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## **Why do Companies Include Warrants in SEOs: The case of French Unit Offerings<sup>1</sup>**

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## **Abstract**

We analyse the reasons why many French companies issue units when they raise additional capital. We show that units are not offered to mitigate the agency conflicts or to signal security mispricing. In contrast, we find that units are large, underwritten, predominantly issued in public rather than in rights offers and result in a lower dilution. The relationship between each individual component of the flotation costs and the use of units in public offerings is negative and significant. These results suggest that companies issue units to minimise their issue cost and to minimise the risk of failure of the issue.

# Why do Companies Include Warrants in SEOs: The case of French Unit Offerings

## 1. Introduction

Over the last few years a large number of French companies have come to the market to raise equity in the form of unit offerings. These unit issues consist of bundles of common stock and warrants, sold together as a package. In the aftermarket the stocks and warrants are traded separately. Unlike in the US where units are often associated with initial public offerings (IPOs) and the warrants are callable,<sup>1</sup> in France they come only with seasoned equity offerings, the warrants are not callable, and the conversion cannot be forced.

The issue of units is controversial. On the one hand, units offer a number of advantages to both shareholders and the company. In particular, by offering units, firms pre-commit to a seasoned offering at the exercise price of the warrants, thus giving the subscriber the right to buy further shares at the exercise price within a defined time period. In addition, by issuing units, companies can effectively have equity financing in stages, and may, under certain conditions, allow firms to raise higher proceeds. Furthermore, since units' offerings bring sequential financing, they may reduce agency costs resulting from potential free cash flow.<sup>2</sup> Consistent with this hypothesis, Schultz (1993) finds that the probability of unit offerings decrease with the proceeds of the offering, the ratio of assets to proceeds, the age of the firm, the ratio of income to proceeds, and the ratio of sales to assets, but increases with the percentage of equity sold, the aftermarket variance, and the use of low

prestige underwriters. Additionally, unit offerings are thought to be used as a signal of issuers' confidence in their future performance because the second stage financing is conditional on stock price appreciation (e.g., Chemmanur and Fulghieri, 1997). Finally, unit offerings can be used to increase the probability of success of a seasoned offering as warrants can be seen as an incentive to raise interest in new offerings when issuers obtain indications of low demand for the offering, i.e., a *sweetener* to increase the rate of subscription. However, despite these benefits, warrants are likely to complicate the offering and may lead to higher flotation expenses and adjustments.<sup>3</sup> Moreover, the firm loses control of the choice of the issue price and the timing of the second equity offering, resulting from the exercise of the warrants. Given these drawbacks, it is not clear why do firms choose units seasoned offerings rather than a typical common stock offering.

The purpose of this paper is to shed some light on the reasons for issuing units. We focus on French companies as they face a different institutional framework than their US counterparts. We test the hypotheses that unit offerings are determined by the agency cost, signalling and arbitrage offer price/banking fees. We also analyse the stock price reaction on the announcement date to show whether units convey less negative information than conventional seasoned equity offering. According to Yeoman (2001) the issuer maximises the net proceeds of the offering, which depend on the offer price and the underwriter spread. Some firms may prefer to lower the offer price and support a reduced spread. If the inclusion of warrants in seasoned equity offerings is used to reduce the spread, then we would expect the use of this strategy to be dependent on the method of equity offering.

Our analysis is based on a sample of 370 offerings over the period 1986 to 2000. For the sample as a whole we find that 23% of these offerings include warrants. The unit offerings are more pronounced in the case of public offers (61%) compared to rights offerings (8%). We contrast three main hypotheses: agency costs (Jensen, 1986), signalling (Chemmanur and Fulghieri, 1997) and the net proceeds maximisation (Yeoman, 2001) to explain why companies opt for units. We show that units are not offered to mitigate the agency conflicts or to signal security mispricing. In contrast, our results are consistent with the hypothesis that units are offered to minimise their issue costs. More specifically, we find that companies that issue units and those that opt for shares are relatively similar but the characteristics of their offers differ significantly. In particular, units are more likely to be large but they result in a lower dilution. Companies that issue units are also more likely to announce the use of the funds raised, to underwrite the issue, and to have higher issue costs than companies that issue shares. We also show that units are predominantly issued in public rather than in rights offers. Finally, we analyse the flotation costs and find that the use of units in public offerings is negative and significant even after accounting for all potential impacts on these costs. The results suggest that warrants decrease flotation costs and imply that the warrants reduce the risk incurred by the underwriters. In sum, our results suggest that companies chose to offer units to minimise their issue cost and the risk of failure of the issue.

The paper proceeds as follows. Section 2 discusses the institutional framework and presents the hypotheses to be tested. Section 3 describes the data and methodology. Section 4 presents our empirical results. Summary and conclusions are in Section 5.

## **2. Institutional framework and hypotheses tested**

### ***2.1. Institutional framework***

A large number of French firms issue units, i.e., attach warrants to their ordinary shares when they have seasoned equity offerings. The warrants and the shares are traded separately in the aftermarket. In every case, the seasoned offering (unit or common stock) has to be approved at the general shareholder meeting. French law grants the shareholders a right to purchase new shares, but the general shareholder meeting may waive this pre-emptive right. The approval of the issue may be given for a maximum amount to be raised within five years in the case of rights, three years for issues without rights, and 26 months if the type of security and flotation method is not specified. Pre-emptive rights cannot be permanently waived by means of charter amendment<sup>4</sup>.

Throughout the paper, we refer to issues without rights as public offerings. The French institutional setting for public offerings differs from U.S. setting in three ways. First, in most cases, shares are first offered to current shareholders, on a pro-rata basis, for an average of ten days, but this priority cannot be traded like a right<sup>5</sup>. Second, there is a regulation constraining the issue price. Before 1994, the issue price cannot be less than the average price over twenty consecutive days chosen among forty daily share prices before the issue. After 1994, the respective periods are ten out of twenty daily share prices before the issue. This constraint is only prevalent in France. In other European countries such as for example Germany, companies are free to set their offer price as long as the dilution is lower than 10% per year. In practice companies set their prices at around 3 to 5% below the price 3 days before the announcement. In the UK, the offer price discount should not

exceed 5% of the price before the announcement date.<sup>6</sup> Third, public offerings can be underwritten through a standby-underwriting contract if there is a priority period, if not companies have to use firm commitment method.

In the French public offerings, the offer price and the size of the issue are set at the latest on the *Commission des Opérations de Bourse (COB)*<sup>7</sup> date, which is on average four days before the beginning of the issue period. The underwriter incurs the risk of adverse changes in share prices from the COB date to the end of the priority period. In the U.S., the offer price for firm commitments is set at the closing transaction price on day  $t$  and the distribution of shares occurs day  $t+1$  (e.g., Corwin, 2003). The French constraints on the issue price increase the risk for the underwriters, who will only accept to enter a public offering if they assess that the true value of the stock is higher than the offer price. As a result, underwriter certification associated with French public offerings may be stronger than in the U.S. firm commitments.

## ***2.2. Hypotheses tested***

In this section we review the literature and set up our hypotheses. We analyse the three main hypotheses developed in the previous initial and seasoned equity offering literature, namely the signalling, agency and the net proceeds, in conjunction with the specificities of the French institutional framework to set up our hypotheses.

### **2.2.1. Signalling hypothesis**

In an environment of information asymmetry, firm insiders have private information about the mean of their future cash flows. They know if the firm is a good firm (high expected future cash flow) or a bad firm (low expected future cash flow), while outsiders cannot identify the type of the firm. When firms raise capital in an IPO or a seasoned offering, outsiders cannot distinguish between the good and bad ones. In this setting, good firms have a greater incentive to signal their quality. In the seminal paper of Leland and Pyle (1977), the risk-averse insiders of the good firm choose to signal their quality by retaining a large fraction of the equity issued. Their model is developed in the case of a one-shot equity offering.

The signalling characteristics of a two stage financing have been mainly underlined in the case of IPOs. In this case, high-quality firms underprice their IPO in order to obtain a higher price at a subsequent seasoned offering (see for instance Allen and Faulhaber, 1989, Grinblatt and Hwang, 1989, Welch, 1996 or Chemmanur, 1993).

Chemmanur and Fulghieri (1997) develop a theory of unit IPOs based on asymmetric information. Their model allows for the firms to differ in both the mean and the riskiness of future cash-flows. At time 0, the firm insiders know the true mean and the variance of the future cash-flows, but they do not know the exact value that will occur at time 1. In this setting, the good-type firm may use three types of signal that will deter mimicking by the bad-type firm: the fraction of equity retained, the degree of underpricing and the number of warrants. Chemmanur and Fulghieri (1997) show that there exists a separating equilibrium, in which high-risk firms issue underpriced units, and lower risk



firms issue underpriced common stock alone. Their model provides several testable predictions. First, unit IPOs should be associated with greater ex post variance compared with common stock IPOs. Second, for firms that have made unit IPOs, the fraction of firm value sold as warrants will be increasing in firm riskiness. Third, in unit IPOs, the percent of underpricing will be increasing in firm riskiness. Fourth, in unit IPOs, the fraction of equity retained by insiders will be decreasing in firm riskiness. Fifth, the exercise price of the warrants will be set equal to the expected stock price.

These predictions may also be valuable for seasoned equity issues. Chemmanur and Fulghieri (1997) suggest that the impact of asymmetric information should be expected to be less severe for seasoned equity issues than for IPOs, and therefore the modelled phenomena less pronounced. How and Howe (2001) analyse 369 IPOs in Australia, among which 134 unit IPOs. Their results provide support for Chemmanur and Fulghieri (1997) predictions. In particular, they find that unit issuers are riskier than non-unit issuers, that underpricing increases with firm riskiness, and that, after controlling for the fraction of equity retained by insiders, the proportion of the firm sold as warrants increases with firm riskiness. Lee, Lee and Taylor (2000) find similar results for Australian IPOs and Jain (1994) for US IPOs. Bouyn and Moore's (2002) results also support signalling predictions for US SEOs. In France, Chollet and Ginglinger (2001) find that SEO units underpricing increases with riskiness and with the proportion of the firm sold as warrants. We, therefore expect firms that face high information asymmetry to issue units.

### **2.2.2. Agency costs hypothesis**

If equity is issued in order to finance an investment with a positive net present value, firms do not need units. But, if the outsiders cannot determine the value of the potential investments, they may be reluctant to subscribe to an equity offering, because there exists a risk of free cash flow (Jensen, 1986). According to the free cash-flow problem, managers have an incentive to invest in negative present value projects for their own personal benefit. It is all the more important as the monitoring of the firm is reduced, for example, when there is a more dispersed pattern of ownership. In this situation, multi-stage equity financing bonds the managers to undertake positive NPV projects.

Consequently, unit issues reduce the agency costs of free cash flow by providing equity financing in two stages, just like venture-capital firms provide financing in a sequence of infusions (see Sahlman, 1990). The second financing is conditional on stock price appreciation. Management has to prove that the firm has worthwhile projects to obtain the second round financing. Thus, the agency cost hypothesis predicts that firms will issue units if there is a doubt on the quality of their investments and on their growth opportunities. It also suggests that unit IPOs will be issued by smaller, younger and riskier firms than common stock IPOs. As units have to motivate managers to disclose the presence of profitable investments, the exercise price of the warrants should be set above the expected stock price.

Consistent with these predictions, Schultz (1993) shows that unit IPOs are issued by smaller and younger firms that are mainly from high-tech or services industries. Unit IPOs also support higher fees and greater underpricing than IPOs that come up with shares only. Since unit IPOs are

characterised by greater uncertainty, they often lead to a stage financing under which managers obtain the second portion of the total cash needed to fund the firm only if the firm has valuable investment, and of the warrants can be exercised. Schultz (1993) also finds that firms issuing unit IPOs are more risky as they are far more likely to fail than those issuing shares alone. His results support the agency-cost hypothesis. However, Jain (1994), How and Howe (2001), and Lee, Lee and Taylor (2000) find that the probability of failure is independent of whether the IPO is a unit or not for firms of similar characteristics. We therefore test the hypothesis units are issued by firms with high agency conflicts.

### ***2.2.3. Net proceeds maximization hypothesis***

The net proceeds maximisation hypothesis has not been fully tested in the previous literature. Yeoman (2001) developed this theory to explain how the spread and the offering price are determined in the case of an underwritten offering. In the model, an issuer seeks to maximise the net proceeds of the offering, i.e., the difference between the offering price and the issuing fees. The fees are proportional to the offering price and represent the spread between the offering price and the net proceeds. The underwriter operates in a competitive environment that requires that the revenues (underwriting fees) of an offering equal its expected costs. By maximising the issuer's net proceeds under the underwriter's constraint, Yeoman determines sequentially the optimal spread and the offering price in the case of seasoned equity offerings. In this case, if the initial return is positive, investors may have an incentive to short sell the shares before the offering. Consequently, the net

proceeds are maximised by reducing the incentive to short sell and this is accomplished by limiting the expected initial return.

The model leads to several predictions. The optimal offer price and the net proceeds are a decreasing function of price uncertainty and an increasing function of the underwriting fee. In the case where fees are fixed, underpricing is expected to increase with the riskiness of the issue and with the dilution factor. These results are established for seasoned equity offerings or unseasoned offerings when there is no possibility of short selling. In unit SEOs, short-selling is not a constraint as the warrant, and not the share, is underpriced. The situation is then comparable to IPOs where there is no short selling possible because the shares are not listed. The issue costs are also low in France compared to the US. On average, the total issue costs in France amount to 2.4% of the gross proceeds compared to 5.49% in the US (Yeoman, 2001). Further, in France, large banking fees are very rare. Until the mid-eighties, underwriting fees are set at a virtually fixed percentage of 2.5% of the gross proceeds. The growing competition among banks caused the flotation costs to vary with the level of offering risk, but this variation is still limited.

Under French rules, in a common stock public offering, the offer price has to be equal to the average share price of 10 amongst 20 days prior to the announcement date. This constraint is likely to prevent companies from issuing equity in depressed markets. French firms may find some flexibility in issuing packages of shares and warrants. As the valuation of warrants may not be unique, the offer price of the package may be less than the sum of the market values of both securities. In some cases firms may prefer to lower the offer price of the units to find an underwriter who accepts to guarantee the offer.

### **3. Data and methodology**

#### **3.1. Sample selection**

We identify all equity issues taking place on the French market over the 1986-2000 period through the annual reports of the COB. Our initial sample includes 473 equity issues. We exclude all issues that do not meet the following criteria:

- The issue involves a single type of security (common stock or units of common stock and warrants) and does not come with a stock dividend;
- The issue does not involve a common stock reduction or a restructuring plan;
- The firm does not publish important information, such as earnings, at the same time as the issue announcement.<sup>8</sup>

These criteria produce a final sample of 370 offerings, which consists of 264 (71%) rights offers and 106 (29%) public offers. Table 1 reports the annual distribution of the sample firms. The first four columns indicate that, on average, out of a total of 370 French seasoned equity offerings, 23 per cent are in the form of units and 77 per cent are shares only. However, the annual distribution of firms offering units is not monotonic across years. For the sample as a whole, unit offerings range between 4.4% in 1986 to 63.6% in 1993, while in terms of number of issues, their popularity is at the highest level in 2000 with 13. With the exception of 1993 and 1995, the proportion of unit offerings is substantially lower than 50% in all years of the sample. The table also highlights a certain pattern in the overall annual distribution of the sample. With the exception of the 48 issues in 2000, the vast majority of offers (58%) are in the pre-1991 period. However, this dominance of the pre-

1991 period is observed only for the issuance of shares not units as 181 (64%) companies issued shares in 1986-1991 compared to 35 out of 86 (41%) companies that issued units. It is also interesting to notice the relative stability of unit offerings, which range between 2 and 13, compared to share of between 2 in 1995 and 43 in 1986.

In the next six columns of Table 1, we distinguish between rights and public offers. The results indicate that companies are more likely to offer units in public rather than right issues. On average, 65 units (76%) are in public offers and 21 (24%) are in rights offers. Column 7 shows that, within rights issues, unit offers are significantly lower in each year of the sample period, reaching only 40% in 1993. In contrast, the last column of Table 1 indicates that the vast majority of public offers are in the form of units. Similarly, the comparison of columns 6 and 9 indicates that unit public offers dominate rights units in each single year of the sample period, ranging between 50% in 1987 to 100% in 1991, 1992 and 1997. These results suggest that the offer method is likely to be one of the factors explaining the decision to offer shares or units.

[Insert Table 1 here]

We use a number of proxy variables to test the aforementioned hypotheses. We split these variables into those that measure firm characteristics and those that relate to the characteristics of the issue. Table 2 provides the definition of these two sets of variables. We expect the decision to issue units to be related to the firm's specific characteristics and to the features of the offering. We identify the following firm's specific characteristics to test the aforementioned hypotheses.

*Risk:* We use the stock price volatility calculated on the 90 days before the announcement of the issue to measure risk. We test for robustness of our results using equity beta and specific risk,

calculated as the residual volatility of the equity of the firm. Prior performance (measured by the cumulative abnormal returns 200 days prior to the announcement date) is also a measure of risk around the offering. Several studies have documented that the adverse selection effects around an equity issue are more pronounced after a run up (e.g., Masulis and Korwar, 1986). Our three hypotheses predict that the decision to issue units will be positively related to the risk.

*Size:* Firm size has also an ambiguous effect on the use of units. From an agency perspective, Jensen (1986) argues that larger companies are more likely to suffer from agency conflicts because they are difficult to monitor. The use of units will mitigate these conflicts. In contrast, from the signalling perspective, larger companies are less likely to be subject to information asymmetries, thus less likely to issue units. We contrast these two views using the firm market value to measure size.

*Growth:* The agency hypothesis predicts that firms with strong growth prospects will use stage financing, and therefore issue units rather than shares alone. We use the market to book ratio at the year-end preceding the offering measures growth.

*Ownership:* According to the agency hypothesis developed by Schultz, 1993, unit offerings are expected to be issued when managers own a small portion of the firm's equity and thus bear fewer of the costs of making poor investments. French firms are characterised by a highly concentrated ownership, especially for small, equity issuers. Thus, agency conflicts are likely to occur between these majority shareholders (blockholders) and minority shareholders, rather than between managers and shareholders. To account for this issue we use two variables to measure ownership: *blockholders* (% of shares owned by the largest shareholder) and *insider* (dummy equals one if the

largest shareholder is a family or the managers). We expect both these variables to be negatively related to the probability of issuing units.

The characteristics of the issue are measured using the following variables:

*Hot issue:* Bayless and Chaplinsky (1996) provide evidence that there exist windows of opportunity (hot markets). During these periods, information asymmetry would be substantially diminished: the risk for an investor of being misinformed in acquiring issued shares being lower than during less active periods (see Booth and Chua, 1996). The risk for an underwriter would also be lower in hot markets. We measure *Hot issue* period using the number of equity offerings during month t-3 to month of the offering. According to the signalling and net proceeds hypotheses, this variable should be negatively related to the probability of issuing units.

*Proceeds:* This variable is measured by Gross proceeds in millions Euro. The proceeds are highly correlated to the size of the firm, and we expect a negative relation between the probability of issuing units and the size of the offering.

*Immediate dilution:* According to the agency hypothesis of a stage financing, the immediate dilution should be lower for units than for shares because unit-issuing firms receive the proceeds in two stages. This variable is defined as the ratio of the new shares over old *plus* new shares at the unit issue.

*Total dilution:* New shares *plus* Shares from exercise of warrants over old *plus* new shares *plus* shares from exercise of warrants. Stage financing is even more useful when the total issue is large relative to current size of the firm (to avoid free cash flow problems).



*Free cash flow:* Dummy equals to one if the issue is for acquisition or investment in specific project. If the firm specifies the precise use of the proceeds, the risk of negative NPV projects decreases and so does the need for units.

*External investors:* Proportion of the issue not taken up by existing shareholders. In an agency perspective, if current shareholders renounce to subscribe, the agency costs may increase, resulting in a preference for units. In a net proceeds perspective, the risk for the underwriter will be greater. As a result, firms will prefer to issue units and to underprice the issue to reduce the flotation costs.

*Underwriters:* Three variables are taken into account. The first is the proportion of the offer that is underwritten. The second is a dummy that equals one if the offer is underwritten. The third measures the underwriter reputation (Dummy equals one if the underwriter has at least 1% of the total seasoned equity offerings in 1986-2000). The arbitrage underpricing/banking fees is only relevant for underwritten offers. Therefore, we expect the probability of issuing units to increase when the offer is underwritten. Further, the underpricing will increase with underwriter reputation, as part of the total cost of the issue. Agency and signalling hypotheses provide no prediction for the percentage underwritten. They both imply that the probability of issuing units will decrease with bank reputation.

*Issue costs:* We use three measures of issuing costs. First we compute the total flotation costs as the sum of the banking fees and the legal and administrative fees. Second, we estimate the level of the underpricing, measured by the difference between the unit offer price and the current market price of the two securities included in the package. This requires an estimation of the value of

the warrant. This value cannot be observed because warrants are not traded immediately. We, therefore calculate it using the Option pricing model. The methodology is described in the appendix. Third we measure the loss in firm value on the announcement date. We use the standard event study methodology to assess the market reaction to the announcement of SEOs. We compute the coefficients of the market model over the period -220 to -21 days relative to the announcement date 0 after correcting for thin trading using Dimson (1977) methodology. Our event period covers -20 to + 20 days. The agency and signalling hypotheses predict that unit issues have both larger flotation costs and greater underpricing than share offerings. However, the net proceeds hypothesis implies that underpricing is a decreasing function of banking costs. If unit offerings allows more underpricing than share offerings, than we should observe that unit issues incur lower flotation costs.

*Issue method:* Dummy equals to one if the issue is a rights. The net proceeds hypothesis is the only one that gives a prediction for the issue method. In rights offering, the arbitrage underpricing/flotation costs is always possible. Firms do not need to issue units. However, in a public offering, regulation limits share underpricing. Issuing units allows more underpricing in public offerings.

*Warrant characteristics:* We use a number of variables to describe the characteristics of the warrant. We define Relative price as the Exercise price of the warrant over  $P_{t-1}$ ; Maturity as the number of year of the life of the warrant; the relative value as the warrant value based on Options pricing model over  $P_{t-1}$ ; and the Dilution as the ratio of shares from exercise of warrants over old, new and shares from exercise of warrants. The agency hypothesis predicts that the exercise price of the warrants is set above the expected stock price, to motivate managers to disclose their profitable

prospects. The signalling hypothesis predicts that the exercise price of the warrants is set equal to the expected stock price, and that the proportion of firm value sold as warrants (dilution) increases with firm riskiness. The net proceeds hypothesis has the same prediction as the agency one, but for a very different reason. If the firm needs underpricing and issues units in this aim and not to obtain a second round of financing, then the exercise price may be lower than the expected stock price at the warrant's maturity.

Most of the data is collected from the registration statement filed with the COB. The filing covers the offering proceeds, the subscription price, number of current shares, the underwriters' name, and shareholding. The company also provides an estimate of the flotation costs. Prices are extracted from the Euronext database. Other data is collected from Extel Financial and Datastream.

[Insert Table 2 here]

### ***3.2. Methodology***

We use a number of methodologies to test our hypotheses. We start by a univariate analysis where we compare the characteristics of firms that issue units against those that issue shares. As reported in Table 1, we find, among other things, that the probability of offering units depends on the issue method, i.e., companies that have rights issues are less likely to offer units. Thus, we cannot consider the probability of offering units in isolation because both decisions (rights and units) are initiated jointly. In a single equation model, the probability of issuing rights would be correlated with the disturbance term. We overcame this problem by estimating the two probabilities together in a simultaneous equation model and consider the probability of issuing rights as an endogenous variable

and the other determinants of issuing units are exogenous. A general method of obtaining consistent estimates of the parameters in such a model is the two-stage least square method. We run a first set of regressions to explain the decision to opt for rights or public offers. We estimate this probability through logit regressions with the dependent variable equal to one for a rights issues and zero for public offers. The predicted probabilities from this model are used as regressors to predict the probability of issuing units or shares.<sup>9</sup>

We test the hypothesis that companies issue units to reduce their issue costs by relating the various measures of flotation costs to the unit dummy. These costs include the direct and indirect costs, the market reaction on the announcement date as well as the level of discount offered to shareholders. The explanatory variables include firm's risk, external investors' subscription, the size of the issue and the characteristics of the underwriters.

#### **4. Empirical results**

In this section we present the results of the various tests we obtained using the 370 French seasoned equity offerings over the period 1986-2000. First, we assess the likelihood of a unit offering through a univariate analysis of the data and by running a set of regressions with a dummy variable equal to 1 for unit offering against a number of explanatory variables. Then we analyse the impact of issuing costs on the decision to issue units.

## **4.1. The likelihood of issuing units**

### **4.1.1. Univariate analysis**

Table 3 provides a descriptive analysis of the characteristics of companies that issued units and shares. Panel A reports the differences in firm characteristics. The results show that, for the sample as a whole, units are offered by companies with high median market value of equity and high managerial or family ownership. There is, however, no statistical difference between the two sets of firms in risk, performance, growth and block ownership. The split of the sample companies into those that had rights issues and those that opted for public offers, reported in the next six columns of Table 3, Panel A, also doesn't highlight any statistical differences between companies that offered only shares and those that issued units. The only statistical difference between companies that issued units and those that issued shares is in the median size and average growth of companies that had rights. These results do not provide support for the agency conflicts hypothesis as, under this hypothesis, high growth companies are expected to issue units. They also indicate that firm specific characteristics are not the main drivers of unit offering, suggesting that any company in France can issue units.<sup>10</sup>

Table 3 Panel B reports differences in the characteristics of the offers between units and shares issues. Columns 4 to 9 of Table 3, Panel B, explore further this issue by splitting the issues into rights and public offers. The first and second rows report the mean and median values of the number of equity offerings during the three months preceding the issue. The results indicate that all the unit offerings, whether rights or public, are less likely to be issued in hot periods. For example,

for the sample as a whole, the average number of offerings in the preceding months before the issue is 12 compared to 9 in unit offerings ( $p = 0.01$ ). Similar numbers are obtained for rights and public offers. Thus, the results indicate that companies prefer to issue units in cold periods, i.e., when the risk of failure is high.

The next two rows report the mean and median gross proceeds. While the differences in means between units and shares are not significant, the differences in medians are significant for the sample as a whole and rights offers, suggesting that companies issue units to minimise the risk of failure of large offers. The agency-cost hypothesis predicts that small companies are likely to issue units. Previous studies show that in the US units are chosen by small firms, and the gross proceeds are three times lower for unit IPOs (Schultz, 1993) and seven times lower for unit SEOs (Byoun and Moore, 2003) than for shares offerings. Our results are not consistent with these findings and appear to suggest that units are offered to minimise the risk of failure of the issue.

A large number of the remaining results also provide support for this argument that units are offered to increase the chances of success. For example, unit offerings are more likely to be underwritten, suggesting either that the units are more risky than shares and/or units are offered to maximise the chances of success. On average 87% of units are underwritten compared to 71.5% for the shares. However, the reputation of the underwriters does not appear to push firms to opt for units. Although these results indicate that, in France, the vast majority of seasoned equity issues, whether rights or not, are underwritten, units are more likely to be guaranteed than shares ( $p = 0.00$ ), implying that companies that issue units are less likely to take the risk of failure. These findings are also consistent with the prediction of the net proceeds hypothesis.

The differences in means and medians in the *free cash flow* variable is significant suggesting that unit offerings are more likely to be accompanied by the disclosure of the use of the proceeds. Although these results suggest that firms issue units to mitigate the agency conflicts, they are also consistent with the proposition that units are issued to mitigate the risk of failure.

The unit offerings are also more likely to have a large proportion of shares not taken up by existing shareholders (*External*). The proportion of the offering that is not taken up by blockholders (external) is significantly larger for units compared to shares for the whole sample. The fraction offered to external investors is significantly greater for public offerings (67.8%) than for rights issues (45.8%), but not for units versus shares only offering, when controlling for the flotation method. The agency-cost hypothesis predicts that the fraction of equity retained by insiders is lower for units offering. Our results are not consistent with these arguments. The signalling hypothesis predicts that the fraction of equity retained by insiders decreases with riskiness (or equivalently that the fraction offered to external investors increases with riskiness). We find that the fraction offered to external investors increases with the systematic risk of the firm. These results are more consistent with signalling hypothesis than agency-cost hypothesis.

The next three variables measure the differences in transaction costs between units and shares. The total costs of units of 2.72% are statistically, but not economically, larger than the 2.34% for share offers. Banking fees are also significantly larger for unit offerings compared to share issues. We also measure issue costs by the level of underpricing. For public offerings (rights issues), the average underpricing is 18% (40%) for units and 7% (22%) for shares. This variable indicates that companies that issue units are much more likely to face higher costs than companies that issue shares.

These findings can be compared to Byoun and Moore (2002) figures. They find that the level of underpricing for unit offerings is 1.74% compared to 1.08% for shares. Recent studies show that SEOs underpricing increases over time. For instance, Corwin (2003) shows that underpricing was 2.21% over 1980-1998, and 3.06% over 1993-1998, whereas Altinkiliç and Hansen (2003) find 2.58% over 1990-1997. Further, Corwin (2003) find that SEO underpricing is significantly related to the concurrent level of underpricing in the IPO market (conditions that both affect IPOs and SEOs)

Finally, as shown in Table 1, the probability of issuing units is negatively related to the rights issue method. On average, in rights issue method there are 24 per cent of units that are issued compared to 86 per cent of share issues. The results suggest that companies prefer to use units when they have public offers as opposed to rights offers.

The last three rows give the warrants characteristics. On average, the exercise price is 14% above the price at the issue date. The average maturity is 3.19 years and the average relative warrant value is 23%. Agency and net proceeds (signalling) hypotheses predict that the exercise price is above (equal to) the expected stock price. We looked at the maturity stock price for the 50 offerings for which we had the data. Out of these 50, only 14 warrants have been exercised at maturity. This finding seems to be in favour of the first prediction.

[Insert Table 3 here]



#### **4.1.2. Multivariate analysis**

We account for the simultaneous effects of all these variables by running a set of 2-stage least square regression method for rights vs. public and units vs. shares. Table 4 indicates that the likelihood of issuing units is negatively related to the probability of issuing rights,  $Pr(rights)$  and to the hot issue period, *Hot issue*. Neither agency cost nor signalling hypothesis put forward a prediction about the flotation method. The net proceeds hypothesis predicts a negative relation. In a rights issue, more underpricing leads to a larger value for rights. Firms do not need to issue units to underprice their offers. On the contrary, public offerings only allow limited underpricing, due to the price regulation constraint. This constraint is less stringent in hot markets. When prices are rising, the average of 10 among 20 prices before the issue still allows underpricing. However, when prices are decreasing, this rule prevents from issuing new shares. This may explain why units are more frequently issued in cold markets. The signalling hypothesis suggests that underpricing decreases during high activity periods, all else being equal. The risk to an investor of being misinformed in acquiring securities would be lower than during more active periods. The need for units is less stringent.

The likelihood of issuing units is positively related to the presence of underwriters, whatever their reputation. The arbitrage flotation costs/underpricing makes sense for underwritten offerings only. This result supports the net proceeds hypothesis. Agency and signalling hypotheses predict that low reputation underwriters will guarantee units' offerings. We find that the underwriter reputation has no impact on the likelihood of units.

We also test the direct impact of banking fees and underpricing on the likelihood of units. Banking fees is not significant, whereas underpricing appears to provide an incentive for companies to issue units.

The three hypotheses predict that riskier firms would preferably issue units. Neither volatility, nor the other measures of risk (not reported), are significantly related to the probability of issuing units.

According to the agency theory, low immediate dilution (and large total dilution), as reflecting the need for stage financing, should induce firms to issue units. We find that immediate dilution is not significant. The free cash flow variable (if funds are raised for a specific project) has a positive impact on the probability of issuing units (however not significant in all the models). Neither the blockholders nor the growth variables are significant. These results are not consistent with the agency conflicts hypothesis. In sum, these results offer only weak evidence in favour of agency theory, but altogether reinforce the net proceeds hypothesis.

[Insert Table 4 here]

#### ***4.2. Issuing costs of seasoned offerings***

In the case of a seasoned offering, the firm faces three types of cost: fees (underwriting and legal fees), underpricing and the reaction following the announcement of the offering. Table 3 gives descriptive statistics for total and banking costs, as well as underpricing. Table 5 reports the stock price reaction to SEOs announcements. In the case of shares rights issues, the announcement date

abnormal returns are negative and significant. In contrast, for units, the abnormal returns are not statistically significant. For public offerings, the abnormal returns are negative and significant for units over the (0;1) and (0;5) periods and negative for shares over (0;5). There are no statistical differences in market reaction between units and shares, whether rights or public. These results are not consistent with Byoun and Moore's (2002), who find a -1.98% reaction for units issues and -2.67% for shares offerings in the US.

[Insert Table 5 here]

Table 6 presents the cross-sectional regressions of flotation costs, underpricing and market reaction on the use of warrants in seasoned equity offering.

[Insert Table 6 here]

The results indicate that for public offerings, as for rights offerings, the fees (banking fees and total fees) decrease with the issuing size, but increase with the percent of the issue, which is guaranteed, with the percent subscribed by external investors and asymmetric information.

If we consider rights offerings, the systematic risk of the firm plays a determinant role in explaining the magnitude of the fees (banking and total). The risk of the firm increases the amount of fees. If we consider public offerings, the fees are higher for common stock issues compared to unit issues, all else being equal. An issue of shares is more expensive in terms of underwriting fees, about 0.6%. For rights issues, units offering are more expensive than common shares offerings, but not significantly so. These results are not consistent with the agency-cost and signalling hypotheses predictions that underwriter's fees are larger for unit issues.

The reduction of flotation costs is to be compared with the underpricing. The results, reported in Table 6, indicate that, for both public or right offering of units, underpricing increases significantly with firm riskiness, which is compatible with the signalling hypothesis. The results show also, that after controlling for risk, underpricing is still larger for unit issues, consistent with the agency and the net proceeds hypotheses. Consistent with the net proceeds hypothesis, underwriter reputation leads to higher underpricing, whether rights or public offerings.

In the case of rights issues, underpricing, whether shares or units, is totally compensated by the value of the rights. In the case of public unit issues, there is no compensation, and underpricing is a cost supported by current shareholders if they do not subscribe to the offering. The average undervaluation for public units (shares) offerings is 18% (7%). The average (median) loss for current shareholders, which corresponds to the value of the rights, if it would exist, is 1.24% for shares and 2.22% for units. Therefore, the difference in the loss for current shareholders, about 1% for units, is comparable to the reduction in flotation costs highlighted in Table 6 (0.6%)<sup>11</sup>. These results support the net proceeds hypothesis of an arbitrage between underpricing and flotation costs.

The third cost of a seasoned offering is the market reaction. A cross-sectional analysis is completed in order to explain the magnitude of mean abnormal returns. The dependant variable is the two-day excess return on the announcement of equity offerings. The abnormal returns on the announcement date accounts for two effects. First, it takes into account the loss for current shareholders resulting from the offering of underpriced shares. Second, it corresponds to investors' reaction to the SEO.

When we control for risk and size, stock market reaction to the announcement of a unit issue is more favourable for units compared to shares in the case of right issues, but not significantly so. The flotation costs do not depend on the choice of units. The underpricing does not lead to a loss for current shareholders, as they can sell the right.

In contrast, the market reaction is more negative, but not significant, compared to the announcement of a common stock issue, in the case of public offerings. The pure signalling effect ( $CAR_{0,1}$  – loss for current shareholders from underpricing) does not differ for units and shares, and is not significantly different from zero. Therefore, the costs for public offerings are underpricing and flotation costs. All together, as discussed above, these results support the net proceeds hypothesis.

## **5. Summary and conclusions**

The purpose of the paper is to test three hypotheses agency, signalling and net proceeds in the case of unit seasoned equity offerings in France. We use a sample of 370 equity offerings over the 1986 to 2000 period. We find weak evidence in favour of the agency-costs hypothesis. Immediate (total) dilution is lower (larger) in the case of unit issues as predicted by the stage financing implication of the agency hypothesis. The likelihood of units decreases when the planned use of the funds is specified. However, other implications of the agency hypothesis are clearly rejected by our evidence. Unit issuers are neither smaller nor riskier than share alone issuers. These results are not in line with the US evidence. The ownership structure and the underwriter reputation have no impact on the choice of units.

The signalling hypothesis has several common implications with either the agency conflicts or the net proceeds hypotheses. We especially look at the net proceeds hypothesis, which suggests the existence of an underpricing/flotation costs arbitrage. We find that the likelihood of unit offerings increases in hot markets, for the public flotation method and for underwritten issues. The agency and signalling hypotheses predict that the flotation costs for units will be higher than for shares alone issues. In contrast, we find that the public offering costs are lower for unit than for shares. These results are consistent with the net proceeds hypothesis. For these offerings, we highlight more underpricing and lower direct costs. Units reduce the risk of the offering for the underwriter and allow an issue which otherwise could have some difficulties to take place.

In sum, our results show that the units have a very specific function on the French market. Part of them help to circumvent the offer price regulation for public offerings.

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**Table 1 Annual distribution of equity issues in France**

The total number of issues in France (*All*) of 370 over the period 1986 to 2000 is split into rights issues (*Rights*) when the issue is offered only to existing shareholders and public offers (*Public*).

Years	All				Rights			Public		
	Shares	Units	Total	% Units	Shares	Units	% Units	Shares	Units	% Units
1986	43	2	45	4.4	40	2	4.8	3	0	0.0
1987	38	2	40	5.0	36	1	2.7	2	1	33.3
1988	14	6	20	30.0	14	2	12.5	0	4	100.0
1989	29	10	39	25.6	28	3	9.7	1	7	87.5
1990	26	12	38	31.6	23	2	8.0	3	10	76.9
1991	31	3	34	8.8	23	0	0.0	8	3	27.3
1992	5	2	7	28.6	3	0	0.0	2	2	50.0
1993	4	7	11	63.6	3	2	40.0	1	5	83.3
1994	18	9	27	33.3	17	3	15.0	1	6	85.7
1995	2	3	5	60.0	2	1	33.3	0	2	100.0
1996	9	3	12	25.0	8	1	11.1	1	2	66.7
1997	11	3	14	21.4	10	0	0.0	1	3	75.0
1998	8	6	14	42.9	5	1	16.7	3	5	62.5
1999	11	5	16	31.3	11	2	15.4	0	3	100.0
2000	35	13	48	27.1	20	1	4.8	15	12	44.4
Total	284	86	370	23.2	243	21	8.0	41	65	61.3

**Table 2 Definition of variables**

The hypotheses tested are the agency costs of Jensen (1986), the signalling of Chemmanur and Fulghieri (1997) and the net proceeds maximization of Yeoman (2001). The expected signs refer to companies that issue units.

Variables	Definitions	Hypotheses		
		Agency	Signalling	Net proceeds
Panel A. Firm characteristics				
Volatility	Annualised volatility of the stock calculated on the 90 days preceding the announcement of the issue.	+	+	+
Performance	CAR <sub>-200,-1</sub> days relative to issue date 0.	+	+	
Size	Equity market value (Euro m)	-	-	
Growth	Market to book ratio at year-end	+		
Insiders	Dummy equals one if the largest shareholder is a family or the managers	-		
Blockholders	% of shares owned by the largest shareholder	-		
Panel B. Characteristics of the issue				
Hot issue	Number of equity offerings during month t-3 to month of the offering		-	-
Proceeds	Gross proceeds in millions Euro	-		
Immediate dilution	New shares over old <i>plus</i> new shares at the unit issue	-		
Total dilution	New shares <i>plus</i> Shares from exercise of warrants over old <i>plus</i> new shares <i>plus</i> shares from exercise of warrants	+		
Free cash flow	Dummy equals to one if the issue is for acquisition or investment in specific project	-		
External investors	Proportion of the issue not taken up by existing shareholders	+	Increases with riskiness	+
Underpricing	Offer price less warrant value less price on day t-1 at offer price	+	Increases with riskiness	+
Underwriters				
% underwritten	Proportion of the offer that is underwritten			+
Underwritten	Dummy equals one if the offer is underwritten			+
Reputation	Dummy equals one if the underwriter has at least 1% of the total SEOs in 1986-2000	-	-	Underpricing increases with reputation
Costs				
Total costs	Total cost of the issue over gross proceeds	+	+	-
Banking costs	Banking fees over gross proceeds	+	+	-
CAR(0,1)	Cumulative abnormal returns from day 0 (announcement date) to day +1			
Rights issue method	Dummy equals to one if the issue is a rights			-
Warrant				
Relative price	Exercise price of the warrant over P <sub>t-1</sub>	> expected stock price	= expected stock price	> expected stock price
Maturity	Warrant maturity in years			
Relative value	Warrant value based on Options pricing model over P <sub>t-1</sub>			
Dilution	Shares from exercise of warrants over old, new and shares from exercise of warrants		Increases with riskiness	

**Table 3 Descriptive statistics of the sample firms**

The sample includes 370 equity issues on the French Stock Exchange from 1986 to 2000. For growth variable we have only 226 observations. The table reports the mean and below in parentheses the median and the p-value for differences in means and medians between units and shares. The variables are defined in Table 1. \*, \*\*, \*\*\* significant at 0.10, 0.05 and 0.01 levels, respectively.

<i>Variables</i>	<i>All</i>			<i>Rights</i>			<i>Public</i>		
	<i>Units Mean (Median)</i>	<i>Shares Mean (Median)</i>	<i>p value for mean/ median differences</i>	<i>Units Mean (Median)</i>	<i>Shares Mean (Median)</i>	<i>p value for mean/ median difference</i>	<i>Units Mean (Median)</i>	<i>Shares Mean (Median)</i>	<i>p value for mean/ median difference</i>
Panel A Characteristics of firms									
Volatility	0.44 (0.32)	0.40 (0.33)	0.27 0.55	0.42 (0.34)	0.37 (0.32)	0.51 0.48	0.45 (0.32)	0.57 (0.38)	0.09* 0.16
Performance	0.37 (0.29)	0.31 (0.25)	0.31 0.19	0.22 (0.26)	0.30 (0.26)	0.52 0.81	0.42 (0.31)	0.34 (0.20)	0.54 0.19
Size	789 (266)	838 (81)	0.87 0.00***	426 (270)	814 (77)	0.26 0.01***	903 (264)	984 (283)	0.81 0.62
Growth	2.79 (1.99)	2.78 (1.80)	0.98 0.90	1.50 (1.42)	2.29 (1.74)	0.01*** 0.43	3.15 (2.23)	4.78 (2.13)	0.11 0.89
Insiders	0.34 (0.00)	0.22 (0.00)	0.03** 0.03**	0.14 (0.00)	0.19 (0.00)	0.58 0.60	0.40 (0.00)	0.41 (0.00)	0.88 0.88
Blockholders	0.45 (0.50)	0.46 (0.49)	0.75 0.99	0.45 (0.51)	0.45 (0.42)	0.82 0.82	0.45 (0.49)	0.45 (0.51)	0.94 0.84

Panel B Characteristics of the offer									
Hot issue	9.24 (9.00)	11.73 (10.00)	0.01*** 0.09*	9.19 (8.00)	11.68 (10.0)	0.07* 0.20	9.26 (9.00)	12.00 (13.00)	0.03** 0.09*
Proceeds	105 (31)	93.5 (18.64)	0.66 0.00***	63 (31)	88 (17)	0.26 0.01***	119 (32)	128 (45)	0.86 0.84
Immediatedilution	0.15 (0.13)	0.23 (0.20)	0.00*** 0.00***	0.20 (0.17)	0.24 (0.20)	0.12 0.45	0.14 (0.12)	0.18 (0.15)	0.05** 0.06*
Total dilution	0.25 (0.22)	0.23 (0.20)	0.31 0.02**	0.36 (0.35)	0.24 (0.20)	0.01*** 0.00***	0.22 (0.20)	0.18 (0.15)	0.11 0.23
Free cash flow	0.74 (1.00)	0.60 (1.00)	0.01*** 0.00***	0.71 (1.00)	0.60 (1.00)	0.28 0.00***	0.75 (1.00)	0.59 (1.00)	0.07* 0.00***
External	0.65 (0.64)	0.48 (0.44)	0.00*** 0.00***	0.53 (0.48)	0.45 (0.42)	0.22 0.11	0.69 (0.70)	0.66 (0.77)	0.70 0.84
% underwritten	76 (100)	61 (100)	0.00*** 0.00***	67 (100)	60 (100)	0.50 0.20	79 (100)	66 (100)	0.10 0.20
Underwritten	0.88 (1.00)	0.71 (1.00)	0.00***	0.81 (1.00)	0.70 (1.00)	0.31	0.91 (1.00)	0.78 (1.00)	0.07
Reputation	0.56 (1.00)	0.55 (1.00)	0.84 0.20	0.52 (1.00)	0.56 (1.00)	0.79 0.20	0.57 (1.00)	0.49 (0.00)	0.42 0.20
Total cost	2.72 (2.46)	2.34 (1.98)	0.06* 0.00***	2.75 (2.40)	2.20 (1.89)	0.18 0.35	2.72 (2.49)	3.20 (3.23)	0.18 0.09*
Banking fees	2.50 (2.21)	1.97 (1.67)	0.01*** 0.00***	2.45 (2.02)	1.81 (1.60)	0.12 0.35	2.52 (2.40)	2.90 (3.15)	0.27 0.20
Rights Issue	0.24 (0.00)	0.86 (1.00)	0.00*** 0.00***						
Underpricing	-0.24 (-0.19)	-0.20 (-0.20)	0.07* 0.60	-0.40 (-0.32)	-0.22 (-0.22)	0.00*** 0.04**	-0.18 (-0.16)	-0.07 (-0.04)	0.00*** 0.00***
Relative price	1.14 (1.11)			1.12 (1.12)			1.15 (1.11)		
Maturity	3.19 (3.06)			3.26 (3.24)			3.17 (3.05)		
Relative value	0.23 (0.22)			0.25 (0.23)			0.23 (0.21)		

**Table 4. Regression results**

The table reports the 2-stage least square regression results. The dependent variable is a dummy equals to one if the company issues units and zero otherwise.  $N$  is the number of observations.  $Probrights$  is the predicted probability of issuing rights as opposed to public issues which is a function of the following variables included into models 1 to 6. The sample includes 370 equity issues on the French Stock Exchange from 1986 to 2000. P-values are in parentheses. \*, \*\*, \*\*\* significant at 0.10, 0.05 and 0.01 levels, respectively.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
N	370	370	370	370	370	226
Probrights	-2.903*** (0.00)	-2.769*** (0.00)	-2.763*** (0.00)	-2.563*** (0.00)	-2.617*** (0.00)	-2.853*** (0.00)
Volatility	-0.204 (0.65)					
Hot issue	-0.055** (0.02)	-0.055** (0.01)	-0.054** (0.01)	-0.059** (0.01)	-0.069*** (0.00)	-0.04 (0.13)
Free cashflow	0.499* (0.09)	0.518* (0.08)	0.518* (0.08)	0.671** (0.03)	0.563* (0.06)	0.274 (0.43)
Blockholder	0.001 (0.79)	0.001 (0.87)				
Underwritten	0.678* (0.01)	0.612 (0.11)	0.618 (0.11)	0.729* (0.09)	0.837 (0.17)	0.747 (0.13)
Reputation	0.113 (0.67)	0.123 (0.64)				
Banking fees				0.76 (0.95)		
Underpricing					-3.28*** (0.00)	
Growth						-0.106 (0.14)
Constant	0.398 (0.65)	0.309 (0.68)	0.394 (0.58)	0.074 (0.94)	0.183 (0.78)	0.756 (0.40)
Cox and Snell R <sup>2</sup>	0.112	0.108	0.106	0.115	0.119	0.099
Classification. %	74.7	74.3	75.4	74.8	75.6	68.1

**Table 5. Market reaction to units and share issues**

The table reports the announcement date abnormal returns and cumulative abnormal returns in %. The mean excess returns are based on Dimson (1977) methodology. The sample includes 370 equity issues over the period 1986 to 2000. The event date is the first date of announcement (either financial press or COB release date). Shares-Units is the test for mean differences based on the Wilcoxon two-sample test. \*, \*\*, \*\*\* significant at 0.10, 0.05 and 0.01 levels, respectively.

<i>Variables</i>	<i>All</i>			<i>Rights</i>			<i>Public</i>		
	<i>Units</i>	<i>Shares</i>	<i>Shares-Units</i>	<i>Units</i>	<i>Shares</i>	<i>Shares-Units</i>	<i>Units</i>	<i>Shares</i>	<i>Shares-Units</i>
	86	284		21	243		65	41	
AR0	-0.25 [-0.67]	-0.49*** [-2.72]	-0.14	0.11 [0.17]	-0.44** [-2.31]	-1.14	-0.36 [-0.83]	-0.77 [-1.23]	-0.003
CAR0,1	-1.18** [-2.26]	-0.54** [-2.12]	1.18	0.61 [0.69]	-0.52* [-1.92]	-1.72	-1.75*** [-2.83]	-0.65 [-0.73]	1.29
CAR0,5	-1.67* [-1.85]	-0.89** [-2.02]	0.43	0.77 [0.5]	-0.81* [-1.73]	-1.57	-2.45*** [-2.28]	-1.36 [-0.89]	0.91

**Table 6. Cross-sectional regression model of issue costs for 370 equity issues between 1986 and 2000**

The dependant variables Banking fees and Total fees are scaled by the gross proceeds and underpricing. Risk is measured by firm's *Beta*, the systematic risk of the firm. *Unit* is a dummy variable equal to one if it is a unit issue. *Size* is the logarithm of the gross proceeds. The other variables are defined in Table 1. . . significant at 0.1, 0.05 and 0.01 levels, respectively. The t-statistics are in brackets.

Variables	Public				Rights			
	Banking fees	Total fees	Underpricing	CAR <sub>0,1</sub>	Banking fees	Total fees	Underpricing	CAR <sub>0,1</sub>
Constant	0.059 [4.04]	0.067 [4.43]	-0.033 (0.10)	0.062 (1.07)	0.061 [8.24]	0.083 [9.28]	-0.165 (-9.65)	0.081 (2.35)
<i>Beta</i>	0.0096 [5.12]	0.0097 [5.00]	-0.0058 (-2.73)	-0.017 (-2.42)	0.004 [3.07]	0.0048 [2.83]	-0.080 (-3.69)	0.004 (0.66)
<i>Unit</i>	-0.005 [-1.97]	-0.006 [-2.28]	-0.116 (-3.75)	-0.012 (-1.26)	0.005 [2.27]	0.005 [1.66]	-0.171 (-4.42)	0.013 (1.13)
<i>External</i>	0.0002 [4.42]	0.0002 [4.36]			0.0002 [6.25]	0.0002 [5.61]		
<i>Size</i>	-0.003 [-3.88]	-0.003 [-4.09]		-0.003 (-0.93)	-0.003 [-7.47]	-0.005 [-8.38]		-0.005 (-2.49)
<i>Reputation</i>			-0.058 (-1.78)				-0.035 (-1.57)	
<i>% Underwritten</i>	0.0001 [2.46]	0.0001 [2.37]			0.0001 [3.07]	0.0001 [4.84]		
Adj R <sup>2</sup>	0.51	0.51	0.17	0.10	0.36	0.36	0.14	0.02



#### Appendix: Computation of the value of the warrant

A way of appreciating the price of warrants at issue is to focus on their market price after the issue and to measure the excess return achieved by an investor who had bought units on the issuing date. One of the difficulties related to this measure is linked to the period existing between the issue and the first quotation of the warrants, which is more than 30 days on average. As we cannot observe the real value of the warrants at the issue date, we have chosen to calculate it.

The unit's underpricing is measured by the difference between the current market price of the two securities included in the package (S for stock, W for warrant), and the issue price P. In relative value, underpricing (UP) is:

$$UP = \frac{P - W - S}{P} \quad (1)$$

The warrants pricing is based on an option-pricing model and takes into account the specific difficulties related to the dilution and volatility estimation. We suppose that :

- The warrants are exercised only at maturity.
- The value of the firm follows a stationary lognormal distribution with a constant variance rate<sup>12</sup>.
- The firm is a pure equity firm; this latest hypothesis can easily be taken away.

Galai and Schneller (1978) show that, under these hypotheses, the warrant can be priced:

- Either as a proportion  $(N+n)/(N + n + n')$  of a call option on a share in a completely similar firm without warrants, where  $N'$  is the number of shares before the exercise of warrants and  $n'$  is the number of shares to be created from the exercise of warrants.
- Or as a call option on a share of a firm with warrants, without adjustment for dilution; in that case the stock market price reflects the dilution factor but cannot follow a log-normal distribution if the value of the firm without warrants follows a log-normal distribution itself.

We use the former model. We apply the analysis to the day before the offering. The warrants have not yet been issued. The Black-Scholes model with a dilution factor is used. The stock volatility is calculated before the issue. This approach is not completely consistent with the model of Galai and Schneller (1978) which assumes a similar firm without warrants, but it gives a first approximation of the warrant's value. Indeed, the units issue leads to a seasoned equity issue on the day of the issue, that is to say a modification of the capital structure: the risk of each stock will decrease and then this model tends to overprice the warrants.

In that case, the warrant's value is:

$$W = \frac{N + n}{N + n + n'} \frac{1}{y} \left[ SN(d_1) - Xe^{-rT} N(d_2) \right] \quad (2)$$

With:

$N$  = number of shares before the issue of units of equity and warrants

$n$  = number of issued units of equity and warrants

$n'$  = numbers of shares to be created from warrant exercise

$y$  = number of warrants needed to purchase a share

$$d_1 = \frac{\log \frac{S^*}{X} + (r + 0.5 \sigma^2)T}{\sigma\sqrt{T}}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

$X$  = exercise price per share of a warrant

$T$  = time to maturity of a warrant

$r$  = continuously compound risk-free interest rate

$\sigma$  = represents the annualized volatility of the stock calculated on the 90 days preceding the announcement of the issue. The return is based on an adjusted market price and takes dividends into account;

$S$  = represents the stock price the day after the announcement of the issue (opening stock price).

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<sup>1</sup> There is little evidence on U.S. seasoned unit offerings. Recently, Bouyn and Moore (2002) documents that a significant number of firms issue units seasoned equity.

<sup>2</sup> The studies referred to thereafter are predominantly U.S. thus relate to initial rather than secondary offerings. However, a number of these explanations apply to the case of seasoned equity offerings.

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<sup>3</sup> Units are complex instruments and an example will help to illustrate the main institutional characteristics. Lafarge Coppée made a typical unit offering in September 1993. For 66.16 € the investors received a unit of one share and one warrant. Two warrants allowed the purchase of one share at an exercise price of 70.13 € at any time until April 1, 1996. The exercise price is adjusted for events such as rights issues, stock splits or stock dividends.

<sup>4</sup> For a description of the French institutional setting, see Gajewski and Ginglinger (2002).

<sup>5</sup> In these conditions, at first glance, outside investors can subscribe only to the part of the issue that is not reserved to current shareholders. Nevertheless, if current shareholders do renounce their allocation, the initial part offered to external investors can be increased. The rate of increase depends on shareholders' renouncements.

<sup>6</sup> COB (2002), Rapport du groupe de travail sur les nouvelles formes d'augmentation de capital – [www.cob.fr](http://www.cob.fr)

<sup>7</sup> The COB plays the same role as the SEC in the US.

<sup>8</sup> French firms quite often announce equity issues at the same time, or immediately after earnings publications. This evidence is consistent with Korajczyk, Lucas and McDonald (1991), who find that equity issues follow shortly after earnings publications.

<sup>9</sup> We checked for robustness of this method using logit regressions in two steps and the instrumental variable method. For the logit method, we first estimate the probability of having rights issues as follows:

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$$\Pr(\text{rights}_{i,t}) = 7.18 - 0.29\text{Size}_{i,t} - 0.02\text{External}_{i,t} - 1.11\text{Insider}_{i,t}$$

$$(0.00) \quad (0.00) \quad (0.00) \quad (0.00)$$

where  $\Pr(\text{rights})$  is a dummy variable equal to one if the firm issues rights and zero if the issue is public and p-values are in parentheses. Size is the log of the proceeds in million Euro, External is the fraction of the issue not taken up by blockholders, and insider is the familial or management ownership. We then use the residuals from this equation in estimating the probability of issuing units. We assume that the choice between units and shares is taken after deciding on whether the companies will opt for rights and public offers.

For the instrumental variable method, the residuals from the first regression are used as instruments. These results from these two alternative methodologies are qualitatively similar to those reported in Table 4. The only exception is the immediate dilution that is significant in the logit regressions.

<sup>10</sup> The comparison of the average market value between rights and public offers reveals some interesting results and suggest that the choice of a flotation method does not vary in all countries according to the size of the firm. For instance, in the U.K., according to Slovin, Sushka and Lai (2000), firms that choose placing are very small relative to rights issuers. In the U.S., the uninsured rights issuers are small firms, but no significant difference in sizes appears between standby rights issuers and firm commitments issuers (Eckbo and Masulis, 1992). In France, large firms prefer public offers to standby rights, which, in turn, are preferred to uninsured rights.

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<sup>11</sup> The difference in flotation costs as a percentage of market value is also of 0.6% (significant at the 10% level).

<sup>12</sup> This hypothesis is open to criticism. Indeed, the warrants issue leads to the transfer of a part of the risk from shareholders to warrants holders. The share-out of a part of the risk depends at any time on the stock value and on the time to maturity of warrants.