the prospectus increases (table 5).

[- Table 5 -]

Further subdividing the sample according to some of the qualitative variables related to the type of activity the company is involved in (Industrial or Financial) and according to the nature of the control (i.e. Public or Private), significant differences were noticed, in terms of the average quality of prospectuses and of the level of underpricing.

As mentioned, a first possible distinction that can be made between the companies of the sample is based on the type of activity that the company carries out. According to this distinction, it appears that the financial companies (10), that on average present a lower quality prospectus (with an average rank of 9.6 rather than the 10.56 of the industrial companies), are also characterized by a greater underpricing (0.295 compared with 0.15).

[- Table 6 -]

On the other hand, seemingly in contrast with the theoretical previsions, the privatized companies (6)⁽¹⁶⁾ present a prospectus quality that is on average lower by more than two points compared to the other companies, along with a slight overpricing (-0.023) with respect to the underpricing of the IPOs carried out by the non privatized companies that, on average is equal to 0.147). However it is important to underline how comparing underpricing of the privatized and non-privatized companies included in the sample may not be correct, due not only to the dimensions of the first, tendentially not similar to the latter, but especially because, in the case of the privatized companies, the pricing policy is obviously based to particular reasons. Further, the apparently anomalous relation that is present in the case of the privatized companies, between the level of underpricing, substantially below the general average (0.132), and the level of the quality of the prospectus, that results instead, as illustrated, less than for the other companies, may be explained by noting that we are referring to large companies, already well known to the public (which is made up of their own clients/subscribers) and that, therefore, all things being equal, do not need so much to "make themselves known" by means of the prospectus⁽¹⁷⁾.

¹⁶ In reality in the sample of the 77 IPOs, 9 are privatized companies but, for this paper, each time that underpricing is analyzed and its relation to other variables observed, we limit ourselves to taking into consideration only 6 privatization operations: the three operations (IMI, INA and ENI) that were characterized by the bonus share have been excluded. In fact, we believed that in these cases the underpricing was not comparable with that of the other IPOs because the value attributed to the bonus share seems to be included in the placement price. The bonus share value must be specified in the case of share exchange after the placement. This is because such exchanges mean that one can lose the right to the successive free allocation of more shares (exchanges in which the price is the same as the one taken into consideration for the calculation of the underpricing). One must remember that, in fact, the term 'bonus share' corresponds to a free share, assigned in accordance to the number of shares subscribed to by private investors at the moment of the placement. The bonus share represents, for the issuer, an incentive towards the formation of a stable and non-speculative shareholding.

¹⁷ In reality, in studying the variables that determine the underpricing of privatized companies it might be of interest to keep in mind that they are the only companies for which the offer was preceded by an advertising campaign, sometimes using television; even though this represented a cost to the company, it certainly helped the placing to be carried out at a more convenient price for the

It is also interesting to note those companies that, before quoting, had some Venture Capitalists (VCs) as shareholders. These companies (13 cases) seem to have been keen on producing a more complete prospectus, rich in information (average rank of 12 compared to that of about 10 for those companies that did not have any VCs as shareholders) - due probably to the desires of the VCs; moreover these companies, consistent with the theoretical predictions, presented a lower level of underpricing (0.055 compared to 0.15). With regard to the lower level of underpricing present for those companies with VC shareholders, along with the higher quality of prospectus, it is also worth remembering the "certifying" role carried out by the VCs through their presence in the company's shareholding; this guarantee, all things being equal, would contribute to reducing the level of underpricing necessary in order to attract non informed investors (Barry-Muscarella-Peavy III-Vetsuydens, 1990 and Meggison-Weiss, 1991).

Further, the quality of the prospectuses in cases of *carve outs* (10 IPO) seems to be significantly different from the others (respectively 9.11 and 10.56). Even in these cases the different quality of the prospectuses seem to be evaluated by the market consistently with the theoretical predictions; in fact, the IPOs of the carve outs are characterized by a level of underpricing which is twice the normal (0.219 instead of 0.119). What is surprising however is that in these cases the management of the companies in question is not exactly new to the quotation experience, they should already have experience of how important it is to be open to and inform the market, and how transparency should implicate lower "costs" in this, since then openness and informing the market would already have been taken care of by other elements of the corporation. Moreover, the data seems to be consistent with the idea that the market does not "like" operations which lengthen the "chain of control".

Finally, no significant differences are present between the quality of the prospectuses of family corporations (44 cases) and those of non-family corporations (30 cases). However, the value of underpricing used by family corporations, twice as much as the others (0.161 compared to 0.091), seems to indicate a greater "distrust" of the market towards such forms of control (that is, to overcome this distrust it is necessary to have a "prize" in terms of a discount, represented by the underpricing).

Examining the quality of the prospectuses (table 7) and underpricing (average measurements) for the IPOs grouped according to the qualitative variables previously identified but also separating the results into the two sub-periods into which we subdivided the sample, some interesting results appear.

First of all, as we already pointed out, the average quality of the prospectuses increased, in a more-or-less uniform way (indicating a general evolution of the placement market), for all the different types of company structures examined.

[- Table 7 -]

Furthermore, the raising of the average level of the quality of the prospectuses corresponds with the slight reduction of underpricing (from 0.207 for the companies in Panel A, to 0.075 for those of Panel B). This appears to be particularly true in the case of Industrial companies, family corporations, subsidiary companies which before the IPO were controlled by Venture Capitalists, and in cases of carve outs. However, Financial companies and Privatized companies are an exception; for these, even in the presence of the increasing quality of their prospectuses (in line with what happened with the others), an increase in the underpricing was observed rather than a reduction (more precisely, from overpricing to underpricing in line with the others). This “anomaly” might be explained by considering the climate of greater attention to the financial markets and to investment prospects that characterized the second period (1994-1998), and that caused investors to examine the IPOs of big companies (such as Privatized and Financial companies) in a more critical way and to therefore, in these cases, demand a discount before being willing to subscribe to the offer.

5. *The reputation of the underwriters and their role as a “certifying agent”.*

a) Hypothesis to be tested

Various models have been provided that explain the formation of underpricing in IPOs on the basis of the relations that exist between issuer and the investment bank that carried out the placement (Baron and Homstrom, 1980; Baron, 1982; Benveniste and Spindt, 1989). Some of the more recent studies concentrate on the “certifying agent” role that the investment banks carry out, and on the capacities of financial intermediaries that have a very good “reputation” of being able to place securities with a lower discount: the intermediary that carries out the placement of the securities of a company certifies, by means of its reputational capital, to the quality of the offering company (reducing, therefore, the uncertainty with regards to the value of the company and contributing to minimize the underpricing “necessary” to sell the securities offered).

The more prestigious underwriters are usually associated with offers that are less risky and that do not in themselves provide sufficient incentives to find additional information on the value of the company and, therefore, attract fewer investors who have “extra” information (Beatty-Ritter, 1986 and Carter-Manaster, 1990).

In practice, in these models the existence is postulated of a selection mechanism, which is used by the high quality intermediaries that accept only the placements that are not excessively risky (those for which sufficient information is available to be able to carry out a pricing that reflects the real value of the company) in order to not reduce their own reputational capital (by which we mean their ability to offer optimal pricing).

Consequently, issues with a lower level of underpricing should be associated with the higher quality underwriters and, considering the lower risk, these intermediaries should ask for lower commissions.

From these assumptions, it also seems correct to expect that a good quality intermediary, interested in preserving its reputational capital, might ask the offerer to produce a complete, exhaustive and clear prospectus that is able to reduce uncertainty regarding the proposed investment. This means that the “quality of the prospectus” could be seen as a variable linked to the quality of the intermediaries. It seems, however, opportune to note that this process implies the

existence of a “placement market” which is perfectly efficient and competitive, and whose members are afraid of losing their reputation because they are aware of the non-approval that they would otherwise receive and any “sanctions” that might follow (reduction of their own market share, and in the more extreme cases, even to the point of exclusion). Furthermore, besides this “market” mechanism (that might be considered a self-regulation mechanism in a certain sense), we find the role of the regulators in asking for a minimum level of information from the market and by encouraging, also through the exertion of their powers of “moral persuasion”, a raising of the quality of prospectuses so as to guarantee more effective investor protection.

b) Criteria followed to determine the quality level of the Underwriters.

The idea of measuring the reputation of the *underwriters* leads back to the work of Haye (1971) who suggests that the investment banking field is based on a rigid hierarchy (an examination of these ideas, with specific reference to IPOs and to the influence of the prestige of the underwriters on the pricing has been carried out by Logue, 1973; Tinic, 1988 and by Johson-Miller, 1988).

Different approaches are possible in measuring the “quality” of the underwriters.

The first possible way to define the quality of an intermediary is to consider its market share (ie. the re-offering market share on the occasion of an IPO): the greater the market share, the higher the quality of the underwriter (obviously under the hypothesis that the intermediary operates in a competitive market). This method is the one applied by Beatty-Ritter (1986), who calculated the market share of an investment bank as the percentage of IPOs placed by that bank as the “lead manager” or “co-lead manager” (compared to the total number of IPOs in a certain period); successively, the underwriters were put in decreasing order according to the market shares held by each (corresponding to a decreasing “quality”). The main problem with this method, especially in an “evolved” market, is that it does not seem to take into consideration, for example, the fact that some intermediaries specialize in the placement of securities of companies which operate in specific fields (for example in “high tech”) and that, therefore, might be involved in the placement of only a few IPOs not because of their lower “quality” but simply because they specialize.

Another approach is the one used by Carter-Manaster (1990). The authors assume that the hierarchical order of quality of the various intermediaries is reflected in the so-called “tombstone announcements”. The Tombstones are announcements published in the main financial newspapers, that list for each IPO the persons who make up the marketing syndicate; the names of the underwriters are listed on different lines (usually 5) with those of better quality on the first line and the others in decreasing order. The idea of this method is to attribute a rank to the intermediaries listed in a prospectus, based on how high up in the tombstone they appear (the value 9 is assigned to the intermediaries that appear on the first line, 8 to the intermediaries that appear in the second ..). If one of these dealers (intermediary “A”) is then also present in another announcement at a lower level compared to other intermediaries that did not appear in the first announcement, the latter assume his preceding rank while the rank of intermediary A is reduced. At the end of this process, therefore, the intermediaries of a higher quality (ranked 9) will be those who, in the considered range of time, never appear below the other intermediaries. The problem with this method (not really applicable to the Italian situation since there is no equivalent to the “tombstone announcements”) is that if it is applied over a substantial period of time it does not consider possible positive and negative variations of the quality of the intermediary, since an intermediary's quality rank will be “freezed” at the lowest level obtained throughout the whole time period observed.

Finally, in a more recent study by Jalilvand-Stewart-Switzer (1996), the quality level of the underwriters is established through consideration of the previously illustrated calculation of ranks, and of the rankings obtained from the annual evaluations present in the Investment Dealer's Digest (also in this case it is not possible to apply these ideas directly to the Italian situation).

In the present paper, taking into consideration the above studies, to determine the market

position of the underwriters we arrange them according to their market share calculated: as the number of operations carried out by them compared to the total number of IPOs considered (QN), or as the corresponding value of the shares placed compared to the value of the total placement carried out, in the period examined, for all the IPOs (QC).

Considering the large span of time involved, so as not to underestimate the earlier operations, the corresponding values were all calculated in 1998 lire and whenever more than one intermediary took part in a single operation, the operation was counted as many times as the number of involved intermediaries.

Following this, a rank indicator⁽¹⁸⁾ was attributed to each dealer according to the two types (QN and QC) of market share held. Finally, the sum of the two rank indicators was calculated, obtaining an indicator that, in giving the “position” of the underwriters, would take into consideration both the number of operations carried out and their dimension – and that could be used as a proxy of the quality and, therefore, reputation of the intermediary.

c) *Description of the results.*

Examining all the IPOs of our sample (table 8), it was found that 30 of the intermediaries had been involved in placements as the “lead managers” or the “co-lead managers”; of these more than half (16) participated in only one operation.

However, the investment banking market is rather concentrated. The five most active dealers in terms of the number of operations carried out, cover about 51% of the market (in numerical terms) while, analyzing market shares calculated on the value of the shares placed, the first three intermediaries placed more than 63% of the total value of the securities placed in all the IPOs of the period observed (these intermediaries are also the ones that took part in the placement of the privatizations of large dimensions - ENI, IMI and INA - but even if these operations are not considered their relative position and their market shares remain unchanged).

Moving on to calculate the correlation between “the quality of the intermediaries” and, respectively, the “quality of the prospectuses”, the “underpricing” and the “average commission asked”, we find that, consistent with the theoretical predictions, they are positive for the first and negative for the other two cases (however, none is calculated as statistically significant).

Nevertheless, the average commission asked by the 14 underwriters who participated in more than one placement vary from a minimum of 3.55% to a maximum of 4.75% of the capital placed (average value 4.03%). This slight variation in the commission seems to be an indication that the competitive level in the sector is not very high.

[- Tav. 8 -]

6. *The role of the analysts in the formation of underpricing: the variable “studies”.*

If the prospectus represents a means by which the quoting company spreads information on its structure, its prospects and therefore on its potential future value, another important tool able to inform the investors and, thus to reduce the uncertainty as to the real value of the company and, consequently, the “necessary” level of underpricing to attract investors, are the so-called “studies”. By this is meant the publications that independent analysts, research agencies of intermediaries and persons in the consultancy field produce, analyzing the general position and the prospects of

¹⁸ The value 1 was attributed to the dealer who held the smallest market share and increasing indicators in correspondence with the increase of the market share (the same procedure was applied with reference to both QC and QN).

growth of quoted companies, quoting companies and of industrial sectors. These studies (which might be monographs, if dedicated to a single company, or otherwise, if dedicated to the securities of more than one company of the same kind of sector) contain an analysis of the available data (the asset and liability statement and the stock exchange developments), predictions on the evolution of these companies, and “advice” based on this information (in simple terms: “Sell”, “Buy”, or “maintain position”). According to the present regulatory framework (these matters are presently disciplined by article 23 of the Regulation approved by Consob Recommendation no. 11520; before 1st July 1998 the rules were dictated by the previous article 25 of Consob Recommendation no. 5553) the persons that produce such studies and that intend to offer them to the public are obliged to also send a copy to Consob.

In practice, it was possible to examine all studies produced since 1996 (more than 16,000), of which 253 studies were identified (¹⁹) as being relevant to the 39 IPOs of the period 1996-1998. This number is of particular interest because it is substantially higher than that calculated for the already quoted companies of the same market capitalization, demonstrating a particular interest in these types of securities.

In particular (table 9), notwithstanding the fact that 78% of the studies were produced by persons “independent” of the underwriters, it is worth noting that the very high level of consent of the advice given in the studies - 97% of the cases gave the same operating advice: “Buy!” (based on the frequency with which these predictions were, *ex-post*, exact, it might be useful to recall that for only 71% of the 39 IPOs in question, was there any underpricing). In fact, in only seven of the 253 studies there was disagreement between the opinions formulated, and only in one case a study that did not consider the taking up of the offer as wise (expressed *ex-ante* in the study) was associated with overpricing. This considerable uniformity of opinion found in the studies and their apparent incapability to correctly predict the future price trends and, specifically in the case of the IPOs, whether the placement price fully reflects the value of the company, leave open some interesting questions that deserve investigation, regarding the origin and the reliability of the data on which these studies are based and the analytic capabilities of the persons that write them. In practice, a more complete examination of the studies reveals that the agreement on the advice is preceded by an agreement on the forecasts of the companies. This nevertheless does not surprise us in that it is a fact that quoting companies distribute their forecast data, also to persons not linked to them. At present, there is no obligation for this data to be contained in the prospectus, although a new regulation regarding admission to the Italian Stock Exchange provides that they must be approved by the Board of Directors and must receive the approval of the “sponsor”.

Another interesting aspect is that of potential conflicts of interest that might exist between the producers of the studies and those to whom the studies are destined, and on the basis of which they formulate their investment choices; this is of course particularly relevant whenever the persons who produce the studies are linked to the persons involved in the placement of the securities. It has already been pointed out that only 22% of the studies are produced by persons linked to the underwriters; what seems interesting, however, is that these studies produced by “non-independent” persons, in the majority of the cases (around 91%) are produced before the offer while in the case of studies produced by independent subjects, this percentage drops to 70%. This seems to indicate that, in the case of non-independent studies, the intention to guarantee consent among the investors prevails, so as to guarantee complete subscription to the offer, while interests to produce information regarding the securities placed decreases immediately after having obtained this goal.

¹⁹ We draw attention to the fact that the set of studies examined represents a sub-sample of those that exist since there is no obligation to deposit studies at Consob if they have been produced by foreign subjects. Also, it was not possible to collect, with sufficient certainty, all the studies of the more recent operations (AEM, Class Editori, Cremonini and Richard Ginori) that, consequently, have been excluded from the analysis.

More generally, while the studies produced before the offering are able to positively influence its outcome (both contributing to increase the offer price and assuring a high level of subscriptions, and even oversubscription), the studies distributed in the period between the offer and the beginning of the negotiations can influence the price of the stock on the first day of trading (also in this case, studies that express a positive opinion on the convenience of buying the securities, as in practically all the cases examined, contribute to an increase in the price of the securities at the start of trading). While in the first case, a production of studies that express positive opinions on the quoting company should contribute to establishing a higher offer price and, therefore, reduce the underpricing; in the second case (studies produced after the offer but before negotiations have taken place) the studies containing "Buy"-type advice should contribute to determining (all things being equal) a higher market price (on the first day of trading) closer to the true value of the securities and, therefore, to increase the underpricing (obviously, this is all under the quite realistic hypothesis that we are not in the presence of perfectly efficient markets).

[- Tav. 9 -]

Regarding the distribution of the studies among the different companies that were involved in IPOs, a positive correlation is found (0.759) between the dimension of the offer and the number of studies dedicated to the company - indicating greater attention being paid to the more substantial operations.

Finally, a negative correlation is found (even if insignificant) between the number of studies produced on a company and the quality rank (calculated as illustrated above) of the underwriter, while there is a positive correlation between the quality of the prospect and the number of studies produced, which strengthens the hypothesis, suggested by the high degree of agreement found among the studies, that the source of their data is actually the quoting company itself (it is logical to expect that a company which pays more attention to passing information to the market would encourage contacts with the persons that produce the studies, and by doing so, favour the activity).

7. The variables of underpricing on empirical verification of the theoretical previsions.

As mentioned above, in trying to explain the causes that bring about the formation of underpricing, different theoretical approaches have been formulated (see Appendix 1). Each of these theories examines one or more explanatory variables. However, the dimension of the sample of IPO used is in certain aspects too small, and the impossibility of collecting all the necessary data prevented empirical verification of all the theories dedicated to explaining the formation of underpricing.

In reality, the causes of underpricing (or rather, the presumed causes) taken into consideration (reported in table 10) are related to:

** The age of the company*

Previous studies have documented the existence of a negative correlation between the level of underpricing and the age of the quoting company. It seems reasonable enough to suppose, in fact, that as the age of the company increases (calculated as the years since the foundation of the company) it will be easier for the market to have a better knowledge of the company, and therefore be in a position to better evaluate it, thus asking for a lower discount.

** The dimension of the company*

This variable is commonly used as a proxy for the degree of uncertainty *ex-ante* on the value of the company; in fact, all things being equal, the larger companies are better known (as mentioned, this is even truer in the case of financial institutions and privatized companies). One could, therefore, expect a negative correlation between underpricing and the dimension of the company. For the measurement of this variable, data regarding the sales revenue and net capital of the IPOs were used, measured in lire at 1998 prices.

- Table 10 -

ECONOMIC THEORIES AND EXPLICATIVE VARIABLES OF “UNDERPRICING”

Hypothesis to be tested	Bibliographic references	Independent variables to be used
Winner's curse and the effect of uncertainty on the value of the company	Rock (1986) Beatty e Ritter (1986) Ritter (1984)	- Age of the company - Pre-IPO sales revenue at lira constant prices - Dimension of the offer at lira constant prices - Type of offer (OPV, OPS or mixed) - Pre-IPO net capital at lira constant prices - Percentage range of the offer price
Indication of the quality of the company and Leave a good taste hypothesis	Ibboston (1975) Allen e Faulhaber (1989) Welch (1989) Grinblat e Hwang (1989)	- Resources gathered via capital increases in the 2-3 years succeeding IPO - Post-IPO quota of the majority shareholder
Influence of the placement mechanisms and the costs to stand to evaluate the company	Beveniste e Spindt (1989) Booth e Chua (1996)	- Type of placement (best effort or with guarantee) - Type of placement (fixed price re-offer or book building) - Dimension of the company at lira constant prices
Reduced monitoring hypothesis	Brennan e Franks (1997)	- Oversubscription - Post-IPO quota of the majority shareholder - The market share of the non-majority shareholders 2-3 years after IPO (the second shareholder's market share, the market share of all the other important non-majority shareholders compared with the market share of all the non-majority shareholders)
The effect of the certifying role carried out by the underwriter and by venture capitalists present in the shareholding of the company Pre-IPO of the company	Booth e Smith (1986) Carter e Manaster (1990) Megginson e Weiss (1991) Barry, Muscarella, Peavy e Vetsuyepens (1990)	- The underwriter's reputation (still to be defined) - Number and final quota of pre-IPO closed-end funds/ venture capitalists present in the shareholding
Trend of the market: Hot issue markets and windows of opportunity	Ibboston-Jaffe (1975) Ritter (1984) Loughran - Ritter - Rydqvist (1994)	- Dummy variable that identifies the years with many IPOs - Temporal lag between the date of the offer and the date on which the negotiations begin - Trend of the market in the three years preceding IPO

** The dimension of the offer*

Also in this case it might seem right to expect a negative correlation²⁰ between underpricing and the dimension of this variable. In fact, it is often true that the smaller issues are related to smaller companies (for which, therefore, the points examined above are valid).

** The type of offer*

The shares offered at placement might originate from a capital increase (OPS) or from a sell-off by previous shareholders (OPV); there is, obviously, a third case which involves both, known as a “mixed offer” or OPV / OPS. While the OPV represents an opportunity for the old shareholders to free part or all of their investments (this could be the case for closed-ended funds), the OPS indicates the desire to find new resources to finance, for example, business development plans or acquisition plans. Consequently, it might seem logical to expect that in the case of IPOs carried out via OPV, one could expect higher levels of underpricing, since this would pay for the “negative” message given by the revealing of the desire of the previous controller to get rid of its investment, even if only partially.

** The method of placement*

The method of placement (book building rather than fixed price re-offer) can be used as a proxy for the level of the information costs sustained by the underwriter to determine the exact value of the company. In fact, book building requires that the informed investors pass on some of the information they hold on the value of the company to the underwriter, who then uses this information to fix the offer price. In this way underpricing can be viewed as a discount used to encourage the informed investors to reveal information.

** The quota of capital held by the previous majority shareholder after the IPO*

If the previous majority controlling shareholder holds back a high quota of the company after the IPO, he communicates to the market his faith in the company’s prospects; therefore, all things being equal, a negative relation should exist between the quota of capital held back by the previous controller and the underpricing.

** Returning to the market after the IPO*

According to the “signalling” model, the issuings of IPOs are purposely underpriced so as to allow subsequent returns to the market at more favourable conditions (Ibboston, 1975). Therefore, one should expect a positive correlation between the level of underpricing and the further use of the market on behalf of the quoting company in the period after IPO (usually the period taken into consideration is three years after the IPO).

** The market trend and temporal lags*

Quotation operations appear to be concentrated in certain periods. Furthermore, it also seems logical to expect that the companies (or more precisely their shareholders/managers) would try to optimize the resources gathered by carrying out the IPOs in the most favourable moment of the market. These considerations seem to imply, respectively that:

- it is possible to identify a flag that indicates the belonging of a specific IPO to one of those periods characterized by a wave of IPOs (to which documentary evidence - Ritter, 1984 - associates even higher levels of underpricing)

²⁰ Some studies (Cherubini-Ratti, 1991) have hypothesized that rather, in a market that is not characterized by great liquidity, the opposite might occur. In other words, a higher underpricing could be associated to issues with a higher value and is explained as the compensation for the greater risk undertaken by the dealers who take care of the placement.

- the IPOs should be more likely to occur after a period in which the market had increasing yields, and presents, in such a case, more contained underpricing.

Further, always taking into account the possible reactions in the trend of the market to the result of the quotation operation, it might seem reasonable to expect a negative correlation between the level of underpricing and the length of time between the date of the offer and the beginning of the negotiations.

** The reputation of the underwriter*

According to paragraph 5 above, one would expect IPOs carried out by high quality intermediaries to have a negative relation with the level of underpricing.

** The presence of institutional investors in the pre-IPO capital structure*

Also the presence of institutional investors (such as closed-ended funds and/or venture capitalists) in the company's framework would seem to act as a sort of "certification" of the value of the company, reducing uncertainty and therefore producing a lower level of underpricing.

The first analysis of the explanatory variables involves underlining the different values they assume for those companies that produced underpricing (U) at IPO, and those that, instead, produced overpricing (NU). From this it was found that the average values that these variables assume in these two sub-samples (respectively, 46 IPOs with underpricing and 28 without) present a statistically significant difference (table 11), with only one exception (the variation of the MIB between the offer and the beginning of the negotiations).

From the above and in line with the theoretical predictions, it appears that the companies whose IPOs produce underpricing are, on average, slightly younger (the average age for the two sub-samples is 43 years for U and 55 for NU).

In particular, the companies of the sub-sample with underpricing, in disagreement with the theoretical predictions, are found to be slightly larger (602 Mld for U and 584 Mld for NU) in terms of market capitalization but, instead, are found to be of distinctly lower dimensions when considering the totals in the asset and liability statement of the year preceding the IPO (the average sales revenue was, respectively, 209 Mld for U and 994 Mld per NU, while the net capital assumed average values of 121 and 341 Mld). This seems to indicate that the market demands higher underpricing for the quotations of non-operating companies whose sales revenue is due to their holdings of other companies in the group.

For those companies associated with underpricing, the quota sold off by the controller is found to be lower with respect to the pre-IPO capital (8.85% for U and 11.74% for NU), while the quota of the post-IPO capital held by the controller is greater (56.39% for U and 55.3% for NU).

With regards to the category of controller before the IPO, four classes of membership were identified (family controlled companies, carve out, venture capitalist backed and privatized). While for the other types of control no relevant differences arise in the distribution of the respective companies within the two sub-samples (U and NU) and, therefore, the category of control does not seem to be able to explain the formation of underpricing, three quarters of the family controlled companies are found in the sub-sample with underpricing. This indicates the necessity of discounting the share issuing of this kind of company so as to make them acceptable to the market (actually many smaller companies are under this kind of control, and the theory predicts that there should be greater underpricing).

Also the presence of institutional investors in the company's pre-IPO shareholding framework seems to agree with the theoretical predictions. In fact, the institutional investors, present in 22 IPOs, held a quota of the capital on average equal to 30% in the companies of the sub-sample U. This quota rises to 58% in the companies present in sub-sample NU. However, the number of

funds present, on average, in each one of the 22 companies, does not substantially vary with the presence or not of the variable “quotation with underpricing”.

[- Table 11 -]

In relation to the ways in which the placement is carried out, it is found that in two thirds of the cases of the IPOs the price was fixed by a procedure based on book building and, in these cases, there are twice as many IPOs with underpricing as there are without. On the other hand, for the IPOs carried out with the fixed price re-offer technique there are as many issuings with underpricing, in numerical terms, as those without.

Also the studies produced by the analysts seem to have had some influence on the formation of underpricing. In fact, while for the 21 companies that belong to sub-sample U, on average, 67% of the studies were produced before the start of the quotations, for the 10 companies belonging to NU this percentage drops to 32%.

Only 16 companies returned to the market in the three years following the IPO (Tables 11 and 12), and in line with the theoretical previsions, presented an average underpricing which was more than double that of the others.

[- Table 12 -]

Finally, the event regarding “change in control” in the three years succeeding the IPO (which was present only in 6 cases) seems to go against the predictions as it was associated with a more limited underpricing.

On the basis of the variables illustrated, we attempted to measure their weight in explaining the formation of *underpricing* (by means of an OLS-type regression). However, the small size of the sample did not permit the extraction of significant results.

We also attempted to examine the probability (by means of a LOGIT²¹ type regression) that the event “underpricing” is present according to the values assumed by the explanatory variables. Also in this case the results obtained with the regression are not statistically significant. Nevertheless, we point out that, even if not significantly, some of the variables used in the regression produce coefficients that are respectively positive or negative in accordance with the theory, namely: the quantity of the offer (positively correlated with underpricing), the quantity sold off by the previous controller (negatively correlated), the number of days between the date of the offer and the start of the negotiations (positively correlated), the reputation of the underwriter (negatively correlated, justified by the fact that the dealers with a better reputation were those for whom the variable REPUNDER was larger), and the dummy variable that indicates if the IPO was carried out in a “hot” period characterized by a wave of IPOs (positively correlated and the only statistically

²¹ The Regression that gave the best results was the one that tried to explain the probability of occurrence of the event “IPO with underpricing” on the basis of the following explanatory variables:

LNOFF98: the logarithm of the value of the offer expressed in lira at 1998 prices;

QVCPRE: the quota sold off by the old controller at the moment of the IPO calculated with respect to the pre-IPO capital;

LNNGG: the logarithm of the number of days between the date of the offer and the start of the negotiations;

HOTMAR: a dummy variable indicating whether the IPO was carried out in one of the years characterized by a high number of IPOs: 1988, 1989, 1995, 1996, 1997 and 1998;

WIND: variation of the market index in the three months preceding the IPO;

REPUND: the rank that indicates the reputation of the dealer that carried out the IPO;

PRO: quality index of the informative prospectus.

significant coefficient: Student's $t = 2.2705$). However, the coefficient of the variable that measured the *performance* of the market in the three months preceding the IPO (WIND), as previously pointed out for the Italian situation by Basile-De Sury (1998), presents a positive correlation, contradicting the theoretical predictions that associate a more limited underpricing in the periods in which there is a greater increase in the prices of the securities. Finally, also the sign of the coefficient of the variable that expresses the quality of the informative prospectus was not found to be that predicted by the theory (positive rather than negative).

8. Conclusions

From the analysis carried out it appears that, in reality, the variables used to estimate the *ex-ante* uncertainty of the value of the company are not sufficient in themselves to explain the cross-section variations of underpricing.

In particular, the average level of the underpricing of the IPOs examined is equal to 11.1%, in line with that found in other countries; furthermore, the phenomenon of the so called "hot issue markets" is confirmed: the IPOs seem to be concentrated in certain periods, associated with above average underpricing.

Another significant aspect is the gradual decrease, in the period observed, of the age of companies at the moment of quotation.

With regards to the quota sold off by the majority shareholder (calculated with respect to the pre-IPO capital), this is found equal to, on average, approximately 10%, about twice as much as that found by Pagano-Panetta-Zingales (1998) to be a substantial signal of the will of the previous controller to diversify his portfolio.

Another significant element found concerns the role of the closed-ended funds and the venture capitalists who, even if present in less than a third of the companies examined, held an average quota of 39%; moreover, the companies controlled by these subjects at the moment of the IPO, present, in line with the theory, an underpricing which is substantially lower (0.055).

Furthermore, there is an undoubted correlation between the dimension of the underpricing and the probability that the company might return to the market in the 3 years following the IPO.

The average quality of the prospectuses of all the different kinds of companies considered (industrial, financial, corporate controlled companies, carve out, privatized companies and venture capitalist backed) improved, in a nearly uniform way, throughout the period considered; but the quality of the prospectus and of the dealers that take care of the offer turned out to be only slightly correlated with the absolute dimension of the underpricing. Yet, the data shows that an increase in the quality of the prospectus is linked to a lesser variation of the underpricing.

The results also confirm that the Italian investment banking market is relatively concentrated (the five most active intermediaries cover about 51% of the market).

With regards to the role of the analysts, even if 78% of the studies were produced by subjects independent with respect to the underwriters, it is worth noting: the very high level of consent on the operative indications furnished, the existence of a positive correlation between the dimension of the offer and the number of studies produced and between the quality of the prospectus and, once more, the number of studies conducted.

In conclusion, the average values assumed by a series of variables that seem to explain the underpricing (the age of the company at the moment of quotation, the number of days between the date of the offer and the start of the negotiations, the dimension of the offer, the quota sold off by the controller...) are significantly different when calculated for the companies with underpricing or calculated for the companies in which the placement did not produce underpricing. However in trying to explain the underpricing with a multi-variable model, no significant results are derived.

The variable extent of the underpricing phenomenon, which progressively decreased during the

considered time range, in the end results as being influenced by the means by which the considered information is spread. However one must also recall that other elements also contributed to the reduction of the level of the average underpricing. In fact, as illustrated for Italy in other studies on the matter²², the way in which the placement is carried out, as much as the allotment techniques and the sharing procedures, deeply influences the formation of the underpricing. However, being almost unchanged in all the cases of the period examined, it was neglected in this study.

The list of the variables that might influence the process of underpricing formation is destined to grow further, since it will have to take into account the new kinds of specialized intermediaries (functions that are often carried out by the global coordinator) set up by the Italian Stock Exchange S.p.A.: the specialist and the sponsor (in reality, the first is not involved in the real quoting process but its presence however seems to influence the pricing processes). These two figures are destined to influence, through their operations but also through their reputation, the price of the securities with which they are working and seem to have had a certain role in the further decrease of the average underpricing that was found for the newly quoted companies in 1999.

²² See Perrini (1999) and Giudici-Paleari (1999). This aspect was highlighted, and its importance pointed out by Cesarini in 1973 in a study on the experience of public share offerings in Italy in the period 1961-1973.

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