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Initial returns: underpricing or overvaluation ?
Evidence from Easdaq and EuroNM

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Abstract

This paper investigates initial returns of Easdaq and EuroNM IPOs and explains part of these returns. Average first day return of 300 IPOs introduced before October 1, 1999, is 36.01 %. The most significant explanatory variable is the mean return of previous IPOs, indicating that high initial returns are caused by too high first trading prices due to investor overreaction and positive market sentiment. Riskier IPOs present substantially higher initial returns. Venture capitalists are not able to significantly reduce initial returns, nor does size of the IPO influence initial returns. Our results indicate that high initial returns are caused by underpricing as well as overvaluation.

1. Introduction

Europe has long been lacking capital markets on which young, high risk companies can be listed. In some countries, secondary or third-tier stock markets existed in the eighties and early nineties, but often there was little difference in listing requirements between the first and the secondary markets. This led to the perception that secondary or third-tier markets were for companies that 'failed' to be listed on the first market. As a consequence, there was little interest of companies and of investors in these secondary markets, leading to a lack of liquidity and little or no analyst support. An ambitious young, innovative European company, wishing to raise capital on a public market, therefore only had one option then: getting a listing on Nasdaq.

In 1996, two initiatives with a pan-European scope were launched almost at the same time, in order to remedy to this problem: Easdaq, a pan-European stock market modeled after Nasdaq, and EuroNM, a pan-European grouping of nationally regulated secondary stock markets. The aim of both markets was quite similar, namely to give listing opportunities to companies that otherwise either could not get access to public stock markets, or had to be listed on Nasdaq. This was considered important by policymakers and by the whole financial and business community at that time. It was thought that this would help to fill the equity gap for companies that could establish the backbone of the future economy in Europe.

In this paper, we briefly present these new stock markets, in terms of number of IPOs, money raised at IPO, and overall return to the investors (section 2). Thereafter, we more extensively investigate the initial returns generated by 300 IPOs listed on these markets before October 1, 1999. The fact that initial returns are higher than can be expected in efficient markets, is well documented on numerous stock markets around the world. We show that, on the first trading day, the return (corrected for the stock market evolution on that day) is on average 15,8% on Easdaq and 38,7% on Euro.NM, and persists during a twenty day trading window (section 3). Thereafter, we explain determinants of these initial returns. Hypotheses relating to underpricing theories and to investor sentiment theories are presented and tested (section 4 and 5). We combine both theories by simultaneously testing the effect of riskiness and certification of an IPO on the one hand, and investor and market sentiment (fads-overvaluation theories) on the other hand, on initial returns. By doing this we add to the

literature on underpricing. For example, we explicitly link the initial return of an IPO to initial returns generated by recent preceding IPOs. Conclusions are drawn in section 6.

2. Easdaq and EuroNM

Easdaq is a pan-European electronic stock market that has been founded in 1996 by more than 60 American and European financial institutions (including investment banks, stock dealers, institutional investors, venture capitalists, Nasdaq,…). Despite the fact that Easdaq is listing companies from different countries, it operates in one legal system, there is a single supervising institution and one trading and clearing system which is accessible from all over Europe. The creation of such a capital market would have been impossible without the introduction of a number of European Directives, meant to ameliorate the integration of financial markets in Europe. The most important were the Investment Services Directive, the Second Bank Directive and the Prospectus Directive. Easdaq aims to attract international oriented growth and high-tech companies. Its trading rules and trading system are very similar to Nasdaq's. The market structure is price-driven: market makers have the obligation to continuously quote bid and ask prices and to deal at these quotes. The first listing took place on November 27, 1996.

EuroNM is a pan-European network of regulated national markets dedicated to growth companies, each governed by its home country requirements. It is a European Economic Interest Grouping and its members currently include the ParisBourse (Le Nouveau Marché, first listing March 20 1996), the Deutsche Börse (Neuer Markt, first listing March 10 1997), the Amsterdam Exchanges (NMAX, first listing March 25 1997), the Brussels Exchanges (EuroNM Belgium, first listing April 11 1997) and the Italian Exchange (Nuovo Mercato, first listing June 17 1999). EuroNM will cease to exist as from December 31 2000. Because of[1] the creation of Euronext, stocks listed on NMAX, Nouveau Marché and EuroNM Belgium will from that date on be trading on that new market, while Neuer Markt and Nuovo Mercato will continue to exist as national markets for growth stocks.

The EuroNM market structure is a combination of the price driven and the order driven system. Detailed data about the number of transactions and the order volumes are not available except for Le Nouveau Marché. However, it seems that these markets are mainly

order driven. On Le Nouveau Marché 11.2 % of the transactions went via the market makers, but this represented 26.9 % of the total volume (mean values for the first 9 months of 1999; source: ParisBourse). This implies that the transaction size in the price driven system is substantially larger, indicating that institutional investors prefer dealing via this latter channel.

The admission criteria on these markets for young growth enterprises are less severe than on more traditional capital markets; for example potential new listed companies need not be profitable yet. Requirements concerning equity and total assets are limited. A lot of differences can be observed between the minimum criteria on the five segments of EuroNM[1]. On Easdaq, admission criteria are more difficult to meet than on EuroNM. For example, requirements concerning equity and market capitalisation at IPO, and corporate governance principles as well as accounting rules are more stringent for companies seeking a listing on Easdaq.

Figure A (appendix) shows the total number of listings on Easdaq and EuroNM between January 1996 and October 1999; figure B (appendix) shows the number of listings on the main segments of EuroNM, Le Nouveau Marché and the Neuer Markt[2]. The growth of EuroNM is evident, with especially the Neuer Markt expanding at a fast rate.

Tables A and B (appendix) show the risk-reward tradeoff for investors and the correlation between returns on these markets and other investment alternatives, starting at the launch of these stock exchanges till 1999. Returns since the existence of the markets show that investors have been rewarded very well for investments on Easdaq and EuroNM. However, the EuroNM segments present considerable differences. In general an investment on the new European stock markets, especially on Easdaq and Neuer Markt, resulted in higher returns than an investment in more traditional blue chips (Euro Stoxx 50) but also yielded a higher risk. The figures are quite comparable to those found for Nasdaq. Correlations between the returns of the different market indices are all positive and significant. The new stock markets clearly make markets more complete and offer investment opportunities that differ in their risk return profile, compared to what the large European companies offer or compared to Nasdaq.

We have studied the initial returns of 300 of the 307 IPOs (but not dual listings) traded before October 1 1999, excluding 7 IPOs for which there is insufficient IPO information. Reasons

not to include some cases were for example inconsistency between data from EuroNM or Easdaq and data from Datastream. Main characteristics of the IPOs in this study, including market capitalisation, amount of funds raised and number of IPOs is given in table 1.

[Insert Table 1 about here]

Firms listed on Easdaq have a larger average market capitalisation (median value: 97.24 million EUR) than those on EuroNM (median value: 69.02). The difference in the amount of funds raised is even larger: 32.69 versus 19.10 million EUR (median values). There are large (and statistically significant) differences within EuroNM: the market capitalisation at IPO on Neuer Markt (median value: 111.98 million EUR) is larger than on Easdaq (97.24) and more than twice the value for NMAX (49.61) which in turn is more than triple the value for EuroNM Belgium (15.65). Market capitalisation of the median IPO on Nouveau Marché is 29.44 million EUR.

The amounts of funds raised at IPO are comparable on Easdaq and Neuer Markt (median values: 32.69 and 32.12 million EUR). This is a multiple of the value for NMAX (13.20) and about four times higher than for Le Nouveau Marché (7.46) and for EuroNM Belgium (8.75). For all markets we observe that the mean value for market values as well as for the amount of funds raised is higher than the median value which indicates that some listed companies have very high market values or funds raised. These statistics show that Le Nouveau Marché and EuroNM Belgium attract only small companies that raise a limited amount of funds whereas Easdaq and the Neuer Markt list significantly larger companies raising far more funds. NMAX is situated in between.

3. Initial returns on Easdaq and EuroNM

In the remainder of this paper, initial returns of the IPOs and their determinants will be studied. Initial returns are the returns realised by an investor who acquires shares at the offering price, and who sells them on the first trading days on the stock market. Initial return is measured as the relative difference between the first trading prices and the issue price.

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Often this initial return is adjusted for the overall market evolution by substracting the return of the market index over the same period from the initial return of the IPO. Miller and Reilly (1987), however proved that the conclusions on underpricing do not differ a lot when using another time period or when not adjusting for the market evolution (possibly risk-adjusted), because of the very short time interval in which initial returns are measured. It is well documented by numerous empirical studies that initial returns at IPO are larger than returns on comparable markets (appendix C). This fact, commonly referred to as 'underpricing', is supported on a world-wide basis and over varying periods of time[3].

This consistent finding is puzzling: why are companies raising equity capital at issue prices below the price investors are willing to pay ? This way, the capital operation generates less funds than it potentially could for either entrepreneurs or companies. Initial shareholders 'leave money on the table', so underpricing is a considerable cost for the company and/or the old shareholders and new investors earn abnormally high returns at the expense of old ones.

There are two explanations for these abnormal initial returns. The most widespread one is that IPOs are introduced on the market at a price lower than their true value: this is the underpricing phenomenon[4]. It is often assumed that the high initial returns are the result of deliberate underpricing by the company or by the investment bank managing the introduction. The constatation that no systematic, abnormal returns are found immediately after trading begins is seen as support for underpricing theories. Therefore it is supposed that in an efficient stock market the 'incorrect' issue price of the IPO is adjusted to its fair value.
However, an alternative explanation is that IPOs are introduced at a fair price but that investors overprice the stocks when trading begins (Aggarwal and Rivoli, 1990). Aggarwal and Rivoli (1990), Ritter (1991) and Loughran and Ritter (1993, 1995) showed that IPOs underperform in the long run (2-3 years) in comparison to the market. This lends support to the second view that the first trading prices are actually too high and that there is no underpricing at IPO. Of course, a combination of both theories is possible too. Theoretical explanations supporting one of these theories will not be given here; this study intends to empirically test which theory - underpricing, overvaluation or a combination - can explain the high initial returns.

Table 2 reports initial returns on Easdaq and different segments of EuroNM.

[Insert Table 2 about here]

300 of all 307 IPOs on Easdaq and EuroNM that occurred before October 1 1999 are included. Information on the issue price is gathered from respectively Easdaq Primary Market Statistics and EuroNM Market Statistics; stock prices come from Datastream. The cumulative initial return for IPO i on trading day t is computed as:

Cumulative initial return $_{i,t}$ = (stock price $_{i,t}$ – issue price $_i$) / issue price $_i$

with stock price $_{i,t}$ = stock price at the end of trading day t of IPO i

issue price $_i$ = issue price of IPO i

The cumulative market return during the same period of time is calculated for every IPO as to adjust the initial returns for the market evolution:

Cumulative market return $_{i,t}$ = (index $_{i,t}$ – index $_{i,0}$) / index $_{i,0}$

with index $_{i,t}$ = value of the price index[5] on trading day t for IPO i

index $_{i,0}$ = value of the price index on the day before the first trading day of IPO i

We use the Easdaq All Share index for IPOs on Easdaq and the EuroNM All Share index for IPOs on EuroNM. For the latter, it would have been possible to use the corresponding market segment indices. This was not done for two reasons. First, EuroNM presents itself as one homogeneous market. Second, doing this would lead to problems in the early phase of existence of these markets.

Initial return on trading day t for IPO i is then calculated as:

Initial return $_{i,t}$ = Cumulative initial return $_{i,t}$ - Cumulative market return $_{i,t}$

= (stock price $_{i,t}$ – issue price $_i$) /issue price $_i$ -

(index $_{i,t}$ – index $_{i,0}$) /index $_{i,0}$

Figure 1 reports the cumulative median initial returns on Easdaq and EuroNM during the first twenty trading days, corrected for returns in the market, while table 2 gives summary statistics of the initial returns on the first trading day.

Table 2 clearly shows that the initial returns are positive both on Easdaq (significant at the 0.059 level, two-tailed t-test) and EuroNM (significant at the 0.000 level). An investor who would have invested an equal amount in all IPOs and sold all shares on the first trading day,

would have realised a return that outperformed the relevant market index by 15.87 % on Easdaq and 38.67 % on EuroNM. Solely investing in Neuer Markt IPOs was the most rewarding investment strategy: the mean initial return is 58.29 % above the EuroNM index. The lowest initial returns are found on EuroNM Belgium, with a negative median return of 2.43 % and a mean return of –0.10 % (not significantly different from zero). The large differences between means and medians, the high standard deviations and the huge range between minimum and maximum initial returns on all markets show, however, that there are large differences between the IPOs. On the Neuer Markt, for example, the lowest initial return was –17.20 % (Edel Music), while the highest return on the first trading day was 403 % (Drillisch, a telecom services company), which means that the stock price of Drillisch at the end of the first trading day was more than five times higher than its issue price.

[Insert figure 1 about here]

Figure 1 further shows that the high median initial returns do not immediately disappear, especially not on the Neuer Markt and NMAX. Initial returns remain positive on Easdaq during the first twenty trading days, although not as high as on the first trading day. On EuroNM Belgium, where the initial return on the first trading day was not positive on average, the returns remain negative.

4. Determinants of initial returns

Variations in initial returns may be explained by characteristics of the particular stock and by the state of the stock market at the time of the IPO. Empirical literature on underpricing guided the selection of relevant variables included in multivariate models in this study. Some variables that previous studies reported as being important were omitted, however, due to lack of data (e.g. the percentage of equity retained by the original shareholders, investment bank and auditor reputation, sales, age of the company) or due to the fact that they are irrelevant in the context of this study. For example, it is well known that IPOs on a best efforts basis are more underpriced than those on a firm commitment basis (Ritter, 1987; Chalk and Peavy, 1987; Kumer and Tsetsekos, 1993), and that there is more underpricing when the issue price is set at a fixed price than resulting from a bookbuilding procedure (e.g. Buijs and Eijgenhuijsen, 1992; Bergström, Fredrikson, Högfeldt and Lind, 1995). However, almost every IPO on Easdaq and EuroNM is introduced via a firm commitment contract and issue

price is set using bookbuilding procedures. All data come from Easdaq and EuroNM Market Statistics, websites of the stock markets and of the listed companies and issue prospectuses.

The dependent variable is the market-corrected initial return on the first trading day. Independent variables are grouped in four constructs: market sentiment at the time of the IPO, market sentiment for this particular IPO, risk of the IPO and certification. Two control variables are included. Descriptive statistics of all independent variables are given in table 3.

MARKET SENTIMENT AT IPO TIME

We hypothesize that a positive market sentiment leads to higher initial returns, consistent with the fads-overvaluation hypothesis[6] (Aggarwal and Rivoli, 1990; Loughran, Ritter, 1993). Optimistic investors are prepared to pay more than the fair value for an IPO and so create fads in the market and overvalue IPOs once they are traded, which will result in bad long term performance of IPOs. Brav and Gompers (1995) provide evidence that investor sentiment is a possible explanation for the severe underperformance of IPOs.

This optimism and overvaluation can be induced by initial returns on recent previous IPOs or by a positive market sentiment in general. The more positive the overall market sentiment is just before or at the IPO, the higher the expected initial return will be. Following five variables are indicators of investor sentiment on the stock market in general or for the IPO market in particular.

Return Spec: return of the specific market index; return of the index of the stock market (segment) on which the listing took place, in the month of introduction of the IPO. The mean value is 1.62 %, it varies between –19.24 % and 51.21 %. The return of the IPO on the first trading day is not included in this variable. On the following trading days, the return on the IPO contributes to the return of the stock market where it is quoted.

Return Gen: return of a general market index; return of the EuroStoxx 50 in the month of the issue. The mean value is 1.61 %, ranging between –16.61 % and 11.46 %.

LN New IPO: natural logarithm[7] of the number of new IPOs on the particular market
                   (segment) in the month of the issue. This variable varies between 0 and
                   3.09, with a mean value of 1.78, meaning that during the month in
                   which the IPO took place, the number of new IPOs varies between 1
                   and 22 and is on average 5.93.

New IPO %:   relative increase in the number of listings; equals the number of new
                   listings on that particular stock market in the month of the issue divided
                   by the total number of listings at the end of the previous month. Mean
                   value is 15.21 %, minimum is 0.25 % and maximum is 66.67 %.

IR Last IPOs: mean value of the level of initial returns of the three previous IPOs on
                   that capital market. This was not computed for NMAX and EuroNM
                   Belgium because of the too small number of listings. This varies
                   between –12.20 % and 254.21 %, with a mean of 38.82 %.

SENTIMENT FOR THIS PARTICULAR IPO

Empirical studies (e.g. Beatty and Ritter, 1986; Koh and Walter, 1989; Levis, 1990; Cherubini
and Ratti, 1992; Suchard and Woo, 1993) found a positive relationship between the
oversubscription rate and the level of initial returns. When the demand is substantially higher
than the supply of a particular stock, it is logical that the price of the scarce good, in casu the
stock, will rise. We therefore hypothesize that the higher the interest for a new issue, the more
investors are prepared to pay once the stock is listed and the higher initial returns therefore
will be.

Overscription: (only available for Le Nouveau Marché) ratio of the number of shares
                   requested in surplus of the number of shares offered to the number of
                   shares offered. The least succesful IPO was not oversubscribed, while
                   the   most   succesful   one   was   oversubscribed   139   times.   Mean
                   oversubscription was about 15 times.

COMPANY RISK

It is hypothesized that more risky IPOs will show higher initial returns. In order to compensate investors for the risk, entrepreneurs may be willing to introduce the shares at a lower price than their intrinsic value. The higher the volatility of the returns after the IPO, the higher the risk and the higher the expected initial returns will be (Miller and Reilly, 1987; McGuinness, 1992). On the other hand, a high market capitalisation, funds raised and issue price are associated with a (relatively) large and more mature company implying a lower risk, everything else equal (Ritter, 1984; Beatty and Ritter, 1986; Ibbotson, Ritter and Sindelar, 1988, Levis, 1990; Hunt-McCool, Koh and Francis, 1996). Variables used in other empirical work, but not used in our study (due to data unavailability) include book value of equity (and book to market ratio), number of risk factors, sales, profits, total assets, percentage equity retained by initial shareholders, age of the company,... (e.g. Logue, 1973; Ritter, 1984; Beatty and Ritter, 1986; Ibbotson, Ritter and Sindelar, 1988; Muscarella and Vetsuypens, 1989; Rees, 1992; Ljunqvist, 1993; Zackrisson, 1994; Hunt-McCool, Koh and Francis, 1996).

Volatility: standard deviation of the daily returns of the stock price, calculated during the first twenty market days. This is an ex-post indicator of the riskiness of the IPO (Miller and Reilly, 1987; McGuiness, 1992). It ranges between 0.47 % and 21.12 % and the mean value is 4.92 %.

ICT: dummy indicating whether the IPO is a company active in software, IT-services, internet business or telecommunications. These companies present more uncertainty and higher risk: Smit and Trigeorgis (1999) show that most of the market value of these companies is based on their intangibles and on the strategic value of their growth opportunities and that this industry involves more unexpected technological revolutions and competitive moves. This dummy variable is an ex-ante indicator of risk. 42 % of all IPOs on Easdaq and EuroNM are ICT companies.

LN Market Cap: natural logarithm of the market capitalisation of the company at IPO time (Levis, 1990). Mean, minimum and maximum values of 4.27, 1.61 and 7.28 are equal to a market capitalisation of respectively 71.52, 5.00 and 1450.99 million EUR.

LN Funds raised: natural logarithm of the amount of funds raised at IPO time, also termed IPO volume, as an absolute indicator of the size of the IPO (Ritter, 1984; Beatty and Ritter, 1986; Levis, 1990; McCool, Koh and Francis, 1996). Mean, minimum and maximum values of 3.03, 0.74 and 5.99 correspond to an amount of funds raised of respectively 20.70, 2.10 and 399. 42 million EUR.

LN Issue price: natural logarithm of the price in EUR at which investors can subscribe to the IPO (Ibbotson, Ritter and Sindelar, 1988[8] and Hunt-McCool, Koh and Francis, 1996). Mean value is 2.80, corresponding to an average issue price of 16.44 EUR; minimum and maximum are –1.06 and 5.59, corresponding to issue prices of 0.35 EUR and 267.74 EUR.

CERTIFICATION OF THE IPO

A negative relation between certification and initial return(underpricing) is hypothesized, as certification mitigates information asymmetries. VC-backed IPOs are certified by a venture capitalist, who gives a strong positive signal and thus is able to reduce underpricing (Barry, Peavy, Muscarella, and Vetsuypens, 1990; Bergström, Högfeldt and Anders, 1994). Empirical literature also tests for other certification variables, like investment bank and auditor reputation, number of financial intermediaries, the choice of the trading system, method of introduction (firm commitment or best effort) (Booth and Smith, 1986; Ritter, 1987; Balver, McDonald and Miller, 1988; Johnson and Miller, 1988; Carter and Manaster, 1990; Rees, 1992; Affleck-Graves, Hegde, Miller and Reilly, 1993). Due to lack of data we did not investigate the relation between initial returns and other certification variables than certification by a venture capitalist.

Venture capital: dummy variable indicating whether the company was venture capital backed or not when going to the market (Barry, Peavy, Muscarella and Vetsuypens, 1990; Megginson and Weiss, 1991; Bergström, Högfeldt and Anders, 1994). 43 % of all IPOs on Easdaq and EuroNM are venture backed.

CONTROL VARIABLES

Dummy control variables are added to the model in order to control for some important aspects.

Nouveau Marché: dummy indicating whether the IPO took place on Le Nouveau Marché or not. 31 % of the IPOs in our study are listed on Le Nouveau Marché.

Easdaq: dummy indicating whether the IPO took place on Easdaq or not. 12 % of the IPOs in our study are listed on Easdaq.

Adding these market related control variables in the multiple regressions sets the Neuer Markt (the largest market in our study) as base case and compares the initial returns on Easdaq and Le Nouveau Marché with those on Neuer Markt, everything else equal.

[Insert Table 3 about here]

5. Results

In table 4a correlations (together with their level of significance and number of cases) between the dependent variable 'initial return' and the independent variables are presented[9]. The initial return is significantly and positively correlated with two indicators of market sentiment at IPO time: the return on the specific IPO market and the mean initial returns of the three previous IPOs on that market. The correlation with the return of Euro Stoxx 50 (Return Gen) is positive, but not significant, while it is negative (but not signifcantly so and almost equal to zero) with the absolute and relative number of new IPOs. It thus seems that buoyant stock markets and not the number of IPOs drive up initial returns.

The oversubscription rate, only available for Le Nouveau Marché, is significantly and positively correlated with the initial returns as expected. When the demand for a particular offering is high, the initial return will also be high.

Some indicators of company risk are significantly correlated with the initial return. The higher the ex-post volatility of the return is, the larger the initial return, as expected. However, contrary to expectations, a larger - and thus less risky - company also experiences larger initial returns. Indeed, the correlation between initial returns and both measures of company size (funds raised and market capitalisation) is significant and positive. This finding, however, should be interpreted with caution. Further examination of the correlation matrix, combined with our previous findings, shows that the largest companies are found on the Neuer Markt, where the largest initial returns occur. Further multivariate analyses are needed in order to find the true relationship between firm size and initial returns. The other risk indicators are not correlated with initial returns.

Table 4b reports differences in initial returns on the first trading day for the dummy variables[10].

It is clear that ICT companies have much higher initial returns than non-ICT companies: their return on the first trading day is twice as high, as expected.

Contrary to findings in the US (Barry, Peavy, Muscarella and Vetsuypens, 1990; Megginson and Weiss, 1991) and to our hypothesis, certification by a venture capital company has no statistically significant effect on the initial return.

[Insert table 4a about here]
[Insert table 4b about here]

Initial returns are substantially and significantly lower on Easdaq and Nouveau Marché (control variables) as compared to those on Neuer Markt.

Cross-section OLS multiple regression analyses are performed with initial return on the first trading day[11] as dependent variable, for the whole sample and for two subsamples: one with all Neuer Markt IPOs and one with Le Nouveau Marché IPOs. White heteroskedasticity consistent standard errors are used. Results are presented in tables 5a and 5b. LN funds raised is used as an indicator of company size in table 5a and LN market capitalisation in table 5b, because these two variables are highly intercorrelated. Results of both sets of regressions are very similar[12]. Correlations between other independent variables are within acceptable limits[13].

[Insert table 5a about here]

[Insert table 5b about here]

The predictive power of the regressions is high (here reported for table 5a): the adjusted R^2 is 30.4 % for the overall sample, 24.9 % for the Neuer Markt subsample and 49.4 % for Le Nouveau Marché subsample[14]. The variables explain a significant amount of variation in the initial returns; moreover the model is stable.

Some coefficients of market sentiment variables are significant. For the whole sample, the initial return of the three previous IPOs has the strongest predictive power for the initial return of subsequent IPOs. If underpricing was low for the most recent IPOs, low underpricing for the new issue is expected and vice versa. Another indicator of the market sentiment, the return of the stock market on which the IPO was issued in the introduction month, also shows a positive relation with the initial return, although not significant. Return on the general stock market index (Euro Stoxx 50) in that same period has little explanatory power but the coefficent is positive.

The two variables related to the number of new IPOs have a negative (sometimes significant) relation with underpricing. This result is different from our conclusion from the correlation analysis, where there was no association. Especially the number of new IPOs in the month of the new issue on that stock market is important. The negative relation is not as expected but is in line with the existence of 'hot and cold issue markets' . This theory, supported by empirical evidence (Ibbotson and Jaffe, 1975; Ibbotson, Ritter and Sindelar, 1988; Aggarwal and Rivoli, 1990; Suchard and Woo, 1993), states that there is a wavelike pattern in the IPO market: first there is a period with many IPOs with low underpricing, followed by a period with few but highly underpriced IPOs. When there is much IPO activity, underpricing is relatively low and higher when few new issues are brought to Easdaq and EuroNM, consistent with the wave theory.

One of the most significant explanatory variables, when available, is the rate of oversubscription, consistent with Beatty and Ritter (1986), Koh and Walter (1989), Levis (1990), Cherubini and Ratti (1992) and Suchard and Woo (1993). If the oversubscription rate is 10 % higher, then the initial return is likely to be about 5 % higher. The market sentiment for a particular IPO is thus a very strong indicator of the initial return.

The riskiness of an IPO as measured by ex-post volatility also has a significant and positive impact on initial return as expected, and consistent with Miller and Reilly (1987) and McGuiness (1992). When the company's business activity is in the area of software, internet, IT services or telecommunications (ex-ante risk indicator), then initial returns are significantly higher too. Other risk indicators, the (logarithm of) market capitalisation and the amount of funds raised, have little or no effect on the level of initial return. The issue price has a negative but not significant effect on the initial return, as expected.

Contrary to American studies (Barry, Peavy, Muscarella and Vetsuypens, 1990; Megginson and Weiss, 1991), the certification of an IPO by a venture capital company has no significant effect on the initial returns. There is no difference between the behaviour of venture capital backed and non-venture capital backed companies on Easdaq and EuroNM.

It is furthermore confirmed that the initial returns on Le Nouveau Marché and Easdaq are lower than on the Neuer Markt.

6. Conclusion

On Easdaq and EuroNM, the difference between the issue price and stock price at the end of the first trading day, corrected for the evolution of the market, is high: on average 15.87% on Easdaq and even 38.67% on EuroNM. The highest initial returns are found on the Neuer Markt : 58.29% on average, with a maximum of 403%. EuroNM Belgium is lagging : the initial returns are not significantly different from zero on this small stock market (12 IPOs). The positive initial returns (corrected for the stock market evolution) remain on high for the first twenty trading days.

The riskiness of a stock, as measured by the volatility of its returns after the IPO, its issue price and its business activity (ICT), positively influence the initial return. In order to attract more investors, riskier IPOs are introduced at lower prices than their market value. This finding is in line with theories of underpricing, hinting that the introduction price is lower than the intrinsic value of the stock.

However, investor sentiment, as well for a particular IPO as the general market sentiment at the time of the IPO, also explains initial returns on Easdaq and EuroNM. One of the most

important determinants of the initial return is the oversubscription rate (only available on the Nouveau Marché), an indicator of the investor sentiment for a particular IPO. A high oversubscription rate is an indication of a positive sentiment of the investors for this particular IPO. When the demand is substantially higher than the supply of a particular stock, it is obvious that the stock price will rise. Other determinants of initial returns are the initial returns of the previous IPOs and the number of IPOs during the month of the IPO, both indicators of the general market sentiment at the time of the IPO. The higher the initial returns of the previous IPOs, the higher the initial return of this particular IPO will be, everything else equal. This hints to the fact that investor sentiment is an important determinant of initial returns. Also, underpricing theories cannot account for some extremely high observed initial returns; these abnormal returns are probably driven by investor overvaluation. Venture capitalist backed IPOs do not present lower initial returns; this in contrast with underpricing theory's predictions.

Moreover, the more IPOs there are, the lower the initial return is, also supporting investor sentiment and 'wave theories'. This suggests that initial returns are not lasting in the long run; the high initial returns are then merely a temporary overpricing of the stock.

Our study found support for both underpricing theories and investor sentiment theories. Abnormal initial returns are caused by fundamental characteristics of the stock (its riskiness) and by investor sentiment. They can therefore either be attributed to 'real' underpricing of the stock at IPO, or can be a temporary fad caused by investor sentiment. Further analysis of the long term performance of these IPOs is needed in order to disentangle both explanations. However, it is clear that initial returns are not merely driven by underpricing, and therefore one should be careful by referring to this initial return via the term 'underpricing', as most of the literature does.

Acknowledgements

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EuroNM Belgium: http://www.beurs.be

Easdaq: http://www.easdaq.be

Table 1: Market capitalisation and funds raised at IPO time (in million EUR)

	Number	Market capitalisation at IPO			Funds raised at IPO		
		Mean	Median	Total	Mean	Median	Total
Easdaq	35	152.93	97.24	5 352	47.77	32.69	1 672
EuroNM	265	113.56	69.02	30 093	32.99	19.10	8 512
EuroNM segments							
Neuer Markt	146	163.58	111.98	23 882	48.27	32.12	7 047
Nouveau Marché	93	52.70	29.44	4 901	12.49	7.46	1 162
NMAX	14	68.80	49.61	963	16.14	13.20	226
EuroNM Belgium	12	28.89	15.65	347	6.42	8.75	77
Total sample	300	118.15	71.59	35 446	34.76	21.25	10 184

Table 2: Summary statistics of market-corrected initial returns on the first trading day (in %)

			EuroNM				
	Easdaq	EuroNM	Neuer Markt	Nouveau Marché	NMAX	EuroNM Belgium	Overall sample
Minimum	-20.26	-35.05	-17.20	-35.05	-5.50	-24.09	-35.05
Maximum	277.22	403.00	403.00	104.31	96.74	19.78	403.00
Mean	15.87	38.67	58.29	13.99	31.19	-0.10	36.01
Median	6.81	14.78	32.43	5.28	25.12	-2.43	11.42
Stand. Dev.	48.19	63.01	75.68	26.97	36.22	12.18	61.83
Number	35	265	146	93	14	12	300
Significance (p)	0.059	0.000	0.000	0.000	0.007	0.977	0.000

Figure 1 : Median market-corrected cumulative initial returns for the first twenty trading days on the different markets
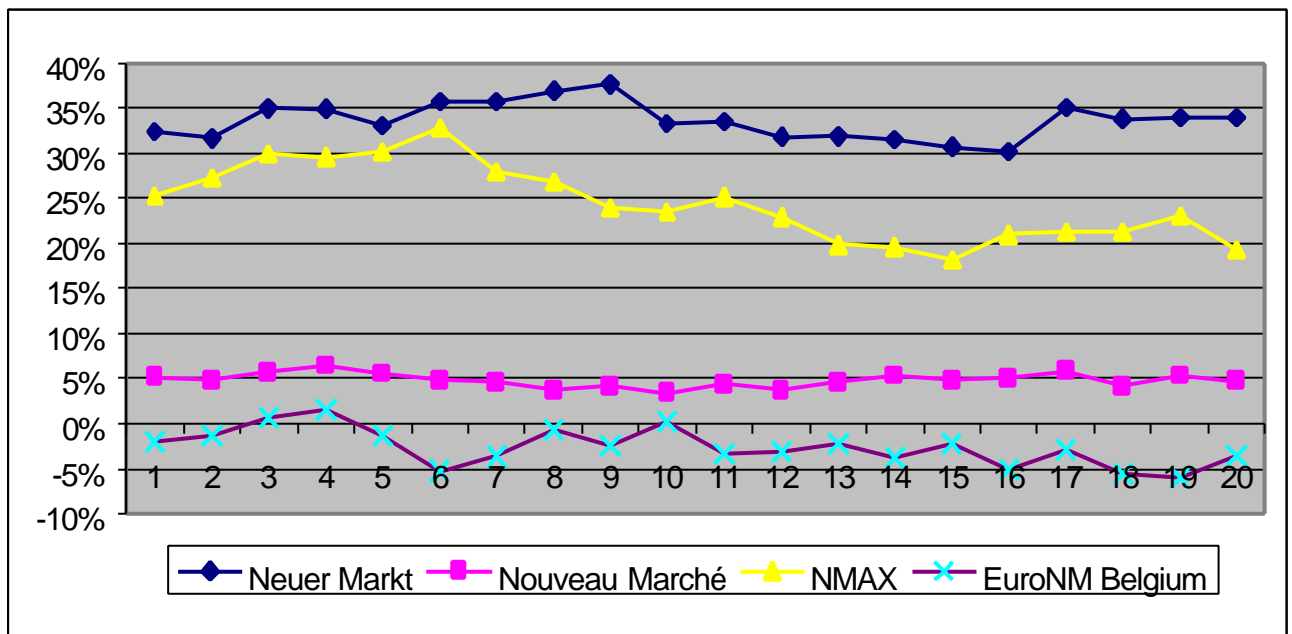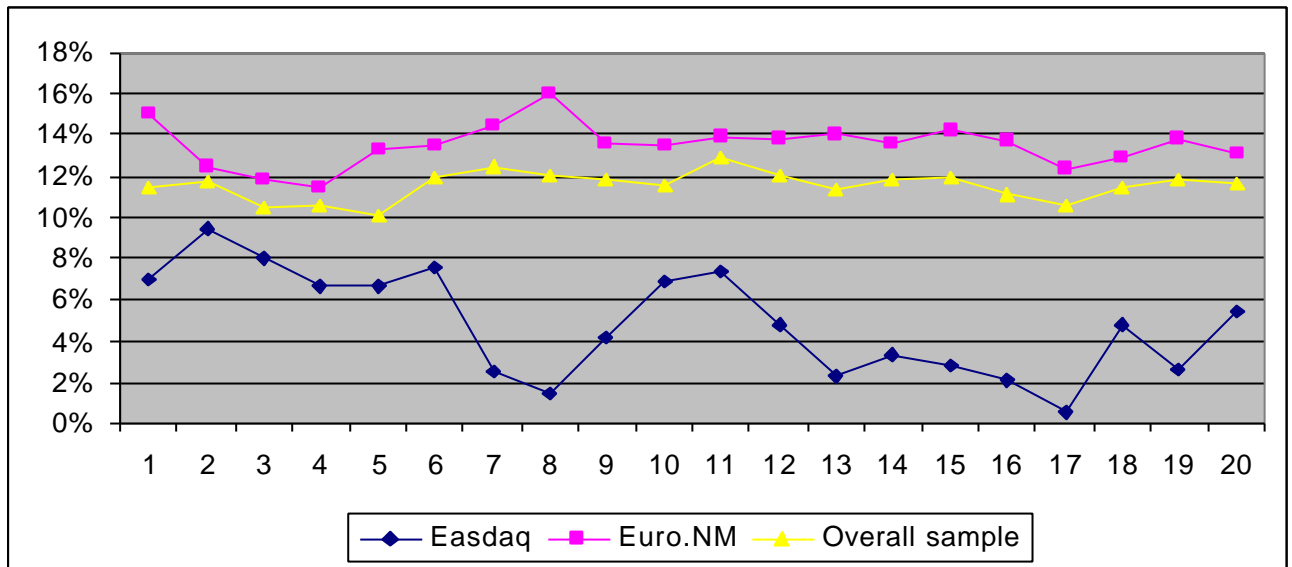
Table 3: Descriptive statistics of the independent variables

	Number	Mean	Median	Minimum	Maximum	Standard deviation
MARKET SENTIMENT AT IPO TIME						
Return Spec %	280	1.62	-1.07	-19.24	51.21	11.13
Return Gen %	280	1.61	2.92	-16.61	11.46	5.37
LN New IPOs	264	1.78	1.79	0.00	3.09	0.82
NewIPOs%	364	15.21	14.07	0.25	66.67	11.02
IR Last IPOs %	263	38.82	22.84	-12.20	254.21	46.11
SENTIMENT FOR THIS PARTICULAR IPO						
Overscription	93	15.30	5.00	0.00	138.93	23.01
COMPANY RISK						
Volatility %	300	4.92	4.07	0.47	21.12	3.38
ICT	300	0.42	0	0	1	0.49
LN Market cap	300	4.27	4.27	1.61	7.28	0.99
LN Funds raised	292	3.03	3.06	0.74	5.99	0.99
LN Issue price	300	2.80	2.86	-1.06	5.59	0.83
CERTIFICATION OF THE IPO						
Venture capital	263	0.43	0	0	1	0.50
CONTROL VARIABLES						
Nouveau Marché	300	0.31	0	0	1	0.46
Easdaq	300	0.12	0	0	1	0.32

Table 4a: Correlations between initial return on the first trading day and the independent variables

MARKET SENTIMENT AT IPO TIME	Correlation	Significance	N
Return Spec %	0.172	**	280
Return Gen %	0.082		280
LN New IPOs	-0.011		264
NewIPOs%	-0.017		264
IR Last IPOs %	0.432	**	263
SENTIMENT FOR THIS PARTICULAR IPO			
Overscription	0.638	**	93
COMPANY RISK			
Volatility %	0.302	**	300
LN Market cap	0.181	**	300
LN Funds raised	0.186	**	300
LN Issue price	-0.004		300

* : Correlation is significant at the 0.05 level (two-tailed).
**: Correlation is significant at the 0.01 level (two-tailed).

Table 4b: Initial returns on the first trading day for the dummy variables

	Number	Mean	Standard deviation	T-value
COMPANY RISK				
ICT company	126	50.98	72.28	** -3.642
Non ICT company	174	25.17	50.49	
CERTIFICATION OF THE IPO				
VC backed	112	42.59	58.30	-1.066
Non VC backed	151	34.33	64.78	
CONTROL VARIABLES				
Nouveau Marché	93	13.99	26.97	** 4.251
Non Nouveau Marché	207	45.90	70.04	
Easdaq	35	15.87	48.19	* 2.061
Non Easdaq	265	38.67	63.00	

* : Difference is significant at the 0.05 level (2-tailed).
**: Difference is significant at the 0.01 level (2-tailed)

Table 5 a : Results of the multiple regression including funds raised

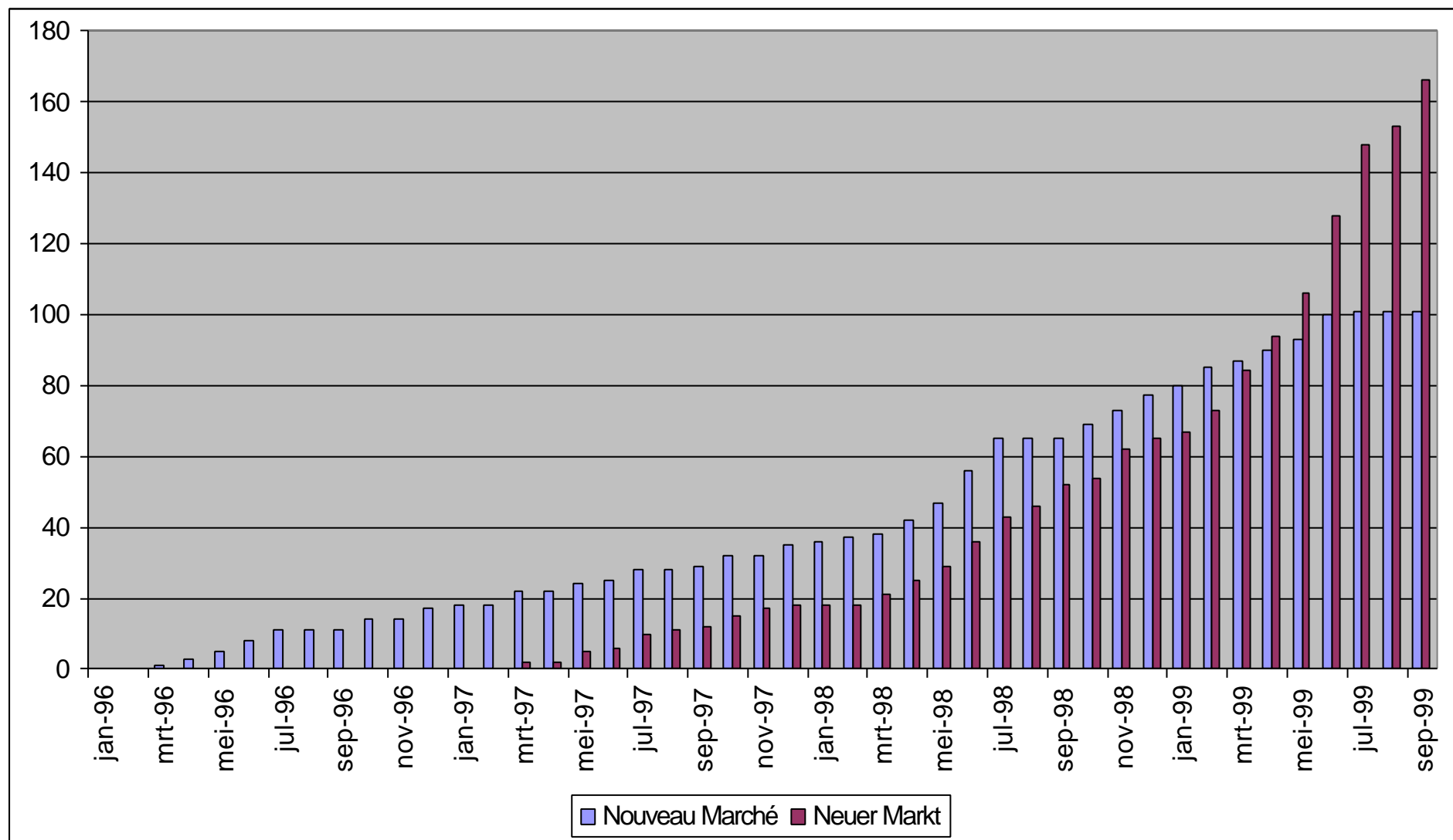|	Overall sample		Neuer Markt		Nouveau Marché	
	Coefficent	t-value	Coefficient	t-value	Coefficent	t-value
(Constant)	47.000	1.903	62.275	1.053	-10.510	-1.149
MARKET SENTIMENT AT IPO TIME						
Return Spec	0.161	0.314	0.961	1.173	0.819	1.589
Return Gen	0.629	0.923	1.069	0.938	-0.273	-0.465
LN New IPOs	-15.421	* -2.472	-9.753	-1.113	-5.082	-1.349
New IPOs %	-0.025	-0.076	-1.462	* -2.080	0.583	** 3.617
IR Last IPOs	0.490	** 3.820	0.605	** 4.077	0.008	0.053
SENTIMENT FOR THIS PARTICULAR IPO						
Overscription					0.521	** 2.845
COMPANY RISK						
Volatility	4.743	** 3.722	6.421	* 2.253	2.077	1.616
ICT	22.341	** 2.562	28.451	* 2.255	2.003	0.386
LN Funds raised	-0.392	-0.091	3.538	0.387	2.118	0.828
LN Issue price	-7.350	-1.479	-20.922	-1.416	0.473	0.265
CERTIFICATION OF THE IPO						
Venture capital	2.602	0.343	2.856	0.232	0.145	0.032
CONTROL VARIABLES						
Nouveau Marché	-27.796	** -2.598				
Easdaq	-23.457	-1.747				
Number of valid cases	226		110		77	
Adjusted R square	30.4 %		24.9 %		49.4 %	

* : the coefficient is significant at the 0.05 level (two-tailed)

**: the coefficient is significant at the 0.01 level (two-tailed)

Table 5 b: Results of the multiple regression including market capitalisation

	Overall sample		Neuer Markt		Nouveau Marché	
	Coefficent	t-value	Coefficent	t-value	Coefficent	t-value
(Constant)	46.846	1.638	56.062	0.810	-14.386	-1.430
MARKET SENTIMENT AT IPO TIME						
Return Spec	0.160	0.311	0.978	1.156	0.802	1.561
Return Gen	0.638	0.949	1.101	0.987	-0.217	-0.372
LN New IPOs	-15.450	* -2.479	-9.294	-1.051	-5.268	-1.455
New IPOs %	-0.027	-0.081	-1.482	* -2.085	0.571	** 3.730
IR Last IPOs	0.490	** 3.831	0.610	** 4.115	0.015	0.095
SENTIMENT FOR THIS PARTICULAR IPO						
Overscription					0.506	** 2.800
COMPANY RISK						
Volatility	4.740	** 3.706	6.458	* 2.200	2.111	1.653
ICT	22.442	** 2.567	28.263	* 2.230	3.151	0.595
LN Market cap	-0.177	-0.043	3.820	0.354	3.183	1.431
LN Issue price	-7.446	-1.523	-21.131	-1.395	-0.341	-0.184
CERTIFICATION OF THE IPO						
Venture capital	2.485	0.329	3.295	0.264	-0.274	-0.059
CONTROL VARIABLES						
Nouveau Marché	-27.422	* -2.593				
Easdaq	-23.540	-1.778				
Number of valid cases	227		110		78	
Adjusted R square	30.4 %		24.9 %		48.2 %	

* : the coefficient is significant at the 0.05 level (two-tailed)

**: the coefficient is significant at the 0.01 level (two-tailed)

Appendix Figure A: Total number of listings on Easdaq and EuroNM between January 1996 and October 1999
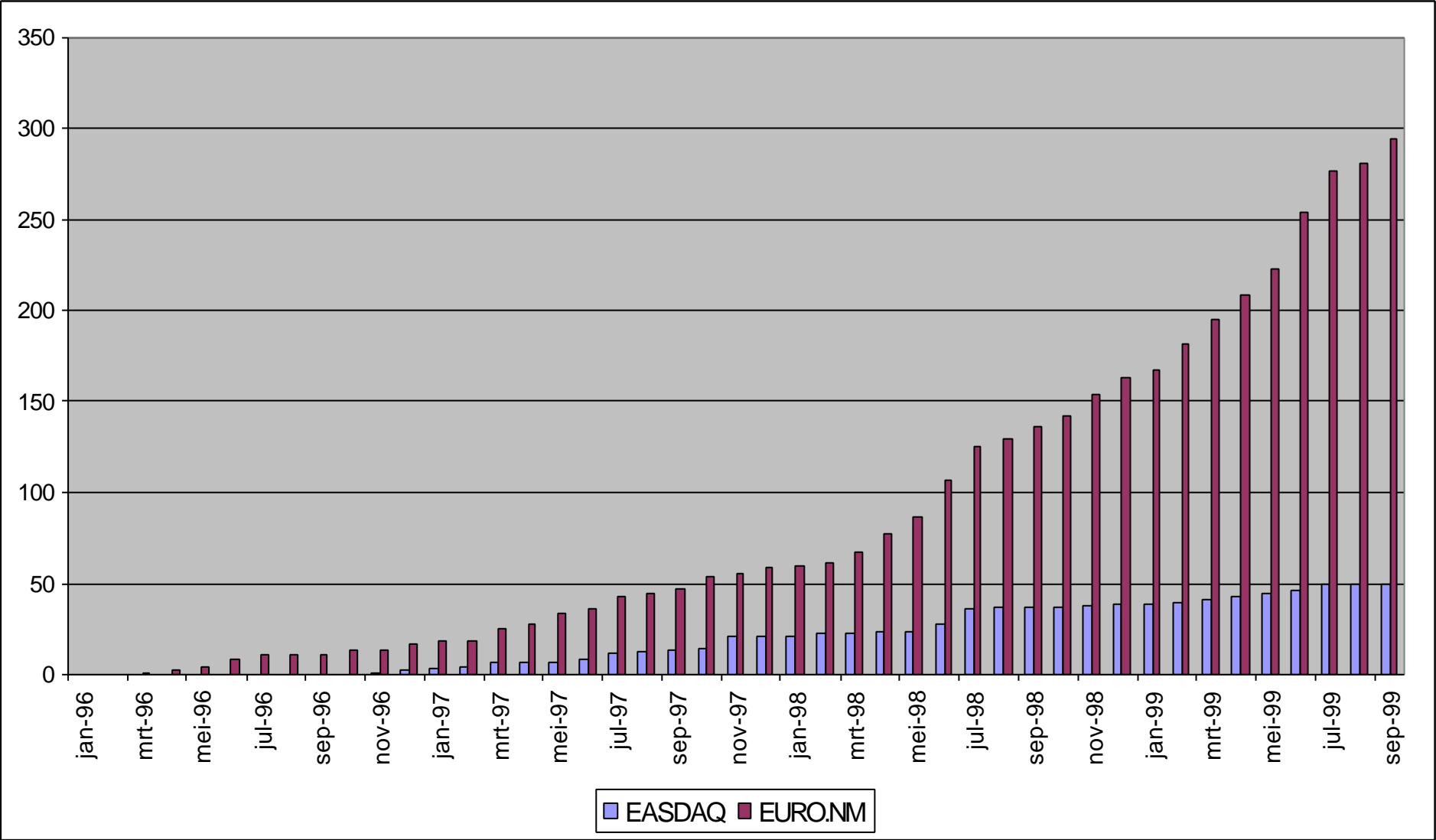
Appendix Figure B: Total number of listings on Nouveau Marché and Neuer Markt between January 1996 and October 1999

Appendix Table A: Average daily return and standard deviation of daily return on Easdaq, EuroNM and investment alternatives, from 1996 till 1999

	EuroNM All Share	Easdaq All Share	Neuer Markt	Nouveau Marché	NMAX	EuroNM Belgium	Euro Stoxx 50	Nasdaq 100	Nasdaq Composite
Since the launch of the index									
Daily return	0.1318 %	0.1976 %	0.3086 %	0.0387 %	0.0706 %	0.0879 %	0.1017 %	0.1777 %	0.1232 %
Standard deviation	1.8833 %	1.9930 %	2.5236 %	1.4757 %	2.1572 %	2.5735 %	1.1581 %	1.8035 %	1.3919 %
Ratio return to standard deviation	6.9963 %	9.9167 %	12.2272 %	2.6231 %	3.2724 %	3.4154 %	8.7841 %	9.8558 %	8.8514 %
1996									
Daily return	-0.3214 %	-0.0874 %	/	-0.3214 %	/	/	0.0753 %	0.1457 %	0.0830 %
Standard deviation	1.5443 %	0.8237 %	/	1.5443 %	/	/	0.5891 %	1.3992 %	0.9567 %
Ratio return to standard deviation	-20.8151 %	-10.4912 %	/	-20.8151 %	/	/	12.7894 %	10.4111 %	8.6759 %
1997									
Daily return	0.2501 %	0.1753 %	0.3551 %	0.0923 %	-0.0912 %	0.0333 %	0.1256 %	0.0832 %	0.0823 %
Standard deviation	1.4788 %	1.4872 %	2.6281 %	1.4462 %	2.2852 %	2.3145 %	1.1399 %	1.6753 %	1.1422 %
Ratio return to standard deviation	16.9145 %	11.7906 %	13.5100 %	6.3841 %	-3.9927 %	1.4367 %	11.0189 %	4.9671 %	7.2046 %
1998									
Daily return	0.3554 %	0.1508 %	0.4265 %	0.1031 %	0.2536 %	0.2333 %	0.1124 %	0.2564 %	0.1414 %
Standard deviation	2.4127 %	1.2288 %	2.8245 %	1.6186 %	2.7301 %	3.3419 %	1.5748 %	1.9903 %	1.6372 %
Ratio return to standard deviation	14.7304 %	12.2747 %	15.1003 %	6.3686 %	9.2885 %	6.9811 %	7.1370 %	12.8836 %	8.6374 %
1999(until 1/12/99)									
Daily return	0.1460 %	0.2060 %	0.1385 %	0.2192 %	0.0069 %	-0.0279 %	0.0910 %	0.2271 %	0.1926 %
Standard deviation	1.8241 %	2.0674 %	2.0349 %	1.2182 %	1.0454 %	1.6337 %	1.1135 %	2.0955 %	1.7158 %
Ratio return to standard deviation	8.0055 %	9.9645 %	6.8079 %	17.9944 %	0.6556 %	-1.7085 %	8.1749 %	10.8391 %	11.2265 %

Appendix Table B: Correlation between daily returns of the stock market indices between 14/4/1997 and 1/12/1999

	EuroNM All Share	Easdaq All Share	Neuer Markt	Nouveau Marché	NMAX	EuroNM Belgium
EuroNM All Share	**1.000**	0.590	0.952	0.515	0.455	0.139
Easdaq All Share	0.590	**1.000**	0.519	0.437	0.416	0.125
Neuer Markt	0.952	0.519	**1.000**	0.370	0.368	0.108
Nouveau Marché	0.515	0.437	0.370	**1.000**	0.333	0.156
NMAX	0.455	0.416	0.368	0.333	**1.000**	0.184
EuroNM Belgium	0.139	0.125	0.108	0.156	0.184	**1.000**
Euro Stoxx 50	0.661	0.559	0.577	0.493	0.479	0.125
Nasdaq 100	0.392	0.485	0.340	0.385	0.242	0.101
Nasdaq Composite	0.410	0.530	0.354	0.420	0.247	0.110

All correlations are significant at the 0.01 level (2- tailed).

Appendix Table C: Initial retuns presented in previous studies (non-exhaustive list)

Country	Author + year	Number of IPOs	Investigated period	Initial return (%)
Australia	Lee, Taylor, Walter (1996)	266	1976-1989	11.9
Belgium	Van Hulle, Vanthienen (1989)	19	1984-1987	8.8
Brasil	Aggarwal, Leal , Hernandez (1993)	62	1980-1990	78.5
Germany	Ljunqvist (1997)	170	1978-1992	10.9
Japan	Hamao, Packer, Ritter (1998)	975	1970-1996	24.0
Korea	Krinsky, Kim, Lee (1992)	275	1985-1990	79.0
Singapore	Dawson (1987)	39	1978-1983	39.4
Spain	Fernandez et al. (1992)	71	1985-1990	35.4
Turkey	Kiymaz (1997)	138	1990-1995	13.6
United Kingdom	Levis (1993)	632	1980-1988	14.1
United Kingdom	Rees (1993)	489	1984-1991	16.0
United States	Ritter (1984)	+- 5000	1960-1982	18.8
United States	Ibbotson, Ritter, Sindelar (1988)	8668	1960-1987	16.4
United States	Beatty (1989)	2215	1975-1984	22.1
United States	Ritter (1991)	1526	1975-1984	14.3
United States	Ibbotson, Ritter, Sindelar (1994)	13308	1960-1996	15.8
United States	Booth (1996)	2151	1977-1988	13.1
Switserland	Kunz, Aggarwal (1994)	42	1983-1989	35.8

Sources: Kunz, Aggarwal (1994); Van Hulle, Casselman, Imam (1993); Ritter (1998).

Calculation of initial returns presented in the last column varies from one study to another, but it is always the price difference between market price and introduction price, measured over a certain time interval, which usually varies from one day to one week. In some studies this return is corrected for the stock market evolution, in others it is not.

Appendix Table D: Correlations between the independent variables

	Return Spec	Return Gen	LN New IPOs	New IPOs %	IR Last IPOs	Over-Scription	Vola-Tility	ICT	LN Market Cap	LN Funds Raised	LN Issue Price	Venture Capital	ICT	Nouveau Marché	Easdaq
MARKET SENTIMENT AT IPO TIME															
Return Spec	**1.000** (280)	.475 (280) **	-.259 (264) **	.162 (264) **	.027 (260)	.106 (89)	.135 (280) *	-.042 (280)	-.091 (280)	-.074 (272)	.001 (280)	.071 (243)	-.042 (280)	-.028 (280)	.116 (280)
Return Gen	.475 (280) **	**1.000** (280)	-.167 (264) **	.033 (264)	.008 (260)	-.023 (89)	.056 (280)	-.038 (280)	-.068 (280)	-.061 (272)	.0100 (280)	.009 (243)	-.038 (280)	.155 (280) **	.031 (280)
LN New IPOs	-.259 (264) **	-.167 (264) **	**1.000** (264)	.176 (264) **	.110 (259)	.131 (89)	.207 (264) **	.211 (264) **	.261 (264) **	.279 (261) **	.175 (264) **	-.051 (232)	.211 (264) **	-.377 (264) **	-.305 (264) **
New IPOs %	.162 (264) **	.033 (264)	.176 (264) **	**1.000** (264)	.016 (259)	.062 (89)	.007 (264)	.030 (264)	-.007 (264)	.045 (261)	.015 (264)	.004 (232)	.030 (264)	-.127 (264) *	.122 (264) *
IR Last IPOs	.027 (260)	.008 (260)	.110 (259)	.016 (259)	**1.000** (263)	.239 (90) **	.149 (263) *	.018 (263)	.201 (263) **	.244 (260) **	.104 (263)	-.016 (232)	.018 (263)	-.389 (263) **	-.198 (263) **
SENTIMENT FOR THIS PARTICULAR IPO															
Over-Scription	.106 (89)	-.023 (89)	.131 (89)	.062 (89)	.239 (90) **	**1.000** (93)	.568 (93) **	.163 (93)	-.059 (93)	-.083 (92)	-.013 (93)	.327 (82) **	.163 (93)	(a)	(a)
COMPANY RISK															
Vola-Tility	.135 (280) *	.056 (280)	.207 (264) **	.007 (264)	.149 (263) *	.568 (93) **	**1.000** (300)	.142 (300) *	-.016 (300)	.004 (292)	-.023 (300)	.101 (263)	.142 (300) *	-.073 (300)	-.192 (300) **
ICT	-.042 (280)	-.038 (280)	.211 (264) **	.030 (264)	.018 (263)	.163 (93)	.142 (300) *	**1.000** (263)	.178 (300) **	.173 (292) **	.046 (300)	.058 (263)	**1.000** (263)	-.132 (300) *	-.057 (300)

	Return Spec	Return Gen	LN New IPOs	New IPOs %	UP Last IPOs	Over-Scription	Vola-Tility	ICT	LN Market Cap	LN Funds Raised	LN Issue Price	Venture Capital	ICT	Nouveau Marché	Easdaq
LN Market Cap	-.091 (280)	-.068 (280)	.261 (264) **	-.007 (264)	.201 (263) **	-.059 (93)	-.016 (300)	.178 (300) **	**1.000** (300)	.841 (292) **	.232 (300) **	.042 (263)	.178 (300) **	-.461 (300) **	.128 (300) *
LN Funds Raised	-.074 (272)	-.061 (272)	.279 (261) **	.045 (261)	.244 (260) **	-.083 (92)	.004 (292)	.173 (292) **	.841 (292) **	**1.000** (292)	.249 (292) **	.048 (262)	.173 (292) **	-.563 (292) **	.183 (292) **
LN Issue Price	.001 (280)	.100 (280)	.175 (264) **	.015 (264)	.104 (263)	-.013 (93)	-.023 (300)	.046 (300)	.232 (300) **	.249 (292) **	**1.000** (300)	-.048 (263)	.046 (300)	.055 (300)	-.106 (300)
CERTIFICATION OF THE IPO															
Venture capital	.071 (243)	.009 (243)	-.051 (232)	.004 (232)	-.016 (232)	.327 (82) **	.101 (263)	.058 (263)	.042 (263)	.048 (262)	-.048 (263)	**1.000** (144)	.058 (263)	.001 (263)	.045 (263)
CONTROL VARIABLES															
Nouveau Marché	-.028 (280) **	.155 (280) **	-.377 (264) *	-.127 (264)	-.389 (263) **	(a)	-.073 (300)	-.132 (300) *	-.461 (300) **	-.563 (292) **	0.055 (300)	.001 (263)	-.132 (300) *	**1.000** (300)	-.244 (300) **
Easdaq	.116 (280)	.031 (280)	-.305 (264) **	.122 (264) *	-.198 (263) **	(a)	-.192 (300) **	-.057 (300)	.128 (300) *	.183 (292) **	-.106 (300)	.045 (263)	-.057 (300)	-.244 (300) **	**1.000** (300)

(a):Correlation can not be computed because at least one of the variables is constant.

* : Correlation is significant at the 0.05 level (2-tailed).

**: Correlation is significant at the 0.01 level (2-tailed).

Appendix Table E: Results of the multiple regression without control variables (overall sample)

	Coefficient		t-value		Coefficient		t-value
(Constant)	8.315		0.479		1.617		0.083
MARKET SENTIMENT AT IPO TIME							
Return Spec	0.269		0.519		0.280		0.540
Return Gen	0.337		0.514		0.340		0.530
LN New IPOs	-9.011		-1.586		-8.686		-1.572
New IPOs %	-0.096		-0.343		-0.076		-0.268
IR Last IPOs	0.595	**	5.196		0.599	**	5.247
COMPANY RISK							
Volatility	4.986	**	3.795		4.989	**	3.790
ICT	23.167	*	2.594		22.781	*	2.565
LN Funds raised	4.310		1.270				
LN Market cap					4.365		1.255
LN Issue price	-8.509		-1.733		-8.512		-1.758
CERTIFICATION OF THE IPO							
Venture capital	1.148		0.148		1.651		0.216
Number of valid cases	226				227		
Adjusted R square	29.3 %				29.3 %		

* : the coefficient is significant at the 0.02 level (two-tailed).
**: the coefficient is significant at the 0.01 level (two-tailed).

FOOTNOTES

[1] We will not give an overview of admission criteria because they are regularly changed.

[2] The Dutch, Belgian and Italian EuroNM segments are not presented separately in figure 1 b because of their minor importance: on October 1 1999, they had respectively 14, 12 and 1 listing(s). Because of this single listing no further attention is given to the Italian segment in the remainder of this paper.

[3] For an overview, we refer to Kunz and Aggarwal (1994), Van Hulle, Casselman and Imam (1993) and Ritter (1998).

[4] Bergström, Fredrikson, Högfeldt, Lind (1995) and Ritter (1998) present an exhaustive overview of theories explaining why underpricing occurs.

[5] We use price indices because for EuroNM and Easdaq return indices are not available on Datastream. However, both are almost equal to each other since stocks on Easdaq or EuroNM very seldom pay dividends.

[6] Cfr. also 'behavioral finance' theory as in Kahneman, Tversky (1982) and Lee, Shleifer and Vishny (1991).

[7] Variables for which we expect a non-linear but monotonously decreasing relation with the dependent variable are transformed into natural logarithm variables.

[8] Ibbotson, Ritter and Sindelar (1988) find that IPOs with an issue price of less than 3 $ (penny stocks) tend to be more speculative offerings and observe high levels of initial returns for this category (42.8 %). IPOs with an offering price above 3 $ gave initial returns of only 8.6 %.

[9] Correlations between the independent variables are given in appendix table D.

[10] Non-parametric tests yield similar conclusions about the significance of the differences.

[11] As there is (on average) little difference between measured initial returns on different trading days, the impact of the exact choice of a specific trading day will be minimal.

[12] Appendix table E reports the regression analysis without control variables, yielding identical conclusions.

[13] It could be argued that correlation between specific and general return on the stock market (Return Spec and Return Gen) is relatively high too(0.475). We controlled for possible multicollinarity problems but these were not present. This is also the case for oversubscription rate and volatility(0.568), for the Nouveau Marché subsample.

[14] These adjusted R^2 are high compared to those found in other studies: e.g. Balver, McDonald and Miller (1988) and Beatty (1989) respectively report adjusted R^2 of 9 % en 11.6 %.

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