Underpricing of IPOs and the Long-Run Underperformance

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Prof. Dr. Michel Antoine Habib

Meier Lukas Andreas



Executive Summary

Problem

Initial Public Offerings contain two peculiarities that have been very popular fields of research for several decades now, namely underpricing and the subsequent long-run underperformance of the companies' stock compared to benchmarks. There is a large variety of approaches existent, all aiming at explaining these phenomena.

The goal of this paper is to test some of the theories empirically for their validity on a specific set of data. The object is to find supportive or dismissive evidence for them and to present variables that have significant influence on the extent of underpricing.

Procedure

This paper consists of two parts, a literature review and an empirical analysis. The literature review gives a general introduction to IPOs, i.e. why firms choose to go public, in what ways they benefit from it and how IPOs are conducted. Thereafter, numerous theoretical approaches to underpricing and long-run underperformance are introduced and reviewed. Theories for underpricing are divided into three groups, asymmetric information models, institutional reasons and ownership and control theories.

The empirical analyses are based on a data set of IPOs conducted between 1997 and 2006 on the *Swiss Exchange* (SWX). It consists of 126 firm offerings of which not all could be included in the analyses, mostly due to data unavailability. Analyses include descriptive statistics, where the data set is presented and relationships are presented and multilinear regressions that aim at giving in-depth analyses of variables and their significance.

The first model put to test suggests information asymmetry surrounding companies to differ significantly and proposes higher asymmetry to lead to higher average underpricing and dispersion of first-day returns. Furthermore, it suggests that in hot issue markets, such as the internet bubble, high information asymmetric companies cluster and therefore yield particularly high underpricing and dispersion. Factors included as proxies for high information asymmetry are company age, offer size, industry, market, underwriters' prestige and a control variable for the bubble period. Furthermore, tests are run for propositions that IPOs conducted during the bubble period perform worse in the long run than others and the notion that prestigious underwriters issue better performing companies than less prestigious ones in the long run. The bubble period is defined to range from September 1998 to August 2000.

The second model tested is the signaling model, which proposes underpricing to be a means for high quality issuers to signal their high value. Rationale is for them to recuperate financial losses from underpricing in a secondary offering at a later point in time. It is assumed that underpricing is unalluring to low quality issuing firms because the market would, with a positive probability, recognize their poor quality before they get the chance to issue equity once again. Variables used as proxies for high quality are dividend yield within the first two years, earnings per share in the first year of trading and the companies' age. Additionally, the linear regression analysis was controlled for the bubble period by using a dummy variable analogously to the one in the former model.

Results

Information Asymmetry Model

Findings of the first model suggest prestigious underwriters to be able to decrease information asymmetry surrounding a company when going public. Underwriters seem to be better capable of accurately pricing new issues, hence decrease the extent of underpricing and the magnitude of first-day return volatility. The average underpricing of the group of less prestigious underwriters is 13.47% as opposed to 5.79% for the prestigious underwriters group. The *t*-statistic of difference is 1.794 and therefore significant at the 90% confidence level. Furthermore, significant results were found for the difference of the long-run performance for the two groups of underwriters. The three-year excess return for the less prestigious group was found to be -20.76% as opposed to an positive excess return of +5.77% for the prestigious group. The *t*-value of the difference for that test was 1.709 and is therefore also valid at the 90% confidence interval.

In line with expectations was the finding that during the bubble period underpricing was significantly higher, averaging at 14% as opposed to 5.4% for non-bubble periods. Furthermore, dispersion of first-day return was allocated as the model proposed, i.e. it was much higher during the bubble with standard deviation of 25.25% opposed to 10.34% for non-bubble periods. The hypothesis that long-run performance is worse for IPOs conducted during the bubble period had to be rejected, with *t*-values of the difference being at 1.20 for two year excess returns and 0.95 for three-year excess returns.

However, the average long-run excess return from the complete data set is insignificantly low and the hypothesis of long-run performance on average is therefore rejected.

Additionally, two variables have yielded marginally insignificant results, companies' age and the technology dummy. Contrary to anticipation, the age variable, which was assumed to decrease information asymmetry respectively underpricing, yielded a positive correlation, meaning that with increasing age underpricing increases as well. The following signaling model suggests age to have that correlation, which provides the opportunity to further test the validity of the variable. The technology dummy variable is in line with expectations yielding a positive relationship to the extent of underpricing, i.e. high-tech companies tend to be more underpriced than others due to higher associated information asymmetry.

Overall, this model seems to have some validity and explanatory power. However, it can only partially explain the extent underpricing takes and the long-run performance a stock yields. R^2 of the multilinear regression takes the value of 0.160, which shows that there still is a lot of research feasible. Evidence for the asymmetric information hypothesis was found and therefore not rejected.

Signaling Hypothesis

Results for the signaling model do not carry as much explanatory power as the previous model. In line with expectations, the bubble period dummy is significantly positive. However, other than that, none of the variables reached the critical t-value of 1.64. Marginally insignificant results were found for the dividend yield respectively the dividend dummy, proposing the exact opposite of what the model predicted, i.e. higher dividend payments followed lower underpricing. A possible explanation can be seen in that it must not necessarily be optimal for high quality firms to distribute dividends shortly after their IPOs. High-growth firms for instance often have numerous very promising projects in their pipeline, which need financing to ensure further growth and maximization of shareholders' investment. This model associates high age of companies as a quality sign, which implies higher underpricing. Recall from the previous model that the age variable did yield a slightly insignificant positive relationship between age and underpricing. The linear regression analysis reveals the same result with a *t*-value below the critical value, but with a positive relationship. However, it is not sufficient to support the model. Hence, no evidence for the validity of the signaling model is found for Swiss IPOs between 1997 and 2006 and the hypothesis rejected.