Orphan versus non-orphan IPOs: the difference analyst coverage makes

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Numerous articles in academic journals or in the press have highlighted the importance of financial analysts' coverage of firms that are going public. Newly public firms rely on their underwriters throughout the IPO process, especially during the marketing phase. The underwriters' services include determining the offering price and the distribution of shares, but what is of particular importance for the issuer is receiving coverage through their financial analysts. During the IPO, investors are limited to information contained in the prospectus. As a result, the flow of information is restricted and sparse. Financial analysts can reduce these asymmetries. Indeed, coverage can transcend borders and financial markets and put the firm in the spotlight. Coverage is seen to add value by the firm because it can generate publicity, attract new consumers (Cliff and Denis, 2004), boost the share price (Chen and Ritter, 2000; Aggarwal et al., 2002), attract new investors, and reduce the cost of capital. However, coverage is not uniformly distributed and is mainly concentrated on large firms (as measured by their market capitalization). In the mid-2000s, 50 per cent of IPO firms were covered by a financial analyst and 35 per cent had no coverage[1]. Newly public firms often suffer from lack of analyst coverage even though it is widely accepted that, because coverage adds value, the allocation of resources to attract such coverage is a worthy investment.

This paper addresses the resources at the disposal of IPO firms to attract financial analysts. We examine the long-run performance of orphan and non-orphan IPOs to explain what value has to be attributed to analyst coverage. We are interested in the added value of analyst coverage, making relevant distinctions between orphan IPO

firms (those without analyst coverage within 5 years of their issuance) and non-orphan IPO firms (those with analyst coverage within 5 years of their issuance). This paper addresses the question of the importance of analyst coverage for the long-run returns of IPO firms over the period from 1991 to 2010.

Over the years, academic research has noted the importance of analyst coverage. Krigman et al. (2001) suggested that the most important motivation for firms to switch underwriters between their IPO and a Seasoned Equity Offering (SEO) is to obtain additional and influential analyst coverage. Loughran and Ritter (2004) and Cliff and Denis (2004) argued that the underpricing of newly public firms is positively related to analyst coverage. According to Loughran and Ritter (2004), the average underpricing of IPOs was 7 per cent in the 1980s, which doubled to 15 per cent from 1990 to 1998, before jumping to 65 per cent during the internet bubble. Part of this increase can be attributed to analyst coverage, which has grown more important over the years. Bradley et al. (2003) showed that the number of managing underwriters in a syndicate is a good indicator of the coverage enjoyed by newly listed firms at the time of their IPOs. Corwin and Schultz (2005) examined the syndicates of 1638 IPOs and found evidence that each additional co-manager results in 0.8 additional analyst recommendations within 3 months of the IPO. Bradley et al. (2008b), however, did not find incremental coverage to be related to improved long-run performance. Bradley et al. (2004) focused on the 2-year post-issue performance (at the end of the IPO's quiet period) of IPOs that receive analyst coverage compared to those that do not. The authors found that orphans significantly underperformed compared to non-orphans during the period from 1996 to 1998.

Unlike Bradley et al. (2004), we analyse long-run performance from one to five years after the IPO. We measure the influence of analyst coverage on the long-run performance of IPO firms over a five-year horizon. We are then able to observe how long-run performance adjusts to analyst coverage. Our observation period is large and encompasses the period from 1991 to 2010. Our definition of an orphan IPO firm differs from that of Bradley et al. (2004) because the authors consider an IPO firm to be an orphan if "there is an absence of a research report/analyst recommendation at the end of the quiet period by at least one underwriter in the managing syndicate".

In US IPOs, during the one- to five-year horizon, we find a significant long-run abnormal performance by orphans (IPOs without analyst coverage) compared to non-orphans (IPOs with analyst coverage). For instance, by the fifth year after the IPO, buy-and-hold abnormal returns for orphans were a significant -52.95 per cent compared to -8.07 per cent for non-orphans, a difference that is statistically significant at the 1 per cent level. Further analysis reveals that this outperformance by non-orphans stems from high analyst coverage. Our results are robust after accounting for venture capital backing, underwriting syndicates, underpricing, institutional investor ownership, or operating performance variables.

The paper is organised as follows. We first discuss the existing literature. In the second section, we describe the methodology, data and sample statistics. The third section presents the findings, and the last section concludes the paper.

1. Literature review

Khorana et al. (2009) examine the consequences of the loss of coverage for a firm over the period from 1983 to 2004. They find that firms that lose all analyst

coverage are significantly more likely to get delisted. This study sheds light on the importance of analyst coverage for firms. To avoid such a situation, the firm may acquire the means to attract financial analysts during its IPO process. Previous studies have found that the underwriting syndicate and the presence of venture capitalists or institutional investors in the IPO, as well as underpricing, allow the firm to increase its probability of analyst coverage.

Krigman et al. (2001) reveal that changes in underwriters (between an IPO and an SEO) are made because the firm wants more reputable underwriters that will provide more coverage. The authors find that firms are more likely to make changes when analyst coverage is not to their liking. In addition, firms do not hesitate to allocate resources to improving their coverage. According to Ellis et al. (2005), almost 50 per cent of firms making an SEO change their lead underwriters. This change takes place not because of the reputation of the underwriter but for the coverage of analysts whose buy recommendation are often more favourable than those of their predecessors. Corwin and Schultz (2005) examine the underwriting syndicates of 1638 IPOs between 1997 and 2002 in the United States. They emphasise the importance of co-managers, stating that the addition of a co-manager to the syndicate increases analyst coverage within the 3 months after the IPO. Loughran and Ritter (2004) find that co-managers are included in syndicates exclusively to provide additional coverage.

The presence of venture capitalists in the IPO may encourage analysts to follow the firm. Several studies note a positive relationship between the presence of venture capitalists in the IPO and analyst coverage. Jain and Kini (2000) find that venture capitalists influence institutional investors, investment bankers and their analysts to ensure the success of the IPO process. This influence is the result of many interactions,

especially with underwriters. Gompers and Lerner (1997) estimate that approximately 25 per cent of venture capitalists have an affiliation with underwriters. A venture capitalist involved in an IPO can advise its underwriter and vice versa[1]. These types of interactions also arise between venture capitalists and financial analysts. Therefore, venture capitalists can attract underwriters and thus facilitate analyst coverage. According to Chemmanur and Loutskina (2006), the presence of venture capitalists in an IPO leads 0.22 more analysts to follow the firm.

Rajan and Servaes (1997) and Aggarwal et al. (2002) argue that underpricing attracts an analyst following. Cliff and Denis (2004) find that underpricing is positively related to analyst coverage. The authors empirically examine the assumption that firms attract analyst coverage through underpricing. They study 1050 firms conducting an IPO and an SEO between 1993 and 2000 and find a strong correlation between underpricing and the frequency and quality of post-IPO analyst coverage. A total of 94 per cent of highly underpriced firms receive initial analyst coverage compared to 84 per cent of minimally underpriced firms. The authors conclude that underpricing compensates, in part, for expected analyst coverage. James and Karceski (2006) note that IPO firms that have not benefited from analyst coverage are significantly less underpriced (average of 27 per cent) compared with those covered by financial analysts (average of 72 per cent) over the period from 1999-2000. Das et al. (2006) show that IPOs with low (high) analyst coverage exhibit underpricing close to 13 per cent (47 per cent) over the period from 1986 to 2000. In contrast, Bradley et al (2008a) do not establish any link between underpricing and analyst coverage following 683 IPOs from 1999 to 2000.

Ownership structure also affects analyst coverage. Bhushan (1989) and O'Brien and Bhushan (1990) find that the likelihood of analyst coverage is associated with the interests of institutional investors in the firm. The authors conclude that there is a positive relationship between institutional investor ownership and analyst coverage. Lang et al. (2004) and Boubaker and Labegorre (2008) indicate that analysts are reluctant to cover a firm managed by controlling family members. This is explained, in part, by the reliance of these firms on private communication channels rather than public disclosure, producing a poor informational environment.

2. Methodology, data and sample statistics

2.1 - Methodology:

The results of long-run performance studies are sensitive to methodological choices. We therefore present our results using two frequently used and recommended methodologies (Brav and Gompers, 1997; Barber and Lyon, 1997).

First, we use the calendar-time approach of Fama and French (1996). Their three-factor model assumes that the expected return on a portfolio in excess of the risk-free rate [$(ER_i) - R_f$] is explained by the sensitivity of its return to three factors: (i) the excess return on a broad market portfolio ($R_M - R_f$); (ii) the difference between the return on a portfolio of small stocks and the return on a portfolio of big stocks (SMB, small minus big); and (iii) the difference between the return on a portfolio of high-book-to-market stocks and the return on a portfolio of low-book-to-market stocks (HML, high minus low). Specifically, the expected excess return on portfolio *i* is,

$$E(R_i) - R_f = \alpha_i + \beta_i[\mathrm{E}(\mathrm{R_M}) - \mathrm{R_f}] + s_i\mathrm{E}(\mathrm{SMB}) + h_i\mathrm{E}(\mathrm{HML}) + \varepsilon_i,$$

where $E(R_i)$ is the monthly return on the IPO portfolio, R_f is the one-month Treasury bill rate, $E(R_M)$ is the monthly return on an equally weighted market portfolio of NYSE, AMEX, and NASDAQ stocks, E(SMB) is the difference between the returns on portfolios of small and big stocks (below or above the median), and E(HML) is the difference between the returns on portfolios of high and low book-to-market stocks (above and below the 0.7 and 0.3 fractiles of book-to-market ratios).

Second, we use an event-time approach, as in the study of Brav and Gompers (1997). Fama and French (1992, 1993) have shown that the size and book-to-market portfolios are important determinants of the cross section of stock returns. We compare the performance of IPOs with that of size and book-to-market portfolios. Starting in January 1991, we use all NYSE, AMEX, and NASDAQ stocks to create size quartile breakpoints with an equal number of firms in each size quartile. Size is measured by the number of shares outstanding multiplied by the stock price at the end of the preceding month. The monthly book-to-market data for each firm are extracted from the Datastream database. Within each size quartile, we create four book-to-market portfolios with an equal number of firms in each book-to-market quartile, resulting in 16 size and book-to-market portfolios. Equally weighted returns are calculated for each portfolio. To avoid comparing IPO firms with themselves, we eliminate IPO firms from the various portfolios for five years after their equity issues. Each issue is matched with its corresponding benchmark portfolio.

The Long-run performance is calculated using the BHAR methodology. The difference between a return on a buy-and-hold investment in the sample firm and the return on a buy-and-hold investment in a portfolio with an appropriate expected return (BHAR) is

$$BHAR_{it} = \prod_{t=1}^{\tau}[1 + R_{it}] - \prod_{t=1}^{\tau}[1 + E(R_{it})]$$

where R_{it} is defined as the month t simple return of a sample firm and $E(R_{it})$ is the month t expected return of the sample firm (that is, the return of firm i's benchmark over the same period).

Long-run buy-and-hold abnormal returns are positively skewed and this positive skewness leads to negatively biased t-statistics. Lyon et al. (1999) recommend the use of a bootstrapped skewness-adjusted t-statistic to eliminate this skewness bias.

2.2 Data and sample statistics

The data come from different sources. We first identify firms that went public from 1991 to 2010 in the Thomson Financial Securities Data Company (SDC) Common Stock Initial Public Offerings database. Consistent with prior studies, we eliminate IPOs that are classified as ADRs, REITs, and closed-end funds, along with offerings that have a file range midpoint of less than €8 and financial services IPO firms (SIC code 6000-6999). Our sample contains 1265 IPOs. Analyst data are collected from the First Call database.

Long-run performance is calculated using the Datastream monthly stock price database.

Table 1 presents descriptive statistics for our sample. Panel A shows the distribution of the IPO sample over the three sub-periods. Panel B provides the market capitalization of the IPOs in our sample at the end of the first month following the offering. Our sample offerings are substantially large in terms of market capitalization. We find that 63 per cent of our sample's IPOs raise $200 million or more and 25 per cent of the offerings have a capitalization ranging from $50 million to $200 million.

Panel C documents that the industry composition of our sample is well-distributed, with the greatest concentration, 17 per cent, being in the business services industry.

Insert Table 1

Table 2 shows descriptive statistics for orphan and non-orphan IPOs. There are 253 IPOs classified as orphans and 1012 classified as non-orphans. The long-term debt of non-orphans is higher than that of orphan IPOs (significant at the 1 per cent level using *w* and *t* tests). The average orphan raises $309.61 million in its IPO, compared to $1067.46 million for the average non-orphan. This difference is statistically significant at the 1 per cent level. Like prior research, analyst coverage increases according to firm size. We find no significant differences in venture capital backing between orphan and non-orphan IPOs over the entire period. Orphans are associated with more underwriting syndicates, with a mean of 6.86 managing underwriters, compared to 6.48 for non-orphans (the difference is statistically significant using a *w* test). There is a weak relationship between analyst coverage and underpricing. For instance, orphans have initial returns of 13.85 per cent compared to 15.53 per cent for non-orphans. Non-orphans are more underpriced than orphans and the difference is statistically significant at the 10% level using a *w* test. Non-orphans are associated with more institutional investor ownership than orphans. For instance, a mean of 73.89 per cent of the shares of IPOs with analyst coverage are held by institutional investors, compared to 31.74 per cent for orphan IPO firms. The difference is statistically significant at the 1 per cent level and is confirmed by both *t* and *w* tests.

Insert Table 2

3. Results

Table 3 shows that IPO firms in the US have statistically significant long-run returns over the entire period. The mean returns of IPOs range from 4.22 per cent over the first year after their offerings to -16.40 per cent over the five-year horizon. Over the period from 1991 to 1998, similar to Ritter and Welch (2002), we find that IPOs have, on average, no abnormal returns regardless of the considered horizon. We also calculate long-run performance using the Fama-French three-factor model. The parameter of interest in this regression is the intercept, alpha. A negative intercept indicates that after controlling for market, size, and book- to-market factors in returns, a sample firm performed worse than expected. Intercepts (alpha) are positive regardless of the considered period. The Fama-French model shows that investing in IPO portfolios leads to a statistically significant (at 1 per cent level) 0.78 per cent return per month over the entire period.

Insert Table 3

We now distinguish IPO firms according to the level of analyst coverage. The findings are reported in table 4. We find that market participants make a relevant distinction between orphan and non-oprhan IPO firms over the entire period (1991-2010). For instance, the three-year return of non-orphans is -1.17 per cent, compared to -18.09 per cent for orphan IPOs, and the difference is statistically significant at the 5 per cent level. These findings are confirmed over the five-year returns. The Fama-French model shows that investing an equal amount in non-orphan IPO portfolios provides a 0.91 per cent return per month, which is statistically significant (at the 1% level), compared to orphan IPO portfolios (monthly return of 0.11 per cent). The 1990s reveal

that the differences between orphan and non-orphan IPOs appear in the first year following the offering. It is worth noting that the one-year returns show the analysts' ability to predict the long-run performance before the disclosure of financial statements. At the time of the IPO, investors are limited to the material information contained in the prospectus, and informational asymmetries are particularly high. In the first year after the offering, the non-orphans exhibit positive abnormal performance, while the orphans exhibit no abnormal performance. The internet bubble period (1999-2000) demonstrates similar findings. The 2000s reveal the opposite result, meaning that orphan IPOs exhibit higher returns than non-orphan IPOs in the first year after their issues. The difference is statistically significant at the 5 per cent level (not confirmed by the calendar-time approach). This could be attributable to recent scandals involving financial analysts; as a consequence, analyst coverage may have become worth less to investors.

Insert Table 4

Venture capital affiliation, underwriting syndication, institutional investor ownership and underpricing have been shown to influence the long-run performance of IPO firms. Therefore, if there is a relationship between analyst coverage and long-run performance, it may be a manifestation of these variables. We investigate these potential relationships by focusing on each of them individually.

The results of venture capital (VC) affiliation are presented in table 5. We partition our sample into VC-backed IPOs and non-VC-backed IPOs. We find significant differences in the long-run performances of orphan and non-orphan VC-backed IPOs. Whatever the horizon and period considered, the long-run returns of non-orphan VC-backed IPOs outperform those of their orphan counterparts. The alpha of the

Fama-French model presents similar findings but the difference in returns is not statistically significant.

These results hold for non-VC-backed IPOs except in the 2000s, when investors paid no attention to analyst coverage.

Insert Table 5

From table 6, we can see that non-orphan IPOs with large underwriting syndicates (IPOs in which the number of managing underwriters is above the median are classified as 'large'; otherwise, they are classified as 'small') outperform orphan IPOs. The one-year returns of non-orphan IPOs with large underwriting syndicates are -1.05 per cent compared to -32.05 per cent for orphan IPOs with large underwriting syndicates over the period from 1991 to 2010. The 31.60 per cent difference is significant at the 1 per cent level. These results hold for three and five-year returns. An exception occurs during the past decade, when there is no difference between orphan and non-orphan IPOs with large underwriting syndicates. Panel B indicates that the difference between orphan and non-orphan IPOs with small underwriting syndicates is only statistically significant over a five-year horizon. However, we find that, over the period from 2001 to 2010, orphan IPOs with small underwriting syndicates exhibit better performances than their non-orphan counterparts during the first year after the issue. The difference of -25.52 per cent is statistically significant at the 5 per cent level (not confirmed by the calendar-time approach).

Insert Table 6

Table 7 shows that, over the entire period, highly underpriced non-orphan IPOs (IPOs with underpricing above the median level are classified as 'high'; otherwise, they

are classified as 'low') outperform their orphan counterparts over the one- and five-year horizons (the differences are statistically significant at conventional levels). The alpha of the Fama-French model identifies significant differences between orphan and non-orphan highly underpriced IPOs, with an average return of -0.08 per cent per month for orphans compared to an average of 0.82 per cent per month for non-orphans. The difference of 0.86 per cent per month is statistically significant at the 1 per cent level. We find no differences between the long-run returns of orphan and non-orphan minimally underpriced IPOs over the entire period. Hence, analyst coverage has investment value only for highly underpriced IPOs.

Insert Table 7

Once we account for ownership structure, table 8 shows that non-orphan IPOs with a high level of institutional investor ownership (IPOs with institutional investor ownership above the median level are classified as 'high'; otherwise, they are classified as 'low') outperform their orphan counterparts. The event-time approach indicates that the difference is statistically significant regardless of the considered horizon. However, in the 2000s, this difference is only statistically significant over a five-year horizon. Globally, these results hold for IPOs with a low level of institutional investor ownership.

Insert Table 8

In summary, these findings suggest that investors and market participants pay attention to analyst coverage when IPOs have large underwriting syndicates and are highly underpriced. The differences between orphans and non-orphans persist in VC-backed and non-VC-backed IPOs and whatever the ownership structure of the IPOs

(that is, those with a high versus low level of institutional investors). The 2000s reveals that the differences between orphan and non-orphan IPO firms are diminishing.

Next, we investigate the characteristics of analyst coverage by determining the number of financial analysts providing coverage. Numerous studies have documented a positive relationship between the coverage number and the subsequent short- and long-run performances (Bradley et al., 2003; Das et al., 2006). These findings are reported in table 9. We find that IPOs with a high level of coverage (those with a coverage number above the median level are classified as 'high'; otherwise, they are classified as 'low') perform better than IPOs with low coverage from three to five years after the IPO date. For instance, from 1991 to 2010, the five-year returns of IPOs with high coverage are 10.30 per cent compared to a -29.88 per cent for IPOs with low coverage. This difference is statistically significant at the 1 per cent level. This result holds for the 1990s and the 2000s.

Insert Table 9

To verify that the univariate results presented in tables 4 through 9 are robust in a multivariate setting, we report our regression model in able 10. The dependent variable in the regression is the long-run performance of IPOs, as determined by the BHARs over one, three, and five years. As Bradley et al. (2008b) note that a common oversight in examining analyst coverage is the endogenous problem between performance and analyst coverage. That is, the quality of an IPO is slowly revealed to the public through financial statements and other public sources after it has been issued. Therefore, other savvy investors could have predicted the long-run IPO performance.

The analysts may just be jumping on the bandwagon when information is provided by other sources, such as financial statements. Our research model overcomes this obstacle. Table 10 reports our regression results (corrected for heteroscedasticity and multicollinearity). We use a 2SLS regression model to account for the endogenous problem (i.e., that the more valuable firms would likely attract more analysts). The coverage variable is endogenous, and we use instrument variables such as trading volume and intangibles that are known to influence analyst coverage but not long-run performance (Bhushan, 1989; O'Brien and Bhushan, 1990; Barth et al., 2001). The results of our model are statistically significant and it helps to explain the long-run performance of US IPOs.

We find non-orphan IPOs to be positively and significantly related to long-run performance over the five-year horizon, which is broadly consistent with the univariate analysis results given in table 3. This finding reveals that market participants do not fully incorporate the perceived value of analyst coverage. Both the syndicate and operating performance variables explain a significant component of the long-run IPO performance regardless of the considered horizon. The other variables (such as underpricing, VC backing and institutional investors) fail to explain the long-run performance of US IPOs over the period from 1991 to 2010.

Insert Table 10

4. Conclusion

We examine the long-run performance of US IPOs carried out between 1991 and 2010 and find that the IPOs in our sample performed negatively relative to the comparison portfolio over this period, but this result varies substantially across sub-

periods. We compare the long-run performance of firms that do not receive analyst coverage (orphans) to those that do (non-orphans). This abnormal long-run performance is considerably more severe for orphan IPOs than for non-orphan IPOs given a three- to five-year horizon. The evidence suggests that analyst coverage is indeed important to the issuing firm but the market does not fully incorporate the perceived value of this coverage. Once we control for other characteristics that have been shown to influence the long-run performance of IPOs, we find that investors and market participants pay attention to analyst coverage when IPOs have large underwriting syndicates and are highly underpriced. The difference between orphans and non-orphans persists in VC-backed and non-VC-backed IPOs, and whatever the ownership structures of the IPOs. Notably, however, the 2000s reveals that the difference between orphan and non-orphan IPO firms is diminishing. This trend may be attributable to scandals affecting analyst coverage, as both regulators and the financial press have identified analyst research that had been tainted by conflicts of interest.

Finally, multivariate regression analysis establishes that analyst coverage is significantly related to the long-run performance of IPOs, contrary to the study of Bradley et al. (2008b).

Notes

1. “Pour un nouvel essor de l’analyse financière indépendante sur le marché français”, AMF, 2005.
2. Hoberg and Seyhun (2009) examine the collaboration between underwriters and venture capitalists in IPOs.

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Table 1: Description of the IPO sample

Panel A: Number of sample IPO firms by sub-period	
1991/1998	301
1999/2000	122
2001/2010	842

Panel B: Sample IPO firms classified by market capitalization (price * shares) at the end of the first month following the offering

Market capitalization, in millions USD	Per cent of sample	Number of IPOs
Less than $50	11.78	149
$50-$99.9	9.09	115
$100-$199.99	15.89	201
$200-$399.99	21.50	272
$400-$999.99	23.16	293
Greater than $1000	18.58	235
All IPO firms	100	1265

Panel C: Industry distribution of sample IPO firms, by two-digit SIC code

	SIC code	Per cent of sample	Number of IPOs
Business services	(73)	17	215
Chemicals and allied products	(28)	11.78	149
Electronic equipment	(36)	10.83	137
Instruments	(38)	7.19	91
Oil and gas	(13)	4.74	60
Industrial equipment	(35)	3.87	49
Communications	(48)	2.92	37
Electric services	(49)	2.77	35
Management and related services	(87)	2.53	32
Water transportation	(44)	2.45	31
Miscellaneous retail	(59)	2.06	26
Other industries	(various)	31.86	403
All IPO firms		100	1265

Table 2: Descriptive statistics of orphan and non-orphan IPOs from 1991 to 2010
This table provides characteristics of orphans and non-orphans. An orphan (non-orphan) is an IPO without analyst coverage (with analyst coverage). IPO is the number of issuing firms. AGE is the age in years of the issuing firm at the time of the offer. LONG-TERM DEBT represents all interest-bearing financial obligations in millions, excluding amounts due within one year, at the offering date. SIZE is the market capitalization in millions at the offering date. VC AFFILIATION is the percentage of firms that are affiliated with venture capitalists. UNDERWRITING SYNDICATE is the number of managing underwriters (lead plus co-managers). UNDERPRICING is the percentage difference between the close on the first day of trading and the offer price. INSTITUTIONAL INVESTORS is the percentage of shares held by institutional investors who hold 5% or more of the outstanding shares at the time of the offering. Student's parametric t-tests and Wilcoxon (w) non-parametric tests are presented to estimate whether the difference between sample distributions is statistically significant. *, ** and *** indicate significant differences at the 10%, 5% and 1% levels, respectively.

	Orphan	Non-orphan	t	w
IPO	253	1012		
AGE	17	23	1.2	0.2
LONG-TERM DEBT	129.63	431.17	2.6***	3.9***
SIZE	309.61	1067.46	2.7***	9.6***
VC AFFILIATION	5.95	38.51	-1.1	-1.1
UNDERWRITING SYNDICATE	6.86	6.48	-0.5	1.9**
UNDERPRICING	13.85	15.53	0.8	1.8*
INSTITUTIONAL INVESTORS	31.74	73.89	15.6***	11.8***

Table 3: Long-run performance of IPO firms

The long-run BHARs over the 12-, 36-, and 60-month returns are reported. Fama-French is the alpha of running the Fama-French (1993) three-factor regression model. Table presents 1265 IPOs made between 1991 and 2010. A bootstrapped skewness-adjusted *t*-test is used to estimate whether the BHAR or the alpha are statistically significant. *, ** and *** indicate significant differences at the 10%, 5% and 1% levels, respectively.

	1991-1998		1999-2000		2001-2010		1991-2010	
	Mean	*t-stat*	Mean	*t-stat*	Mean	*t-stat*	Mean	*t-stat*
BHAR (size & book-to-market adjusted)								
60-month returns	-12.94	-1.5	-56.13	-3.3***	-6.38	-1.4	-16.40	-3.5***
36-month returns	1.41	0.2	-36.09	-3***	-1.43	-0.5	-4.57	-1.5
12-month retunrs	5.85	1.5	-31.07	-3.3***	8.76	3.8***	4.22	2.2**
Fama-French								
Alpha	0.98	3***	1.47	1.7*	0.46	1.3	0.78	3.3***

Table 4: Long-run performance of orphan and non-orphan IPO firms from 1991 to 2010

Table 4 presents the long-run performance of orphan and non-orphan IPO firms over the period from 1991 to 2010. Long-run performance is computed as buy-and-hold abnormal returns over 12, 36, and 60 months. A bootstrapped skewness-adjusted *t*-test is presented to estimate whether the BHAR or the difference between sample distributions are statistically significant. *, ** and *** indicate significant differences at the 10%, 5% and 1% levels, respectively.

		Type of abnormal return							
	N	Size & book-to-market adjusted						Fama-French	
		BHAR60 (%)	*t-stat*	BHAR36 (%)	*t-stat*	BHAR12 (%)	*t-stat*	Alpha (%)	*t-stat*
Full sample: 1991 to 2010									
Orphan	253	-52.95	-5.1***	-18.09	-2.1**	5.31	1.2	0.11	0.4
Non-orphan	1012	-8.07	-1.7*	-1.17	-0.4	3.95	2**	0.91	3.9***
Difference		44.87	4.6***	16.92	2.3**	-1.35	-0.3	0.75	2.9***
1991 to 1998									
Orphan	52	-67.16	-3***	-14.57	-0.5	-11.12	-1.3	0.26	0.7
Non-orphan	249	-1.62	-0.2	4.74	0.7	9.39	2.3**	1.07	3.2***
Difference		65.54	3.7***	19.32	0.9	20.51	2.3**	0.53	1.2
1999 to 2000									
Orphan	22	-141.25	-4.1***	-72.35	-2**	-54.80	-2.1**	-0.55	-0.4
Non-orphan	100	-37.41	-2.1**	-28.11	-2.1**	-25.85	-2.6***	1.96	2.3**
Difference		103.84	3.2***	44.24	2.1**	28.95	2.4***	2.50	2.9***
2001 to 2010									
Orphan	179	-17.19	-1.5	-10.97	-1.5	17.47	3.6***	-0.01	-0.1
Non-orphan	663	-3.72	-0.8	1.22	0.4	6.40	2.6***	0.55	1.5
Difference		13.47	1.3	12.19	1.5	-11.06	-1.9**	0.56	1.8*

Table 5: Long-run performance of orphan and non-orphan IPO firms by an underwriting syndicate

Table 5 presents the long-run performance of orphan and non-orphan IPO firms by underwriting syndicate over the period from 1991 to 2010. Firms with a number of managers above the median level are classified as large, otherwise small. Long-run performance is computed as buy-and-hold abnormal returns over 12, 36, and 60 months. A bootstrapped skewness-adjusted *t*-test is presented to estimate whether the BHAR or the difference between sample distributions are statistically significant. *, ** and *** indicate significant differences at the 10%, 5% and 1% levels, respectively.

	Type of abnormal return							
	Size & book-to-market adjusted						Fama-French	
	BHAR60 (%)	*t-stat*	BHAR36 (%)	*t-stat*	BHAR12 (%)	*t-stat*	Alpha (%)	*t-stat*
Panel A: Large syndicate								
Full sample: 1991 to 2010								
Orphan	-115.61	-5.9***	-64.11	-2.6***	-32.65	-2.8***	0.22	0.5
Non-orphan	-16.20	-1.8*	-7.60	-1.5	-1.05	-0.3	0.97	2.5***
Difference	99.41	4.9***	56.52	3.9***	31.60	3.1***	0.50	1.2
1991 to 2000								
Orphan	-123.4	-5.6***	-69.57	-3.9***	-38.94	-2.4***	0.17	0.2
Non-orphan	-36.54	-2.1**	-20.16	-2.4***	-6.85	-1.2	1.65	2.5***
Difference	96.90	4.5***	49.41	3.6***	32.09	3.3***	1.1	1.5
2001 to 2010								
Orphan	-56.08	-0.3	-46.82	-0.5	-14.28	-0.8	0.20	0.3
Non-orphan	9.93	0.7	8.71	1.1	5.41	0.7	0.29	0.7
Difference	66.01	1	55.54	1.4	19.69	0.9	0.1	0.2
Panel B: Small syndicate								
Full sample: 1991 to 2010								
Orphan	-49.68	-2.1**	1.37	0.1	9.27	1.1	0.39	0.8
Non-orphan	3.15	0.4	8.28	1.5	2.61	1	1.00	4.3***
Difference	52.84	2.8***	6.90	0.4	-6.66	-0.7	0.55	1.2
1991 to 2000								
Orphan	-53.03	-1.9**	8.17	0.3	-8.45	-0.8	0.88	1.5
Non-orphan	5.06	0.5	13.21	1.4	6.39	1.5	1.28	3.8***
Difference	58.08	2.7***	5.03	0.2	14.84	1.4	0.34	0.7
2001 to 2010								
Orphan	-25.61	-0.1	-8.42	0.1	25.63	2.2**	-0.10	-0.1
Non-orphan	-3.14	-0.3	2.68	0.5	0.11	0.1	0.61	2**
Difference	22.47	1.2	11.11	0.6	-25.52	-1.9**	0.70	0.9

Table 6: Long-run performance of orphan and non-orphan IPO firms by underpricing

Table 6 presents the long-run performance of orphan and non-orphan IPO firms by underpricing over the period from 1991 to 2010. IPOs that are underpriced above the median level are classified as high, otherwise low. Long-run performance is computed as buy-and-hold abnormal returns over 12, 36, and 60-months. A bootstrapped skewness-adjusted *t*-test is presented to estimate whether the BHAR or the difference between sample distributions are statistically significant. *, ** and *** indicate significant differences at the 10%, 5% and 1% levels, respectively.

	Type of abnormal return							
	Size & book-to-market adjusted						Fama-French	
	BHAR60 (%)	*t-stat*	BHAR36 (%)	*t-stat*	BHAR12 (%)	*t-stat*	Alpha (%)	*t-stat*
Panel A: High underpriced								
Full sample: 1991 to 2010								
Orphan	-81.39	-3.6***	-28.40	-1.2	-13.56	-1.7*	-0.08	-0.2
Non-orphan	-5.42	-0.7	0.29	0.1	0.77	0.3	0.82	3.5***
Difference	75.97	4.3***	28.68	1.5	14.32	1.7*	0.86	2.4***
1991 to 2000								
Orphan	-79.58	-3.4***	-26.36	-0.8	-20.36	-1.9**	0.39	0.8
Non-orphan	-11.94	-1.2	-8.06	-1	-1.18	-0.3	1.13	3.5***
Difference	67.63	3.6***	18.29	0.9	19.18	2.1**	0.69	1.5
2001 to 2010								
Orphan	-105	-0.1	-35.98	-0.7	3.28	0.2	-0.54	-0.8
Non-orphan	12.15	1.2	10.15	2.1**	2.45	0.6	0.48	1.4
Difference	117.15	1.7*	46.14	1.1	-0.83	-0.1	0.99	1.7*
Panel B: Low underpriced								
Full sample: 1991 to 2010								
Orphan	-63.55	-2.3**	-44.98	-2.1**	-10.68	-0.8	-0.20	-0.3
Non-orphan	-10.18	-0.6	-3.70	-0.3	-4.17	-0.9	0.69	2.3**
Difference	53.36	1.6	41.28	1.6	6.51	0.5	0.95	1.5
1991 to 2000								
Orphan	-79.21	-2.7***	-31.79	-0.9	-24.91	-1.2	-0.23	-0.3
Non-orphan	-6.31	-0.3	13.76	0.8	4.96	0.5	0.81	1.7*
Difference	72.90	2**	45.55	1.5	29.87	1.6*	1.20	1.3
2001 to 2010								
Orphan	30.43	1.8*	-60.81	-1.9**	-0.64	-0.1	-0.37	-0.4
Non-orphan	-18.91	-0.8	-19.69	-2.3**	-9.41	-2.2**	0.45	1.2
Difference	-49.34	-1.3	41.12	1.7*	-8.77	-0.6	0.82	0.9

Table 7: Long-run performance of orphan and non-orphan IPO firms by venture capital affiliation

Table 7 presents the long-run performance of orphan and non-orphan IPO firms by venture capital affiliation over the period from 1991 to 2010. Long-run performance is computed as buy-and-hold abnormal returns over 12, 36, and 60 months. A bootstrapped skewness-adjusted *t*-test is presented to estimate whether the BHAR or the difference between sample distributions are statistically significant. *, ** and *** indicate significant differences at the 10%, 5% and 1% levels, respectively.

	Type of abnormal return							
	Size & book-to-market adjusted						Fama-French	
	BHAR60 (%)	*t-stat*	BHAR36 (%)	*t-stat*	BHAR12 (%)	*t-stat*	Alpha (%)	*t-stat*
Panel A: VC-backed IPOs								
Full sample: 1991 to 2010								
Orphan	-81.36	-3.1***	-30.96	-0.7	-26.70	-1.7*	0.27	0.5
Non-orphan	-15.45	-1.7*	-5.02	-0.7	4.13	0.9	1	2.7***
Difference	65.90	2.8***	25.94	0.9	30.83	2.3***	0.70	1.3
1991 to 2000								
Orphan	-87.15	-3***	-26.80	-0.5	-29.56	-1.4	1.05	1.3
Non-orphan	-20.82	-1.8*	-13.10	-1.3	-0.04	-0.1	1.75	3.8***
Difference	66.33	2.4***	13.70	0.4	29.52	2**	0.71	1.1
2001 to 2010								
Orphan	-23.39	-0.1	-51.73	-0.6	-12.43	-0.2	-0.41	-0.5
Non-orphan	2.32	0.2	12.34	1.3	13.09	2.3**	0.19	0.3
Difference	25.71	1.1	64.07	3.1***	25.52	1.2	0.60	0.7
Panel B: Non–VC-backed IPOs								
Full sample: 1991 to 2010								
Orphan	-87.05	-4.1***	-37.07	-2.2**	-17.42	-2.5***	-0.12	-0.3
Non-orphan	-0.01	-0.1	2.88	0.4	2.57	0.8	0.56	2.5***
Difference	87.04	4.4***	39.95	2.8***	19.99	2.9***	0.66	1.5
1991 to 2000								
Orphan	-90.57	-3.7***	-35.12	-2.3***	-20.39	-2.6***	-0.38	-0.8
Non-orphan	-4.38	-0.4	2.39	0.3	-1.26	-0.3	0.81	2.5***
Difference	86.19	4.4***	37.51	2.6***	19.12	2.5***	1.17	2.4***
2001 to 2010								
Orphan	-56.08	-0.4	-44.19	-0.5	-6.52	-0.4	0.10	0.1
Non-orphan	19.32	0.8	3.93	0.4	10.67	2.4***	0.28	0.9
Difference	75.40	1.1	48.12	1.2	17.20	1.1	0.18	0.2

Table 8: Long-run performance of orphan and non-orphan IPO firms by institutional investor ownership

Table 8 presents the long-run performance of orphan and non-orphan IPO firms by institutional investor ownership over the period from 1991 to 2010. Firms with a percentage of shares held by institutional investors who hold 5% or more of the outstanding shares at the time of the offering that is above the median level are classified as high, otherwise low. Long-run performance is computed as buy-and-hold abnormal returns over 12, 36, and 60 months. A bootstrapped skewness-adjusted *t*-test is presented to estimate whether the BHAR or the difference between sample distributions are statistically significant. *, ** and *** indicate significant differences at the 10%, 5% and 1% levels, respectively.

	Type of abnormal return							
	Size & book-to-market adjusted						Fama-French	
	BHAR60 (%)	*t-stat*	BHAR36 (%)	*t-stat*	BHAR12 (%)	*t-stat*	Alpha (%)	*t-stat*
Panel A: High institutional investor ownership								
Full sample: 1991 to 2010								
Orphan	-53.70	-1	-26.66	-1.9*	-13.32	-1.7*	1.11	1.1
Non-orphan	19.42	2.3**	18.07	3***	12.43	3.1***	1.56	3***
Difference	73.12	2.8***	44.73	3.2***	25.75	3.1***	0.45	0.4
1991 to 2000								
Orphan	-46.09	-0.7	-33.08	-1.8*	-18.24	-1.7*	1.35	1.3
Non-orphan	17.04	1.8*	11.95	1.6	9.25	1.8*	1.75	5.9***
Difference	63.13	2.2**	45.03	3.3***	27.49	2.9***	0.25	0.2
2001 to 2010								
Orphan	-95.51	-1.3	-6.49	-0.1	2.15	0.1	0.48	0.2
Non-orphan	30.53	1.5	39.71	3.3***	23.67	3.2***	0.93	0.8
Difference	126.05	2**	46.20	1.2	21.54	1.5	0.87	0.3
Panel B: Low institutional investor ownership								
Full sample: 1991 to 2010								
Orphan	-83.76	-7.4***	-42.65	-2.7***	-15.41	-2.6***	-0.63	-0.9
Non-orphan	-24.78	-2.1**	-5.19	-0.4	-9.40	-1.6	-0.05	-0.1
Difference	58.97	4***	37.47	2.6***	6.01	0.8	0.65	1.6
1991 to 2000								
Orphan	-84.69	-6.8***	-42.85	-2.2**	-18.24	-2.7***	0.08	0.2
Non-orphan	-30.83	-2.2**	-6.59	-0.4	-14.73	-1.9*	0.26	0.5
Difference	53.87	3.5***	36.25	2.1**	3.50	0.4	0.36	0.8
2001 to 2010								
Orphan	-71.62	-0.9	-41.45	-1.1	2.01	0.1	-1.93	-1.4
Non-orphan	4.42	0.2	-0.65	-0.1	7.79	1	-0.74	-0.6
Difference	76.05	1.4	40.80	1.3	5.78	0.4	1.19	1.5

Table 9: Long-run performance of non-orphan IPO firms based on analyst coverage from 1991 to 2010.

Table 9 presents the long-run performance of non-orphan IPO firms based on analyst coverage over the period from 1991 to 2010. Those with an amount of analyst coverage above the median level are classified as high, otherwise low. Long-run performance is computed as buy-and-hold abnormal returns over 12, 36, and 60 months. A bootstrapped skewness-adjusted *t*-test is presented to estimate whether the BHAR or the difference between sample distributions are statistically significant. *, ** and *** indicate significant difference at the 10%, 5% and 1% levels, respectively.

	Type of abnormal return							
	Size & book-to-market adjusted						Fama-French	
	BHAR60 (%)	*t-stat*	BHAR36 (%)	*t-stat*	BHAR12 (%)	*t-stat*	Alpha (%)	*t-stat*
Full sample: 1991 to 2010								
High coverage	10.30	1.8*	9.80	2.5***	5.46	1.8*	1.13	4.6***
Low coverage	-29.88	-4.6***	-14.77	-3.2***	2.14	0.9	0.74	2.6***
Difference	40.18	5.3***	24.57	4.3***	3.31	0.8	-0.39	-1.7*
1991 to 2000								
High coverage	12.16	1.2	16.01	2**	8.08	1.6	1.56	4.8***
Low coverage	-41.27	-3.4***	-29.96	-3.1***	-11.45	-2.2**	1.01	2.5***
Difference	53.44	4.1***	45.97	4.5***	19.52	2.9	-0.54	-1.5
2001 to 2010								
High coverage	8.10	1.2	5.61	1.3	4.06	1.1	0.63	1.7*
Low coverage	-17.29	-3.3***	-4.27	-0.8	9.19	3.1***	0.49	1.2
Difference	25.40	3.2***	9.87	1.4	-5.12	-1.1	-0.14	-0.6

Table 10: Cross-sectional regressions of long-run performance of IPOs from 1991-2010

The dependant variable is buy-and-hold abnormal return. *, ** and *** indicate that the coefficient is significantly different from 0 at the 10%, 5% and 1% levels, respectively, using Student's *t*-test. We use the 2SLS regression model. The instrumented variable is coverage. The instrument variables are trading volume and intangibles.

	BHAR 60 803 observations	BHAR 36 1076 observations	BHAR 12 1265 observations
Intercept	-0.909**	-0.148	0.108
Orphan	1.274**	0.118	-0.089
Syndicate	-0.461***	-0.192***	-0.070
Underpricing	-0.013	0.070	0.042
VC backing	-0.067	-0.060	-0.036
Institutional investors	0.003	0.076	0.095
Coverage	0.161	0.222*	0.034
ROA	-0.014**	-0.004	0.004
Asset turnover	-0.002**	-0.003***	-0.009
Sales	0.002***	0.004***	-0.004
Capital expenditures	-0.001	-0.001***	0.001
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes

Table 10 (Continued)

Definition of regression variables:

Orphan	Dummy variable equals 1 if IPOs have analyst coverage and 0 otherwise.
Syndicate	Dummy variable equals 1 if the number of managing underwriters is above the median level and 0 otherwise.
Underpricing	Dummy variable equals 1 if an IPO's initial return is above the median level and 0 otherwise.
VC backing	Dummy variable equals 1 if venture capitalists are affiliated with the IPO at the time of the offering and 0 otherwise.
Institutional investors	Dummy variable equals 1 if the percentage of shares held by institutional investors who hold 5% or more of the outstanding shares at the time of the offering is above the median level and 0 otherwise.
Coverage	Dummy variable equals 1 if the amount of coverage is above the median level and 0 otherwise.
ROA	Natural logarithm of the change in return on assets. The change is measured 1, 3 and 5 years after the IPO date.
Asset turnover	Natural logarithm of the change in asset turnover (sales divided by total assets) The change is measured 1, 3 and 5 years after the IPO date.
Sales	Natural logarithm of the change in sales. The change is measured 1, 3 and 5 years after the IPO date.
Capital expenditures	Natural logarithm of the change in capital expenditures The change is measured 1, 3 and 5 years after the IPO date.