Issuers' features and stock market reaction to convertible bonds issuance: Evidences from the French market

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Abstract

This study investigates the announcement effect of convertible bond issues on the French market between 1997 and 2006. The analysis shows a strong negative European stock market reaction that is closer, for the first time, to an American one. Then, based on the theoretical frameworks of asset substitution, risk uncertainty, or backdoor equity hypotheses, we examine whether the issuers' characteristics influence the market response. Our cross-sectional analysis produces significant results, conflicting with most previous studies on the European markets, and does not corroborate the theoretical expectations.

JEL Classification: G12, G14, G32

Keywords: Convertible bonds; market reaction; issuers' characteristics

1. Introduction

Convertible bonds (CB) are hybrid securities that, at the option of the holder, can be converted into shares of common stock of the issuing firm. Both issuer and investor, for different but related reasons, find convertible bonds attractive. For the former, the two main advantages are their cheaper costs and ability to provide the firm with 'delayed' equity. For the latter, they allow investors to enjoy the secure yield of a bond and the possibility of benefiting from a rise in the issuing firm's stock price.

Empirical studies usually observe a decline in stock price at a convertible bond issuance. Furthermore, the magnitude of the price reaction generally falls between those reported for equity and straight debt issues. Several theories coexist to explain these investors' reactions, giving the convertible bond the ability to reduce agency conflicts and other potential costs such as financial distress or information asymmetry: mainly, the risk-uncertainty hypothesis (Brennan and Schwartz, 1988; Brennan and Kraus, 1987), the backdoor equity hypothesis (Stein, 1992) and the asset substitution hypothesis (Green, 1984). The relation between issuer features and costs suggest that it would be highly interesting to study directly the links between issuer characteristics and stock market reaction. Based on the theoretical background, it then becomes possible to formulate explicit expectations about these relationships.

Despite the fact that it is frequently considered the first European convertible bond market, the French market has not been closely investigated on this point. Only a small amount of research has been carried out on the stock market reaction to convertible bond issues (Burlacu, 2000; Ducassy, 2003; Dutordoir and Van de Gucht, 2004). This paper has a three-fold purpose in addressing this lack of research. First, it re-examines the stock market reaction to CB issues in France on a more recent period. Second, it investigates empirically the

determinants of the market reaction by focusing on the impact of issuer characteristics. Third, it proposes an empirical reconsideration of theoretical expectations about the influences of issuer features on the stock market response to CB issues.

The paper is organized as follows. Section 2 summarizes the main theoretical and empirical work on market reaction at the announcement of a CB issue. Our sample selection procedure, design methodology and data description are covered in section 3. Section 4 examines our results in relation to theoretical expectations and in section 5 we summarize our findings.

2. Previous literature

2.1. Theoretical background

Two main streams of theoretical literature explain the use of convertible bonds:[1] first, convertible debt is a means to solve an agency conflict[2] – risk-shifting or asset substitution hypothesis (Green, 1984) – and second, such a debt is a way to reduce problems related to informational asymmetry – risk-uncertainty hypothesis (Brennan and Schwartz, 1988; Brennan and Kraus, 1987) and the backdoor equity hypothesis (Stein, 1992). According to the hypothesis considered, a convertible bond is either a substitute for debt or a substitute for equity. These hypotheses lead to different expected relationships between issuers' characteristics, firm value and stock market reactions to CB issues.

2.1.1. Risk-shifting hypothesis

As Jensen and Meckling (1976) pointed out, when managers have the opportunity to issue debt and subsequently to choose the investment policy, they are able to transfer wealth from

[1] For a more complete survey on theoretical issues, see Loncarski et al., 2006.
[2] Mayers (1998) shows how convertible debt may mitigate the over-investment (free cash-flow) problem discussed by Jensen (1986); but as written by the author, this theory, known as the sequential-financing hypothesis, has no direct implications for market reaction at the date of announcement.

bondholders to stockholders by investing the funds in riskier activities. This risk-shifting behaviour leads to agency costs and non-value-maximising optimum. As convertible debt can be thought of as straight debt with a call option, Jensen and Meckling suggested that the use of convertible bonds may not only reduce the wealth transfer but also mitigate the asset substitution cost. To obtain such a result, the shift of outcomes coming from a riskier investment policy must be shared with bondholders through the exercise of the conversion option.

Following Jensen and Meckling, Green (1984) showed formally that a convertible bond reduces the agency conflict between shareholders and bondholders coming from the shareholders' incentive to engage the firm in riskier activities. To offset the incentive to substitute less risky for more risky assets, the financing instrument has to modify the payoff of the residual claimants from a convex to a concave function. This effect is only obtained in some states of nature if the bond is not converted and paid back to bondholders. In Green's model, because risk-shifting occurs when firms finance their activities with risky debt, convertible bonds can be seen as a substitute for straight debt.

This leads us to consider that the riskier and/or more levered the firm, the higher the probability of asset substitution. Then, the market reaction to convertible bond issues should be more positive (less negative), as they reduce the likelihood of a shift to a riskier investment policy.

2.1.2. Risk-uncertainty hypothesis

Myers (1977) and Myers and Majluf (1984) showed that when shareholders have information that bondholders do not have, the use of risky debt leads to adverse selection cost and

prevents managers from financing an investment project even when it has a positive net present value. On this basis, Brennan and Schwartz (1988) and Brennan and Kraus (1987)[3] explored the investment-financing problem when the asymmetry concerns the riskiness of the distribution of returns. Due to the hybrid nature of the financing instrument, it shelters investors from soaring and uncertain risk and the owners from bearing high costs of debt: the potential loss of value of the bond component is partly offset by the corresponding increase in value of the equity component. According to the authors, "companies issuing convertible bonds tend to be characterized by higher market and earnings variability, higher business and or financial risk, stronger growth-orientations, and shorter corporate histories than their straight debt counterparts"[4]. In this approach, convertible bond is also seen as a substitute for debt. Investors' reactions to convertible bond issue are expected to be more positive (less negative) the more uncertain the risk of the firm.

2.1.3. Backdoor equity hypothesis

In his model, Stein (1992) focuses on the ability of convertible bonds to solve problems of investment financing related to asymmetric information (i.e. when adverse selection costs make a common stock issue unappealing). Following Myers and Majluf's (1984) pecking order theory, he developed a framework where the issuance of securities signals the type of firm to the market. The "good" firm, whose gross cash-flow from investment is certain, will always issue straight debt, as there will be no advantages to issuing undervalued securities

[3] Constantinides and Grundy (1989) developed a model where the combination of stock repurchase and a convertible bond issue solved the asymmetric information problem. The repurchase prevents the owner-manager from selling overstated securities and the convertible bond functions as in Brennan and Kraus's (1987) model. Kim (1990) also provided a signalling model, where the type of financial instrument indicates shareholders' willingness to share the risk and the return with outside investors. In issuing nonconvertible debt (equity) the owners signal their expectation of good (bad) performance and their reluctance to share the profit with outsiders. So the more debt-like the convertible bond, the more positive the signal: or in other words, the higher the conversion price (the lower the conversion ratio), the lower (the higher) the probability of conversion and the more debt-like (equity-like) the convertible bond.

[4] Brennan and Schwartz (1988), p. 64.

(i.e. nonconvertible or convertible bond); the "bad" firm is deterred from issuing straight or convertible debt (the bond will never be converted) because of potential bankruptcy costs due to debt overhang – its only choice is to issue equity. The "medium" firm, which has more probability of success than the "bad", will issue neither equity nor straight debt, which would result in equity dilution or financial distress costs. But by issuing a convertible debt the "medium" firm sends a credible signal to the market about its future perspective. And the more leveraged the firm with profitable investment opportunities, the more credible the signal sent to the market. Stein's theory sheds light on the use of call provision of the convertible as a way to obtain backdoor equity. By forcing conversion, management can implement equity and attain a less levered capital structure; but this can only happen if the stock price rises above a threshold value that makes the conversion attractive to bondholders.

Backed by the existing empirical literature, which showed that "delayed equity" emerged as the most important reason for issuing such a bond, convertibles are seen as a substitute of equity. Furthermore, the use of convertible bonds appeared to be positively correlated with financial distress and informational asymmetry costs. The stock market reaction to CB issues should be more positive (less negative) the higher these costs are.

2.2. Analysis of previous empirical results

Almost all empirical studies found a significant negative market reaction to CB issues wherever they take place. Similar results have been obtained by many studies on the American market,[5] and various Asian (Japan,[6] China[7]), European (UK,[8] France,[9] Germany,

[5] See Loncarski et al. (2006) for a survey of studies on the American market.
[6] Mollemans, 2002.
[7] Yang et al., 2007.
[8] Abhyankar and Dunning, 1999.
[9] Burlacu, 2000; Ducassy, 2003.

Switzerland[10]) and Australian markets.[11] Only few studies (Kang and Stulz, 1996, in Japan; Chang et al., 2004, in Taiwan; De Roon and Veld, 1998, in the Netherlands) noted a positive reaction.

However, the decline of the stock price following convertible bond issues seems to depend on the market studied. Stock market reactions appear to be much higher on the American market than everywhere else. For example, Dann and Mikkelson (1984) and Arshanapalli et al. (2004) showed a reaction of –2.31% and –3.07% respectively over the window (–1; 0). On the European markets the reaction observed is generally less than half the American reaction. In Western European countries, Dutordoir and Van de Gucht (2004) found a decline of the stock price between –1.2% and –1.44%; on the UK market, Abhyankar and Dunning (1999) a reaction of –1.21%; on the German and Swiss markets, Ammann et al. (2006) an impact of respectively –1.6% and –0.19% (not statistically significant).

Despite its size, there have been relatively few studies on the impact of CB issues on the French market. The investors' reactions usually appear negative and even lower than those observed on other major European markets. Burlacu (2000) found an impact between –0.196% and 0.203% over the period 1981–1998 and Ducassy (2003) between –0.88% and –0.9% over the period 1991–1999.

Most of these studies computed the cumulative abnormal return over a two- or three-day period around the convertible debt issue announcement date. The authors assumed that all information was provided at the announcement date and was fully and immediately integrated into the stock prices.

[10] Ammann et al., 2006.
[11] Magennis et al., 1998.

To explain the investor reactions to CB issues, empirical studies have chosen various firm characteristics that presumably influence the costs described by risk-shifting, risk uncertainty and backdoor equity hypotheses.

Firm size

Firm size is a proxy for different costs associated with informational asymmetry, risk uncertainty and financial distress. Following Brennan and Schwartz (1988) and Stein (1992), the larger the issuer's size, the larger the coverage by financial analysts and the easier the assessment of the risk; a state of financial distress is less likely. Because these costs are less significant for large firms, a convertible issue is not particularly suitable. So, both risk uncertainty and the backdoor equity hypothesis expect a negative relationship between size and market reaction. Using the market value of equity as a proxy of size, previous empirical work investigating the impact of such a variable was unable to find any correlation with investors' reactions (De Roon and Velt, 1998: Ducassy, 2003; Abhyankar and Denning, 1999; Ammann et al., 2006; Lewis et al., 1999, 2003; Chang et al., 2004). Three studies showed that size had a significant influence but their results are contradictory: on the Japanese market Cheng et al. (2005) noticed a negative influence, but Arshanapalli et al. (2004), on the American market, and Dutordoir and Van de Gucht (2004) on Western European markets, found a positive impact.

Intangible assets

Intangible assets have two essential features relative to our study; on the one hand, external investors have difficulty in assessing the value of such assets; on the other, their values are particularly volatile, especially in cases of financial distress. We can also infer that, due to these specificities, the management of a firm with lots of intangible assets has more

opportunity to shift the risk of its investment policy. Then, the ratio of intangibles is related to informational asymmetry (risk uncertainty, adverse selection), financial distress and agency costs (risk-shifting). The more intangible assets there are in the balance sheet, the more important these costs are and the more appropriate the issue of a convertible bond will be. Each theory, then, expects a positive relationship between stock price reaction and the ratio of intangible assets. The influence of intangible assets has been studied only on the Western European markets by Dutordoir and Van de Gucht (2004) and on the French market by Burlacu (2000). Both found a significant negative influence of this ratio.

Financial leverage

The financial leverage explicitly accounts for the costs of financial distress and as a consequence raises the cost of issuing straight debt (Stein, 1992). In such a case, it is also more difficult to assess risk level (Brennan and Schwartz, 1988), which could lead to a higher risk of management gambling (Green, 1984). So, firms with a large burden of debt will choose to issue convertible bonds as they are more suitable. The three theoretical approaches mentioned above predict a positive relationship. The results obtained by empirical work did not provide us with a clear conclusion: if Jen et al. (1997), Abhyankar and Dunning (1999), Cheng et al. (2005), Dutordoir and Van de Gucht (2004) and Ammann et al. (2006) did not find any significant influence of the financial leverage, Chang and al. (2004) and Ducassy (2003) concluded that there was a significant positive influence. As far as the American market is concerned, Lewis et al. (2003) did not find the positive relationships between financial leverage and market reaction they obtained in their previous study (Lewis et al., 1999).

Financial slack

Following Myers and Majluf (1984) and the backdoor equity hypothesis, financial slack tends to raise the adverse selection costs of issuing equity and the opportunity to issue a convertible debt. Stein (1992) expected a positive relationship between investors' reaction and financial slack. Once again, the results are puzzling: Lewis and al. (1999) and Dutordoir and Van de Gucht (2004) found no significant influence but the empirical work of Lewis et al. (2003) showed a significant and positive relationship.

Profitability

Profitability is inversely correlated to the probability that financial distress occurs. Low profitability not only increases anticipated financial distress costs but also implies higher risk uncertainty and greater probability of a shift to a riskier investment policy; a negative correlation is expected between the market reaction and the level of profitability. Ducassy (2003) in France, Dutordoir and Van der Gucht (2004) in Western Europe and Lewis et al. (2003) on the American market found no significant influence from issuers' profitability.

Growth and growth opportunities

According to Brennan and Schwartz (1988) and Stein (1992), more growth opportunities could imply more risk uncertainty and adverse selection costs. But according to Green (1984), the more growth opportunities, the less the risk of asset substitution. If the former lead us to expect a positive relationship between the stock price reaction and growth, the latter encourages us to predict a negative association. Regarding the growth opportunities (Market to book or Tobin's q) the empirical results are contradictory. Jen et al. (1997), Lewis et al. (1999), Chang et al. (2004), Cheng et al. (2005), Dutordoir and Van de Gucht (2004), Burlacu (2000) and Ducassy (2003), obtained a significant positive correlation of growth opportunities. Inversely, Mollemans (2002) and Arshanapalli et al. (2004) observed a

significant negative impact. Lastly, Lewis et al. (2003), Abhyankar and Dunning (1999) and Ammann et al. (2006) did not notice any significant relation. Using the sales or assets' growth, Yang et al. (2007) and Dutordoir and Van der Gucht (2004) observed a positive influence of issuers' growth rate on market reaction, while Lewis et al. (2003) did not obtain a significant result. Studying the investment rate, considered as a potential growth proxy, Jen et al. (1997) found a positive influence.

Risk

We can expect a higher risk to lead to a higher adverse selection cost when a firm tries to issue securities. It is also possible that management will try to expropriate wealth from bondholders by investing in riskier activities. According to Brennan and Schwartz (1988), convertible bonds are very attractive for risky firms as they lower the cost of issuing debt. A positive relationship is expected for all the theories we have mentioned,. Using various risk indicators (share return or Ebit standard deviation, rating, beta), most of the studies found no significant influence of risk on market reaction (Kim and Stulz, 1992; Jen et al., 1997; Lewis et al., 2003 ; Davidson et al., 1995 ; Magennis et al., 1998 ; Chang et al., 2004 ; Ducassy, 2003). However, Dutordoir and Van der Gucht (2004) and Mehta and Khan (1995), using the beta, and Lewis et al. (1999), using the rating, observed a negative influence of the risk. Inversely Mehta and Khan (1995), using the rating, and Lewis et al. (1999), using the share return standard deviation, pointed out a positive influence of risk on the market reaction to CB issues.

Stock price run-up

When the stock experiences a large increase in price before the announcement of the convertible debt issue, there is a non-zero probability of overvaluation. In this scenario, Lucas

and MacDonald (1990) showed that the costs of adverse selection rise. As a consequence, the convertible bond would seem to be more appropriate. The influence of the stock run-up seems to be proxy-dependent: Lewis et al. (2003), Dutordoir and Van der Gucht (2004) and Ducassy (2003), using the stock market run-up on the estimation period, observed a significant negative impact on market reaction; inversely, using the adjusted excess return, Jen et al. (1997), Lewis et al. (1999) and Chang et al. (2004) found no significant influence.

Market run-up

For equity issues, Choe et al. (1993) showed that the investors' reaction is less negative in good economic conditions. They inferred that during market expansion (contraction) the information costs of issuing equity are lower (higher). From their observations, one can also expect risk uncertainty, asset substitution and adverse selection costs will decrease during good times. Using the market run-up estimated over the estimation period, Lewis et al. (2003) found no significant influence on the American market. The empirical studies of Ammann et al. (2006) and Ducassy (2003) exhibit a positive and negative impact respectively.

3. Data and methodology

3.1. Sampling procedure

An initial sample of 129 issues was built by including all CB issues on the French market during the 10-year period January 1997–December 2006. This selection period is more recent and follows those of previous researches on the same market: Burlacu (2000) 1981–1998 and Ducassy (2003) 1991–1999. In our study, private and financial sector issues (banking and insurance) were excluded, due to their specificities in terms of financing. Furthermore, because of missing book and market data, 21 convertible bonds were also excluded from the initial sample. So, under these conditions, our final sample contained 99 issues. For each

convertible bond issue, we took the announcement date to be the date at which the Autorité des Marchés Financiers (AMF, an equivalent to the American Security Exchange Commission) appends its certificate ('visa') on the information memorandum produced by the issuer. This certificate allows a first public disclosure of the issuing process timing and the issues' characteristics. Stock price data and information on issuers' features were obtained from Datastream. Data about issues characteristics were obtained directly from the issuer's memorandum produced within the issuance.

3.2. Event study methodology

A standard event study methodology was conducted to investigate the market reactions of CB issues. The event window is a 31-trading day period surrounding the announcement date (t = 0). Such a window, (–15, +15), is quite different from those chosen in previous empirical studies, which are usually not longer than two or three days. For each convertible bond issue a one-factor market model is estimated on the issuer stock price returns. The estimation period was a 200-trading day period (–215; –16) preceding this event window. The chosen market index was the SBF250, the larger index used on the French stock exchange. For each event, i, and each day t, of the event window, abnormal return (AR_{it}) was estimated by computing the difference between the observed return (R_{it}) and a normal return (NR_{it}), estimated using the market model regression parameters:

$$A\hat{R}_{it} = R_{it} - N\hat{R}_{it} = R_{it} - \hat{\alpha} - \hat{\beta} \cdot R_{mt} \qquad (1)$$

with: i = (1, …, N) and t = (–15, …, 0, …, +15).

Cumulative abnormal returns ($CAR_i(t_1,t_2)$) have been computed first on the entire event window period and then on different sub-periods (t_1,t_2) by cumulating the abnormal returns:

$$CAR_i(t_1,t_2)=\sum_{t=t_1}^{t_2} A\hat{R}_{it}\,, \tag{2}$$

with: i = (1, …, N) and $(t_1,t_2)\cap(-15,+15)$.

In order to test the significance of the impact of the convertible bond issue on the stock price, we ran different statistical tests on the cumulative abnormal returns. First, a student parametric test on the average cumulative abnormal returns, $ACAR(t_1,t_2)$, was used, with:

$$ACAR(t_1,t_2)=\frac{\sum_{i=1}^{N} CAR_i(t_1,t_2)}{N}, \tag{3}$$

then, two non-parametric sign and rank tests, to reinforce our results.

3.3. Cross-sectional analysis

We use multivariate regressions to measure the impact that key variables have on the cumulative abnormal returns. The dependent variable is the cumulative abnormal return over the window (–15; +15). The exogenous variables describe the financial and economic characteristics of the issuers related to the theoretical approaches discussed in section 2. All variables are measured during or at the end of the fiscal year preceding the announcement of the issue, unless otherwise indicated. The regression is as follow:

$$CAR_i=\alpha_i+\beta_i[X_i]+\varepsilon_i \tag{4}$$

where:

- CAR_i is the cumulative abnormal returns over the window (–15; +15) for the event i
- α_i is the intercept for the event i
- β_i is a vector of coefficients of the explanatory variables for the event i
- $[X_i]$ is a set of the variables defined below:
    - **size,** defined as the logarithm of the inflation adjusted total assets

- **financial leverage,** defined as the ratio of total financial debt (short- and long-term financial debts) over total equity
- **intangible assets,** defined as the ratio of intangible assets over total assets
- **financial slack**, defined by the ratio of cash and marketable securities over total assets
- **asset growth**, defined as the growth rate of the total asset
- **investment rate**, defined as the ratio of capital expenditures over total assets
- **growth opportunities**, defined as the Tobin's q
- **profitability**, defined as the return on equity
- **risk,** defined as the beta coefficient estimated over the estimation period
- **price run-up**, defined as the stock price variation over the estimation period
- **market run-up**, defined as the market index variation over the estimation period.

We discussed the theoretical approaches, and their predictions in terms of the relationship between issuers' characteristics and stock market reactions to CB issues, in section 2. Regarding the three main hypotheses (asset substitution, risk uncertainty and backdoor equity hypothesis), our expectations of the influence of these variables on the investors reactions is summarized in Table 1.

< Insert Table 1 >

3.4. Data description

Our sample shows interesting patterns (see Table 2). As underlined by Dutordoir and Van de Gucht's study of Western European markets (2004), French issuers appear bigger than their US counterparts. We found a mean size, in terms of total assets, of €6,716m (equivalent to US$7,853m in 2005), while Dutordoir and Van de Gucht (2004) found US$7,285m in 2002,

and Lewis et al. (1999) record a mean size of US$1,025m on the American market. This may be due to the fact that only the largest firms tend to be quoted in Europe. With a mean financial leverage of 0.97,[12] the issuers' debt level seems to be quite low (<1) – lower than in previous studies such as Ducassy (2003), who found a 1.24 value. This difference could be the consequence of the leverage reducing process of number of French firms after the tech bubble burst. About the financial slack, our sample exhibits a mean ratio of 14.21%, higher than what was reported by Lewis et al. (2003) on the US market (10.4%) and Dutordoir and Van de Gucht (2004) on the Western European countries (12%). With an assets growth of 49% and a 2.27 Tobin's q in mean, the issuers are growing firms carrying valuable opportunities for expansion. Surprisingly, we found a relatively low systematic risk level, with an average beta of 0.94. So, our firms seem to be less risky than their American counterparts for which Mehta and Kahn (1995) and Lewis et al. (1999) found an average beta of 1.24 and 1.18 respectively.

<Insert Table 2>

4. Results

4.1. Stock price reactions to convertible bond issues

Table 3 provides an overview of the cumulative abnormal returns computed over various windows surrounding the event date. Over the whole period (–15; +15), we find a significant negative impact of CB issuance announcement on stock prices, with average cumulative abnormal returns of –5.13%. This negative impact is consistent with those reported in most prior studies. If we take a closer look, we can see that the stock price adjustment starts 10 days before the event and ends the day of the announcement when all the information included in the CB issue is fully reflected in the value of the stock (Figure 1). Hence there is no significant influence on the stock market in post-announcement periods. So, if we had

[12] If we had computed the net debt to equity ratio, the leverage would have been lower (51%), reinforcing the fact that our firms are less indebted than one might expect.

chosen the event window (–1; 0) used in previous studies, we would have taken into account only half the market reactions. Besides, even if we compare our results with those obtained on other European markets over the same event window (–1; 0), the magnitude of the reaction is much higher (Abhyankar and Dunning, 1999; Dutordoir and Van der Gucht, 2004; Ammann et al., 2006).

On the French market, these results are very different from other recent researches and exhibit a much stronger negative reaction on comparable windows. Burlacu (2000) found only an impact of –0.2% on the windows (–1; +1) and (–1; 0), while Ducassy (2003) observed a reaction of –2.87% on the window (–10; +10) and only –0.89% on the window (–1; +1). Surprisingly, for the first time, the size of investors' reactions is closer to those usually reported on the American market than previously reported in Europe (e.g. Dann and Mikkelson, 1984; Mikkelson and Partch, 1986; Billingsley et al., 1990; Jen et al., 1997; Arshanapalli et al., 2004).

<Insert Table 3>

<Insert Figure 1>

4.2. Cross-sectional regression results

The parameter estimates of our regressions are described in Table 4. The main results, compared with those obtained by previous European studies and major American research, show the following patterns.

First, a positive significant influence on stock price reactions has been observed for three variables:

- **size**: unlike almost all previous empirical work, even on the French market (Ducassy, 2003), which did not find any significant result, ours are only consistent with

Arshanapalli et al. (2004) and Dutordoir and Van de Gucht (2004) on the American and Western European markets.

- **profitability**: contrary to all previous studies (Ducassy, 2003, in France; Dutordoir and Van de Gucht, 2004, in Western Europe; Lewis et al., 2003 on the American market), which did not observe any significant impact.
- **financial slack**: contrary to the non-significant results of Dutordoir and Van de Gucht (2004) in the Western Europe and Lewis et al. (1999), but similarly to Lewis et al. (2003) on the American market.

Second, three variables present significant negative coefficients:

- **financial leverage**: unlike Ducassy (2003) in France, who obtained a positive sign, and other European studies that did not find any significant explanatory power (Dutordoir and Van de Gucht, 2004; Ammann et al., 2006; Abhyankar and Dunning, 1999), such as most American research.
- **growth opportunities**: contradicting all the results obtained previously on the French and Western European markets that showed a positive impact (Ducassy, 2003); Burlacu, 2000); Dutordoir and Van de Gucht, 2004), or no influence (Abhyankar and Dunning, 1999; Ammann et al., 2006). The only similar results that have been reported are by Mollemans (2002) in Japan and Arshanapalli et al. (2004) on the American market.
- **risk**: like Dutordoir and Van de Gucht (2004) on Western European markets, Lewis et al. (1999) and Mehta and Khan (1995) on the American market. On the French market, Ducassy (2003) did not find any significant relationship.

Lastly, five variables do not exhibit any explanatory power:

- **intangible assets**: unlike previous studies on the French (Burlacu, 2000) and Western European markets (Dutordoir and Van de Gucht, 2004), which found a negative relationship.
- **asset growth**: like Lewis et al. (2003) on the American market, but contrary to Yang et al. (2007) in China and Dutordoir and Van der Gucht (2004) in Europe.
- **investment rate**: contradictory to the only research using this variable, Jen et al. (1997), on the American market.
- **stock price and market run-ups**: once again contradicting previous empirical work on the European markets (Ducassy, 2003; Dutordoir and Van de Gucht, 2004; Ammann et al., 2006).

Globally, for almost all variables included in our models, the conclusions contradict the results obtained by previous studies on not only the French but also other European markets. The only exceptions are size and risk in the Dutordoir and Van de Gucht study (2004).

<Insert Table 4>

These results can be compared with the predictions (see Table 4) based on different theoretical approaches. It appears that on almost all points, the results obtained contradict these expectations, whatever the theoretical hypothesis considered. The risk uncertainty hypothesis is not confirmed by our empirical findings. Coefficients are either non-statistically significant or give the opposite sign to our expectations. As far as the asset substitution hypothesis is concerned, the only variable that has a statistically significant coefficient with the right sign is the proxy for valuable growth opportunities: the more valuable opportunities the firm has, the less likely a shift in risk (in the investment policy) and the less necessary an issue of convertible bond. Regarding the backdoor equity hypothesis, only one variable has a coefficient that is consistent with what we might expect. Financial slack is positively correlated with the cumulative abnormal return: the more cash and marketable securities, the

higher the cost of adverse selection of an equity issue according to Myers and Majluf (1984) and the more attractive the issue of a convertible bond.

5. Conclusion

Our study sheds light on the reaction of investors to a CB issuance, an area not hitherto studied on the French market. Interestingly, we observe that the magnitude of market reaction has changed across time: French market response is now more similar to American market response. Furthermore if the market reacts gradually until the event, no abnormal returns are found from the announcement of the convertible debt issue. Among the issuers' characteristics studied, market reaction is positively related to the variables 'size', 'financial slack' and 'profitability', and negatively to 'financial leverage', 'growth opportunities' and 'risk'. As far as market reaction size and the consequences of issuers' characteristics are concerned, our results are opposite to those previously obtained on French and European markets. The regression analysis could not confirm any theoretical approaches, as most of the parameter estimates of the variables gave a sign opposite to what we expected. Hence, the French market does not seem to understand fully how convertible bonds could prevent the firm from bearing different costs (uncertainty, asset substitution, financial distress and informational asymmetric costs), as suggested by the theories.

References

Abhyankar, A., Dunning, A., 1999. Wealth effects of convertible bond and convertible preference share issues: an empirical analysis of the UK Market. Journal of Banking & Finance 23, 1043-1065.

Ammann, M., Fehr, M., Seiz, R., 2006. New evidence on the announcement effect of convertible and exchangeable bonds. Journal of Multinational Financial Management 16, 43-63.

Arshanapalli, B., Fabozzi, F., Switzer, L.N., Gosselin G., 2004. New evidence on the market impact of convertible bond issues in the U.S. Working Paper, Concordia University.

Billingsley, R.S., Lamy, R.E., Smith, D.M., 1990. Units of debt with warrants: evidence of the penalty-free issuance of an equity-like security. Journal of Financial Research, Vol. XIII, No. 3, 187-199.

Brennan, M., Kraus, A., 1987. Efficient financing under asymmetric information, Journal of Finance, Vol. 42 No 5, 1225-1243.

Brennan, M., Schwartz, E., 1988. The case for convertibles. Journal of Applied Corporate Finance Vol. 1, 55-64.

Burlacu, R., 2000. New Evidence on the Pecking Order Hypothesis: The Case of French Convertible Bonds. Journal of Multinational Financial Management 10, 439-459.

Chang, S.-C., Chen, S.-S., Liu, Y., 2004. Why firms use convertibles : a further test of the sequential-financing hypothesis. Journal of Banking & Finance 28, 1163-1183.

Cheng, W., Visaltanachoti, N., Kesayan, P., 2005. A stock market reaction following bond issuance: evidence from Japan. International Journal of Business, Vol. 10 No. 4, 323-339.

Choe, H., Masulis, R.W., Nanda, V., 1993. Common stock offerings across the business cycle: theory and evidence. Journal of Empirical Finance Vol. 1, 3–31.

Constantinides, G.M., Grundy, B.D., 1989. Optimal Investment with Stock Repurchase and Financing as Signals. Review of Financial Studies, Vol. 2, No. 4, 445-465.

Dann, L. Y., Mikkelson, W. H., 1984. Convertible debt issuance, capital structure change and financing-related information: some new evidence. Journal of Financial Economics 13, 157-186.

Davidson, W.N., Glascock, J.L., Schwarz, 1995. Signalling with convertible debt. Journal of Financial and quantitative Analysis, Vol. 30, No. 3, p. 425-440.

De Roon, F., Veld, C., 1998. Announcement effects of convertible bond loans and warrant-bond loans: an empirical analysis for the Dutch market. Journal of Banking & Finance 22, 1481-1506.

Ducassy, I. 2003. « Déterminants de la réaction du marché français aux émissions de titres à caractère action ». Banque&Marchés. n°64, 46-58.

Dutordoir, M., Van de Gucht, L., 2004. Determinants of the Stockholder Reactions to Convertible Debt Offering Announcements: An Analysis of the Western European Market. Working Paper, Katholieke Universiteit Leuwen, Belgium.

Green, R.C., 1984. Investment incentives, debt and warrants. Journal of Financial Economics, Vol. 13, 115-136.

Jen, F.C., Choi, D., Lee, S.-H., 1997. Some New Evidence on Why Companies Use Convertible Bonds. Journal of Applied Corporate Finance, Vol. 10.1, 44-53.

Jensen, M. C., 1986. Agency Cost Of Free Cash Flow, Corporate Finance, and Takeovers. American Economic Review, Vol. 76, n°2, 323-329.

Jensen, M.C., and Meckling, W.H., 1976. Theory of the firm: Managerial behaviour, agency cost and ownership structure. Journal of Financial Economics 3(4), 305-360.

Kang, J.K., Stulz, R.M., 1996. How different is Japanese corporate finance? An investigation of the information content of new security issues. Review of Financial Studies, 109-139.

Kim, Y., 1990. Informative conversion ratios: a signalling approach. Journal of Financial and Quantitative Analysis 25(2), 229-243.

Kim, Y., Stulz, R.M., 1992. Is there a global market for convertible bonds? Journal of Business, Vol. 65, No. 1, 75-91.

Lewis, C. M., Rogalski, R. J., Seward, J.K., 1999. Is convertible debt a substitute for straight debt or for common equity? Financial Management, Vol. 28, No 3, 5-27.

Lewis, C. M., Rogalski, R. J., Seward, J.K., 2003. Industry conditions, growth opportunities and market reactions to convertible debt financing decisions. Journal of Banking & Finance 27, 153–181.

Loncarski, I., Ter Horst, J., Veld, C., 2006. Why do companies issue convertible bonds? A review of theory and empirical evidence. In: Renneboog L.D.R. (ed.), Advances in Corporate Finance and Asset Pricing, Elsevier, Amsterdam.

Lucas, D., McDonald, R., 1990. Equity issues and stock price dynamics. journal of Finance, Vol. 45, No. 4, 1019-1043.

Magennis, D., Watts, E., Wright, S., 1998. Convertible notes: the debt versus equity classification problem. Journal of Multinational Financial Management, 8, 303-315.

Mayers, D., 1998. Why firms issue convertible bonds: the matching of financial and real investment options. Journal of Financial Economics 47, 83-102.

Mehta, D.R., Khan, A.Q., 1995. Convertible bond issues: evidence from security markets. Financial Review, Vol. 30 No. 4, 781-807.

Mikkelson, W. H., Partch, M.M., 1986. Valuation effects of security offerings and the Issuance process. Journal of Financial Economics 15, 31-60.

Mollemans, M., 2002. The Convertible Bond Announcement Effect in Japan. Working paper, Macquarie University, Sydney, Australia.

Myers, S.C., 1977. Determinants of corporate borrowing. Journal of Financial Economics 5, 147-175.

Myers, S.C., Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13, 187-221.

Stein, J.C., 1992. Convertible bonds as backdoor equity financing. Journal of Financial Economics 32, 3-21.

Yang, R., Meng, H., Xu, F., 2007. Managing expected return of investors: convertible bond in China. International Journal of Information Technology & Decision Making, Vol. 6, No 1, 141 -161.

Table 1: Expected signs of issuers characteristics influence

Variables	Asset substitution hypothesis	Risk uncertainty hypothesis	Backdoor equity hypothesis
Size	●	–	–
Financial leverage	+	+	+
Intangible assets	+	+	+
Financial slack	●	●	+
Growth opportunities	–	+	+
Assets' growth	–	+	+
Investment rate	–	+	+
Profitability	–	–	–
Risk	+	+	+
Stock price run-up	●	●	+
Market run-up	+	+	+

Table 2: Descriptive statistics of the sample

Variables	Mean	Std Dev	Median	Minimum	Maximum
Size	13.699	2.418	13.707	9.127	18.375
Financial leverage	0.976	0.880	0.716	0.000	4.529
Intangible assets	0.192	0.144	0.188	0.000	0.494
Financial slack	0.142	0.114	0.113	0.002	0.610
Profitability	0.086	0.208	0.115	–0.863	0.682
Growth opportunities	2.272	1.921	1.592	0.649	12.788
Asset growth	0.490	0.822	0.196	–0.331	4.568
Investment rate	0.115	0.116	0.084	–0.152	0.455
Stock-price run-up	0.342	0.792	0.124	–0.614	4.888
Market run-up	0.088	0.190	0.095	–0.321	0.441
Risk	0.947	0.529	0.813	0.159	2.250

Table 3: Average cumulative abnormal returns

Period	Mean (%)	Median (%)	Z-test statistic	Sign test statistic	Wilcoxon signed rank test statistic
(–15; +15)	–5.13	–3.72	–2.50**	–12.5**	–796***
(–10; +10)	–4.49	–4.39	–3.16***	–19.5***	–1045***
(–5; +5)	–3.53	–3.32	–4.61***	–22.5***	–1338***
(–2; +2)	–2.65	–2.47	–5.52***	–22.5***	–1458***
(–1; +1)	–2.80	–2.65	–6.47***	–23.5***	–1623***
(–1; 0)	–2.60	–1.73	–6.79***	–31.5***	–1714***
(0; +1)	–2.15	–1.82	–5.79***	–18.5***	–1478***
(–15; –6)	–1.38	–0.05	–1.38	–0.5	–292
(–15; –2)	–1.80	–0.65	–1.52	–4.5	–300
(–10; –6)	–1.23	–0.88	–1.96*	–11.5**	–608**
(+1; +15)	–0.72	–0.55	–0.59	–6.5	–170
(+2; +15)	–0.52	–0.25	–0.46	–3.5	–68
(+6; +10)	0.26	–0.37	0.46	–0.5	–36
(+6; +15)	–0.22	–0.46	–0.25	–5.5	–112

*, **, *** : significant at a 10%, 5% and 1% levels.

Figure 1: Average cumulative abnormal returns

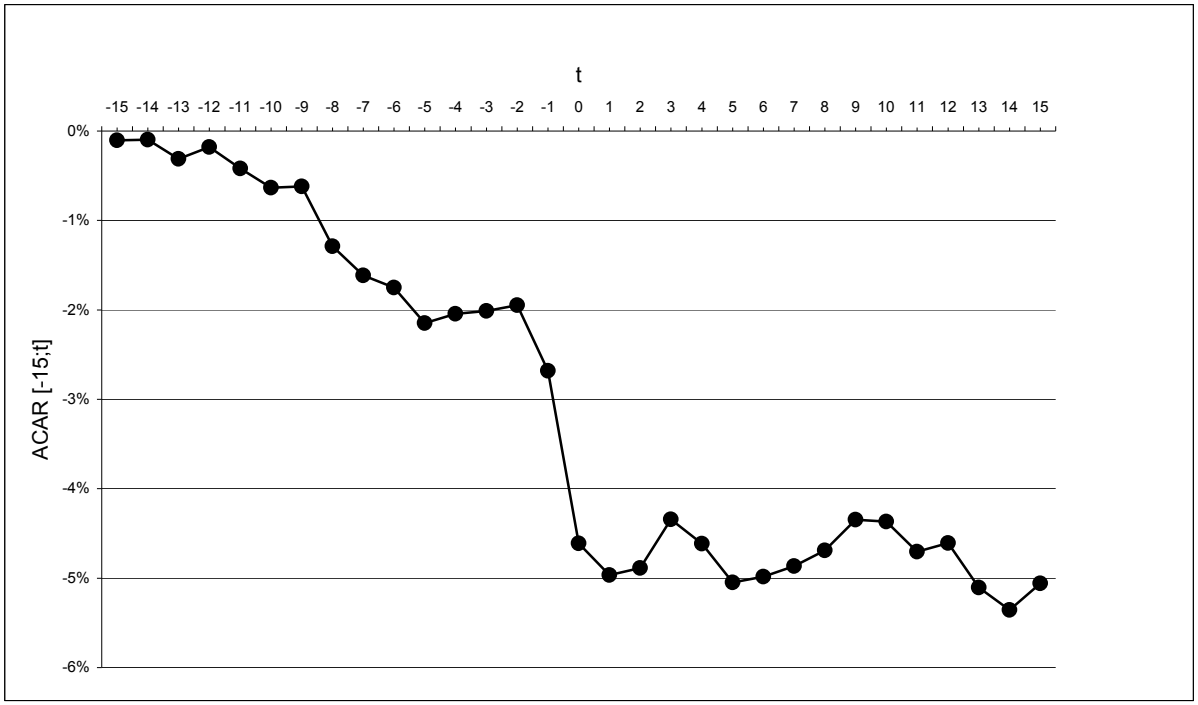

Table 4: Cross-sectional regression results

Table 4 displays successively, for each independent variable, the estimated coefficient and (in parentheses) the Student test–t value. For each regression model, the adjusted-R^2 is followed by its Fisher test-F value.

The sample includes 99 convertible bond issues on the French market between January 1997 and December 2006. The event date is the day on which the French financial markets authority (AMF) appends its certificate ('visa') on the information notice submitted by the issuer. The dependent variable is the cumulative abnormal returns, calculated over a (–15; +15) day period. All the independent variables are measured during or at the end of the fiscal year preceding the announcement of the issue, unless otherwise indicated. The size of the firm is the logarithm of the inflation adjusted total assets. The financial leverage is the ratio of total financial debt (short- and long-term financial debts) over total equity. The intangible assets ratio is the ratio of non-fixed and non-financial long-term assets over total assets. The financial slack is calculated by the ratio of cash and marketable securities over total assets. The asset growth is estimated by the growth rate of the total asset and the investment rate (capital expenditures/total assets). Growth opportunities are the ratio of the market value of equity plus the book value of short- and long-term liabilities over total assets. The profitability is measured by the return on equity. The beta is estimated over the estimation period. The stock price run-up and the market run-up are the stock price and market index variation over the estimation period.

N°	Intercept		Size		Financial leverage		Intangible assets		Financial slack		Growth opportunities		Assets' growth		Investment rate		Profitability		Risk		Stock price run-up		Market run-up		Adjusted R^2	F
1	-0.03665	*(-1.00)*							0.50573	*(2.80)* ***	-0.04434	*(-4.23)* ***					0.16524	*(1.68)* *							0.1524	6.88***
2	-0.00132	*(-0.03)*			-0.03772	*(-1,69)* *			0.56978	*(3.15)* ***	-0.04449	*(-4.10)* ***					0.22021	*(2.18)* **			-0.03500	*(-1.41)*			0.1744	5.14***
3	-0.00199	*(-0.05)*			-0.03949	*(-1.74)* *			0.56693	*(3.12)* ***	-0.04375	*(-3.98)* ***					0.22052	*(2.17)* **			-0.02802	*(-0.98)*	-0.05970	*(-0.5)*	0.1677	4.29***
4	0.00076	*(0.02)*			-0.03909	*(-1.71)* *			0.58732	*(3.05)* ***	-0.04307	*(-3.83)* ***	-0.00860	*(-0.33)*			0.22677	*(2.19)* **			-0.02652	*(-0.91)*	-0.06483	*(-0.54)*	0.1595	3.66***
5	0.00886	*(0.19)*			-0.04011	*(-1.74)* *			0.55926	*(3.03)* ***	-0.04265	*(-3.68)* ***			-0.06722	*(-0.39)*	0.22363	*(2.17)* **			-0.02765	*(-0.95)*	-0.05779	*(-0.48)*	0.1591	3.62***
6	0.00037	*(0.01)*			-0.03847	*(-1.67)* *	0.0213	*(0.15)*	0.57170	*(2.86)* ***	-0.04330	*(-3.74)* ***	-0.00333	*(-0.12)*	-0.05769	*(-0.30)*	0.22310	*(2.11)* **			-0.03335	*(-1.28)*			0.1479	3.10***
7	-0.29450	*(-2.37)* **	0.02077	*(2.40)* **					0.46857	*(2.56)* **									-0.11378	*(-2.92)* ***					0.0979	4.55***
8	-0.24176	*(-1.69)* *	0.01711	*(1.77)* *					0.47752	*(2.59)* ***									-0.10366	*(-2.59)* ***	-0.02777	*(-0.92)*	-0.04589	*(-0.34)*	0.0956	3.07**
9	-0.24613	*(-1.64)*	0.01717	*(1.76)* *			0.01487	*(0.10)*	0.47992	*(2.57)* ***									-0.10363	*(-2.58)* ***	-0.02773	*(-0.91)*	-0.04235	*(-0.30)*	0.0858	2.53**
10	-0.26827	*(-2.02)* **	0.01847	*(2.05)* **			0.05759	*(0.42)*	0.52548	*(2.72)* ***			-0.02340	*(-0.88)*					-0.11639	*(-2.95)* ***					0.0876	2.88**
11	-0.24078	*(-1.74)* *	0.01746	*(1.90)* *			0.0649	*(0.46)*	0.49274	*(2.47)* **			-0.01448	*(-0.49)*	-0.14143	*(-0.73)*			-0.11426	*(-2.85)* ***					0.0824	2.45**
12	-0.22015	*(-1.58)*	0.01612	*(1.74)* *			0.03915	*(0.27)*	0.49495	*(2.49)* **			-0.01041	*(-0.35)*	-0.13098	*(-0.67)*			-0.10493	*(-2.56)* **	-0.02819	*(-1.05)*			0.0834	2.26**

*, **, ***: respectively significant at a 10%, 5%, 1% level