

Characteristics of Initial Public Offerings in Hot Markets

Dr. Ricardo Tovar-Silos

Abstract

In this paper, we provide a characterization of IPOs in the two regimes High Volume-Low Underpricing and High Volume-High Underpricing generally identified as “hot IPO markets”. We concentrate our analysis in a group of variables that have been related in the IPO literature to the level of asymmetry of information surrounding an offering. These variables are: age of the issuing firm at the time of the IPO, size of the offering, offering price, price update and the presence of venture capital prior to the IPO. Our findings indicate that IPOs from these two regimes do only differ in terms of the variables price update and size of the offerings, with the levels of these variables being greater in the regime High Volume-High Underpricing commonly associated to investor sentiment.

Keywords: Initial public offerings, IPO, underpricing, hot markets

JEL: C52, G24, G32, E22, E32

I. Introduction

Generally speaking, hot IPO markets have been described in the literature as having an unusually high volume of offerings, frequent oversubscription of offerings and (at times) concentrations in particular industries.

In Tovar-Silos (2015), we used the dating abilities of the Hamilton filter in the context of a bivariate regime-switching model to provide an objective identification of periods of heightened issue activity at the industry level characterized by either a high or a low level of underpricing. In particular, we identified four different regimes: Low Volume-Low Underpricing, High Volume-Low Underpricing, Low Volume-High Underpricing and High Volume-High Underpricing. We presume that the regime High Volume-Low Underpricing corresponds to a “hot market” that appears as a consequence of a reduction in the level of asymmetry of information whereas the regime High Volume-High Underpricing corresponds to a “hot market” that appears as a consequence of an increase in the level of investor sentiment. The main contribution of this paper is to provide a characterization of IPOs in the two regimes associated to “hot markets”. We concentrate our analysis in a group of variables that have been related in the IPO literature to the level of asymmetry of information surrounding an offering. These variables are: age of the issuing firm at the time of the IPO, size of the offering, offering price, price update and the presence of venture capital prior to the IPO. We try to achieve our goal by testing for differences in the mean level of each variable in the regime High Volume-Low Underpricing and in the regime High Volume-High Underpricing at the industry level. The remainder of this paper is organized as follows: Section I describes the data and sample selection. Section II compares the characteristics of IPOs in “hot markets” characterized by either a low level of underpricing or a high level of underpricing by using a difference in means test and Section III concludes.

II. Data and Sample Selection

The IPO dataset was obtained from the Field –Ritter dataset of company founding dates. This dataset contains the founding dates, CRSP permanent IDs, the first day of trading on CRSP, and



the company names for 8,267 firms that went public in the U.S. during 1975-2005 and were subsequently listed on CRSP. Because we are interesting in an industry level analysis we also obtained the two-digit industry classification of each firm issuing an IPO from COMPUSTAT. The data on the characteristics of IPOs was obtained from different sources. Information on issue size, offering price and whether the firm received venture capital prior to the offering are obtained mainly from Thomson Financial Securities Database and Standard and Poor's Research Insight. For underwriter prestige ranking, we use Loughran and Ritter's (2004) ranks. Original filing price information used to calculate the price update comes from Thomson Financial Securities Data and the age of the company at the time of the IPO was obtained from the information on company founding dates found in the Field-Ritter IPO dataset.

Characterization of IPOs in the Regimes High Volume-Low Underpricing and High Volume-High Underpricing

A. Underwriter Rank

Expected Relation between Underwriter Rank and Underpricing

Highly ranked underwriters can successfully decrease the amount of information asymmetry surrounding an offering suggesting a negative relation between rank and underpricing (Carter and Manaster (1990) and Michaely and Shaw (1994)). By agreeing to be associated with an offering, prestigious underwriters "certify" the quality of the issue.

The empirical results on this relation are mixed. Studies using data from the 1970s and 1980s, have found a negative relation between underwriter reputation and initial returns. Carter and Manaster (1990) provide a ranking of underwriters based on their position in the advertisements in the financial press that follow the completion of an IPO. This ranking is widely used in the empirical IPO literature. Underwriters with rank of 8.0 to 9.0 are considered to be prestigious national underwriters.

Beatty and Welch (1996), who use data from the 1990s, found that the sign of the relation has flipped since the 1970s and 1980s, such that more prestigious underwriters are now associated with higher underpricing. One hypothesis about the causes of the shift given by Loughran and Ritter (2004) is that issuers increased focus on analyst coverage rather than pricing implies that issuers are willing to accept lower offer prices to obtain the best analyst coverage suggesting a positive relation between underpricing and rank.

In the context of our bivariate regime-switching model, we would expect the mean underwriter rank to be higher during the regime High Volume-Low Underpricing than during the regime High Volume-High Underpricing (associated to a high level of investor sentiment) if underwriter rank is associated to a lower level of asymmetry of information. If Ritter's hypothesis about IPOs favoring analyst coverage instead of pricing is correct then we would expect the opposite relation.

Results

Table I shows the mean underwriter rank of issuing firms classified according to industry and to the regime under which the IPO occurred (High Volume-Low Underpricing or High Volume-High Underpricing). Underwriter rank is the average Carter-Manaster (1990) ranking score.



For manufacturing industries (Chemicals, Industrial Machinery and Equipment, Electronic Equipment and Instruments) we do not find a statistically significant difference in the average ranking of their underwriters between the two regimes High Volume-Low Underpricing and High Volume-High Underpricing, with the exception of Electronic Equipment. We conclude that there is no statistically significant difference in the mean underwriter rank between the IPOs that occurred either on the High Volume-Low Underpricing regime or the High Volume-High Underpricing. It seems that underwriter rank is not a characteristic that reduces the level of asymmetry of information because its mean value is the same in periods where investor sentiment is high and in periods where underpricing is low. For the Electronic Equipment we found that the mean underwriter rank in the regime High Volume-High Underpricing is greater than in the regime High Volume-Low Underpricing. This relation is inconsistent with the hypothesis that an underwriter with a higher ranking reduces the level of asymmetry of information but it is consistent with the idea that when signaling is not needed (because investor sentiment is high) a higher underwriter rank is desirable to obtain the best analyst coverage.

In the case of the services industries (Depository Institutions and Business Services) the results are mixed. In the case of Depository Institutions we find that there is no significant difference in the mean underwriter rank between the two regimes whereas for the Business Services industry we find that underwriter ranking is statistically greater in the state High Volume-High Underpricing. Just as in the case of the Electronic Equipment industry, this finding is inconsistent with the hypothesis that a higher underwriter rank reduces the level of asymmetry of information but it is consistent with Ritter's hypothesis of analyst coverage emphasis. This explanation seems plausible for the case of the internet companies because of their desire of greater media exposure. Note also that the mean level of underwriter rank for all industries in both regimes is always less than 9 and it is greater than 8 for only three industries and during the regime High Volume-High Underpricing which seems to support Ritter's hypothesis.

B. Price Update

Expected Relation between Price Update and Underpricing

Price Update is the percentage change between the offer price and the midpoint of the range of prices in the prospectus. It is a proxy for the amount of learning that occurs during the registration period. It is expected that substantial learning is more likely to occur in firms that are subject to more information asymmetry. According to this hypothesis we would expect a positive relation between the price update and the level of asymmetry of information surrounding an IPO. In the context of our model we would expect that the mean price update to be higher during the regime High Volume-High Underpricing than during the regime High Volume-Low Underpricing.

Results

Table I shows the mean price update of issuing firms classified according to industry and to the regime under which the IPO occurred (High Volume-Low Underpricing or High Volume-High Underpricing).

For all industries with the exception of Depository Institutions, we find that the mean price update is lower (and very close to zero) in the regime High Volume-Low Underpricing than in

the regime High Volume-High Underpricing which is consistent with the hypothesis that when the level of asymmetry of information is relatively low the amount of learning during the registration period is also low. During periods when the level of investor sentiment is high we find that the mean price update is positive and large. We presume that this is due to the amount of learning during the registration period but also we hypothesize that firms seem to recognize that the demand for their shares is larger than expected and that investors are willing to pay higher prices and they take advantage of this “window of opportunity” and update the offering price accordingly. It seems puzzling that even though issuing firms update the offering price, the underpricing is still very high and a large amount of money is “left on the table”. Note also that the price update in the regime High Volume-High Underpricing is far from being homogeneous across firms and has a large variability. It can be as large as 50% and 42% for the Chemicals and Business Services industries respectively.

C. Age of the issuing firm at the time of the initial public offering

Expected Relation between Age and Underpricing

The age of the issuing firm is defined as the number of years since the firm was founded at the time of the IPO. According to the IPO literature, it is expected that the level of asymmetry of information surrounding an IPO from a young firm to be higher than from an older firm. We expect the mean age of IPOs in the regime High Volume-Low Underpricing to be higher than in the regime High Volume-High Underpricing.

Results

Table I shows the mean age of issuing firms classified according to industry and to the regime under which the IPO occurred (High Volume-Low Underpricing or High Volume-High Underpricing).

We do not find a statistically significant difference in the mean age of companies between the regimes High Volume-Low Underpricing and High Volume-High Underpricing in the case of the manufacturing industries and Depository Institutions. Only in the case of the Business Services industry (that includes the internet companies) we do find a statistically significant difference. Overall, issuing firms from the Business Services industry are younger in the regime High Volume-High Underpricing (5.8 years) than in the regime High Volume-Low Underpricing (8.7 years) which is consistent with the IPO literature. Note also that for depository institutions the mean age is very high (52.2 years in the regime High Volume-High Underpricing and 51.2 in the regime High Volume-Low Underpricing).

D. Size of the Offering and Offering Price

Expected Relation between Size of the Offering and Underpricing

The IPO literature suggests that there is less information available for smaller offerings, predicting that information asymmetry will be greater for such issues. We define size of the offering by the number of offered shares. In the context of our bivariate regime-switching model, we expect the mean size of offerings to be higher in the regime High Volume-Low Underpricing than in “hot markets” caused by an increase in investor sentiment (i.e. regime High Volume-High Underpricing).

Results

Table I shows the mean size of the offering and offering price of issuing firms classified according to industry and to the regime under which the IPO occurred (High Volume-Low Underpricing or High Volume-High Underpricing).

We find that the mean size of the offerings in the regime High Volume-High Underpricing is significantly greater than the mean size of the offerings in the regime High Volume-Low Underpricing for all industries which is inconsistent with the IPO literature. We hypothesized that firms seem to recognize periods of high investor sentiment and know about the willingness of investors to pay high prices for IPOs. In order to take advantage of this irrational behavior, issuing firms increase the size of the offering for the same reason that they update the offering price to raise more money. We also tested for differences in the mean offering price in the two regimes and we found that the mean offering price of IPOs from manufacturing industries and Business Services in the regime High Volume-Low Underpricing is lower than in the regime High Volume-High Underpricing (though this relation was only statistically significant for Chemicals, Electronic Equipment and Business Services). We interpret this result as being consistent with our hypothesis that whenever investor sentiment is high issuing firms increase the size of the offering and also charge higher offering prices.

E. Venture Capital

Expected Relation between Venture Capital and Underpricing

It has been suggested (see Gompers and Lerner (1999) and Megginson and Weiss (1991)) that since venture capitalists have better knowledge in particular industries, they are expected to make superior investments relative to other investors. Basically, venture capitalists certify the quality of an IPO and their presence signals that asymmetric information is relatively low for this issue. If this hypothesis is correct we expect to find a higher proportion of issuing firms receiving venture capital prior to the IPO in the regime High Volume-Low Underpricing.

However, Lerner (1994) documents that venture capitalists are experts at timing the market and wait until investor sentiment levels are high before taking firms public. If this hypothesis is correct we expect a larger proportion of firms being backed by venture capital in the regime High Volume-High Underpricing.

Results

Table I shows the mean proportion of issuing firms that received venture capital prior to the IPO, classified according to industry and to the regime under which the IPO occurred (High Volume-Low Underpricing or High Volume-High Underpricing).

Our results indicate that there is no significant difference in the proportion of firms that received venture capital prior to the IPO between the two regimes in the case of the manufacturing industries, with the exception of Electronic Equipment. The proportion of issuing firms that received venture capital is 0.72 in the regime High Volume-High Underpricing and 0.45 in “hot markets” characterized by a low level of underpricing. This finding is consistent with Lerner’s hypothesis that venture capitalists are experts at timing the market and wait until sentiment levels are high before taking firms public.

It is interesting that only a very small proportion of IPOs from Depository Institutions received venture capital (5% and 2% on each of the two regimes) and that the difference is not significant between regimes.

In the case of the Business Services industry we find that the proportion of firms that received venture capital is higher in the regime High Volume-High Underpricing (0.73) than in the regime High Volume-Low Underpricing (0.48) a result that, as in the case of the Electronic Equipment industry, supports Lerner's hypothesis.

III. Conclusions

In this paper we provided a characterization of IPOs at the industry level for the two regimes High Volume Low Underpricing and High Volume-High Underpricing. Our main conclusions are the following:

- 1) There is no statistically significant difference in the underwriter rank of IPOs from all industries with the exception of Electronic Equipment and Business Services. For these two industries, underwriter rank is greater in the state High Volume-High Underpricing consistent with Ritter's hypothesis that issuing firms may accept a higher level of underpricing from prestigious underwriters if they can obtain the best analyst coverage.
- 2) For all industries with the exception of Depository Institutions, we find that the mean price update is lower (and not significantly different from zero) in the regime High Volume-Low Underpricing than in the regime High Volume-High Underpricing consistent with the hypothesis that the price update is a proxy of the level of asymmetry of information and is positively related to underpricing. We hypothesized that firms recognize that the demand for their shares is larger than expected and that investors are willing to pay higher prices so they take advantage of this "window of opportunity" and update the offering price accordingly.
- 3) Only in the case of the Business Services industry we do find a statistically significant difference in the age between the two regimes. Overall, issuing firms from the Business Services industry are younger in the regime High Volume-High Underpricing than in the regime High Volume-Low Underpricing consistent with the IPO literature.
- 4) We find that the mean size of the offerings in the regime High Volume-High Underpricing is significantly greater than the mean size of the offerings in the regime High Volume-Low Underpricing for all industries which is inconsistent with the IPO literature. We hypothesized that firms seem to recognize periods of high investor sentiment and know about the willingness of investors to pay high prices for IPOs so that they increase the size of their offering and the offering price in order to get the highest amount of consumer surplus.
- 5) Our results indicate that there is no significant difference in the proportion of firms that received venture capital prior to the IPO between the two regimes for all industries the exception of Electronic Equipment and Business Services. For these two industries the proportion of firms that received venture capital is higher in the regime High Volume-High Underpricing than in the regime High Volume-Low Underpricing consistent with Lerner's hypothesis.

References

- Beatty, Randolph P., and Ivo Welch, 1996, Issuer Expenses and Legal Liabilities in Initial Public Offerings, *The Journal of Law and Economics* 39, 545-602.
- Carter, Richard B., Dark, Frederick H., and Ajay K. Singh, 1998, Underwriter Reputation, Initial Returns, and the Long-run Performance of IPO Stocks, *The Journal of Finance* 53, 285-311.
- Carter, Richard, and Steven M., 1990, Initial Public Offerings and Underwriter Reputation, *The Journal of Finance* 45, 1045-1067.
- Gompers, Paul, and Josh Lerner, 1999. The Venture Capital Cycle (MIT Press Cambridge).
- Meggison, William L., and Kathleen A. Weiss., 1991, Venture Capitalist Certification in Initial Public Offerings, *The Journal of Finance* 46, 879-904.
- Lerner, Joshua, 1994, Venture Capitalists and the Decision to Go Public, *Journal of Financial Economics* 35, 293-316.
- Loughran, Tim, and Jay Ritter, 2004, Why Has IPO Underpricing Changed Over Time, *Financial Management* 33, 5-37.
- Michaely, Roni, and Wayne H. Shaw, 1994, The Pricing of Initial Public Offerings: Tests of the Adverse Selection and Signaling Theories, *The Review of Financial Studies* 7, 279-319.
- Tovar-Silos, Ricardo S., 2015, Identification of Hot IPO Markets using a Bivariate Regime Switching Model, *International Journal of Business Accounting and Finance* 9, 70-89.

Table I. Test of the Difference in Means of Characteristics of IPOs

Characteristic	Industry	High Vol-Low Up	High Vol-High Up	t-statistic
Rank	Chemicals	7.2	6.0	1.09
	Industrial Machinery and Equipment	6.8	8.0	-1.73
	Electronic Equipment	7.1	8.2	-3.84**
	Instruments	6.8	7.6	-1.82
	Depository Institutions	7.5	7.3	0.34
	Business Services	7.2	8.1	-6.39**
Price Update	Chemicals	-0.07	0.5	-4.11**
	Industrial Machinery and Equipment	-0.01	0.18	-2.3**
	Electronic Equipment	0.001	0.25	-3.21**
	Instruments	-0.001	0.05	-2.95**
	Depository Institutions	-0.08	-0.04	-1.75
	Business Services	0.06	0.42	-9.2**
Age	Chemicals	9.58	5	0.63
	Industrial Machinery and Equipment	12.35	19.71	-0.78
	Electronic Equipment	11.6	9.72	0.51
	Instruments	9.1	8.7	0.16
	Depository Institutions	52.2	51.2	0.15
	Business Services	8.7	5.8	5.21**
Shares (millions)	Chemicals	3.4	4.5	-3.4**
	Industrial Machinery and Equipment	2.8	7.6	-2.2**
	Electronic Equipment	4.8	5.7	-2.3**



DOI: 10.0612/article-4

	Instruments	2.6	4.9	-5.28**
	Depository Institutions	2.3	2.5	-2.3**
	Business Services	3.6	4.8	-3.69**
Offering Price	Chemicals	11.3	17.2	-2.6**
	Industrial Machinery and Equipment	11.4	16.9	-1.4
	Electronic Equipment	11.7	15.4	-2.8**
	Instruments	11.4	12.8	-1.7
	Depository Institutions	11.4	10.6	1.3
	Business Services	12.5	16.8	-7.9**
Venture Capital	Chemicals	0.64	0.57	0.058
	Industrial Machinery and Equipment	0.47	0.57	-0.49
	Electronic Equipment	0.45	0.72	-2.7**
	Instruments	0.55	0.72	-1.19
	Depository Institutions	0.05	0.02	0.88
	Business Services	0.48	0.73	-5.73**

** Statistically Significant (5%)

Author

Dr. Ricardo Tovar-Silos

Department of Information Systems and Analysis, College of Business Administration, Lamar University, Beaumont, Texas, ricardo.tovar-silos@lamar.edu

