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Underpricing of IPOs : Evidence from the Euronext Paris market

Ayad Assoil
MRE- University of Montpellier

Jean-Marie Laporte
University of Montpellier

Abstract

In this review of IPOs on Euronext listings, we find evidence of underpricing over a time span of 21 years (2000-2020). We investigate several time horizons: first day of listing, one month and 180 days later and compare with underlying market trends. Although there is clear average underpricing, and we propose a few explanations to that, it appears that market trends have an impact on underpricing size and variations. Indeed, underpricing is significantly larger when markets trends are “bullish” than in “bearish” phases. Underpricing, a feature of IPOs, appears in its magnitude, to rely upon market trends. While one would expect a more incitative underpricing in bear markets, facts do not support this view. Investors willing to buy IPOs in bull markets are pushing prices well above the IPO price tag while refraining to buy, whatever conservative is the price, in declining markets.

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Contact: Ayad Assoil - assoil.ayad@gmail.com, Jean-Marie Laporte - jeanmarie.laporte@wanadoo.fr.
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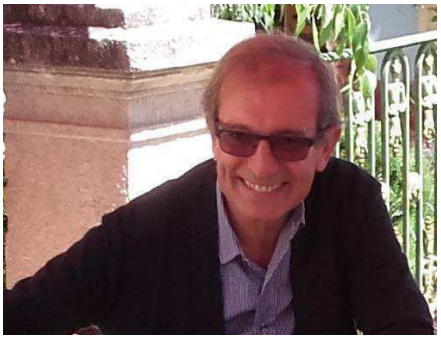

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Special issue “In memory of Professor Michel Terraza”

1. Introduction

Going public shines a spotlight on the firm and may bring indirect benefits. Small firms often use an Initial Public Offering (IPO) to achieve further growth. IPOs are also an important channel for firms to obtain direct funding in capital markets. With the rapid development of stock markets over the past few years, many firms have adopted IPO as an effective source of capital funding to support company research and development (R&D), capital expenditures, or even to reduce existing debt. Lowry et al.(2017) identify other reasons that may lead a company to go public such as : overvaluation, capital structure, stock liquidity, certification by analysts, marketing... For example, Pagano et al.(1998) find that firms that have experienced higher growth are more likely to do an IPO. Simultaneously, the company acquires new obligations in the form of reporting and disclosure requirements and becomes accountable toward a broader group of some anonymous shareholders. In addition, and especially for smaller companies, the cost of complying with regulatory standards can be prohibitive. Morever, the IPO process itself (research, underwriting, marketing, allocation, listing and trading) is associated with multiple risks that most often lead to underpricing.

An IPO underpricing occurs when a new stock closes above the IPO price in its first day of trading. It ultimately results in money left on the table, which is expressed as the issuer's potential revenue loss. Underpricing of IPOs has been one of the most widely examined irregularities in the literature on financial economics since Ibbotson (1975). The issue of IPO underpricing has been empirically explored in different countries, and the findings show that it occurs almost all over the world. For example, Huang et al. (2016) investigate IPO overpricing in the Chinese market and show that initial returns in 2012 were 22.97 %. In the United Arab Emirates, the average first-day return on IPOs is 270 % (Alanazi and Al-Zoubi, 2015), whereas it is less than 10% in many countries. In Brazil, premium level of 3.3 % is an example of a low underpricing level (Nogueira et al., 2008). Signori (2018) recently reports that IPOs of zero-revenue European companies are more underpriced on the first day and have more volatility afterwards than IPOs of companies that have made profits before issuing IPOs. After analyzing IPOs in the United Kingdom and France, Chachine et al. (2007) report no significant difference in underpricing between venture capital backed and non venture capital backed IPOs in both countries. According to the authors, initial underpricing is correlated with both market volatility and market return. However, Akyol et al. (2014) find that IPO underpricing decreased in some European countries following the introduction of some new regulations.

The majority of literature justifies underpricing by information asymmetry between the company and investors posited in the form of share price ex-ante uncertainty (Chen et al., 2004; Loughran et al., 1994; Chen et al., 2013; Boone et al., 2016; Chaplinsky et al., 2017), litigation risk (Ibbotson et al., 1994) and other behavioural theories. Rock (1986) states that in order to encourage potential investors to participate in IPOs, the IPO firm's underwriter must establish an offer price that is lower than the intrinsic value of the stock. Other factors are mentioned in the literature including the probability of issue withdrawal (Edelen and Kadlec, 2005), agency costs (Ljungqvist and Wilhelm, 2003) and the role of analyst recommendations. Analyst coverage can help the IPO gain more attention and improve the firm's value by bringing in additional consumers (Cliff and Denis, 2004). In this context, Boissin and Sentis (2014)

examine the link between financial analyst recommendations and the long-run performance of French IPOs between 1991 and 2005, and found a significant long-run underperformance of French IPOs from two to five-year horizon, with significant differences between orphan IPOs(i.e. without analyst coverage) and non orphan IPOs (i.e. with analyst coverage). In regards to IPO long term variations, Weisbach et al. (2006) claim that IPO leads to future negative abnormal returns.

The long-term performance of IPOs is also affected by the economic cycle or market trend. Ritter (1991) documentes that IPO firms underperform the market on average for three and five years after the IPO. According to Loughran and Ritter (1995), firms going public in hot markets underperform by 60 basis points per month, whereas firms going public in cold markets underperform by only 17 basis points per month. Gounopoulos et al. (2007) and Loughran et al. (1994) explain that during the hot-issue periods, IPOs produced high initial returns because of the increase in the new IPO risk and total market risk. Instead of choosing cold periods to launch IPOs, Alanazi and Al-Zoubi (2015) and Colak (2012) state that a firm may benefit from higher initial returns by issuing IPOs during hot periods. Mumtaz et al. (2016), on the other hand, look into the hot-issue market and find an insignificant negative association with initial returns. According to the literature, these cycles are driven by some factors like fluctuations in investor sentiment and fluctuations in market-wide information asymmetry. Lubochinsky (2020), on the general IPO trends insists on a market which is declining in both volume and numbers due to intense activity by private equity deals competing with public listings.

The main objective of this study is to test whether the phenomenon of underpricing exists on Euronext Paris. We also evaluate the performance of IPOs over time with respect to market variations. We also distinguish between periods of expansion and contraction.

This paper contributes to the existing literature in several ways. **Firstly**, we address the limitations of previous research taking into account the underpricing for three time horizons: the first day of IPO, 1 month later and 6 months later. The choice of these horizons is based on the existence of a stabilization period and a lockup period that support IPOs under book building practice. In fact, most IPOs involve lockup agreements that restrict insiders' ability to sell shares for a specific amount of time. The lockup agreement is typically 180 days long. According to Field and Hanka (2001), from 1988 to 1997, 80% of IPOs had 180-day lockup periods. Moreover, underwriters usually provide a variety of services after the IPO, such as price support, in addition to marketing and pricing the IPO. The goal of price support is to keep the price from falling too much below the offer price, and most price support operations take place within the first month after the offer. Underwriters can use pure stabilizing bids to stabilize the aftermarket price of an IPO, as detailed by Ellis, Michaely, and O'Hara (2000) and Aggarwal (2000). Lewellen (2006) finds that stabilization seems to raise the equilibrium stock price in the short run as there is no evidence of declines in stock prices after the stabilization being withdrawn. Field and Hanka (2001) find a -1.5 % average return at the lockup expiration, when insiders first have the ability to sell their shares.

Secondly, to the best of our knowledge, this study is one of the few to examine the Euronext market from its creation in 2000 up to 2020, which even covers some of the Covid19 crisis period. **Thirdly**, we take into account the amount of capital raised which may reveal that firm size plays an important role in the IPO underpricing and long term performance.

Finally, we compare IPOs during market downturns and upturns to assess the impact of market mood on underpricing and IPO performance.
The remainder of this study is organized as follows: Section 2 details the data and our research method, Section 3 reports the empirical results and interpretations and Section 4 presents the conclusions and suggestions for further research.

2. Data and Method

This study focuses on Euronext Paris market. Data on IPOs are obtained from the Euronext website for firms that went public between 2000 and 2020. A total of 138 firms selected meet the following criteria: listed on Euronext, mid and large capitalisation (compartments A and B of Euronext), companies that still exist (to avoid survivor bias). Our sample also excludes IPOs from Euronext Growth and Euronext Access. To capture the market dynamics, we use the SBF 120 which is a French stock market index based on the 120 most actively traded stocks.
We use the linear regression model to explain the underpricing. We define the dependent variable 'IPO gap' (i.e underpricing of IPO) as the difference in % between the closing price and IPO. This dependent variable is calculated over three time horizons: 1 day, 1 month and 6 months.

$$IPO\ gap\ = \frac{Closing\ price - IPO\ price}{IPO\ price} \quad (1)$$

The independent variables were selected based on the literature. First, since market variations have an impact IPO gaps, we include the SBF120 variation in our model following Loughran & Ritter (2002) who claim that during bull markets, the level of initial IPO gap is significantly higher. Second, as stated by Jamaani and Alidarous (2019) there is a correlation between deal size and underpricing. We therefore take into account the amount of capital raised in millions of euros. The linear models are defined as follows, where ε_t is the error term:

$$\text{IPO gap day1} = C + \beta 1\ \text{SBF Day1} + \beta 2\ \text{Raised capital} + \varepsilon_t \quad (2)$$
$$\text{IPO gap 1month} = C + \beta 1.\ \text{SBF variation 1month} + \beta 2\ \text{Raised capital} + \varepsilon_t \quad (3)$$
$$\text{IPO gap 6months} = C + \beta 1.\ \text{SBF variation 6months} + \beta 2\ \text{Raised capital} + \varepsilon_t \quad (4)$$

3. Empirical Results

3.1 Underpricing in Euronext

As shown in Figure 1, the total amount of capital raised on Euronext has been steadily decreasing but with some upward spikes. This supports the finding of Lubochensky (2020). The highest number of IPOs was observed in 2006. The global financial shock of 2008/2009 had a negative effect on the stock market and caused a very low level of IPO activities, as it happened after the internet bubble burst in 2000. Block and Sandner (2009) found that the financial crisis is related to a 20% decrease in the average amount of funds raised. According to Gao et al (2013), smaller companies have contributed to the reduction in IPO volume. Rather than going public, these companies are increasingly likely to be acquired. There is a slight increase in the capital raised in 2020, the stock market is attracting capital again and

the French index has returned to its previous peak of 2000 only in October 2021. The 2021 achieved until October a record of 20 billion 524 million of capital raised and with 173 IPOs.

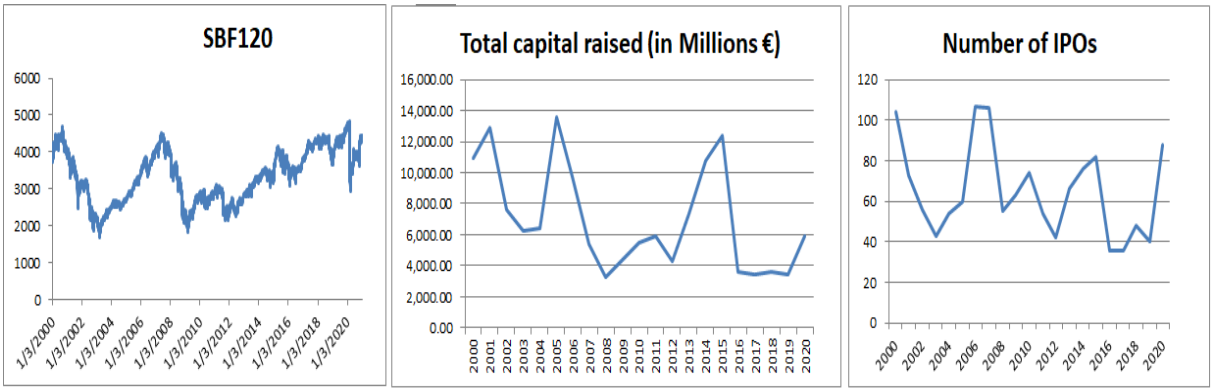

Figure 1: SBF120 variation, Total amount of capital raised and number of IPO on Euronext. Source: Euronext

Table 1 shows some descriptive statistics of our variables. The average underpricing of our sample is 3.728% with a 9.355% standard deviation. The capital weighted average of IPO gaps is bigger than the overall average. This indicates that large caps are more affected by underpricing. The average raised capital is 393 million euros.

	IPO gap day1	IPO gap 1 month	IPO gap 6 months	SBF variation day1	SBF variation 1month	SBF variation 6months	Raised Capital (Mio€)
Mean	3.728%	3.853%	2.497%	-0.089%	0.028%	0.492%	393.99
Capital weighted mean	3.967%	4.905%	6.682%				
Standard deviation	9.355%	16.035%	26.514%	1.261%	4.938%	9.755%	844.76
median	1.750%	1.935%	-0.563%	0.101%	0.435%	1.987%	80.00
Max	30.625%	87.838%	121.545%	3.391%	9.583%	22.088%	7000.00
Min	-18.273%	-24.344%	-57.430%	-4.014%	-23.001%	-26.973%	0.13300
Skewness	0.662	1.133	0.925	-0.858	-1.426	-0.665	4.828
Kurtosis	4.404	7.334	6.023	4.542	7.476	3.368	30.101

Table 1 : Descriptive statistics for a sample of 138 initial public offerings, 2000–2020.

As shown in Table 1 and Figure 2, underpricing is not a constant feature. There is an obvious risk factor for issuers and investors. By definition, the price at which an issuer meets demand for a given number of shares, the IPO post market price, is unknown. Similarly, investing into a newly listed stock exposes to the risk of price variation. To some extent, underpricing is attractive in order to compensate for the uncertainty in the pricing of an IPO once landing on the stock market. The logic behind this is that the cost of issuing is higher (Underpricing) when taking market volatility into account.

IPO gap for first day cannot be analyzed as an absolute number. It is important to assess how the figure has evolved over the period. We notice that, as we are further away from the first day of the listing, the IPO gap is getting smaller. For our analysis, we select the three periods (1day, 1 month and 6 months) for the following reasons: first day because most of the literature is focusing on the first day and it shows by how much the equilibrium price is missed, one month to match the end of stabilization period by the banking syndicate when the issue price may not

be supported by the underwriters, 180 days, the usual end of the lock up agreement preventing pre IPO shareholders to sell on the market.

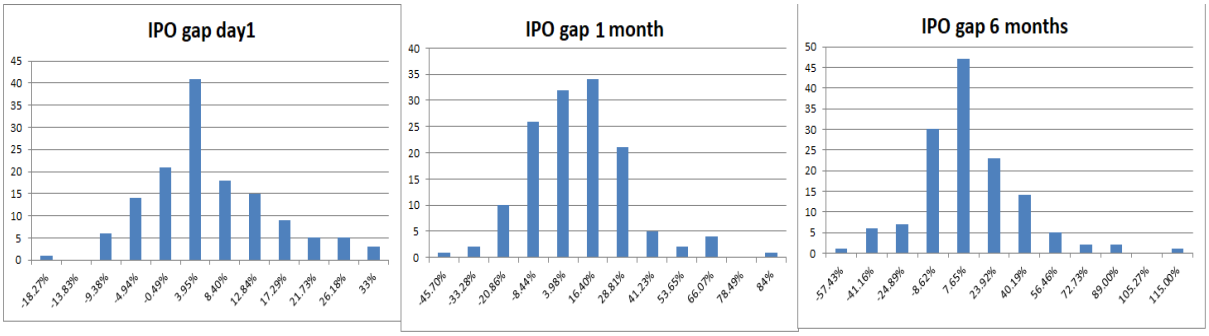

Figure 2 : Histograms of IPO gap

The IPO gap distribution is given by the three histograms in Figure 2. For the first listing day, the IPO gap is normally distributed. The IPO gaps are rather concentrated around the mean. For the distribution of IPO gaps 1 month and IPO gaps 6 months, the mass of the distribution is concentrated on the left side. These two distributions have more outliers than the 1 day IPO gap distribution (Kurtosis much higher).

3.2 **Preliminary views on underpricing causes : a professional perspective**

The economic literature has offered explanations for underpricing. From a professional point of view derived from the authors past experience, parties at an IPO may behave in a way supportive of underpricing. We present below assumptions supported by professional experience which are not, at this stage, verified by statistical evidence but that we deem worth investigating for future research:

- The sellers of existing or new shares are willing to achieve success in landing their stock on the stock exchange and may believe an "attractive price" will benefit their image, drive up the demand of shares and enhance the value of their remaining holdings which may be very substantial, often more than a third or even half the number of shares post IPO. Shareholders willing to sell all their stake at IPO would be expected, on the contrary, to seek for the highest possible price but such situations are not that frequent and most of the large shareholders tend to keep part of their holdings post IPO (a regular feature of Private equity divestments of VC controlled companies going public). Although we do not investigate differences between shareholders keeping substantial holdings in the listed company and those selling all their shares, we deem interesting, as for research on the topic, to further investigate this situation.
- The managers of the listing candidate are usually offered stock options with long term holdings commitments and such options have an exercise price at or below the IPO price. The lowest the IPO price, the largest are potential future gains. An agency issue whereby the management is more conservative than the shareholders.
- In addition, selling investors or their managers want to secure success because they have put enormous efforts and expenses to go from a private to a public company. Those costs may include accounting expenses to present GAAP accounts required by the regulator, considerable time and effort with legal advisors to file a prospectus with the market regulator, setting up an investors' relation function with proper communication tools, training the relevant teams on

issuing quarterly accounts in due time. Company management invests considerable time in this process, including presentation of the company, its strategy and prospects to financial analysts and, at the final stage, communication with institutional investors through road show presentations, typically 8 to 12 financial venues in Europe and the USA for Euronext A listings. Costs associated with an IPO typically average 4 to 7% of amounts raised on the market, including 3 to 5 % paid to the banking syndicate (selling, underwriting and management commissions). IPO active preparation spans over a minimum of 6 months. Failing an IPO has then a substantial opportunity cost and may induce a conservative pricing decision. Aborted IPOs are not so infrequent events on Stock markets.

- The banking syndicate which collects investors' orders is usually willing to maintain a positive goodwill with investors which are also their customers for many other IPOs and market transactions. They naturally tend to advocate for a conservative pricing which reinforces an identical bias by the issuer. More precisely, pricing an IPO relies on comparable listed companies to assess a price range before final pricing. Typically, a discount is introduced in the middle of the range and hence on top and bottom ends of such range. Reasoning of underwriters is that, other things being equal, a company going public needs to show a price discount on its peers to carve out some room in investors' portfolios and such discount factored in is typically 5 to10%. It is a theoretical situation since there are not 2 identical companies but assuming companies similar in turnover, growth, debt to equity ratio, EBITDA margins, operating on the same markets, one listed the other subject to an IPO. In such case, a discount needs to be offered to institutional investors.

- Investors demand is key to understand underpricing of IPOs. While issuers and banking syndicates have a conservative bias in pricing an IPO, the aftermarket is in the hands of investors. There, some details of the pricing process which influence the post IPOs price may be worth describing. The banking syndicate runs a book building process whereby institutional orders, within the proposed price range, are collected. If demand is particularly strong, then there may be an increase in the top end of the initial range and conversely if demand is weak (but not too weak otherwise the IPO is cancelled). Usually, a « safe » pricing is reached when investors demand equals some two times the shares offered around the mid-price. Now institutional investors may be divided into two groups, long term investors such as pension funds or sovereign wealth funds that tend to buy and keep their allocation for some usually fairly long time and hedge funds seeking a quick return. The latter ones, usually under alloted by the syndicate as a proportion of their demand, may buy on the aftermarket and, based on information they may gather, invest into the stock helping to raise the price in the aftermarket. No guarantee of stable holding there but a potential thrust for the price the first day of listing. As for individual investors who are not familiar with valuation parameters, they are investing simply because others invest, or the sector is trendy and expanding (Techs / Biomeds…), stock market is climbing. Or they may have heard of a name and flock to subscribe. We have seen recently such behavior on the US markets with the so called « meme stocks » with deeply inflated prices not supported by business reality. Such individual investors demand is pretty much unstable, rushing in to buy under bull markets and disappearing under prolonged bear market. This volatility of individual speculation is a major reason explaining why issuers use a book building process based on institutional (professional) demand rather than an auction that would, by nature eliminate under/over pricings but create substantial volatility and uncertainty

on the stock price at issue and going forward. Such volatility is deemed unbearable by the issuer and by institutional investors.

In the following part, we perform our three regressions following the models described in equations (2), (3) and (4). Results are shown in Table 2.

Model 1: IPO gap day1 $= C + \beta 1$ SBF Day1 $+ \beta 2$ Raised capital $+ \varepsilon_t$

Dependent variable: **IPO gap day1**

	Coefficients	*Standard Error*	*t Stat*	*P-value*
C	**0.03760**	0.008847	4.249913	3.96E-05
SBF Day1	0.45623	0.638487	0.714550	0.47612064
Raised capital	2.21E-07	9.53E-06	0.023182	0.98153859

Model 2 : IPO gap 1month $= C + \beta 1$. SBF variation 1month $+ \beta 2$ Raised capital $+ \varepsilon_t$

Dependent variable: **IPO gap 1 month**

	Coefficients	*Standard Error*	*t Stat*	*P-value*
C	**0.03625**	0.01495	2.42381	0.01668
SBF variation 1month	**0.56392**	0.207386	2.04534	0.04277
Raised capital	5.38E-06	1.61E-05	0.3336	0.73914

Model 3 : IPO gap 6months $= C + \beta 1$. SBF variation 6months $+ \beta 2$ Raised capital $+ \varepsilon_t$

Dependent variable: **IPO gap 6 months**

	Coefficients	*Standard Error*	*t Stat*	*P-value*
C	0.007816	0.0236	0.33078	0.74131
SBF variation 6months	**0.873027**	0.22006	3.96709	0.000117
Raised capital	**5.13E-05**	2.54E-05	2.02258175	0.045091

Table 2: Results of linear regressions of our 3 models.

For model 1, the SBF120 variations on the first day of the IPO and the amount of capital raised have no influence on the first-day IPO gap. Hence, this gap is mainly driven by what happens before the IPO (communication operations, investors' expectations...). In model 2, the 1-month IPO gap (i.e. the difference between the price 1 month after the IPO and the IPO) is only impacted by the SBF variations over this period. The fact that SBF120 variations increase underpricing supports market conditions theory. The amount of capital raised does not explain this gap. In model 3, the 6-months IPO gap (i.e. the difference between the price 6 months after the IPO and the IPO) is explained by the SBF120 variations over this period and also by the amount of capital raised. This may be related to the lock up period. Arthurs et al. (2009) claim that lockup periods improve the information symmetry as it indicates the issuer long term confidence in the long term growth of its company.

3.3 Underpricing and market trend

In this subsection, we compare IPOs that took place during declining markets and those that took place during bull markets. These periods are identified based on the evolution of the SBF 120 index. Figure 1 shows five periods of market decline that are relatively shorter than the upward periods. These five periods represent the market downturn in early 2000's, the 2007/2008 financial crisis, the European debt crisis, the short recession of 2016 and more

recently the market crash following the Covid crisis19. The bullish period includes a sample of 75 IPOs and the bearish period includes 63 IPOs. We then conduct the regressions of model 2 and model 3. Table 3 gives the descriptive statistics of the IPO gap for the three periods depending on the market trend.

	Bull market			Bear market		
	IPO gap day1	**IPO gap 1month**	**IPO gap 6months**	**IPO gap day1**	**IPO gap 1month**	**IPO gap 6months**
Mean	3.904%	5.627%	6.743%	3.536%	1.918%	-2.134%
Capital weighted mean	3.134%	5.057%	14.988%	4.334%	3.779%	1.480%
Standard deviation	8.617%	17.706%	25.479%	10.163%	13.864%	27.033%
Median	2.009%	3.415%	4.429%	1.062%	-0.152%	-5.891%
Max	29.825%	87.838%	84.535%	30.625%	35.833%	121.545%
Min	-12.744%	-24.344%	-57.430%	-18.273%	-21.813%	-49.036%
Skewness	0.952	1.428	0.427	0.49	0.23	1.54
Kurtosis	4.145	8.328	4.675	2.93	2.43	8.66

Table 3 : Descriptive statistics by market trends.

The underpricing is higher if the IPO occurs during a bull market. As time goes by, the gap between the stock price and the IPO price becomes wider. Large capitalizations are less affected by underpricing except for the 6 months period. The underpricing is lower if the IPO takes place during a declining market. The gap becomes even negative at the end of the lock-up period (price is higher than the IPO price).

IPOs underpricing then appears to be procyclical. Underpricing, although a natural consequence of a conservative approach by issuers and their bankers cannot be explained mainly by the supply side but rather by investors' appetite which, in bull markets may push underpricing well above what can be expected from the sole conservative pricing on the issuer side. Alternatively in bear markets, where one would expect some very cautious and conservative pricing from issuers to hit the market with an attractive price, we find evidence that investors are not willing to rush on those IPOs, hence a reduced underpricing.

Model 1 : IPO gap 1month = C + β1. SBF variation 1month + β2 Raised capital + ε_t

Dependent variable: **IPO gap 1month**

	Coefficients	*Standard Error*	*t Stat*	*P-value*
C	0.03928	0.02145	1.8306	0.070535
Raised capital	0.00003	0.00004	0.78914	0.43426
SBF variation 1month	0.72395	0.36875	1.96326	0.05596

Model 2 : IPO gap 6months = C + β1. SBF variation 6months + β2 Raised capital + ε_t

Dependent variable: **IPO gap 6 months**

	Coefficients	*Standard Error*	*t Stat*	*P-value*
C	-0.05035	0.05054	-0.99623	0.32458
Raised capital	**0.00008**	0.00004	2.08730	0.04231
SBF variation 6months	0.50975	0.40641	1.25426	0.21637

Table 4 : linear regressions in Bull market

Model 1 : IPO gap 1month = C + β1. SBF variation 1month + β2 Raised capital + ε_t

Dependent variable: **IPO gap 1month**

	Coefficients	*Standard Error*	*t Stat*	*P-value*
C	0.02220	0.02491	0.89131	0.37519
Raised capital	0.00001	0.00002	0.46086	0.64604
SBF variation 1month	**0.96303**	0.38200	2.52102	0.01350

Model 2 : IPO gap 6months = C + β1. SBF variation 6months + β2 Raised capital + ε_t

Dependent variable: **IPO gap 6 months**

	Coefficients	*Standard Error*	*t Stat*	*P-value*
C	0.02060	0.02878	0.71557	0.47615
Raised capital	0.00001	0.00003	0.32330	0.74723
SBF variation 6months	**1.08441**	0.32032	3.38537	0.00106

Table 5 : linear regressions in Bear market

To conclude the above discussion, our results show the limits of IPOs through book building. This form of offering is nevertheless the safest way to go public, compared to auctions and direct listings. Another interesting debate arises from the possibility of increasing the proportion of shares offered to retail investors, at the risk of reinforcing the procyclicality of underpricing and the volatility of the share price.

Obtaining a fair value remains an important challenge in the IPO process. Any policy that contributes to the mitigation of information asymmetry will benefit the market. Analysts' reports could help in this regard but some studies found that most banks instructed their analysts to provide only bullish recommendations. Another way to improve the price formation process is the IPO prospectus. As the market reads the prospectus as a credible signal, firms' communications plays a key role in share valuation. Underwriters could also have a significant contribution to this prospectus signal mechanism.

4. Concluding Remarks

The objective of this study is to examine underpricing on the Euronext market as well as the short-term performance of IPOs as a function of the market trend. We begin by presenting the theoretical background that discusses the phenomenon of underpricing. For the empirical analysis, a sample of 138 IPOs is used to measure the magnitude of underpricing of IPOs on Euronext Paris. Our results show the existence of underpricing in this market. We then provide further explanations from a professional perspective on the reasons of underpricing. In the second part of the results, we run three regression models to measure the impact of market variation and capital raised on IPO performance for three time horizons. We distinguish between bull and bear market phases. Procyclicality seems to be a characteristic of IPOs on Euronext Paris.

Our study could be improved in many ways: first, by taking into account other variables such as the reputation of the underwriter, the age of the company. Second, industry effects could be introduced as an additional explanatory factor. Third, our study could be extended to small-cap

companies. Fourth, it would be fruitful to evidence divergence in pricing between those IPOs leaving a substantial control to pre IPOs shareholders with a view that they favor underpricing in a dynamic stance while preparing other equity sales or combination, and the IPOs with no remaining ownership in the listed company. Finally, since underpricing varies across markets, the impact of market structure on underpricing should be investigated.

Bibliography

Aggarwal, R. (2000). Stabilization Activities by Underwriters after Initial Public Offerings. The Journal of Finance, **55(3)**, 1075-1103.

Alanazi, A. S., & Al-Zoubi, H. A. (2015). Extreme IPO underpricing and the legal environment in wealthy emerging economies. Journal of Multinational Financial Management, **31**, 83-103.

Akyol, A. C., Cooper, T., Meoli, M., & Vismara, S. (2014). Do regulatory changes affect the underpricing of European IPOs?, Journal of Banking & Finance, **45**, 43-58.

Boone, A. L., Floros, I. V., & Johnson, S. A. (2016). Redacting Proprietary Information at the Initial Public Offering. Journal of Financial Economics, **120(1)**, 102-123.

Arthurs, J. D., Busenitz, L. W., Hoskisson, R. E., & Johnson, R. A. (2009). Signaling and initial public offerings: The use and impact of the lockup period. Journal of Business Venturing, 360-372.

Block, J., & Sandner, P. (2009). What is the effect of the financial crisis on venture capital financing? Empirical evidence from US Internet start-ups. Venture Capital, **11(4)**, 295-309.

Boissin, R., & Sentis, P. (2014). Long-run performance of IPOs and the role of financial analysts: some French evidence. The European Journal of Finance, **20(2)**, 125-149.

Chahine, S., Filatotchev, I., & Wright, M. (2007). Venture capitalists, business angels, and performance of entrepreneurial IPOs in the UK and France. Journal of Business Finance & Accounting, **34**(3-4), 505-528.

Chaplinsky, S., Hanley, K. W., & Moon, S. K. (2017). The JOBS Act and the costs of going public. Journal of Accounting Research **55**.4 (2017): 795-836.

Chen, C., Shi, H., & Xu, H. (2013). Underwriter reputation, issuer ownership, and pre-IPO earnings management: evidence from China. Financial Management, **42(3)**, 647-677.

Chen, G., Firth, M., Kim, J.B., 2004. IPO underpricing in China's new stock markets. J. Multinatl. Financ. Manag. **14 (3)**, 283–302.

Cliff, M. T., & Denis, D. J. (2004). Do Initial Public Offering Firms Purchase Analyst Coverage with Underpricing? The Journal of Finance, **59(6)**, 2871-2901.

Colak, G., 2012. IPO characteristics of index firms. Manag. Financ. **38 (12)**, 1134–1159.

Edelen, R. M., & Kadlec, G. B. (2005). Issuer Surplus and the Partial Adjustment of IPO Prices to Public Information. Journal of Financial Economics, **77(2)**, 347-373.

Ellis, K., Michaely, R., & O'Hara, M. (2000). When the Underwriter Is the Market Maker: an Examination of Trading in the IPO Aftermarket. The Journal of Finance, **55(3)**, 1039-1074.

Field, L. C., & Hanka, G. (2001). The expiration of IPO share lockups. the Journal of Finance, **56(2)**, 471-500.

Gao, X., Ritter, J. R., & Zhu, Z. (2013). Where Have All the IPOs Gone? Journal of Financial and Quantitative Analysis, **48(06)**, 1663-1692.

Gounopoulos, D., Nounis, C., Paris, S., 2007. The short- and long-term performance of initial public offerings in the Cyprus Stock Exchange. J. Financ. Decis. Mak. **4 (1)**

Huang, H., Li, Y., Zhang, Y., 2016. Investors' attention and overpricing of IPO: an empirical study on China's growth enterprise market. Inf. Syst. E-bus. Manag. **16 (4)**, 761–774.

Ibbotson, R. G., & Jaffe, J. F. (1975). Hot Issue Markets. The Journal of Finance, **30(4)**, 1027-1042.

Ibbotson, R. G., Sindelar, J. L., & Ritter, J. R. (1994). The Market's Problems with the Pricing of Initial Public Offerings. Journal of Applied Corporate Finance, **7(1)**, 66-74.

Jamaani, F., & Alidarous, M. (2019). Review of Theoretical Explanations of IPO Underpricing. Journal of Accounting, Business and Finance Research, **6(1)**, 1-18.

Lewellen, K. (2006). Risk, Reputation, and IPO Price Support. The Journal of Finance, **61(2)**, 613-653.

Ljungqvist, A., & Wilhelm, W. J. (2003). IPO Pricing in the Dot-Com Bubble. The Journal of Finance, **58(2)**, 723-752.

Loughran, T., Ritter, J. R., & Rydqvist, K. (1994). Initial public offerings: International insights. Pacific-Basin Finance Journal, **2(2)**, pp. 165-199.

Loughran, T., & Ritter, J. R. (1995). The New Issues Puzzle. The Journal of Finance, **50(1)**, 23-51.

Loughran, T., & Ritter, J. R. (2002). Why Don't Issuers Get Upset About Leaving Money On the Table in IPOs? The Review of Financial Studies, **15(2)**, 413-443.

Lowry, M., Michaely, R., & Volkova, E. (2017). Initial public offerings: A synthesis of the literature and directions for future research. Forthcoming Foundations and Trends in Finance.

Lubochinsky, C. & Manière P (2021) Eclipse ou crépuscule ? Pourquoi les Bourses n'ont plus la cote. Institut Messine.

Mumtaz, M.Z., Smith, Z.A., Maqsood, A., 2016. An examination of short-run performance of IPOs using Extreme Bounds Analysis. Estud. Econ. (Sao Paulo) **43 (1)**, 71–95.

Nogueira Freitas, A. D. P., Ferreira Savoia, J. R., & Montini, A. D. Á. (2008). The aftermarket performance of initial public offerings: The Brazilian Experience. Latin American Business Review, **8(4)**, 97-114.

Pagano, M., Panetta, F., & Zingales, L. (1998). Why Do Companies Go Public? An Empirical Analysis. The Journal of Finance, **53(1)**, 27-64.

Ritter, J. R. (1991). The Long-Run Performance of Initial Public Offerings. The Journal of Finance, **46(1)**, 3-27.

Rock, K. (1986). Why New Issues Are Underpriced. Journal of Financial Economics, **15(1-2)**, 187-212.

Signori, A. (2018). Zero-revenue IPOs. International Review of Financial Analysis, **57**, 106-121.