

Contagion effects of successive bond rating downgrades of a leading firm

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Abstract:

The object of this paper is to study the impact of successive changes in ratings of a leading firm on competitors of the same sector. Two courses of research are being mobilized regarding, on the one hand, the incidence of downgrading of ratings on the value of the firms and on the other hand, the contagion effects associated with the report of bad news. The analysis of the successive downgrading of the ratings of Alcatel, world leader in the telecommunications infrastructure allows us to point out the contagion effects among the main French and European competitors.

Keywords:

Ratings; Contagion effects; Event studies; Telecommunications.

JEL Classification :

G14 - G30

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1. Introduction

Within the context of asymmetry of information between investors and firms, certain financial market participants occupy an exclusive position. They are, in particular, the financial analysts and the rating agencies. By reducing the asymmetry of information between the various actors present on the stock market, the financial analysts contribute to the efficiency of the latter. The rating agencies play a similar role for the holders of debt securities. The allocation of ratings should especially allow the creditors to adjust the risk premium required for the debt securities³. We can point out that the activities of these two categories of information producers are relatively complementary since the new information reported by one or by another can be used by the creditors as well as the shareholders (Ederington and Goh, 1998).

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³ Using survey research methodology, Baker and Mansi (2002) confirm the importance of rating companies, but these authors find that industrial companies issuing bonds and mutual funds investing in corporate bonds differ in some of their assessments about rating agencies.

The object of this article is to complete the studies of the reactions of the financial market to the information reported by the rating agencies. We will try to verify the idea according to which the disclosure of information regarding the solvency of a given firm lead investors to review their expectations in relation to the value of the other firms evolving in the same sector of activity. Our study is based on two different courses of research.

The first involves the impact that a downgrade by the rating agencies of the solvency ratings of firms would have on the value of shares⁴. In the United States, various studies have pointed out a negative reaction of the financial market upon a report of “bad news” concerning ratings. Holthausen and Leftwich (1986) were the first to study this phenomenon on daily data. Their results were confirmed by Hand *et al.* (1992), who obtained an average negative abnormal return of 0,79%, on a sample of 841 reports of downgrades of ratings between 1977 and 1982. Ederington and Goh (1998) confirmed these results for a more recent period; an average decrease in the value of the shares of 1,29% (over a two day period) is observed for the 494 downgrades of ratings reported between 1984 and 1990⁵.

⁴ The reader interested in the impact of the change of ratings on the bond risk premium may consult Altman and Kao (1992) or Hite and Warga (1997). For studies of the link between the yield spread and the return of the shares market, see for example Duffee (1998) or Longstaff and Schwartz (1995). Finally, Kliger and Sarig (2000) study the wealth transfers between bondholders and shareholders in the case of rating changes.

⁵ It also appears that an improvement in the ratings does not have a significant impact on the value of the shares. Otherwise, the financial market seems to expect the event. In fact, these studies show that the value of the shares generally decreased during the weeks preceding the report of a downgrade in the solvency rating. Finally, Dichev and Piotroski (2001) find negative abnormal returns in the first year following downgrades.

Outside the United States, and especially in Europe, very few similar studies have been published. This occurrence is probably linked to less bondholder financing and therefore, to a lesser presence of the rating agencies⁶. However, in the United Kingdom, the results from Barron *et al.* (1997) corroborate those obtained on the American market. Using weekly data, Matolcsy and Lianto (1995) also confirm this result for the Australian market.

The analysis of the contagion effects is the second course of research retained. The main idea is to understand how certain information, *a priori* specific to a firm, affects the wealth of the shareholders of the competitive firms. Lang and Stulz (1992) noted that information relative to a given firm (for example, bankruptcy announcement) can have a positive effect on the value of the competitive firms (*competition effect*), linked to a redistribution of market shares and profits, or a negative effect (*contagion effect*), resulting from a downward revision of expectations by the financial market for all of the firms belonging to the considered sector of activity. For example, in the banking industry, contagion effects have been highlighted by Docking *et al.* (1997), upon reports of a bank's financial difficulties, as well as by Aharony and Swary (1996) and Akhigbe and Madura (2001) upon reports of bankruptcies. In addition, in the insurance sector, the results of Fenn and Cole (1994) also show that contagion effects exist. Furthermore, Fields *et al.* (1998) find a negative reaction of the financial market for 46 insurance firms of their sample, upon the report of financial difficulties of the English insurance firm Lloyd's in the early 1990's.

⁶ It is still important to note that the bond market in euros has considerably expanded over these last years and today there are almost 2200 firms registered.

In an original work, Akhigbe *et al.* (1997) study the contagion effects linked to the reports of changes in ratings in the U.S market. While studying 354 reports of downgrades of ratings between 1980 and 1993, these authors conclude on a negative average return, economically weak but statistically significant, for the competitive firms. Furthermore, this abnormal return is all the more negative since the firms with downgraded ratings hold a considerable market share⁷.

In light of the various results obtained in the United States, it seems pertinent to study in a European context the existence and persistence of contagion effects after downgrades of solvency ratings. Based on the results of Akhigbe *et al.* (1997) and adopting a similar approach to that of Fiels *et al.* (1998), we will analyze what the impact was on the value of shares of rivals after reports of successive downgrades of solvency ratings, or being put on a negative watch list, of a firm that is a leader in the market. We will consider the Alcatel firm, source of a downgrade of their rating and placed on the watch list on 14 occasions over an 18 month period by the two major rating agencies in the world: Moody's and Standard and Poor's (S&P). Our work provides evidence of contagion effects among 39 French and 27 European rivals, but some results are sensitive to the window retained for the calculation of abnormal returns.

This paper is structured as follows. In the next section, we will briefly present the Alcatel firm, as well as the various events studied relative to their solvency rating. The methodology will be presented in a third section and the results will be discussed in the fourth section. Finally, we will synthesize our main results in the last section.

⁷ In a recent work, Caton and Goh (2003) also study the intra-group effects linked to the drop in ratings. These authors verify that these reports lead to a downward revision of the expectations of the financial analysts.

2. Downgrades of Alcatel's bond rating

2.1. Presentation of the Alcatel firm

In 2001, with a sales figure greater than 25 billion euros, Alcatel is the n°1 supplier of telecommunications infrastructures in the world⁸. This firm, with close to 100,000 employees around the world, occupies the top positions in markets such as high speed Internet and optical networks. Their portfolio includes a range of turnkey solutions, from the simple telephone service to the most sophisticated multimedia networks. Alcatel proceeded with numerous operations for external growth and their two major purchases were the American DSC in June of 1998, purchased for 4.4 billion dollars and Canadian Newbridge in February of 2002, for 6 billion dollars.

During the first months of the year 2001, the financial situation of Alcatel deteriorated more or less, the same as numerous other firms evolving within the sphere of the "new economy". Its market capitalization was divided by three in one year (24 billion euros at the end of 2001, in comparison to 75 billion at the end of 2000). Furthermore, their reported net profit turned negative (-5 billion euros at the end of 2001 in comparison to 1.3 billion euros at the end of 2000), and their total amount of debts exceeded 21 billion euros (of which 7.6 billion were financial debts) on December 31, 2001. These financial developments brought about many downward revisions of ratings attributed by S&P and Moody's.

⁸ Most of the information relating to the presentation of the Alcatel Company was obtained on their internet site (www.alcatel.fr). Information regarding the reports made by S&P and Moody's comes from Fininfo.

2.2. Alcatel's bond ratings

For the 18 month period studied (May 2001 to October 2002), the two rating agencies rendered negative information public on 14 occasions. Besides the 8 downgrades of ratings (by 8 notches from S&P and 6 notches by Moody's), these agencies placed Alcatel's solvency rating under negative watch on 6 occasions. Table 1 summarizes these various events (the reports from Moody's are presented in italics). The object of this work is not to evaluate the capital loss of the Alcatel firm, but rather to analyze the importance of the contagion effects associated to these events or, in other terms, to test the impact the successive reports have on the value of the competitive firms.

[Insert Table 1]

3. Methodology

3.1. The sample

The construction of our sample is based on an identification of all the French and European competitors of the Alcatel firm. In this regard, we have selected the division sector that Alcatel belongs to the DJ Euro Stoxx Technology index as well as the sectoral classifications of FTSE and DJ STOXX XEU Large (4 sectors: technology, communication technology, computer equipment, telecommunications equipment). To increase the range of French competitors we have selected the classification of EPA information technology. In

total, we have identified almost 80 competitors. The lack of stock market or financial data, for the period under study, forced us to eliminate some of the firms. Finally, our study is based on 66 competitors, 39 of whom are French and 27 European.

The data provided in table 2 indicates that the market value of stocks adds up to a mean of 6228 million euros on 31/12/2001, but there is a great dispersion between the firms: the median value is equal to 449 million euros. However, these firms achieved mean sales of 3900 million euros and their mean total net assets were equal to 5061 million euros. We may note here that the French firms selected are significantly smaller than the European ones. The market value of stocks, sales and total net assets are approximately six times higher for the latter.

[Insert Table 2]

3.2. The variables

3.2.1. Abnormal returns

To determine the effect of the downgrade of the Alcatel rating on the value of the competitive firms, we calculate two abnormal returns. The first corresponds to the return on the day of the report ($AR_{i,t}$) and the second measures the reaction of the financial market over the period of two days (CAR_i). The calculation is made in the following manner:

$$CAR_i = AR_{i,t} + AR_{i,t+1}$$

with:

CAR_i : the abnormal return is accumulated for a period of 2 days, including the day the rating agencies reported the downgrade of the rating or the placement on a negative watch list, and the following day (date of the publication of the information in the financial newspapers);

$AR_{i,t}$: the abnormal return of firm i over the period t , equal to $R_{i,t} - E(R_{i,t})$;

$R_{i,t}$: the return of firm i over the period t ;

$E(R_{i,t})$: the expected return of the firm i over the period t , estimated by way of a market model. We have: $E(R_{i,t}) = \alpha + \beta.Rm_t + \mu_{i,t}$. The parameters α and β of the market model are estimated by daily returns, over a period of 6 months (up to the day before the date of the event). We use the EUROSTOXX 50 index for the calculation of the market portfolio return (Rm_t).

We retain two measures for two reasons. Firstly, they allow us to highlight the sensitivity throughout the time period studied. In principle, bad news should be immediately integrated into the course of events and the abnormal return accumulated over the period of two days should not be significantly different from the return measured on the day of the report. Secondly, two reports took place on two consecutive days (July 26 and 27, 2001 and September 23 and 24, 2002, see table 1) and these crossover events posed a methodological difficulty since, in this case, only the calculation of the immediate reaction is pertinent.

3.2.2. Determinants of the industry counterparts' abnormal returns

If we study the existence of contagion effects, we should also try to understand the magnitude of the effects. To do so, we define two types of variables. The first type relates to the characteristics of the reports made by the rating agencies (downgrades or placement on a negative watch list, number of downgrade notches, passing to a speculative category - *junk bonds* – or not, first report or confirmation). The second type relates to the characteristics of the rivals (evolution of return prior to the reports, solvency, growth opportunities, size and nationality).

- The nature of the report (DEGR)

We will identify the events according to whether they relate to a placement on a watch list (DEGR = 0) or a downgrade (DEGR = 1). Theoretically, the market continually revises its expectations. In view of this, we expect a more negative reaction when the rating agency reveals information that appears original (placement on a watch list). In practice, the downgrades frequently result from a placement on a negative watch list. This anteriority should ease the impact of the effective downgrade of the rating on the stock market. We may note over the period of study that in 5 out of 8 cases of downgrades of ratings a placement on a negative watch list had already been reported.

- The number of downgrade notches (NOTCH)

Even if the investors continually revise their expectations, we expect a more significant reaction of the market in the presence of an asymmetry of information when the downgrade of the rating is more considerable. It seems, in fact, difficult to perfectly anticipate the magnitude of the downgrade by the rating agencies. The NOTCH variable measures the number of downgrade notches of the rating. In the case of Alcatel, we notice that the rating decreased 1 notch in 3 cases, 2 notches in 4 cases and 3 notches in 1 case.

- The category of the rating (SPEC)

The reaction of the financial market should also be more pronounced when Alcatel is passing from the investment category to the speculative category (junk bonds). In this case, it is probable that the market will significantly revise its expectations, leading to a greater decrease in the value of the shares of the competitors. We notice that the bonds were classified in the speculative category (SPEC = 1) by Moody's on July 9, 2002 and by S&P on July 12, 2002.

- The timing of the report (TIME)

We also expect a more negative reaction of the investors at the time of the report of the first downgrade by an agency (TIME = 1), in comparison to the confirmation of the downgrade by the other agency. This variable allows taking into account the problem of

split rating, discussed particularly by Cantor et al. (1997). Concerning Alcatel, we note that S&P are first to report a downgrade in four out of five cases. However, at the time this study was carried out, Moody's had not confirmed the last downgrade (of three notches) by S&P occurring in October of 2002.

- *Prior adjustment by the stock market (PERF1 and PERF2)*

While various works (Hand et al., 1992; Ederington and Goh, 1998) have shown that, in general, the financial market at least partially expected the bad news, we retain two variables for taking into account the prior adjustment carried out by the market. PERF1 and PERF2 respectively correspond to the stock performance of each competitor over the period of two months (40 trading sessions) and the month (20 trading sessions) preceding the event. We form the hypothesis that the reaction of the financial market diminishes with the prior adjustment of the market.

- *Firm solvency (SOLV)*

In principle, the downgrade of Alcatel's rating should have a greater downward effect on the firms with weaker solvency, since the market integrates new information regarding business conditions (or the state of the product market) that could possibly be at the origin of Alcatel's downgrade of ratings (or placement on a watch list). We retain the variable SOLV that corresponds to the connection between the recorded shareholder's

equity of the firm and the total recorded liabilities. This measure is commonly accepted for solvency⁹.

- *Growth opportunities (MMAR)*

For firms with greater growth opportunities, the impact of a downgrade in solvency should be weaker. In fact, for these firms with projects that would produce a greater cash flow in the future, the risk of insolvency is weaker. Due to their historical character, the accounting data can only imperfectly reflect this situation. To measure the firms' growth opportunities, we retain the Marris (MMAR) ratio¹⁰. This ratio is equal to the market value of the shareholder's equity in relation to the book value of the shareholder's equity.

- *The size (SIZE) and nationality of the firms (FRAN)*

Finally, we introduce two variables for additional control. Firstly, the size is estimated by using the total net assets of the firms. We assume that the small competitive firms are more affected by bad news than the large firms. There are two justifications that can be put forth. The first relates to the a greater asymmetry of information for small firms (less followed by the financial analysts, absence of ratings). In this context, the report of bad news for a competitive firm should reflect more strongly on the small firms. The

⁹ Due to the limited number of competitors possessing a solvency rating, this variable, more pertinent in estimating the solvency of firms, was not retained.

¹⁰ We have verified that the use of the Tobin's Q ratio did not modify the results obtained. This second ratio is calculated as follows: (Market value of the shareholder's equity + financial debts) / (Recorded value of the shareholder's equity + financial debts).

second is connected to the stronger diversification of large firms as much from a geographic point of view as from the product point of view. Due to this fact the latter are less sensitive to a downgrade of market conditions. The second control variable is defined by the nationality of the firms (FRAN=1, when the firm is French).

4. Results and analysis

4.1. Rivals' reaction to Alcatel's bond rating downgrades

In table 3, the abnormal returns associated to the various events retained are presented. We have calculated the abnormal return of the competitive firms for the day of the report, as well the cumulative abnormal returns over the period of two days, including the day of the report and the following day. The table details the following comments.

First of all, the choice of accumulating the abnormal returns over the period of two days (or not) is not without an effect on the results obtained. In fact, for certain dates, significant differences exist. As an example, on 10/09/2001, the mean abnormal return for one day is 0.10%, with a median return equal to -0.82%, and 54.55% of the competitive firms registered a negative return. By accumulating the abnormal returns over a period of two days, we obtain significantly different results. The abnormal return amounts to 2.73%, with a median of 1.44% and only 43.94% of the firms had registered a negative cumulative abnormal return. It is therefore extremely important to not retain only a single method of calculation of abnormal return when analyzing this phenomenon, all the more so since the

financial theory, or the existing methodological works, does not allow us to conclude that one method of calculation is predominant over another (Brown et Warner, 1985; McKinlay, 1997; Binder, 1998).

[Insert Table 3]

Secondly, it does not seem possible to conclude that there is a systematic contagion effect, even if we note a significantly negative abnormal return in 50% of cases. Of course, the mean or median returns over a period of one day are significantly negative at the time of certain reports (for example, on 18/05/2001, 6/08/2001 or 30/04/2001), with a percentage of firms registering a negative abnormal return of close to 65%. However, at the time of other reports, a competition effect seems to exist, since the abnormal returns are positive (for example on 12/07/2002 or 04/10/2002) and the percentage of firms registering a negative return is weaker (close to 35%). The same comments may be formulated when the returns are accumulated over a period of two days. We note that the latter are significantly negative in 5 of 14 cases (with the nonparametric test) and positive in 4 of 14 cases. The contagion effect seems therefore less important with this second measure, where the returns are accumulated over the period of two days.

4.2. Cross-sectional analysis of rival firms abnormal returns

The multivariate analyses will allow us to refine our initial results and to understand what factors lead to explaining the magnitude of the abnormal returns of the competitors.

Given this difference in the results with the returns over a period of one day, the day of the report, we will carry out regressions on the two types of abnormal returns.

4.2.1. The existence of the contagion effect over the period of one day

The results of the linear regressions pertaining to the abnormal returns calculated over the period of one day are presented in table 4. Because differences exist between the two measures of share performance prior to reports (PERF1 and PERF2) and that problems of multicollinearity appear, we present the results associated with the two models tested.

[Insert Table 4]

In accordance with our expectations, the SIZE variable seems to ease the contagion effect. For larger firms, that are not as subjected to informational problems (because they are better followed by the financial analysts), this effect seems less important. Moreover, according to our expectations, the TIME variable also seems to influence the contagion effect, even if this variable is found mostly in the second model tested; the first report of a downgrade by a rating agency seems to carry more weight than a confirmation of the downgrade by the other rating agency.

A third, more surprising result is emphasized. It concerns the NOTCH variable. We notice that with a more considerable downgrade a higher abnormal return is associated, which was not in accordance with our expectations. This result indicates that Alcatel's competitors register a higher increase in the value of their shares when the Alcatel rating

receives a more considerable downgrade: this result tends to indicate that competition effects also exist at the time of such reports. Therefore, the extent of the downgrade (difficult to predict) seems to lead the investors to portfolio adjustments within the same sector and these adjustments seem to operate in favour of the large firms. We however interpret this result cautiously, since it is not confirmed in the continuation of this article, when we use the cumulative abnormal returns in our regression.

Finally, the significance of the PERF2 variable allows us to confirm the idea that the contagion effect is all the more important since the trading performance of the firms is very weak during the month preceding the report (PERF1 is not significant), which was according to our expectations.

These different results must be interpreted with precaution, since the explanatory power of the models tested remains moderate. In fact, although the Fisher test was very significant, the coefficients of determination are close to 3%.

4.2.2. The existence of a contagion effect with the cumulative abnormal returns

When we retain the cumulative abnormal returns over the period of two days, the results obtained seem to be more pertinent. In fact, the coefficients of determination are close to 7% and the values of the Fisher test are higher. As in the previous case, we present numerous regressions in table 5. A new sample that we qualify as “non polluted” is formed and includes 660 observations (66 firms multiplied by 10 reports). In this sample, the connected reports of July 26 and 27, 2001 as well as September 23 and 24, 2002, were

deleted; the existence of a downgrade on two consecutive days does not allow us to distinguish the impact of each of the events retained.

[Insert Table 5]

The results, from now on, are appreciably modified, leading us to wonder about the delicate question of the speed of the integration of new information in the trading course of events as well as about the pertinence of some results published in the past. In fact, the methodology of the study of events is commonly used by retaining specific time periods for the calculation of cumulative abnormal returns¹¹.

We concentrate the rest of our interpretations on the “non polluted” sample, but all the remarks and comments remain globally valid on the initial sample. Concerning the effect of the different variables, we notice that the SIZE variable remains very significant, confirming the idea that small firms are more negatively affected than the large firms. Furthermore, the coefficient of the TIME variable is always negative: the initial bad news reported by a rating agency leads to a more negative reaction of the value of the competitive firms than the confirmation of the downgrade of the rating.

Moreover, the placement on a watch list seems to affect the value of the competitive firms more negatively than the report of an effective downgrade of the rating (DEGR variable). The informational content of the placements on a watch list seems from then on to be non-negligible and the less predictable character of this report is probably at the origin

¹¹ It is interesting to note and to recall that the two day time period (0,1), the three day time period (0,2) or other time periods: (-1 ; +1), (-2 ;+2), (-5 ;+5), are regularly retained, without verification of the sensitivity of the results to the period of accumulation retained.

of the adjustments affecting the entire sector. We also note that a report of the passing of Alcatel's rating from the investment category to the speculative category ("junk bond") appears beneficial for their competitors (SPEC variable). This result is not surprising, if we consider that crossing this threshold leads to intra-group portfolio adjustments (particularly on behalf of the largest firms of the sector, characterized by a lesser extent of asymmetry of information). Finally, we notice that the NOTCH variable is the desired signal from then on, which was not the case in the study on the "immediate" reaction of the financial market.

5. Conclusion

The object of this article is to study the impact of information supplied by rating agencies on the financial market in a context of asymmetry of information. Prior studies were generally focused on the consequences of the reports of downgrades of solvency ratings, or placement on a negative watch list, of the concerned firms (evolution of the value of the shareholder's equity or the cost of bondholder financing). This work attempts to highlight the impact of the successive changes in ratings of a leading firm on the value of the shareholder's equity of their competitors. It is at the heart of the two literatures: one is regarding the impact of the negative changes in ratings and one addresses the intra-group contagion effects.

More precisely, we have an interest in the effect that the diverse "negative information" having affected the Alcatel firm (world leader in its sector) has on the value of the shareholder's equity of 66 European and French competitive firms, namely 14 changes

in ratings and placements on a negative watch list, reported by the two principal rating agencies (Standard and Poor's and Moody's) over a period of 18 months.

Numerous results are highlighted. First of all, the importance of the time period for calculation of abnormal returns, directly linked to the reaction speed of the financial market, must be emphasized. In fact, different results are obtained, according to if the immediate reaction is studied (day of the report), or if we focus on two days of trading (the day of the report and the day after).

However, whatever the time period of study retained, certain variables seem to emerge to explain the magnitude of the abnormal returns of the competitors. In particular, the financial market seems to react more strongly to the report of the first public downgrade rather than to the confirmation of the downgrade by the second rating agency. Moreover, it appears that the contagion effect is more moderate for the large firms for which the asymmetry of information is reduced. By studying the impact of the various events over two days of trading, the nature of the event is important. The placement on a watch list, the number of notches of downgrade or the passing to the speculative category influences the extent of the contagion effect.

In conclusion, it seems that, globally, the entire sector of activity that Alcatel belongs to is affected by the information made public by the rating agencies. This result, that confirms the non-negligible role played by the rating agencies on the European financial markets, deserves to be generalized. In particular, the study of the effects of reports of ratings changes within other sectors of activity seems appropriate.

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Table 1
Information relative to the solvency rating of Alcatel

Date	Agency	Report
18 May 2001	S&P	Placed on watch list
26 July 2001	Moody's	<i>Downgrade from A1 to A2 (1 notch)</i>
27 July 2001	Moody's	<i>Placed on watch list</i>
6 August 2001	S&P	Downgrade from A to BBB+ (2 notches)
10 September 2001	Moody's	<i>Downgrade from A2 to Baa1 (2 notches)</i>
13 November 2001	S&P	Downgrade from BBB+ à BBB (1 notch)
18 February 2002	Moody's	<i>Downgrade from Baaa1 to Baaa2 (1 notch)</i>
30 April 2002	S&P	Placed on watch list
14 May 2002	Moody's	<i>Placed on watch list</i>
9 July 2002	Moody's	<i>Downgrade from Baa2 to Ba1 (2 notches)</i>
12 July 2002	S&P	Downgrade from BBB to BB+ (2 notches)
23 September 2002	S&P	Placed on watch list
24 September 2002	Moody's	<i>Placed on watch list</i>
4 October 2002	S&P	Downgrade from BB+ to B+ (3 notches)

Table 2
Description of the sample

The sample involves 66 firms, engaged in the same sector of activity as Alcatel, 39 of these firms are French and 27 are European. All the figures are expressed in millions of euros (dated 31/12/2001).

	Mean	Median	Standard deviation
Total sample			
Market value of stocks	6228	449	18982
Sales	3900	474	12138
Total net assets	5061	452	16242
European firms			
Market value of stocks	12328	1463	28147
Sales	8270	1261	18166
Total net assets	10999	1970	24302
French firms			
Market value of stocks	2005	279	5431
Sales	875	181	1801
Total net assets	950	164	2180

Table 3
The abnormal returns associated to the different reports of the rating agencies

The sample involves 66 firms, engaged in the same sector of activity as Alcatel, 39 of these firms are French and 27 are European.

t (p) corresponds to the statistic of Student and the probability associated with this statistic.

z (p) corresponds to the statistic of Wilcoxon and the probability associated with this statistic.

*, ** and *** represent significance level at 10%, 5% and 1%.

Date	Abnormal return (over a period of one day)					
	Mean	Median	Standard deviation	% AR < 0	t (p)	z (p)
18/05/01	-0,99%	-0,69%	2,55%	63,64%	-3,15 (0,002)***	-2,99 (0,003)***
26/07/01	-0,70%	-0,70%	2,78%	62,12%	-2,03 (0,047)**	-2,46 (0,014)**
27/07/01	0,29%	0,04%	3,67%	48,48%	0,65 (0,520)	0,41 (0,680)
06/08/01	-1,04%	-0,91%	3,43%	63,64%	-2,47 (0,016)**	-2,57 (0,010)***
10/09/01	0,10%	-0,82%	5,21%	54,55%	0,16 (0,877)	-0,40 (0,690)
13/11/01	0,71%	-0,01%	4,49%	50,00%	1,29 (0,203)	0,28 (0,781)
18/02/02	-0,26%	0,07%	2,11%	48,48%	-0,99 (0,326)	0,54 (0,589)
30/04/02	-0,72%	-0,89%	3,10%	69,70%	-1,88 (0,064)*	-2,78 (0,006)***
14/05/02	0,02%	-0,22%	2,54%	56,06%	0,05 (0,961)	-0,06 (0,952)
09/07/02	-0,95%	-0,66%	3,55%	57,58%	-2,18 (0,033)**	-2,24 (0,025)**
12/07/02	1,67%	1,45%	3,66%	33,33%	3,71 (0,000)***	3,47 (0,001)***
23/09/02	-1,92%	-1,29%	5,25%	63,64%	-2,98 (0,004)***	-3,09 (0,002)***
24/09/02	-3,07%	-3,55%	6,29%	63,64%	-3,96 (0,000)***	-3,82 (0,000)***
04/10/02	0,87%	0,58%	4,57%	37,88%	1,55 (0,127)	1,54 (0,125)
Date	Cumulative abnormal returns (over a period of two days)					
	Mean	Median	Standard deviation	% AR < 0	t (p) *	z (p) **
18/05/01	-0,26%	-0,61%	4,74%	54,55%	-0,45 (0,657)	-0,90 (0,366)
26/07/01	-0,40%	-0,66%	4,07%	57,58%	-0,80 (0,424)	-0,88 (0,376)
27/07/01	0,88%	-0,19%	7,61%	51,52%	0,94 (0,351)	-0,41 (0,680)
06/08/01	-0,78%	-0,82%	4,26%	63,64%	-1,49 (0,140)	-1,95 (0,052)*
10/09/01	2,73%	1,44%	9,11%	43,94%	2,43 (0,018)**	2,12 (0,034)**
13/11/01	3,36%	1,76%	8,16%	30,30%	3,35 (0,001)***	3,50 (0,001)***
18/02/02	0,01%	0,95%	4,02%	39,39%	0,03 (0,978)	1,31 (0,189)
30/04/02	-0,33%	-1,05%	5,52%	71,21%	-0,48 (0,630)	-2,82 (0,005)***
14/05/02	-0,68%	-0,46%	4,88%	59,09%	-1,14 (0,260)	-0,72 (0,472)
09/07/02	1,45%	1,50%	4,13%	39,39%	2,85 (0,006)***	2,72 (0,007)***
12/07/02	4,65%	4,29%	5,31%	19,70%	7,12 (0,000)***	5,80 (0,000)***
23/09/02	-4,99%	-5,07%	8,88%	72,73%	-4,57 (0,000)***	-4,39 (0,000)***
24/09/02	-2,18%	-0,77%	8,12%	59,09%	-2,18 (0,033)**	-2,03 (0,043)**
04/10/02	-1,41%	-1,80%	6,78%	60,61%	-1,69 (0,096)*	-2,20 (0,028)**

Table 4

OLS regressions with abnormal returns calculated over the period of one day.

The sample involves 924 observations (14 reports for 66 competitors). The explanatory variables are defined as follows: PERF1 is the return of each competitor during the 40 trading sessions preceding the report; PERF2 is the return of each competitor during the 20 trading sessions preceding the report; SOLV is the solvency ratio for each competitor, equal to the recorded shareholder's equity divided by the total liabilities; MMAR is the Marris ratio, equal to the market value of the shareholder's equity divided by the recorded value of the shareholder's equity; ln(SIZE) is the logarithm of the size of the competitors, corresponding to the total net assets (in millions of euros); FRAN is equal to 1 if the competitor is French and equal to 0 if the competitor is European; DEGR is equal to 1 if the report is a downgrade of the solvency rating of Alcatel and equal to 0 if it is a report of placement on a watch list; NOTCH is equal to the number of notches of downgrade of Alcatel's solvency rating; SPEC is equal to 1 if the downgrade leads to Alcatel's rating being classified in the speculative category; TIME is equal to 1 for the first report of downgrade and equal to 0 if it is a confirmation of the downgrade by the other rating agency.

F is the Fischer statistic, t is the Student statistic and p is the probability associated with the tests.

*, ** and *** represent significance level at 10%, 5% and 1%

	AR0	AR0
Constant	-0,012	-0,011
t	-2,738	-2,477
p	0,006 ***	0,013 **
PERF1	0,005	
t	0,948	
p	0,343	
PERF2		0,014
t		1,869
p		0,062 *
SOLV	0,004	0,004
t	0,667	0,609
p	0,505	0,543
MMAR	0,000	0,000
t	-0,085	-0,048
p	0,932	0,962
lnSIZE	0,004	0,004
t	2,178	2,194
p	0,030 **	0,028 **
FRAN	0,002	0,002
t	0,515	0,579
p	0,607	0,562
DEGR	0,004	0,002
t	0,650	0,325
p	0,516	0,745
NOTCH	0,006	0,007
t	1,798	2,123
p	0,073 *	0,034 **
SPEC	0,003	0,003
t	0,724	0,679
p	0,469	0,497
TIME	-0,006	-0,008
t	-1,602	-1,877
p	0,109	0,061 *
r ²	0,029	0,032
F	3,064	3,361
P	0,001 ***	0,000 ***
N	924	924

Table 5

OLS regressions with abnormal returns accumulated over a period of two days.

The sample involves 924 observations (14 reports for 66 competitors) and 660 observations (10 reports multiplied by 66 competitors) respectively. The explanatory variables are defined as follows: PERF1 is the return of each competitor during the 40 trading sessions preceding the report; PERF2 is the return of each competitor during the 20 trading sessions preceding the report; SOLV is the solvency ratio for each competitor, equal to the recorded shareholder's equity divided by the total liabilities; MMAR is the Marris ratio, equal to the market value of the shareholder's equity divided by the recorded value of the shareholder's equity; ln(SIZE) is the logarithm of the size of the competitors, corresponding to the total net assets (in millions of euros) ; FRAN is equal to 1 if the competitor is French and equal to 0 if the competitor is European; DEGR is equal to 1 if the report is a downgrade of the solvency rating of Alcatel and equal to 0 if it is a report of placement on a watch list; NOTCH is equal to the number of notches of downgrade of Alcatel's solvency rating; SPEC is equal to 1 if the downgrade leads to Alcatel's rating being classified in the speculative category; TIME is equal to 1 for the first report of downgrade and equal to 0 if it is a confirmation of the downgrade by the other rating agency.

F is the Ficher statistic, t is the Student statistic and p is the probability associated with the tests.

*, ** and *** represent significance level at 10%, 5% and 1%.

	CAR(0,1)	CAR(0,1)	CAR(0,1)	CAR(0,1)
Constant	-0,006	-0,003	-0,002	-0,001
t	-0,871	-0,413	-0,270	-0,152
p	0,384	0,679	0,787	0,879
PERF1	-0,001		-0,014	
t	-0,056		-1,321	
p	0,955		0,187	
PERF2		0,020		-0,007
t		1,584		-0,447
p		0,113		0,655
SOLV	0,001	0,000	-0,002	-0,003
t	0,097	-0,007	-0,154	-0,232
p	0,923	0,995	0,877	0,817
MMAR	0,000	0,000	0,001	0,001
t	-0,569	-0,619	1,071	0,959
p	0,570	0,536	0,285	0,338
lnSIZE	0,006	0,006	0,006	0,006
t	2,061	2,056	1,726	1,697
p	0,040 **	0,040 **	0,085 *	0,090 *
FRAN	-0,008	-0,007	-0,006	-0,006
t	-1,428	-1,418	-0,966	-1,046
p	0,154	0,156	0,334	0,296
DEGR	0,035	0,030	0,045	0,042
t	3,829	3,291	4,369	4,125
p	0,000 ***	0,001 ***	0,000 ***	0,000 ***
NOTCH	-0,008	-0,005	-0,015	-0,013
t	-1,474	-0,900	-2,859	-2,463
p	0,141	0,368	0,004 ***	0,014 **
SPEC	0,027	0,028	0,022	0,024
t	3,963	4,063	3,387	3,723
p	0,000 ***	0,000 ***	0,001 ***	0,000 ***
TIME	-0,007	-0,010	-0,010	-0,011
t	-1,106	-1,561	-1,719	-1,827
p	0,269	0,119	0,086 *	0,068 *
r ²	0,067	0,070	0,075	0,073
F	7,342	7,640	5,847	5,661
p	0,000 ***	0,000 ***	0,000 ***	0,000 ***
N	924	924	660	660