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April 2012

The European Journal of Finance

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rejf20

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Available online: 25 Jun 2012

To cite this article: Romain Boissin & Patrick Sentis (2012): Long-run performance of IPOs and the role of financial analysts: some French evidence, The European Journal of Finance, DOI:10.1080/1351847X.2012.689773

To link to this article: http://dx.doi.org/10.1080/1351847X.2012.689773

The European Journal of Finance
2012, 1–25, iFirst

Long-run performance of IPOs and the role of financial analysts: some French evidence

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(*Received 26 January 2011; final version received 26 April 2012*)

This paper examines the long-run performance of French initial public offerings (IPOs) carried out between 1991 and 2005. Using various methodologies, we found that IPOs in our sample performed poorly relative to the comparison portfolios over the 1991–2005 horizon in contrast to that reported by prior studies of the French market. This abnormal long-run performance is more severe for orphan IPOs (those without financial analysts' recommendations) than for non-orphan IPOs the first year following the offerings (a statistically significant difference). In contrast to the widely held belief, this evidence suggests that analyst coverage is indeed not important to the issuing firm. Investors pay more attention to non-orphan IPOs when they are not book built, venture capital backed, underwritten by a large syndicate and less underpriced. Over the 1991–2005 period, an analyst's affiliation does not appear to matter. This result is inconsistent with the conflict of interest hypothesis. During the first year of issuance, analysts' recommendations are associated with the success of a newly public firm. However, once we extend the horizon to 3 or 5 years after the issuance, we can find that analysts' recommendations are not significantly related to the long-run performance of IPOs.

Keywords: initial public offerings; financial analyst; long-run performance

1. Introduction

The last decade of crisis has been turbulent for analysts' research. During the internet bubble period (1999–2000), the media and investors pressured analysts to focus on the 'hot' industries. In every bull market, there are excesses that become apparent in contrast with the subsequent bear market. Therefore, in 2001 (when the internet bubble burst), investors needed to blame somebody, and analysts were the scapegoats. Both regulators and the financial press have pointed out that the analysts' research was tainted by conflicts of interest, and the academic literature has revealed that analysts were biased towards providing favourable reports, to the detriment of their objectivity and reputation. From 1998 to 2001, an 'all-star' analyst issued 16 buy recommendations for Global Crossing. The stock was 61$ in 1999 and had collapsed to approximately 1$ in 2001, when the analyst finally revised his rating from buy to hold. Of the 10 firms that he covered, 5 traded below 1$ a share and 3 had filed for bankruptcy.

Based on this report, New York Attorney General Eliot Spitzer pointed out the performance of such recommendations during an institutional investor award dinner in 2002. 'These are the institutional investor awards, and thus reflect criteria important to institutional investors, who prize analysts' accessibility, their insights and their ability to uncover a valuable piece of information

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ISSN 1351-847X print/ISSN 1466-4364 online

http://dx.doi.org/10.1080/1351847X.2012.689773
http://www.tandfonline.com

about a company or sector, and their access to management. What these awards do not measure is the performance of analysts' buy, sell and hold recommendations'. '… The investing public is not aware that the awards don't reflect the performance of your stock recommendations'.

In this study, we investigate the role of financial analysts as interpreters and producers of information by examining whether their recommendations allow for the reduction of information asymmetry. Miller (1977) pointed out that as the information is revealed to the market, investors downgrade their expectations and support the long-run underperformance phenomenon. We expect that by reducing the information asymmetry, financial analysts' recommendations would help investors progressively define the true value of the firm. We focus on the long-run performance of French initial public offerings (IPOs) made between 1991 and 2005. To the best of our knowledge, this is the first study to investigate the link between the financial analysts' recommendations and the performance of French IPOs over the recent period.

Some French studies have found no abnormal long-run performance (see Degeorge and Derrien 2001). These findings suggest that the French market may be efficient. All the information may appear in the price, the market may not overprice or underprice certain types of offerings and the role of financial analysts may be unjustified. Our observation period is large and overlaps the so-called bubble period that was characterised by strong information asymmetry. We analyse the long-run performance from 1 to 5 years following the IPOs.

We measure the influence of the financial analysts' recommendations on the long-run performance of IPOs over a 5-year horizon. Thus, we are able to observe the adjustment of long-run performance to recommendation disclosures. We are interested in the added value of the analyst coverage, and we then make the relevant distinction between orphan IPOs (those without analyst coverage within 5 years of their issuance) and non-orphan IPOs (those with analyst coverage within 5 years of their issuance).This methodology differs from that of Bradley et al. (2008b), which focuses on the IPOs that received research coverage.

In contrast to previous studies, we found significant long-run underperformance exhibited by French IPOs over a 2- to 5-year horizon. This finding reinforces the importance of investigating the role of financial analysts in the long-run IPO performance puzzle, and it can be partly attributed to the inclusion of recent IPOs which underperform strongly.

Significant differences appear between the long-run performance of orphan and non-orphan IPOs. For example, buy-and-hold abnormal returns (BHARs) in the first year following an IPO are a significant −11.41% for orphans compared with an insignificant 4.29% for non-orphans (a difference that is statistically significant). Further analysis revealed that this outperformance exhibited by non-orphans stems from high coverage.

Finally, our results are robust after conditioning for venture capital backing, bookbuilding method, underwriting syndicate, underpricing, analyst affiliation or operating performance variables.

The paper is organised as follows. In Section 2, we analyse the existing literature to define our hypothesis. In Section 3, we describe the methodology, data and sample statistics. In Section 4, we present our findings, and in Section 5, we present the conclusions.

2. Prior literature and hypothesis development

2.1 *Can analyst coverage reduce the IPO underperformance phenomenon?*

Analysts' recommendations are valuable for several reasons. Analyst coverage can generate publicity for the IPO and increase firm value by generating more customers (Cliff and Denis 2004).

As Chen and Ritter (2000) and Aggarwal, Krigman, and Womack (2002) argued, recommendations can boost share price, which is important for insiders wishing to sell their shares at the end of the lock-up period. Academic research has pointed out the importance of analyst coverage over the years. Krigman, Shaw, and Womack (2001) suggested that the most important motivation for firms to switch underwriters between an IPO and a seasoned equity offering is obtaining 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% in the 1980s and doubled to 15% during 1990–1998, before jumping to 65% during the internet bubble. Part of this increase can be attributed to analyst coverage, which has become important over the years. Bradley, Jordan, and Ritter (2003) showed that the number of managing underwriters in a syndicate is a good indicator of both which firms are likely to have coverage and which firms will have multiple coverage. Corwin and Schultz (2005) examined syndicates for 1638 IPOs and found evidence that each additional co-manager results in 0.8 additional analyst issuing recommendations within 3 months of the IPO.

Many other variables have been shown to influence the long-run performance of IPOs. Brav and Gompers (1997) found that IPOs with venture capital backing outperform non-venture capital-backed IPOs. Venture capitalists provide potential future investment banking business to underwriters. Therefore, analysts make favourable recommendations to keep venture capitalists happy. Jain and Kini (2000) found that venture capital-backed IPOs are characterised by greater analyst coverage. Degeorge, Derrien, and Womack (2007) found that book-built issues were more likely to be followed and positively recommended by financial analysts. Their results show a clear link between the IPO method and analyst coverage. Rajan and Servaes (1997) and Aggarwal, Krigman, and Womack (2002) argued that underpricing attracts an analyst following. Bradley, Jordan, and Ritter (2003) and Corwin and Schultz (2005) found that having an underwriting syndicate is related to research coverage.

Das, Guo, and Zhang (2006) examined analyst coverage and found that unexpected analyst coverage is positively related to long-run performance. Bradley et al. (2008b) did not find incremental coverage to be related to improved long-run performance. Bradley et al. (2004) focused on the 2-year (at the end of the IPO's quiet period) post-issue performances of IPOs that receive analyst coverage and those that do not. The authors found that orphans significantly underperformed the non-orphans during the 1996–1998 period.

Despite the conventional wisdom that analyst coverage is crucial to an IPO, there is no systematic evidence for this conclusion. An examination of IPO firm performance with and without analyst coverage may explain what value has to be attributed to analyst coverage. If financial analysts reduce information asymmetry and help investors to progressively define the true value of a firm, then we hypothesise

H1: Non-orphan IPOs may have long-run performance that is superior to that of the orphan IPOs.

2.2 *The role of financial analysts*

2.2.1 Recommendations have investment value

Analysts both provide new information and interpret previously released information. Most prior studies have concluded that the information they produce promotes market efficiency by helping investors to more accurately value companies. One possible source of this value is the ability of analysts to collect information that is useful for identifying undervalued or overvalued stocks. An

analyst's report includes the collection and evaluation of information related to a firm's future performance. The analyst obtains information from various sources, including conference calls and other management communications, general assemblies and financial meetings, and reports describing macro-economic conditions. From this information, the analyst produces earnings forecasts, target price, and stock recommendations. Investors use these outputs to make trading decisions. Jegadeesh and Kim (2006) examined analysts' recommendations in the G7 countries and evaluated the value of these recommendations over the 1993–2002 period. The authors found that the frequencies of sell and strong sell recommendations (15.3%) in all the countries were far less than those of the buy and strong buy recommendations (46.9%). Using a sample of 1126 analysts' reports, Asquith, Mikhail, and Au (2005) documented that analysts rarely issue sell or strong sell recommendations. The authors showed that only 0.5% of the recommendations fall into these two categories. By contrast, 30.8% of the recommendations were classified as strong buy, 40% as buy, and 28.7% as hold. A reason for the lack of negative recommendations is that an analyst's salary and bonus are linked to his or her firm's underwriting fees or to the commissions generated by his or her recommendations. Furthermore, analysts rely on company management for information and thus have a reason for maintaining good relations with them. Barber et al. (2001) examined whether investors can profit from the analysts' recommendations and whether these recommendations remain valuable. Numerous studies have distinguished four types of recommendations: initiation, reiteration, upgrade, and downgrade. Initiation is defined as the first report that an analyst produces about a firm. Bradley, Jordan, and Ritter (2008a) showed that initiation of coverage occurs immediately after the end of the quiet period. Reiteration is defined as a restatement of a previously issued recommendation. Upgrades and downgrades are issued when analysts change their position on a stock that they are covering. The authors found that initiations, on average, elicit positive responses and that there is a large positive (negative) market reaction associated with upgrades (downgrades). According to Bagchee (2003), the strong response to both positive and negative revisions is not terribly surprising in the case of IPOs considering their newness and the lack of public information about them. This study has shown that downgrades are more likely to occur than upgrades. Irvine (2003) compared the return surrounding an analyst's initiation of coverage with the return surrounding a recommendation made by an analyst who has already covered the stock (a so-called continuation). Using a sample of 2128 analysts' recommendations over the year 1995, he found that the market responds more positively to analysts' initiations than to other recommendations. The market interprets analysts' initiation as a positive signal. According to Bradley, Jordan, and Ritter (2003), analysts almost always initiate coverage with a buy or a strong buy recommendation. This conclusion is consistent with that of Sayrak and Dhiensiri (2004), who found positive abnormal returns at the time of the initiations.

It appears like the analysts' recommendations add value for investors. Stock recommendations are costly for the analysts to provide. These costs include investigation costs and any reputation costs associated with incorrect recommendations. Finally, according to Houston, James, and Karceski (2006) and Brav and Lehavy (2003), the market believes that there is some information in the analysts' recommendations and the market gives some credence to their recommendations. If recommendations have investment value, then we hypothesise

H2: Non-orphan IPO performance may be associated with the nature of the recommendations.

2.2.2 The characteristics of financial analysts

All analysts do not have the same access to information. Affiliated analysts (analysts whose employer is a managing underwriter at the IPO) have superior access to information. As Jegadeesh

et al. (2004) noted, analysts recommend firms with past strong performances and firms waited to have good expectations.

It is widely noted that analysts face conflicts of interest.[1] Prior studies have documented two alternative hypothesis (Lin and McNichols 1998; Michaely and Womack 1999). Under the conflict of interest hypothesis, analysts may have to give positive recommendations to compete for future investment banking business, to generate trading commissions (Hayes 1998; Irvine 2004) or to maintain management relations and their access to the information (Francis and Philbrick 1993; Das, Levine, and Sivaramakrishnan 1998).[2] Under the non-strategic hypothesis, issuers choose underwriters who are optimistic about their prospects. Using a sample of 391 IPOs in the USA over the period 1990–1991, Michaely and Womack (1999) found that affiliated analysts' recommendations perform more poorly than unaffiliated analysts' recommendations (which is consistent with the findings of Iskoz (2003) and Houston, James, and Karceski (2006)). Affiliated analysts issue recommendations that are overly optimistic (positively biased), and these analysts may be compelled to issue more positive recommendations for firms that have traded poorly in the IPO aftermarket (consistent with the findings of James and Karceski (2006)). According to Chen (2004), even though the market reaction to favourable recommendations is less positive for affiliated analysts, long-run return analyses suggest that analyst affiliation is not significantly associated with long-run abnormal returns after recommendations.

Michaely and Womack (1999) reported some explanations to understand the affiliation bias. The first explanation holds that an affiliated analyst believes that the firms that he or she covers are better than the firms covered by other financial analysts. Therefore, he or she is not able to be objective and to accept that the firm that he or she recommends does not show exceptional profits. This explanation reveals an anchor (or overoptimism) bias.

The second explanation holds that an analyst is partly chosen because of the favourable views that he or she has about a firm. This choice reveals a selection bias in the form of a strategic choice assuring that the firm will have favourable recommendations. Dechow, Hutton, and Sloan (2000) examined long-term earnings growth forecasts for seasoned equity offerings and established a direct link between overoptimistic growth forecasts and post-offering underperformance. Rajan and Servaes (1997) found that in the long run, IPOs have better stock performance when analysts ascribe low growth potential rather than high growth potential. However, the authors did not explain underperformance as a consequence of overoptimistic growth forecasts.

Similar to Bradley, Jordan, and Ritter (2008a), we focused on the market's performance to recommendations made by affiliated and unaffiliated analysts. Affiliated recommendations may be associated with a more positive announcement effect than unaffiliated recommendations if the market views these analysts as having sufficiently superior information or expertise to more than offset any conflicts of interest.

H3a: Market performance to affiliated recommendations than to unaffiliated recommendations may be associated with a more positive announcement effect.

Affiliated recommendations may be associated with a less positive announcement effect than unaffiliated recommendations if the market views these analysts as having a greater conflict of interest that is not offset by superior information.

H3b: Market performance to affiliated recommendations than to unaffiliated recommendations may be associated with a less positive announcement effect.

Finally, there may be no difference in the announcement effects because the market is naïve about the differential conflicts of interest.

H3c: Market performance may make no announcement effect distinctions between affiliated and unaffiliated recommendations.

2.3 *Long-run performance of IPOs: some international evidence*

Many studies have documented abnormal long-run underperformance 3–5 years after an IPO's issue. For example, Ritter (1991) compared the 3-year-horizon performance of 1526 US IPOs between 1975 and 1984 with that of the IPOs of firms already listed with the same characteristics (market capitalisation and industry). It appears as though the long-run performance after the offering was 34.47% compared with 61.86% for the group of matching firms. Ritter emphasised that underperformance is concentrated in younger companies and hot market periods. Loughran and Ritter (1995) studied the 5-year-horizon performances of a sample of 4750 US IPOs in the 1970–1990 period. On average, the annual return over 5 years was 5%. The authors found that investing an equal amount at the same time in a non-issuing firm with approximately the same market capitalisation returns an average compound of 12%.

This underperformance is mainly explained by irrational investor behaviour in the context of strong uncertainty. Teoh, Welch, and Wong (1998) found that earnings manipulation by managers at the time of the IPO may be a source of investors' overoptimism. Similarly, this anomaly can be explained by the role of underwriters who underprice the IPOs. The strong fluctuations of shares on the first few days put the firm under the spotlight and attract investors. This effect creates a short moment of enthusiasm once the fad ends.

The underperformance of IPOs is not a singular phenomenon of the US market. Levis (1993) focused on IPOs issued in the UK market over the 1980–1988 period. The author found an underperformance of between −8% and −23% relative to the benchmarks used. Kooli and Suret (2004) studied the long-run performance of newly public firms in the Canadian market. Their study revealed a 5-year long-run underperformance of −24.66% for a sample of 445 IPOs between 1991 and 1998. Aggarwal, Leal, and Hernandez (1993) reported underperformances of −47%, −19.6%, and −23.7% for IPOs in Brazil, Mexico, and Chile, respectively.

These long-run underperformance findings are controversial. Brav and Gompers (1997) argued that IPO underperformance disappears once book-to-market and size effects are taken into account. In a sample of 3661 US IPOs between 1935 and 1972, Gompers and Lerner (2003) found underperformance when they used the BHAR methodology, although they reported that underperformance disappeared when they used the cumulative abnormal return methodology. In other words, the long-run performance of IPOs depends on the method employed.

3. Methodologies, data, and sample statistics

3.1 *Methodologies*

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

First, we used 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

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

where $E(R_i)$ is the monthly return on the IPO portfolio, R_f is the 1-month Treasury bill rate, $E(R_M)$ is the monthly return on a value-weighted market portfolio of Euronext stocks, E(SMB) is the difference between the returns on portfolios of small and big stocks (below or above the Euronext median), and E(HML) is the difference between the returns on portfolios of high-book-to-market and low-book-to-market stocks (above and below the 0.7 and 0.3 fractiles of the book-to-market ratios).

Second, we used 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 compared the performance of IPOs with that of the size and book-to-market portfolios. Starting in January 1991, we used all Euronext stocks to create size quartile breakpoints with an equal number of firms in each size quartile. Size was 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 were extracted from the Amadeus database for each firm. Within each size quartile, we created 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 were calculated for each portfolio. To avoid comparing IPO firms with themselves, we eliminated IPO firms from the various portfolios for 5 years after their equity issue. Each issue was matched with its corresponding benchmark portfolio.

The long-run performance was 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

$$\text{BHAR}_{it} = \prod_{t=1}^{\tau}[1 + R_{it}] - \prod_{t=1}^{\tau}[1 + E(R_{it})],$$

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

3.2 *Data and sample statistics*

Three types of variables were used in this study.

- *Ex ante* IPO variables (venture capital, shares offered, underwriters, etc.) were obtained from the SDC Platinum database. Our sample contained 270 IPOs that were issued in France over the 1991–2005 period. We included all the IPOs, with the exception of transfers from one market to another. IPOs that conducted a seasoned equity offerings (SEO) within 5 years of the IPO date or IPOs that were delisted within 3 years of the IPO date were also excluded.
- The *ex post* IPO variables were focused on the recommendations made by the financial analysts. These recommendations were obtained from the analyst-by-analyst I/B/E/S historical earnings estimate database. I/B/E/S provided us with 6760 recommendations since 1993 until 2004.
- The long-run performance was calculated using the Datastream monthly stock price database.

3.2.1 Ex ante variables and the long-run performance of IPOs

- *VC affiliation* is a dummy variable equal to 1 if venture capitalists are affiliated with IPOs at the time of the offering and 0 otherwise. As in the study of Brav and Gompers (1997), we expected a negative coefficient.
- *Bookbuilding method* is a dummy variable equal to 1 if the IPOs are book built. Previous studies have found that book-built issues were more likely to be covered. We expected a positive coefficient.
- *Tech firm* is a dummy variable equal to 1 if IPO firms are technology firms and 0 otherwise. Most of the technology firms in our sample went public during the internet bubble, a period with strong uncertainty and aberrant pricing behaviour (Ljungqvist and Wilhelm 2003). We expected a negative coefficient.
- *Syndicate* is a dummy variable equal to 1 if the number of managing underwriters is above the median level and 0 otherwise. Corwin and Schultz (2005) found evidence of information production by syndicate members. In IPOs underwritten by large syndicates, the offer price is more likely to reflect the true value of the firm. IPOs with a large underwriting syndicate should outperform the others. We expected the coefficient to be positive.
- *Underpricing* is a dummy variable equal to 1 if an IPO's initial return is above the median level and 0 otherwise. Rajan and Servaes (1997) and Carter, Dark, and Singh (1998) found evidence that IPOs with a significant underpricing underperform other firms; therefore, we expected a negative coefficient.

3.2.2 Ex post variables and the long-run performance of IPOs

3.2.2.1 The characteristics of financial analysts

- *Analyst affiliation* is equal to 1 if the financial analyst is affiliated and 0 otherwise. Using a sample of 391 IPOs in the USA over the period 1990–1991, Michaely and Womack (1999) found that affiliated analysts' recommendations performed more poorly than the unaffiliated analysts' recommendations (consistent with the findings of Iskoz (2003) and Houston, James, and Karceski (2006)). Affiliated analysts issue recommendations that are overly optimistic (positively biased), and these analysts may be compelled to issue more positive recommendations on firms that have traded poorly in the IPO aftermarket (consistent with the findings of James and Karceski (2006)). Therefore, if the market is rational, investors should discount affiliated recommendations compared with unaffiliated ones. We expected the coefficient to be negative.

3.2.2.2 The nature of the recommendations

- *Code* represents the recommendations made by financial analysts within 5 years of the IPO. This variable is 2 for 'strong buy' recommendations and 1, 0, −1, and −2 for 'buy', 'hold', 'underperform', and 'sell', respectively. We hypothesise that better (worse) recommendations have a positive (negative) impact on the long-run performance. We expected the coefficient to be positive.
- *Favourable* represents the favourable recommendations made by financial analysts within 5 years of the IPO. This variable is 2 for 'strong buy' recommendations, 1 for 'buy', and 0 for 'hold', 'underperform', and 'sell'. We hypothesise that favourable recommendations have a positive impact on the long-run performance. We expected the coefficient to be positive.

- *Unfavourable* represents the unfavourable recommendations made by financial analysts within 5 years of the IPO. This variable is 2 for 'sell' recommendations, 1 for 'underperform', and 0 for 'hold', 'buy', and 'strong buy'. We hypothesise that unfavourable recommendations have a negative impact on the long-run performance. We expected the coefficient to be negative.
- *Initiation* is set to 2 for a 'strong buy' recommendation and to 1, 0, −1, and −2 for 'buy', 'hold', 'underperform', and 'sell', respectively. We expected a positive coefficient.
- *Upgrade* represents recommendation changes that are upgrades, which are upgrades from 'sell' to 'hold' or from 'buy' to 'strong buy', for example. It takes the value of 2 for a 'strong buy' recommendation and those of 1, 0, and −1 for 'buy', 'hold', and 'underperform', respectively. We expected a positive coefficient.
- *Downgrade* reflects recommendation changes that are downgrades (from 'strong buy' to 'buy' or from 'hold' to 'sell', for example). It is set to 2 for a 'sell' recommendation and to 1, 0, and −1 for 'underperform', 'hold', and 'buy', respectively. We expected a negative coefficient.

3.2.2.3 The strength of recommendations We tested the interaction between the characteristics of the analysts (whether they are affiliated) and the nature of their recommendations. Six variables were used: Aff*Code, Aff*Favourable, Aff*Unfavourable, Aff*Initiation, Aff*Upgrade, and Aff*Downgrade.

3.2.2.4 Control variables

- *Non-orphan* is a dummy variable equal to 1 if an IPO has analyst coverage and 0 otherwise.
- *Dispersion* serves as a control variable for dispersion of recommendations. It represents the natural logarithm of the standard deviation of analysts' recommendations within 1, 3, and 5 years of the IPO. We interpret this variable as a proxy for differences in opinion about a stock. A larger *Dispersion* value indicates more strong uncertainty that can lead investors to make irrational choices. We suppose that dispersed analysts' recommendations have a negative impact on the long-run performance. Therefore, we expected a negative coefficient.
- *Coverage* is a dummy variable that is equal to 1 if the coverage number is above the median level and 0 otherwise. Das, Guo, and Zhang (2006) and Bradley, Jordan, and Ritter (2003) found a positive relationship between the coverage number and subsequent performance. We expected a positive coefficient.
- *Size* was set to 1 for small, 2 for medium, and 3 for large firms. There is a strong size effect on performance, even when using methodologies that control for size. Brav, Geczy, and Gompers (2000) found that after dividing their sample into three size groups, underperformance was much larger for small firms. We expected a positive coefficient.
- As done in the study of Jain and Kini (1994), we measured the changes in operating performance, such as *Return on assets*, *Asset turnover*, *Sales*, and *Capital expenditure.* The growth in these measures may provide an explanation for the underperformance experienced by IPOs 5 years after going public. The changes in operating performance were measured 1, 3, and 5 years after the IPO date. *Return on assets* is the operating income before depreciation and taxes divided by total assets (COMPUSTAT data item 13 divided by data item 6). *Asset turnover* is sales (COMPUSTAT data item 12) divided by total assets. *Sales* represent gross sales after cash discounts, trade discounts, and returned sales and allowances. *Capital expenditure* (COMPUSTAT data item 128) is the cash outflow or funds used for additions to the company's property, plant, and equipment, excluding funds used for acquisitions.

- *Trading volume* represents the natural logarithm of the average number of IPO shares traded the first month following the offering.
- *Intangibles* represents the natural logarithm of the assets not having physical existence during the year of the issuance.
- *Institutional investors* is the percentage of the shares held by investors who hold 5% or more of the outstanding shares at the time of the offering.

Three multivariate regression models were used to estimate the effects of analysts' recommendations on the long-run performance. Model 1 considers all the recommendations, whereas Model 2 distinguishes between favourable and unfavourable recommendations. The rationale behind this distinction is that the market can asymmetrically react to favourable news and unfavourable news (Cooper, Day, and Lewis 2001; Jegadeesh and Kim 2006; Bradley, Jordan, and Ritter 2008a). As in previous studies, Model 3 assumes that initiation, upgrade, or downgrade conveys more information than the value of the recommendation itself (Irvine 2003; Jegadeesh et al. 2004).

Model 1:

$$\text{BHAR} = \alpha + \beta_1\text{Analyst affiliation} + \beta_2\text{Code} + \beta_3\text{Aff*Code} + \beta_4\text{Dispersion} + \beta_5\text{Coverage} + \beta_6\text{Size} + \beta_7\text{Tech firm} + \beta_8\text{Bookbuilding method} + \beta_9\text{Syndicate} + \beta_{10}\text{Underpricing} + \beta_{11}\text{VC affiliation} + \beta_{12}\text{Return on asset} + \beta_{13}\text{Asset turnover} + \beta_{14}\text{Sales} + \beta_{15}\text{Capital expenditure} + \gamma_t + \varepsilon$$

Model 2:

$$\text{BHAR} = \alpha + \beta_1\text{Analyst affiliation} + \beta_2\text{Favourable} + \beta_3\text{Unfavourable} + \beta_4\text{Aff*Favourable} + \beta_5\text{Aff*Unfavourable} + \beta_6\text{Dispersion} + \beta_7\text{Coverage} + \beta_8\text{size} + \beta_9\text{Tech firm} + \beta_{10}\text{Bookbuilding method} + \beta_{11}\text{Syndicate} + \beta_{12}\text{Underpricing} + \beta_{13}\text{VC affiliation} + \beta_{14}\text{Return on asset} + \beta_{15}\text{Asset turnover} + \beta_{16}\text{Sales} + \beta_{17}\text{Capital expenditure} + \gamma_t + \varepsilon$$

Model 3:

$$\text{BHAR} = \alpha + \beta_1\text{Analyst affiliation} + \beta_2\text{Initiation} + \beta_3\text{Upgrade} + \beta_4\text{Downgrade} + \beta_5\text{Aff*Initiation} + \beta_6\text{Aff*Upgrade} + \beta_7\text{Aff*Downgrade} + \beta_8\text{Dispersion} + \beta_9\text{Coverage} + \beta_{10}\text{Size} + \beta_{11}\text{Tech firm} + \beta_{12}\text{Bookbuiliding method} + \beta_{13}\text{Syndicate} + \beta_{14}\text{Underpricing} + \beta_{15}\text{VC affiliation} + \beta_{16}\text{Return on asset} + \beta_{17}\text{Asset turnover} + \beta_{18}\text{Sales} + \beta_{19}\text{Capital expenditure} + \gamma_t + \varepsilon,$$

where α is the intercept, γ_t is the year fixed effects, and ε is the usual error term.

Table 1 presents the descriptive statistics for the orphan and non-orphan IPOs. There are 98 IPOs classified as orphan and 172 IPOs classified as non-orphan. The average orphan raised 174.1€ million in its IPO compared with 215€ million raised by the average non-orphan. This difference was statistically significant at the 5% level as indicated by the non-parametric tests. Consistent with prior research, analyst coverage increased with firm size. Age did not differ significantly between the non-orphan and orphan IPOs, and the long-term debt of the non-orphan IPOs was higher than that of the orphan IPOs (the difference was significant at the 10% level as indicated by the *w* test). We found no significant difference between the orphans and non-orphans in venture capital backing. Unlike Degeorge, Derrien, and Womack (2007), we did not find the bookbuilding method to promote the issuing company through more positive research coverage. Orphan status was associated with less syndicate underwriting, with a mean of 1.96 managing underwriters for orphans and that of 3.14 for non-orphans. According to previous studies, a large underwriting syndicate attracts analyst coverage (a statistically significant effect at the 1%

Table 1. Descriptive statistics.

	Orphan	Non-orphan	*t*	*w*
Panel A: orphan versus non-orphan over the 1991–2005 period				
IPO	98	172		
AGE	19 (10)	21 (13)	0.7	1.4
LONG TERM DEBT	41.2 (3.5)	47.5 (6)	0.3	1.6*
SIZE	174.1 (42.1)	215 (54.3)	0.6	1.9**
VC AFFILIATION	18.28%	12.79%	−1.2	−1.2
BOOKBUILDING METHOD	61.2%	69.2%	1.3	1.3
UNDERWRITING SYNDICATE	1.96	3.14	3***	3.6***
UNDERPRICING	5.75%	11.14%	1.1	0.9

Notes: The characteristics of orphans versus non-orphans are reported. An orphan (non-orphan) means an IPO without analyst coverage (with analyst coverage). IPO is the number of the issuing firm. AGE is the age of the issuing firm at the time of the offer in years. LONG TERM DEBT represents all interest-bearing financial obligations, excluding amounts due within 1 year at the offering date in millions. SIZE is the market capitalisation at the offering date in millions. VC AFFILIATION is the percentage of firms that are affiliated to venture capitalists. BOOKBUILDING METHOD is the percentage of firms that are book built. 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. Medians are given within the parentheses. Student's parametric (*t*) test and Wilcoxon (*w*) non-parametric test were used to determine whether the difference between the sample distributions was statistically significant.
*Significant difference at the 10% level.
**Significant difference at the 5% level.
***Significant difference at the 1% level.

level). There is no relationship between analyst coverage and underpricing. For example, orphans have initial returns of 5.75% compared with 11.14% for non-orphans. Non-orphans are more underpriced than orphans, but the difference is not statistically significant. Finally, neither orphans nor non-orphans are concentrated in a particular industry or period (results not reported here).

4. Results

4.1 *Long-run performance of IPOs*

In this section, we report the findings related to the performance of newly public firms over the 5-year horizon. Two methodologies were chosen in this study: the size and book-to-market-adjusted BHAR, as in the study of Brav and Gompers (1997), and the Fama–French three-factor model.

4.1.1 The event-time approach

Table 2 (Panel A) shows that French IPOs have statistically significant long-run underperformance over a 3- to 5-year horizon. IPOs have mean performances ranging from −28.85% over the 3 years following their offerings to −68.10% over the 5-year horizon (both the *t* and *w* tests were statistically significant at the 1% level). It is worth noting that the 12-month performances of French IPOs over the entire period showed a positive abnormal return.

Consistent with the findings of Degeorge and Derrien (2001), in the 1991–1998 period, we found French IPOs to have, on average, no abnormal performance over a 3-year horizon. Once we extended the horizon to 4 years after the issuance, the IPOs exhibited an underperformance that was statistically significant at the1% level as indicated by both the *t* and *w* tests. This result was confirmed by the 60-month performances.

Similar to Brav, Geczy, and Gompers (2000), as shown in Panel B, we found the underperformance over the entire period to be much greater for smaller firms than for larger firms. Many studies

Table 2. Long-run performance of IPOs.

	1991–1998			1999–2000			2001–2005			1991–2005		
Panel A	Mean	*t*	*W*	Mean	*t*	*w*	Mean	*t*	*w*	Mean	*t*	*w*
BHAR 60	−61.76% (−75.11%)	−4***	−6.7***	−80.26% (−100.06%)	−2.7***	−6.6***	−56.34% (−27.04%)	−2.7***	−2.5***	−68.10% (−85.62%)	−5.4***	−9.8***
BHAR 48	−51.18% (−71.26%)	−3.9***	−5.4***	−59.17% (−77.98%)	−3.2***	−6.5***	−41.44% (−34.42%)	−2**	−2.7***	−52.78% (−71.53%)	−5.8***	−8.8***
BHAR 36	−18.52% (−50.30%)	−1.3	−3.9***	−40.34% (−58.39%)	−2.8***	−5.1***	−35.31% (−26.49%)	−3.8***	−3.3***	−28.85% (−53.57%)	−3.1***	−7.2***
BHAR 24	8.92% (−30.27%)	0.7	−1.8*	−29.02% (−59.13%)	−1.9**	−4.2***	−17.26% (−18.01%)	−2.2**	−2.1**	−8.62% (−35.44%)	−1	−4.9***
BHAR 12	16.36% (−3.93%)	2.9***	1.1	15.48% (−22.41%)	1	−1.3	−11.45% (−5.47%)	−2.2**	−1.9**	11.02% (−9.23%)	1.9**	−1
Panel B	*S*	*M*	*B*	*S*	*M*	*B*	*S*	*M*	*B*	*S*	*M*	*B*
BHAR 60	−77.84%	−80.03%	−32.86%	−111.97%	−79.41%	−57.28%	−67.20%	−65.96%	−8.95%	−93.42%	−78.92%	−35.98%
F		5.5***			4.4***			1.3			11.3***	
BHAR 48	−85.92%	−63.36%	−26.52%	−77.31%	−61.13%	−35.17%	−79.60%	−46.05%	−26.27%	−81.10%	−60.36%	−28.45%
F		5.5***			2.2			1.2			9.4***	
BHAR 36	−80.86%	−41.22%	−112.7%	−61.41%	−47.73%	9.85%	−57.05%	−36.03%	−17.31%	−68.56%	−42.63%	−7.74%
F		6.8***			6.1***			0.9			12.7***	
BHAR 24	−58.53%	−19.46%	0.6%	−27.89%	−44.60%	−16.99%	−119.56%	−146.15%	−0.35%	−38.35%	−27.20%	−3.95%
F		4.2***			1.4			0.3			4.4***	
BHAR 12	−30.34%	4.39%	11.37%	3.44%	−7.86%	−3.30%	−44.59%	−9.66%	5.27%	−22.03%	−1.96%	6.74%
F		3.7**			0.1			2.8*			3**	

Notes: The long-run BHARs over the 12-, 24-, 36-, 48-, and 60-month performances are reported. Panel A shows the 270 French IPOs made between 1991 and 2005. Bootstrapped skewness-adjusted (*t*) test and Wilcoxon (*w*) non-parametric test were used to estimate whether the BHAR was statistically significant. Panel B distinguishes IPOs by size. *S*, *M*, and *B* indicate, respectively, small, medium, and big IPOs measured by their market capitalisation at the time of the issuance. The Bartlett (*F*) test for equal variances was used to estimate whether the differences between IPO sizes were significant. Medians are given within the parentheses.

*Significant difference at the 10% level.

**Significant difference at 5% level.

***Significant difference at the 1% level.

Table 3. The Fama–French three-factor model. $E(R_i) - R_f = \alpha_i + \beta_i[E(R_m) - R_f] + s_i E(SMB) + h_i E(\text{HML}) + \varepsilon_i$.

	1991–1998 130 IPOs	1999–2000 218 IPOs	2001–2003 241 IPOs	2004–2007 270 IPOs
α_i	−0.001 (−0.1)	−0.015 (−3.1)***	−0.007 (−1.7)*	−0.003 (−2.3)**
β_i	1.245 (13.4)***	1.836 (7.2)***	1.480 (6.9)***	1.298 (27)***
s_i	−0.073 (−0.4)	0.672 (3.2)***	−0.072 (−0.4)	−0.047 (−0.6)
h_i	−0.081 (−0.7)	−0.895 (−5.4)***	−0.265 (−1.3)	−0.059 (−0.7)
R^2	0.70	0.91	0.89	0.96

Notes: The results obtained using the calendar-time approach based on IPO waves are reported. The years 1991–1998 and 2001–2003 are the cold market periods, whereas the years 1999–2000 and 2004–2007 are the hot market periods. Coefficient estimates are also reported (with *t*-statistics given within the parentheses).

have revealed that small firms are covered by fewer analysts. Therefore, this underperformance associated with the absence of analyst coverage may be due to a size effect.

4.1.2 The calendar-time approach

We also calculated the long-run performance using the Fama–French three-factor model. The regression yielded parameter estimates for α_i, β_i, s_i, and h_i. The parameter of interest in this regression was the intercept, α_i. A negative intercept indicates that after controlling for the market, size, and book-to-market factors in returns, a sample firm performed worse than expected. We used a calendar-time approach based on IPO waves. The heteroscedasticity-corrected results are presented in Table 3.

Table 3 shows that the intercept (α_i) is negative over the four waves. The number of IPOs is cumulative across the sub-periods. In the 1991–1998 period, for example, there were 130 new issues, and over the 1999–2000 period, there were 130 IPOs (those introduced between 1991 and 1998) plus 88 new issues (those introduced between 1999 and 2000).The IPOs tended to perform worse than expected. The intercept was statistically significant during the hot market periods, meaning that underperformance was concentrated in this period (the effect was significant at the 1% level during the internet bubble). Over the 2001–2003 and 2004–2007 periods, α_i was statistically significant at conventional levels, which indicates that older IPOs (IPOs that went public in the 1990s) explain the abnormal long-run returns in the 2000s.

4.2 *Long-run performance of orphan versus non-orphan IPOs*

We now distinguish IPOs according to financial analyst coverage. The findings are reported in Table 4. Panel A shows that orphan and non-orphan IPOs have statistically significant long-run underperformance over the 2–5-year horizons (as confirmed at the 1% level by both the *t* and *w* tests). We found a significant difference between the long-run underperformances of orphan and non-orphan IPOs within the first year of the offering. The 12-month performance showed 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. It is worth noting that in the first year following the offering, there is no abnormal performance exhibited by the non-orphans (an average of 4.29%, $t = 0.9$). In the first 12 months following their offerings, the orphans exhibited an underperformance of −11.41%, whereas the non-orphans exhibited a performance of 4.29%. This 15.7% difference was significant at the 5% level in both the *t* and *w* tests.

Table 4. Long-run performance of orphans versus non-orphans over the 1991–2005 period.

	Orphan IPOs					Non-orphan IPOs						
Panel A	*N*	Mean	Median	*t*	*w*	*N*	Mean	Median	*t*	*w*	*t*	*w*
BHAR 60	63	−73.23%	−84.16%	−6.3***	−5.9***	150	−79.33%	−89.17%	−10.1***	−9.6***	−0.6	−0.6
BHAR 48	69	−67.26%	−78.08%	−6.3***	−6.4***	155	−56.07%	−70.26%	−7.3***	−8***	1.4	0.9
BHAR 36	83	−47.16%	−57.04%	−4.4***	−5.9***	153	−35.42%	−51.06%	−5.1***	−6.1***	1.4	1.3
BHAR 24	95	−30.17%	−45.61%	−3.8***	−5***	146	−16.53%	−29.45%	−2.8***	−3.6***	1.7*	1.3
BHAR 12	113	−11.41%	−16.53%	−2.3**	−3.2***	126	4.29%	−2%	0.9	0.4	2.3**	2.1**

	Orphan IPOs				Non-orphan IPOs				Yes		No	
	Venture capital affiliation											
Panel B	Yes	No	*T*	*w*	Yes	No	*t*	*w*	*t*	*w*	*t*	*w*
BHAR 60	−68.43%	−98.70%	1.4	1.2	−78.69%	−84.02%	0.4	0.3	−0.9	−0.9	0.6	0.6
BHAR 48	−61.32%	−98.60%	2.2**	1.9**	−58.11%	−43.77%	−0.9	−1	0.3	0.1	2.6***	2.2**
BHAR 36	−47.11%	−47.41%	0.1	0.4	−36.27%	−30.31%	−0.3	−0.1	1.2	1.1	0.7	0.8
BHAR 24	−27.82%	−40.93%	0.8	0.8	−16.82%	−14.55%	−0.1	−0.2	1.3	0.8	1.1	1.3
BHAR 12	−9.18%	−22.41%	1.1	1.3	7.31%	−13.81%	1.6	1.5	2.2**	2.1**	0.5	0.4

	Orphan IPOs				Non-orphan IPOs				Yes		No	
	Bookbuilding method											
Panel C	Yes	No	*T*	*w*	Yes	No	*t*	*w*	*t*	*w*	*t*	*w*
BHAR 60	−95.08%	−47.63%	2.6***	3.1***	−88.95%	−58.26%	2.4***	2.3**	0.5	0.8	−0.7	−0.7
BHAR 48	−87.72%	−42.19%	3.3***	3.2***	−67.84%	−28.18%	3***	2.7***	2.2**	1.9**	0.9	0.5
BHAR 36	−58.12%	−30.56%	1.9**	2.3**	−47.84%	−4.64%	3.3***	3.5***	1	1.1	1.7*	1.8*
BHAR 24	−43.92%	−6.59%	3***	3.3***	−33.25%	16.56%	4.1***	4***	1.3	1.2	1.6	1.3
BHAR 12	−18.99%	0.05%	2.1**	2.8***	−3.28%	20.01%	2.2**	2.4***	1.8*	1.6	2**	1.9*

	Underwriting syndicate								Large		Low	
Panel D	Large	Low	*T*	*w*	Large	Low	*t*	*w*	*t*	*w*	*t*	*w*
BHAR 60	−76.59%	−84.74%	0.4	0.4	−80.69%	−83.73%	0.3	0.3	−0.2	−0.1	0.1	0.1
BHAR 48	−80.36%	−76.40%	−0.2	0.2	−60.23%	−57.46%	−0.2	0.1	1.5	1	1.6	1.5
BHAR 36	−46.86%	−51.35%	0.3	0.2	−27.57%	−42.63%	1.3	1.1	1.1	1	0.8	0.9
BHAR 24	−42.58%	−25.29%	−1.2	−1.1	−19.84%	−13.38%	−0.6	−0.4	1.5	1.3	1.1	0.7
BHAR 12	−19.67%	−5.44%	−1.2	−1.2	6.53%	1.79%	0.4	0.4	2**	1.7*	0.8	0.7

	Underpricing								High		Low	
Panel E	High	Low	*T*	*w*	High	Low	*t*	*w*	*t*	*w*	*t*	*w*
BHAR 60	−63.14%	−94.82%	1.7*	1.6*	−67.36%	−84.03%	1.3	1	−0.3	−0.3	0.8	0.7
BHAR 48	−53.04%	−89.34%	2.5***	1.7*	−45.46%	−63.55%	1.4	1.3	0.4	0.5	2.4***	1.6*
BHAR 36	−40.37%	−56.62%	1.2	1	−32.83%	−35.75%	0.2	0.2	0.5	0.6	1.6	1.6*
BHAR 24	−21.26%	−36.64%	1.2	0.6	−16.82%	−22.26%	0.4	0.6	0.3	0.5	1.2	0.7
BHAR 12	−5.97%	−19.66%	1.4	1.8*	6.88%	−0.91%	0.6	0.6	1.2	0.9	1.7*	1.6*

Notes: The long-run performance of French IPOs classified as orphan IPOs (without analyst coverage) and non-orphan IPOs (with analyst coverage) is reported. Panel A focuses on analyst coverage, whereas Panels B, C, D, and E partition orphans and non-orphans by other characteristics. Panel B distinguishes orphans and non-orphans by venture capital affiliation. Yes and no mean venture capital-backed IPOs and non-venture capital-backed IPOs, respectively. Panel C distinguishes orphans and non-orphans by underwriting syndicate. Number of managers above the median level is classified as big; otherwise small. Panel D partitions orphan IPOs and non-orphan IPOs by underpricing where IPOs that have underpricing above the median level are classified as high; otherwise low. Panel C distinguishes orphan and non-orphan IPOs by the bookbuilding method. Yes and no mean book-built issues or non-book-built issues, respectively. Panel D distinguishes orphans and non-orphans by underwriting syndicate. Number of managers above the median level is classified as large; otherwise low. Panel E partitions orphan IPOs and non-orphan IPOs by underpricing where IPOs that have underpricing above the median level are classified as high; otherwise low. Long-run performance is computed as the BHARs over the 12-, 24-, 36-, 48-, and 60-month performances. Bootstrapped skewness-adjusted (*t*) test and Wilcoxon (*w*) non-parametric test were used to estimate whether the BHAR or the difference between the sample distributions was statistically significant. The returns were winsorised at the 5% and 95% levels.

*Significant difference at the 10% level.

**Significant difference at the 5% level.

***Significant difference at the 1% level.

Hypothesis *H1*, which posits that non-orphan IPOs may have long-run performance that is superior to that of the orphan IPOs, was confirmed for the first year of floatation.

After the first year of floatation, however, the differences between the long-run performance of orphan and non-orphan IPOs were no longer significant. This change may be due to some endogeneity between firm performance and the analysts' recommendations. Indeed, firms publish their financial statements after the first year of floatation, which can influence the analysts' recommendations. Therefore, analysts' recommendations are linked to past performance for a short time.

Venture capital affiliation, the bookbuilding method, underwriting syndication, and underpricing have been shown to influence the long-run performance of IPOs. Therefore, if there is a relationship between analyst coverage and long-run performance, it may be a manifestation of these variables. We investigated these potential relationships by focusing on each of them separately.

The results of venture capital affiliation are presented in Panel B. We partitioned our sample by 'Yes' or 'No', indicating venture capital-backed IPOs or non-venture capital-backed IPOs, respectively. We found no significant difference in the long-run performance between venture capital-backed IPOs and non-venture capital-backed IPOs that receive analyst coverage. This result holds for the orphan IPOs except for the 48-month performance. Interestingly, there was a statistically significant difference in the 12-month performance between the venture capital-backed orphan IPOs and the venture capital-backed non-orphan IPOs (−9.18% versus 7.31%). This difference may be attributable to the crucial role of financial analysts.

From Panel C, it can be seen that firms that conduct an IPO using the bookbuilding method exhibit poorer long-run performance than firms introduced by an auction-like or a fixed-price method. For example, non-orphan IPOs with a book-built issue have a 48-month performance of −67.84% compared with −87.72% for orphan IPOs with a book-built issue. The difference was statistically significant. Non-orphan IPOs that were not conducted by a bookbuilding method had a 1-year performance of 20.01% compared with 0.05% for their orphan IPO counterparts. These results suggest that financial analysts help investors to progressively define the true value of the firm.

From Panel D, we can see that non-orphan IPOs with large underwriting syndicates (IPOs in which the number of managing underwriters is above the median level are classified as 'large'; otherwise, they are classified as 'low') outperform orphan IPOs, particularly in the first year following the IPO. The performance of non-orphan IPOs with a large underwriting syndicate is 6.53% compared with −19.67% for orphan IPOs with a large underwriting syndicate. The 26.2% difference was significant at conventional levels in both the *t*and *w* tests. Hence, the market pays more attention to analyst coverage when the underwriting syndicate is large.

As has been discussed above, prior studies have found a positive relationship between underpricing and analyst coverage. We expected IPOs with high underpricing to be associated with analyst coverage. In Panel A, we can see a positive relationship between analyst coverage and long-run performance. Thus, the results given in Panel A indirectly imply a positive relationship between underpricing and long-run performance, findings that are inconsistent with the evidence reported by Rajan and Servaes (1997) and Carter, Dark, and Singh (1998). Unlike these studies, Panel E shows that highly underpriced orphan IPOs (IPOs with underpricing above the median level are classified as 'high'; otherwise, they are classified as 'low') outperform less underpriced orphan IPOs over the 48- and 60-month horizons (the difference was statistically significant in both the *t* and *w* tests). Non-orphan IPOs with less underpricing outperform orphans with less underpricing over the 1- and 4-year horizons. The differences were significant at conventional

levels in both the *t* and *w* tests. Finally, there were no long-run performance differences between the orphan and non-orphan highly underpriced IPOs. Hence, analyst coverage has investment value only for the less underpriced IPOs.

In summary, these findings suggest that investors and market participants pay attention to analyst coverage when IPOs are venture capital backed, are not introduced by the bookbuilding method, have a large underwriting syndicate, and are less underpriced.

Next, we investigated the characteristics of analyst coverage by distinguishing the coverage number and the affiliation of the financial analysts. Numerous studies have documented a positive relationship between the coverage number and the subsequent short- and long-run performance (Bradley, Jordan, and Ritter 2003; Das, Guo, and Zhang 2006). These findings are reported in Table 5. Panel A indicates that IPOs with high 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 4 to 5 years after the IPO date (a difference that was statistically significant).

As shown in Panel B, we tested the conflict of interest hypothesis (*H3*) by conditioning for the financial analyst affiliation. IPOs covered by affiliated analysts do not underperform those covered by unaffiliated analysts. This result is inconsistent with the conflict of interest hypothesis, but supports our hypothesis *H3c*, which posits that there may be no difference in the announcement effects between affiliated and unaffiliated recommendations because the market is naïve about the differential conflicts of interest.

To verify that the univariate results presented in Tables 4 and 5 are robust in a multivariate setting, we report two OLS regression models in Table 6. We found non-orphan IPOs and analyst coverage to be positively and significantly related to long-run performance only over the 12-month horizon, which is broadly consistent with the univariate analysis results given in Table 4. Both the bookbuilding method and size explain a significant component of the long-run IPO performance whatever the horizon we considered. The other variables (such as underpricing and underwriting syndicate) fail to explain the long-run performance of French IPOs.

Model B differs from Model A by considering variables such as the trading volume, intangibles, and the presence of institutional investors that are known to influence analyst coverage but not the long-run performance (Bhushan 1989; O'Brien and Bhushan 1990; Barth, Kasznik, and McNichols 2001). Table 6 shows that these variables are not related to the long-run performance of French IPOs.

4.3 *Determinants of the long-run performance*

We established that the firms going public in the 1991–2005 period had long-run abnormal underperformance. Moreover, part of this underperformance can be attributed to *ex ante* variables, such as the bookbuilding method and the size of the IPO.

Next, we investigated whether the *ex post* variables can explain the abnormal performance. We studied the relationship between long-run performance and a variety of variables that were known to investors at the time of the offering (industry, shares offered, underwriters, venture capital backing, etc.) or occurring within 5 years of the IPO date (specifically, the financial analysts' recommendations). The null hypothesis of market efficiency predicts that all these variables are correctly estimated and hence cannot explain the long-run performance. An alternative hypothesis is that some variables are systematically overvalued or undervalued and can impact the long-run performance.

Table 5. Long-run performance based on analyst coverage and affiliation.

	Low coverage				High coverage					
Panel A	Mean	Median	*t*	*w*	Mean	Median	*t*	*w*	*t*	*w*
BHAR 60	−94.37%	−100.06%	−9.4***	−7.8***	−69.44%	−73.52%	−7.1***	−6.5***	2.5***	2.1**
BHAR 48	−70.49%	−80.14%	−5.5***	−7***	−47.24%	−61.76%	−4.4***	−4.9***	2.2**	2.1**
BHAR 36	−43.29%	−58.09%	−4***	−5.4***	−30.13%	−36.90%	−3.6***	−3.8***	1.2	1.5
BHAR 24	−18.69%	−38.53%	−2.4***	−2.8***	−20.18%	−29.65%	−2.7***	−3.3***	−0.2	0.3
BHAR 12	4.61%	−6.91%	0.7	0.1	0.14%	−5.76%	0.1	−0.2	−0.5	−0.2
	Affiliated				Unaffiliated					
Panel B	Mean	Median	*t*	*w*	Mean	Median	*t*	*w*	*t*	*w*
BHAR 60	−81.61%	−91.90%	−5.9***	−6.4***	−74.69%	−82.38%	−8***	−7.2***	0.3	0.7
BHAR 48	−60.04%	−71.11%	−6***	−6.2***	−52.53%	−68.97%	−4.6***	−5.2***	0.7	0.2
BHAR 36	−40.27%	−53.99%	−4.1***	−4.8***	−30.87%	−44.55%	−3.2***	−3.8***	0.8	0.7
BHAR 24	−22.43%	−42.44%	−2.5***	−3.3***	−10.29%	−26.30%	−1.2	−1.7*	1.1	1
BHAR 12	6.17%	0.5%	0.8	0.5	2.59%	−5.7%	0.4	0.1	−0.4	−0.4

Notes: The long-run performance of French IPOs covered by financial analysts are reported. Panel A distinguishes IPOs with high coverage (where the number of analysts is above the median level) and IPOs with low coverage (where the number of analysts is below the median level).Panel B partitions analysts by affiliation where analysts whose employer is a managing underwriter are classified as affiliated, else unaffiliated. Long-run performance is computed as the BHARs over the 12-, 24-, 36-, 48-, and 60-month performances. Bootstrapped skewness-adjusted (*t*) test and Wilcoxon (*w*) non-parametric test were used to estimate whether the BHAR or the difference between the sample distributions was statistically significant. The returns were winsorised at the 5% and 95% levels.

*Significant difference at the 10% level.

**Significant difference at the 5% level.

***Significant difference at the 1% level.

Table 6. Cross-sectional regressions of the long-run performance of IPOs over the 1991–2005 period.

	BHAR 60		BHAR 36		BHAR 12	
	Model A	Model B	Model A	Model B	Model A	Model B
Intercept	−1.252***	−1.589***	−0.984***	−1.288***	−0.379**	−0.406
Non-orphan	0.043	0.025	0.285	0.248	0.423***	0.416***
VC affiliation	−0.059	−0.108	0.077	0.053	−0.104	−0.081
Bookbuilding method	−0.250***	−0.256**	−0.340***	−0.311***	−0.216***	−0.198***
Syndicate	−0.010	−0.037	0.111	0.095	0.049	0.057
Underpricing	0.162	0.118	0.033	0.038	0.068	0.120*
Size	0.292***	0.243***	0.296***	0.262***	0.136*	0.187
Coverage	−0.090	−0.137	−0.159	−0.151	−0.277**	−0.258**
Analyst affiliation	0.017	0.001	−0.076	−0.092	0.140	0.134
Volume information		0.103		0.012		−0.118
Intangibles		0.177		0.176		−0.037
Institutional investors		0.089		0.066		0.023
F	5***	3.2***	7.2***	5***	3.4***	2.6***

Note: The dependent variable is the buy-and-hold abnormal return. Fisher statistics (*F*) appear to estimate whether the models are significant or not.
*The coefficient is significantly different from 0 at a 10% level using Student's *t*-statistics.
**The coefficient is significantly different from 0 at a 5% level using Student's *t*-statistics.
***The coefficient is significantly different from 0 at a 1% level using Student's *t*-statistics.

The dependent variable in the regression will be the long-run performance of French IPOs, as determined by the BHARs over 1, 3, and 5 years. As Bradley et al. (2008b) noted, a common oversight in examining analysts' recommendations 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 generated by other sources, such as financial statements. Our research model overcomes this pitfall by calculating the BHARs for each recommendation's date.

Table 7 reports our regression results (corrected for heteroscedasticity and multicollinearity). We used a 2SLS regression model to take into account the endogenous problem (the more valuable firms would likely attract more analysts). The coverage variable was endogenous, and we used instrument variables, such as trading volume, intangibles, and institutional investors, that are known to influence analyst coverage but not the long-run performance (as reported in Table 6). Our three models were statistically significant and explained the long-run performance of French IPOs.

Table 7 shows that the nature of the recommendations is not related to long-run performance over the 5- and 3-year horizons. This finding may imply that investors fully incorporate the information contained in the recommendations at the time of the offering. This finding is consistent with the study of Bradley et al. (2008b). Analyst coverage has a negative impact on IPO firm performance over the 5-year horizon. This result may explain why market participants pay no attention to the nature of the recommendations over this horizon.

During the investigation the first year following the issue, we found the *Code*, *Favourable*, *Unfavourable*, *Initiation*, *Upgrade*, *and Downgrade* variables to be significantly related to long-run performance, as we hypothesised. 'Strong buy' and 'buy' ('underperform' and 'sell') recommendations were positively (negatively) related to long-run performance. Hence, the recommendations have investment value, and hypothesis *H2* that posits an association between

Table 7. Determinants of the long-run performance of non-orphans over the 1991–2005 period.

	Model 1	Model 2	Model 3
5491 observations (174 IPO firms)			
Intercept	−1.437***	−1.445***	−1.448***
Analyst affiliation	−0.038	−0.021	−0.129
Code	−0.027		
Favourable		−0.024	
Unfavourable		0.026	
Initiation			−0.012
Upgrade			0.007
Downgrade			−0.101**
Aff*Code	−0.057		
Aff*Favourable		−0.055	
Aff*Unfavourable		0.039	
Aff*Initiation			0.032
Aff*Upgrade			0.103
Aff*Downgrade			−0.158
Dispersion	0.178	0.147	0.176
Coverage	−2.458**	−2.317*	−2.463**
Size	1.195**	1.144**	1.193**
Tech firm	−0.614***	−0.610***	−0.614***
Bookbuilding method	0.161	0.164	0.158
Syndicate	−0.334	−0.330	−0.327
Underpricing	−0.068	−0.058	−0.076
VC affiliation	0.541*	0.509	0.547*
Return on asset	0.020	0.020	0.021
Asset turnover	0.118	0.131	0.122
Sales	−0.028	−0.030	−0.028
Capital expenditure	0.160***	0.159***	0.160***
1993	0.524	0.633	0.589
1994	0.893*	0.928*	0.891*
1995	0.492	0.508	0.492
1996	0.211	0.220	0.200
1997	0.248	0.257	0.249
1998	0.135	0.142	0.139
1999	0.138	0.142	0.137
2000	0.340***	0.340***	0.338***
2001	0.071	0.071	0.072
2002	–	–	–
2003	–	–	–
2004	–	–	–
6724 observations (202 IPO firms)			
Intercept	0.555	0.731	0.614
Analyst affiliation	−0.116	−0.166	−0.119
Code	0.022		
Favourable		0.010	
Unfavourable		−0.046	
Initiation			0.025
Upgrade			0.041
Downgrade			−0.005
Aff*Code	0.034		

(*Continued*).

Table 7. Continued.

	Model 1	Model 2	Model 3
Aff*Favourable		0.068	
Aff*Unfavourable		0.029	
Aff*Initiation			0.049
Aff*Upgrade			0.028
Aff*Downgrade			−0.017
Dispersion	−0.478	−0.516	−0.500
Coverage	1.868*	2.068*	1.935**
Size	−0.832	−0.943	−0.872
Tech firm	−0.067	−0.046	−0.060
Bookbuilding method	−0.105	−0.108	−0.107
Syndicate	0.005	−0.006	0.001
Underpricing	0.078	0.064	0.068
VC affiliation	−0.050	−0.076	−0.060
Return on asset	0.109***	0.116**	0.112***
Asset turnover	0.019*	0.024	0.023**
Sales	0.031	0.037	0.034
Capital expenditure	0.022	0.023	0.022
1993	0.300	0.302	0.312
1994	0.279	0.274	0.276
1995	0.102	0.092	0.095
1996	0.340	0.337	0.0336
1997	0.163	0.153	0.154
1998	−0.272	−0.290	−0.277
1999	−0.274	−0.292	−0.280
2000	−0.135	−0.154	0.138
2001	−0.438**	−0.461**	−0.442**
2002	−0.282	−0.296	−0.285
2003	0.091	0.084	0.085
2004	–	–	–
6760 observations (203 IPO firms)			
Intercept	2.458	2.516	2.372
Analyst affiliation	−0.179	−0.193	−0.198
Code	0.066***		
Favourable		0.066**	
Unfavourable		−0.070**	
Initiation			0.083**
Upgrade			0.050***
Downgrade			−0.066**
Aff*Code	0.030		
Aff*Favourable		0.038	
Aff*Unfavourable		−0.013	
Aff*Initiation			0.140*
Aff*Upgrade			0.023
Aff*Downgrade			0.024
Dispersion	−0.192	−0.194	−0.180
Coverage	1.818	1.872	1.727
Size	−1.168	−1.198	−1.110
Tech firm	0.197	0.207	0.176
Bookbuilding method	−0.271**	−0.275**	−0.268**
Syndicate	−0.116	−0.122	−0.112
Underpricing	−0.221	−0.225	−0.228

(*Continued*).

Table 7. Continued.

	Model 1	Model 2	Model 3
VC affiliation	−0.418	−0.430	−0.398
Return on asset	0.039***	0.039***	0.037***
Asset turnover	0.011*	0.012**	0.012**
Sales	0.034	0.033	0.035
Capital expenditure	0.119*	0.118*	0.123*
1993	−0.565	−0.584	−0.604
1994	−0.547	−0.560	−0.553
1995	−0.592	−0.602	−0.603
1996	−0.632	−0.642	−0.628
1997	−0.254	−0.263	−0.252
1998	−0.537	−0.546	−0.533
1999	−0.165	−0.174	−0.155
2000	−0.315	−0.323	−0.307
2001	−0.578**	−0.587**	−0.567**
2002	−0.594***	−0.599***	−0.580***
2003	−0.284	−0.288	−0.273
2004	−0.349	−0.358	−0.333

Notes: The dependent variable is the BHAR over a 60-month horizon (5491 observations (174 IPO firms)), a 36-month horizon (6724 observations (202 IPO firms)), and a 12-month horizon (6760 observations (203 IPO firms)). Observations correspond to analysts' recommendations. We used the cluster 2SLS regression model. This specifies that the observations are independent across the groups but not necessarily independent within the groups. The instrumented variable is coverage. The instrument variables are trading volume, intangibles, and institutional investors.

*The coefficient is significantly different from 0 at a 10% level using Student's *t*-statistics.

**The coefficient is significantly different from 0 at a 5% level using Student's *t*-statistics.

***The coefficient is significantly different from 0 at a 1% level using Student's *t*-statistics.

non-orphan IPO performance and the nature of the recommendations is supported. The coefficient of *Unfavourable* (*Favourable*) was negative (positive); as we expected, unfavourable (favourable) recommendations were negatively (positively) related to long-run performance (the effect was significant at the 5% level). *Upgrade* and *Downgrade* variables had an impact on the long-run performance. We found the market reaction to be similar to the changes in the recommendations than to the value of the recommendations themselves. This result is inconsistent with the evidence given by Irvine (2003) and Jegadeesh et al. (2004). The characteristics of the financial analysts are not significant whatever the horizon we considered. We found no difference between affiliated and unaffiliated analysts' recommendations (except for the initiation by the affiliated analysts). Therefore, the market seems to be naïve about the differential conflicts of interest, and our *H3c* hypothesis was supported. Two explanations may be advanced: (1) there may be no difference in the announcement effects because, on balance, the more severe conflicts that affiliated analysts face are offset by their superior information and (2) there may be no difference in the announcement effects because the incentives for unaffiliated analysts to curry favour are so strong that they face conflicts of interest just as severe as those faced the affiliated analysts.

Finally, our findings show that the results vary from year to year, with no evident-time trend.

5. Conclusion

In this study, we examined the long-run performance of French IPOs issued between 1991 and 2005. Unlike prior studies of the French market, we found the IPOs in our sample to perform

more poorly than a comparison portfolio over the 1991–2005 horizon. We compared the long-run performance of firms that did not receive analyst coverage (the orphans) with that of those that did receive (the non-orphans). This abnormal long-run performance was more severe for orphan IPOs than for non-orphan IPOs over a 1-year horizon. The evidence suggests that research coverage is not vital for the long-term success of IPOs, in contrast to the widely held belief. Once we controlled for other characteristics that have been shown to influence the long-run IPO performance, we found that investors and market participants pay attention to analyst coverage when the IPOs are venture capital backed, not introduced using a bookbuilding method, underwritten by a large syndicate, and not highly underpriced.

The market does not fully incorporate the perceived value of analyst coverage. We found firms with high coverage to outperform those with low coverage over a 3- to 5-year horizon. Once we controlled for the affiliation of the analysts making the recommendations, the IPOs covered by affiliated analysts did not underperform those covered by unaffiliated analysts. This result is inconsistent with the conflict of interest hypothesis (Michaely and Womack 1999), but supports our naïve market hypothesis (*H3c*).

Finally, consistent with the study of Bradley et al. (2008b), multivariate regression analyses established that the analysts' recommendations are not related to the 5- or 3-year performances of IPO firms. Once we focused on the first year after the issuance, however, we found the nature of the recommendations to be strongly associated with the long-run performance of French IPOs.

Notes

1. It is worth noting that affiliated analysts' recommendations are viewed as more credible following recent regulatory reforms (Kadan et al. 2009; Cliff 2007).
2. Derrien (2006) found that security analysts increase their bank's chance of managing future IPOs when they have issued generous recommendations to recent IPOs managed by their own bank.

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