

Stocks of Firms under Reorganization Procedure

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Abstract

This paper aims to analyze the market reaction of US firms following their reorganization procedure announcement. As a first step, an analysis of stock prices of a sample of U.S. companies having filed for chapter 11 during the period 2000–2012 is carried through the use of indexes of prices. As a second step, we compare the stock prices of these firms with the ones of “similar” firms that have not been affected by this type of event. The results report a lower average stock return of companies under judicial protection throughout the considered time horizon, except for the period 2008–2009.

Keywords: reorganization procedure, index of prices, chapter 11

1. Introduction

During the subprime crisis, many American firms filed for chapter 11 (reorganization procedure). Li and Zhong (2013) report that, since then, US media suggest investment opportunities in the capital of firms under reorganization procedure. Nevertheless, only a few studies about the market valuation of companies under chapter 11 process have been led. The probable reasons of this lack of research are the difficulty of access to information on stocks of companies under reorganization process and, the alleged lack of activity related to this market. This paper exploits a unique database from Bloomberg which makes it possible to analyze the return of stocks under reorganization process. Regarding, the alleged lack of activity of this market, there is actually an active market for the exchange of stocks of firms under chapter 11 (Li & Zhong, 2013). These authors also report a transfer of these stocks from institutional to private investors. According to Kumar (2009), these individual investors are characterized by a riskier behavior. He compares “chapter 11 stocks” to lottery tickets characterized by a low initial investment, a very low probability of significant gain and a very strong probability of losing the amount that has been invested initially.

The few studies regarding the valuation of stocks under chapter 11 (Morse & Shaw, 1988; Datta & Iskandar-Datta, 1995; Hotchkiss & Mooradian, 1997; Altman, 1998; Indro et al., 1999; Chi & Tang, 2005; Chi & Tang, 2007; Brédart & Finet, 2012; Li & Zhong, 2013; Li, 2013) lead to contrasting results. As per Li and Zhong’s (2013), investing in stocks of firms under chapter 11 is, on average, unprofitable. However, Brédart and Finet (2012) report positive abnormal returns for the concerned stocks during the subprime crisis period.

The aim of this article is to understand the reaction of the U.S. stock market following to reorganization process announcement date during the period 2000–2012. In this perspective, we construct, upon a unique database of 435 firms, an index based on stock prices following their announcement of filing for chapter 11. We also focus our attention on the period of the subprime crisis (2008–2009) to observe the positive abnormal returns reported by Brédart and Finet (2012) during this period. In a second step, we compare the prices of our initially selected stocks to the ones of stocks from ‘similar’ firms regarding their size and sector; these firms have not been affected by a reorganization procedure between 2000 and 2012. The Comparison of two equity portfolios makes it possible to compare the performance of the two sub-samples on an identical period. Mooradian and Hotchkiss (1997), Indro et al. (1999) and Chi and Tang (2005) report that the returns of the shares of firms under reorganization procedure can be higher than those of healthy securities.

The analysis of the index of prices relative to firms under reorganization process reports, for the period 2000–2012, a gradual decline in stock prices over a period of 100 days following the announcement date of the filing for chapter 11. For the period 2008–2009, the index of prices reported contrasting results. This observation leads us to compare firm characteristics during the two periods 2000–2012 and 2008–2009. Moreover, the comparative

analysis led between our initial index and the one reflecting the evolution of stock prices of “similar” firms that did not recourse to any bankruptcy protection law between 2000 and 2012 allows us to remark a different evolution of stock prices for the period 2008–2009.

The results of this study shed light to the valuation of securities of firms under reorganization process. This paper contributes to the literature regarding financial distress and bankruptcy. This study may also be of interest for investors to allow them to adjust their investment strategies by considering stocks of firms under chapter 11 in their choice of investments.

The rest of the article is as follows. The second part will present our population and detail the methodology used. The third part of this article will present the results of our analyzes. The last section will discuss the results and propose some research avenues.

2. Literature Review

According to Chi and Tang (2007), very few studies have addressed the impact of the release announcement of filings for reorganization procedures on the stock returns of firms. Following the recent wave of bankruptcies, this topic is of significant importance (Coelho, Kose, & Taffler, 2010). In addition, the study of Bris et al. (2006), conducted over the period 1995–2001, suggests that their study could have been more interesting if it had been led on a period of recession. The academic literature provides more about stock prices before (Kalay et al., 2007) and after (Cunney & Thomas, 2004) the reorganization procedure. Nevertheless, very few studies focus on the analysis of stock prices during the reorganization procedure.

Because the reorganization procedure is costly (Beaver, 1968) and because the notification announcement for a reorganization procedure is perceived by the investors as the sign of potential problems for the firm (Clark & Weinstein, 1983), we expect a negative impact on stock prices. Clark and Weinstein's (1983) study, led over the period 1938–1979, reports a decline in profitability around the release of the announcement of a reorganization procedure. Chi and Tang (2007), report a positive abnormal return of 25 percent for stocks of firms under reorganization procedure for the period of one month following the filing date for chapter 11.

Over a longer period after the announcement, some events such as news regarding the plan of reorganization may impact the prices of stocks of firms under reorganization procedure (Chi & Tang, 2005). As per Li and Zhong's (2013) study, realized on the period 1998–2006, investing in stocks of firms under chapter 11 of the American bankruptcy code is, on average, unprofitable. Brédart and Finet (2012) report, for the subprime crisis period, positive abnormal returns during the first month following the announcement date. Finally, Morse and Shaw (1988) conclude to the absence of abnormal returns by investing in stocks of firms under reorganization procedure.

Regarding comparative studies, Mooradian and Hotchkiss (1997), Indro et al. (1999) and Chi and Tang (2005) report that the returns of the stocks of firms under chapter 11 can be positive and significantly higher than those of healthy securities for several holding periods.

3. Data and Methodology

3.1 Data

In this study, we utilize a sample of 870 firms originally quoted on the National Association of Securities Dealers Automated Quotations (Nasdaq) and the New York Stock Exchange (NYSE). Out of this sample, 435 firms filed for chapter 11 of the United States Bankruptcy Code between 2000 and 2012. For each firm, we collect daily stock prices on a period of 100 business days after the filing date for chapter 11. In a second step, using the nearest neighbour method, we build a matched pair of 435 financially healthy companies (without any filing for bankruptcy protection law during the timeframe) selected among firms listed on the Nasdaq and the NYSE. We match for industry (SIC code) and firm size (total assets) as it is the case in many comparative studies regarding bankruptcy (Altman, 1986; Daily, 1996; Donohoe, 2004). For this second sub sample, stock prices have also been collected after the filing date for chapter 11 of each failed counterpart. For example, Lehman Brothers filed for chapter 11 on 15 September 2008 and its healthy counterpart is Goldman Sachs; for both firms, we take into consideration the hundred business days after 15 September 2008. We utilized Bloomberg database to collect financial data.

3.2 Methodology

The analysis of stock prices is usually tackled by the use of ARCH (Auto-Regressive Conditional Heteroskedastic; Engle, 1982) and GARCH (Generalized Auto-Regressive Conditional Heteroskedastic; Bollerslev, 1986) models. In this article, we use a “user friendly” methodology based on the calculation and

comparison of price indexes in order to analyze the reaction of stock prices following the potential filing for reorganization procedure of US firms between 2000 and 2012. This methodology is easier to apply for non-academics.

To this aim, we first create an index based on stock prices of our initial business population (placed under reorganization process). To this end, we set the initial value of the index on the announcement date for chapter 11. Then, we compare, per firm, the prices of the 100 days after the announcement date with the price on the filing date. It allows us to build our first index.

$$Index_{it} = \frac{Price_{it}}{Price_{i0}}$$

With,

$Index_{it}$: value of the index of prices of firm i at time t ;

$Price_{it}$: stock price of firm i at time t ;

$Price_{i0}$: stock price of firm i on the filing date for chapter 11.

Then, per day, we calculate, the average of the indexes obtained per firm. Aiming to verify the existence of positive abnormal returns during the subprime crisis, we carry the same work for companies having filed for reorganization procedure over a period of 1 year from the announcement date of filing for chapter 11 of the bank Lehman Brothers (15 September, 2008). In addition to comparing price indexes, we statistically compare some characteristics (size, sector of activity and financial ratios) of firms for these two sub-periods.

In a second step, we compare the prices of our initially selected stocks to the ones of stocks from 'similar' firms regarding their size and industry (Altman, 1986; Daily, 1996; Donohoe, 2004); these firms have not been affected by a reorganization procedure between 2000 and 2012. In order to compare the two indexes on identical periods, we set, for each healthy firm, the initial value of the index on the announcement date for chapter 11 of his "failed" counterpart. The confrontation of such indexes makes it possible to compare the stock prices of the two sub-samples of firms avoiding biases inherent to conventional event methodologies.

4. Results

4.1 Descriptive Statistics

Table 1 reports descriptive statistics for firms under reorganization process, both for the period 2000–2012 and for the period of one year following the entry into chapter 11 of the bank Lehman Brothers. This table also shows the results of tests comparing variances (Levene's test) and means (Student's t test) for four firm characteristics.

Table 1. Descriptive statistics for firms under reorganization process

	2000–2012			LEHMAN + 1 year			Levene test		Student test	
	Number	Mean	Std.Error	Number	Mean	Std.Error	F	p	T_stat	p
Total assets	435	4862.36	37488.26	60	21001.28	98209.71	18.72	0.00	1.26	0.21
Total debt/Total assets	389	65.79	109.08	60	104.92	248.08	23.62	0.00	1.44	0.16
Return on assets	384	-44.40	65.64	59	-37.06	45.67	0.59	0.44	0.93	0.35
Current ratio	362	1.26	1.45	53	0.93	0.79	1.53	0.22	-1.60	0.11

The results of mean comparison tests do not indicate significant differences (at 5 percent threshold) regarding size, solvency, profitability and liquidity between the two periods. Regarding the size (Total assets) of firms under reorganization procedure, we may notice that the ones which have filed for chapter 11 on the period of one year following the entry into chapter 11 of the bank Lehman Brothers are, on average, bigger. Regarding the ratio Total debt/Total assets, firms which have filed for chapter 11 on the period of one year following the entry into chapter 11 of the bank Lehman Brothers have, on average, a larger proportion of debts. The liquidity ratio (current ratio) is smaller for firms which have filed for chapter 11 on the period of one year following the entry into chapter 11 of the bank Lehman Brothers. Finally, the means values for the return on assets are negative for the two sub-samples; this means that, on average, firms made losses.

Table 2 shows the distributions of the two samples of firms under judicial protection by sector of activity.

Table 2. Firms under judicial protection by sector of activity

	2000/2012	LEHMAN +1 year
Mining	17	5
Construction	6	0
Manufacturing	150	30
Transportation & Public Utilities	83	5
Wholesale Trade	14	2
Retail Trade	45	3
Finance, Insurance, Real estate	34	8
Services	86	7
Total	435	60
Chi square test		
Pearson Chi square		15.36
ddl		7
p		0.03

Comparing the two time periods, we show different distributions with respect to the sectors. Over the subprime crisis period, a relatively larger proportion of manufacturing and financial companies filed for chapter 11. Manufacturing, financial and real estate are the sectors that have been most affected by the crisis. While the crisis had first been limited to the real estate sector, in a second time, it has spread to the financial sector (Aglietta, 2008). Due to the credit crunch, the crisis has also affected while the industrial sector (i.e., the real economy (Attali, 2008)).

4.2 Price Indexes

As mentioned above, in a first step, we analyze the companies that have experienced difficulties related to bankruptcy only. In a second step, we compare these to a paired sample of healthy firms.

Figure 1 shows the price indexes of firms having filed for chapter 11; we distinguish the two periods previously mentioned (Lehman + 1 year and 2000–2012).

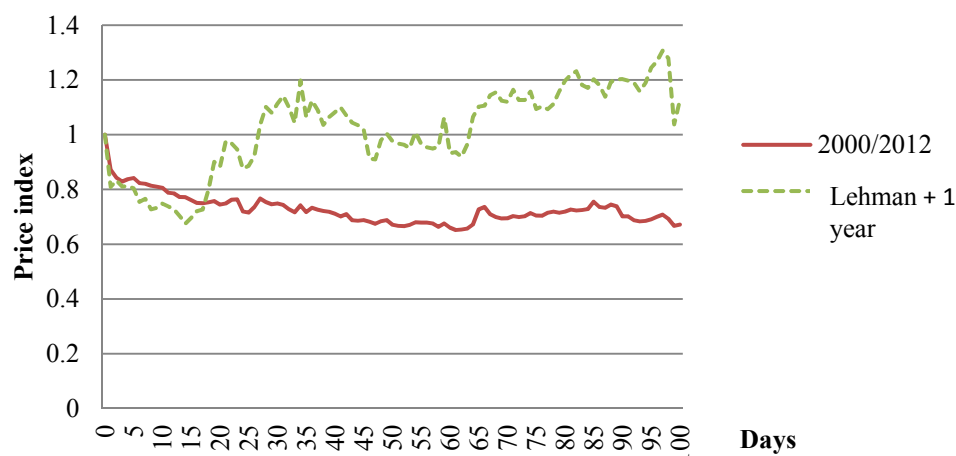


Figure 1. Price indexes of firms having filed for chapter 11 (till 100 days after the announcement date)

From Figure 1, we can first remark that, over the period 2000–2012, the index of prices of firms under reorganization process, follows a negative trend during the first 100 trading days following the announcement. We observe an important negative market reaction on the announcement date (-12.8 %), which is followed by a gradual decline in the index. Regarding the period of financial crisis, the interpretation is quite different. A more brutal reaction to the announcement (-19%) is observed. The latter is also followed by a decline in the index over the first fifteen trading days following the announcement. However, after this period, the stock prices of these firms rise. For certain periods, the index reaches higher levels than the one recorded on the date of filing for chapter 11.

In a second step, we compare firms that have been under reorganization process with a paired sample of firms not concerned by a bankruptcy protection procedure. For each firm under reorganization process, we selected a healthy firm from the same industry and approximately of the same size. We then have a paired sample 870 firms. Figure 2 shows both the index relative to firms under reorganization procedure and the index relative to healthy firms.

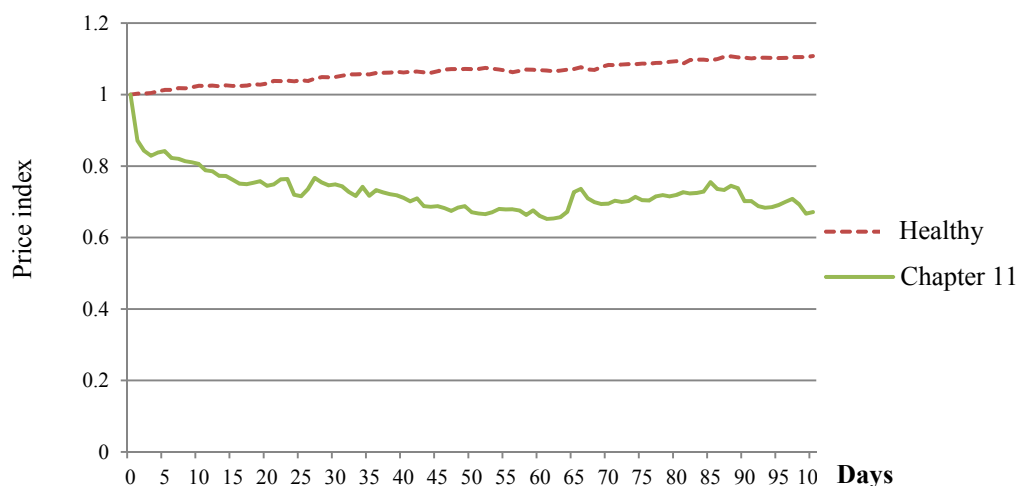


Figure 2. Price indexes relative to firms under reorganization procedure and to healthy firms over the period 2000–2012

Figure 2 shows a positive, stable and continuous trend for index relative to healthy firms. In contrast, the index relative to firms under reorganization process is less stable and displays, a negative trend. We also realized this comparison over the period 2008–2009 (Figure 3).

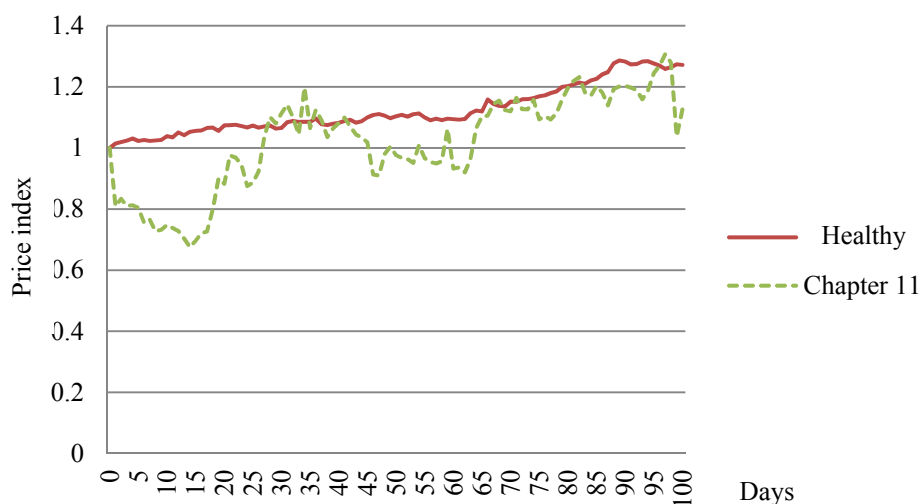


Figure 3. Price indexes relative to firms under reorganization procedure and to healthy firms over the period 2008–2009

Figure 3 shows that, during the subprime crisis, the index of prices relative to firms under chapter 11 has outperformed the one of healthy firms for different holding periods. For example, investing in a basket of shares of firms under reorganization process between 14 and 97 days after the filing date for chapter 11, makes it possible to benefit from an appreciation of the corresponding index of 93.5% versus 19.5% for an investment in

a basket of comparable healthy firms.

5. Discussion and Conclusion

The aim of this article was to analyze the prices of stocks of firms initially quoted on traditional U.S. equity markets after the announcement date of filing for reorganization process. The objective was to observe the behavior of the investors concerned by the profile described by Kumar (2009). To this end, we firstly carried out analyzes on a sample of firms that have filed for the chapter 11 of the US bankruptcy code between 2000 and 2012. In order to observe the trend of positive abnormal returns reported by Brédart and Finet (2012), we paid particular attention to the period of the subprime crisis. These first observations, relative to firms that have experienced difficulties related to bankruptcy, report significant differences between the subprime crisis period and the period 2000–2012. Over the period 2000–2012, we observe a gradual decline in the index. This is not the case for the period following the bankruptcy of Lehman Brothers. For this period, the trend of the index is positive; this result is in line with the conclusions of Brédart and Finet (2012) showing, during the subprime crisis, positive abnormal returns for certain holding periods. Different characteristics of the firms under reorganization process were compared between the two periods. The results show that firms that have announced their filing for chapter 11 during the financial crisis are not significantly different from other in regards to size, profitability, liquidity or solvency. In contrast, the frequency distributions of firms by sector of activity are significantly different for the two periods.

From these first analyzes, let us first notice an important negative impact on stock prices the few days after the announcement date for the reorganization procedure; this result is in line with Clark and Weinstein (1983). We may also notice, for the period 2000–2012, an overall negative trend for the index relative to firms under reorganization process; this result is in line with Li and Zhong's (2013) reporting that investment in the securities of companies under judicial protection is on average unprofitable. However, during the subprime crisis, the picture is significantly different as highlighted by Brédart and Finet (2012). Accounting characteristics of the two samples are not significantly different; however, the sectors that are affected are different.

In a second step, we compared the prices of stocks relative to firms under chapter 11 with prices of “similar” healthy firms. This comparative analysis, initially conducted over the period 2000–2012, shows that the trend of the two indices is totally different and clearly in favor of healthy firms. A similar analysis was also conducted over the period of 2008–2009; the results are significantly different; for certain holding periods, investing in a basket of shares of firms under reorganization process is more profitable than investing in a basket of comparable healthy firms. This finding is in line with Hotchkiss and Mooradian (1997), Indro et al. (1999) and Chi and Tang (2005) reporting that the returns of stocks relative to firms under judicial protection can be positive and significantly higher than those of stocks relative to healthy firms.

According to our analyses, results related to the period of the subprime crisis could be due to differences regarding the distribution of activity sectors. Another explanation could be intrinsic to the analysis period. Due to the loss of confidence in conventional finance, the subprime crisis may have had the effect of transferring the assets of individual investors from traditional markets to less regulated markets.

The results are contingent on our business population; it would be useful to conduct a similar study on a different market. Moreover, as research avenue, the use of ARCH (Auto-Regressive Conditional Heteroskedastic) and GARCH (Generalized Auto-Regressive Conditional Heteroskedastic) models could bring more robustness to the results of this study. The results of this study shed light to the valuation of securities of firms under reorganization process. This paper contributes to the literature regarding financial distress and bankruptcy. This study, aiming to analyze the return of stocks of firms under reorganization procedure, may also be of interest for investors to allow them to adjust their investment strategies by considering stocks of firms under chapter 11 in their choice of investments for certain holding periods.

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