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The Competitors' Response to a Bankruptcy Filing Announcement Made by a Stock-Listed Company Depending on Sector Characteristics

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Abstract

The main aim of the article is to determine how the bankruptcy filing announcement of a stock-listed company affects the market valuation of its competitors, depending on the sector characteristic. An event study was conducted on the example of returns to shares of companies comprised in the WIG index and operating in 9 sectors. It is indicated that the bankruptcy filing announcement is quickly (within one day) incorporated into the share prices of competitors of the announcing firm. It is confirmed that the direction of market reaction toward share prices of competitors is differentiated by the characteristics of the sector. Averaged results show that the competitive effect occurs in the sectors with a high level of concentration, while the contagion effect is noted in sectors with low concentration. Companies from sectors characterized by low leverage experience the competitive effect. No information transfer was found for a group of companies in sectors characterized by high leverage.

Introduction

Bankruptcy is a natural and inevitable phenomenon accompanying a free-market economy. However, it is not without consequences – both positive and negative. These consequences can be considered from an economic and social perspective.

Looking at the capital market, a bankruptcy announcement may be considered from the perspective of information transfer induced by it. The information transfer means that information revealed to the market by a firm affects not only its returns to shares but also the returns to shares of non-announcing firms (Schipper, 1990). A bankruptcy filing announcement made by one firm may have either a positive or a negative impact on the market valuation of its competitors operating within the same industry. The overall effect induced by a bankruptcy filing is a resultant of the contagion and competitive effect (Lang & Stulz, 1992). In the case of the bankruptcy filing, when the announcing firm experiences a negative reaction of investors to its returns, the positive reaction of investors to the share prices of competitors means the contagion effect, whilst the negative reaction means the competitive effect.

In academic literature, there is an ongoing discussion on the determinants that cause the predomination of either competitive or contagion effect in some industries. Usually, market concentration and leverage are indicated as the main industry characteristics that determine the reaction of investors. The research conducted so far has focused mainly on the US market (Lang & Stulz, 1992; Haensly, Theis, & Swanson, 2001; Iqbal, 2002; Jorion & Zhang, 2007; Hertzel, Li, Officer, & Rodgers, 2008). The results of the preliminary study conducted on the Polish stock market indicate the dominance of the competitive effect of the bankruptcy filing, however, the sector characteristics are not analyzed in the context of these findings (Krzeczewska & Pastusiak, 2020). The results obtained for the Polish capital market, which is the leading market in Central and Eastern Europe, may be interesting both from a national and international perspective and may enable a better understanding of the mechanisms affecting investors' reactions.

The main aim of this article is to determine how the announcement of a bankruptcy filing by a listed company affects the competitors' returns to shares, depending on the characteristics of the sector. Based on the analysis of the literature, the following research hypothesis is formulated: the bankruptcy announcement made by a company affects the returns to shares of its competitors, and the direction of this impact is differentiated by the characteristics of the particular economy sector.

Literature review

Lang and Stulz identified two effects induced by the bankruptcy announcement: contagion effect and competitive effect (Lang & Stulz, 1992). The contagion effect means that the announcing and non-announcing firms experience the investors'

reaction in the same direction, whilst market reaction in the opposite direction indicates a competitive effect (Goins & Gruca, 2008). The overall effect induced by a bankruptcy filing is a resultant of these two effects (Lang & Stulz, 1992). As the bankruptcy filing announcement is generally a negative information for the investors of the announcing company, hence in this case, the contagion effect will also harm the market valuation of competitors, whereas the competitive effect will have a positive impact on it. The effect of the bankruptcy announcement is considered in the literature not only in the context of returns to shares but also CDS credit default swaps (Jorion & Zhang, 2007) and changes in ROE (return on equity) (Iqbal, 2002).

In academic literature, there is an ongoing discussion on the determinants that cause the predomination of either competitive or contagion effect in some industries. Usually, market concentration and leverage are indicated as industry characteristics that determine the market reaction. Most of the previous studies have focused on the US market (Lang & Stulz, 1992; Haensly et al., 2001; Iqbal, 2002; Jorion & Zhang, 2007; Hertzel et al., 2008). The results of the preliminary study conducted on the Polish stock market show the predomination of competitive effect in the sample, however, the sector characteristics are not analyzed in the context of these findings (Krzeczewska & Pastusiak, 2020).

It is indicated that in highly concentrated markets (with low competition), after the exclusion of the company that is filing for bankruptcy, other companies may take over its market shares. These companies can take an advantage of the increased demand and set higher prices for their products. Hence, the competitive effect seems to increase with the increased concentration level. The level of concentration is not considered in the relation to the contagion effect (Lang & Stulz, 1992).

High leverage should strengthen the contagion effect when the announcement of filing for bankruptcy indirectly contains information about the problems of the entire industry. In such a situation, investors lose their trust in the industry and withdraw their funds. The greater use of debt may stimulate larger declines in the market value of companies. The interaction of leverage with the competitive effect is ambiguous (Lang & Stulz, 1992). On the one hand, the effect of competitiveness may be stronger in industries that use external capital financing to a large extent. But on the other hand, debt may limit the company's ability to invest, and thus to take advantage of changes in the competitive environment (Lang & Stulz, 1992).

Lang and Stulz (1992) showed that contagion is the dominant effect in the case of bankruptcy filing that has a place on the US market. The effect is larger in the case of industries with high leverage and in industries characterized by a greater correlation between stock returns of announcing and non-announcing firms. The competitive effect is strengthened for companies operating in more concentrated industries with low leverage. Haensly et al. (2001) argued with these results. They reassessed the seminal study of Lang and Stulz with some modifications in methods (e.g. they only included the period with a single legal regime). The results of their research did not confirm the occurrence of information transfer.

Iqbal (2002) examined the effects of the bankruptcy filing on changes in the return on equity (ROE) and indicated that in highly concentrated industries the positive effect on competitors is stronger than in industries with a low level of concentration. Moreover, he noted a competitive effect in industries characterized by high leverage and in which more than one bankruptcy occurred. In contrast to the other studies described earlier in the article, the long-term event study was employed in his study.

Hertzel et al. (2008) in turn, showed that the contagion effect is more pronounced in industries that are more competitive (with a low concentration). Besides, this negative effect is amplified when the company filing for bankruptcy has a debt greater than USD 120 million.

Research methods

An event study is used to assess the occurrence of the effects related to the bankruptcy filing announcement. The event study is a method used to measure the effect of various events on the market value of a firm. The event is here defined as the occurrence of certain facts or circumstances that accompany the activities of the company, or that occur in the proximal and distal environment. The basic stages of the event study are the identification of the event, defining a timeframe of the study, determining relationship between the rate of return of a specific company and the rate of return on the market and/or sector, and estimation of the event effect based on the research sample (Gurgul, 2012).

The bankruptcy announcements included in the study occurred between August 2016 and December 2018 among companies comprised in the WIG (*Warszawski Indeks Giełdowy*). The analysis covered 9 sectors in which operated the companies with a status "the issuer submits a petition for declaration of its bankruptcy" designated by the Warsaw Stock Exchange (WSE) (Portal Giełdy Papierów Wartościowych w Warszawie, 2020). The competitors of these companies were 53 entities with available quotes in days surrounding the announcement and belonging to the same sector according to the WSE classification. The analysis was based on daily quotations and included in total 10,865 firm-day observations.

The research period ensures a relatively homogeneous legal system in the field of bankruptcy proceedings. At the beginning of 2016, the Restructuring Law of May 15, 2015, entered into force (Ustawa z dnia 15 maja 2015 r…), and the restructuring and bankruptcy proceedings were separated from each other.

The date of the event was retrieved from the current reports published by the companies (Serwis Ekonomiczny Polskiej Agencji Prasowej, 2020). If the report was published after the closure of the stock exchange session, the next trading day was assumed as the date of the event (the day on which the event occurred). Share prices were obtained from the financial portal Stooq.pl (2020).

The event study method requires to establish the event window in which the effect caused by the announcement of information is measured. The event window is a time interval, measured in days for daily observations, set in relation to the day of the event (Perepeczo, 2011). In the ongoing study the event window was set at 5 days (from the day -2 to +2 in relation to the event day). To measure the effect of the bankruptcy filing, abnormal rates were computed for each company in the event window:

$$AR_{it} = R_{it} - E(R_{it})$$

AR_{it} – the abnormal return for day t and firm i
R_{it} – the actual return for day t and firm i
$E(R_{it})$ – the expected (normal) return for day t and firm i

The abnormal return rate is the difference between the actual ex-post rate of return and the expected (normal) rate of return. In this case, the expected rate of return is the "normal" rate of return – assuming that the event did not occur (Perepeczo, 2011). To estimate the expected rate of return, a market model was used (Sharpe's single index model). The length of the estimation window, which was used for estimation of models' parameters, is 200 days (ranging from the day -250 to the day -50 before the event day).

The characteristics of the industries were also examined. The data from the financial statements were obtained via the EMIS (Emerging Markets Information Service) database. The sector leverage was defined as the median of the ratio (total debt to total assets) for enterprises in a given industry, following the approach presented by Haensly et al. (2001). The median was used as it is a measure that is robust to outliers. The level of market concentration was calculated using the Herfindahl–Hirschman index (HHI), i.e. sum of the squares of the market shares of the firms within the industry. This index is the most commonly used measure in the analysis of competitiveness (Kwiatkowska, 2013).

After calculating the concentration level in sectors, the median was determined. It was used to divide sectors into two groups – with a low and high concentration level. For each of the two groups, the average abnormal returns (AAR) were calculated using the formula:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it}$$

AAR_t – average abnormal return for day t
N – number of companies

In the next step, the cumulative average abnormal returns (CAAR) for the whole 5-day event windows were calculated for each of these groups:

$$CAAR_{T1,T2} = \frac{1}{N}\sum_{i=1}^{N}\sum_{t=T1}^{T2} AR_{it}$$

$CAAR_{T1,T2}$ – the cumulative average abnormal return
T1 – the first day of the event window
T2 – the last day of the event window

To find out if the average abnormal rate of return differs significantly from zero, the test proposed by Brown and Warner was used (Crude Dependence Adjustment test – CDA) (Brown & Warner, 1980, 1985). The tested hypotheses can be described as follows:

H0: The average abnormal rate of return is equal to zero.
H1: The average abnormal rate of return is not equal to zero.
The test statistic for AAR on the day *t* was calculated according to the equation:

$$t = \frac{AAR_t}{\hat{\sigma}_{AAR}}$$

$\hat{\sigma}_{AAR}$ – standard deviation of the average abnormal returns in the estimation window

Then it was tested if the cumulative average abnormal rates of return differ significantly from zero. In this case the tested hypotheses can be described as follows:

H0: The cumulative average abnormal rate of return is equal to zero.
H1: The cumulative average abnormal rate of return is not equal to zero.
The test statistic for $CAAR_{T1,T2}$ was calculated according to the equation:

$$t = \frac{CAAR_{T1,T2}}{\hat{\sigma}_{AAR} * \sqrt{(T2 - T1 + 1)}}$$

A similar procedure was carried out for companies divided into groups according to the median of leverage.

Results and discussion

In Table 1 there are presented the average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) for competitors divided into two groups, according to the concentration level. These values are rounded to two decimal places. The *p*-value is rounded to three decimal places. The median value of the HHI index for the whole sample is 0.33.

Table 1. Average abnormal returns in event window for companies operating in sectors characterized by low and high concentration

Market concentration		
Day *t*	HHI below the median	HHI above the median
	AAR (%)	AAR (%)
-2	-0.17	-0.33
-1	-0.87*	0.49
0	0.55	1.29*
1	0.30	0.39
2	-0.64	-0.08
CAAR (-2,2) (%)	-0.83 (*p*-value = 0.418)	1.76 (*p*-value = 0.294)
Number of sectors	5	4

* statistical significance at the level of 0.1

Source: Author's own elaboration.

Companies from the sectors characterized by a high level of concentration (HHI index value above median) show a positive, though statistically insignificant, cumulative average abnormal return rate for the entire five-day event window. On the day of the event (day 0), a positive average abnormal return is observed (AAR = 1.29%), and the result is statistically significant at the level of 0.1, indicating a competitive effect on that day.

For the companies from the sectors with a lower level of concentration (HHI index below the median), the cumulative average abnormal returns on days -2 to 2 is negative, although the result is not statistically significant.

Looking at particular days in the event window, it can be observed that on the day preceding the event (day -1), there is a negative average abnormal return (AAR = -0.87%), and the result is statistically significant at the level of 0.1, indicating a contagion effect on that day. This may indicate an information leakage.

The occurrence of the competitive effect in the sectors with a high level of concentration is in line with the considerations of Lang and Stulz (1992) indicating that after excluding a rival, companies operating in industries with a low level of competition may benefit from shifts in demand (in practice, in the study by Lang and Stulz, statistically significant results indicating the effect of competitiveness were achieved only after the imposition of an additional criterion – i.e. a low level of leverage). Additionally, the contagion effect observed in the sectors with a low level of concentration is in line with the study of Hertzel et al. (2008).

Table 2 presents the average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) for competitors divided into two groups according to the median value of the leverage (total debt to total assets ratio). These values are rounded to two decimal places. The *p*-value is rounded to three decimal places. The median of the total debt to total assets ratio is 0.57.

Table 2. Average abnormal returns in event window for companies operating in sectors characterized by a low and high level of leverage

Day *t*	Level of leverage	
	Leverage below the median	Leverage above the median
	AAR (%)	AAR (%)
-2	-1.01	-0.08
-1	-2.10	0.24
0	4.49**	-0.55
1	1.66	-0.07
2	-2.41	-0.30
CAAR (-2,2) (%)	0.63 (*p*-value = 0.872)	-0.15 (*p*-value = 0.934)
Number of sectors	5	4

** statistical significance at the level of 0.05
* statistical significance at the level of 0.1
Source: Author's own elaboration.

The above results indicate that the sectors characterized by the leverage below the median experience positive average abnormal return (AAR = 4.49%) on the day of the event (day 0), which indicates the competitive effect. The cumulative average abnormal return for the whole event window is positive, although the value is not statistically significant.

The group of companies operating in the sectors with leverage above the median does not experience statistically significant average abnormal returns. The average abnormal returns for this group of companies show negative signs on almost all days in the event window (except the day -1), similarly like in the case of the cumulative average abnormal return, however, the values are not statistically significant. It means that the occurrence of bankruptcy effects cannot be determined.

The hypothesis assuming that the bankruptcy announcement made by a company affects the returns to shares of its competitors, and the direction of this impact is differentiated by the characteristics of the particular economy sector can be verified only partially. The bankruptcy announcement has an impact on the return to shares of non-announcing firms, which is visible in three out of four analyzed groups. However, the effects are very short-lived – they apply just to one day. The returns to shares of enterprises divided into groups according to industry characteristics react differently to the event.

Conclusions

The presented study shows that the effect of a bankruptcy filing announcement made by a Polish stock-listed companies on the returns to shares of their sector competitors is limited just to one day. It means that new information is quickly incorporated into share prices. In the 5-day event window, considered jointly, the effect of the event disappears.

The results obtained for the groups of companies divided according to sector characteristics indicate that the impact of the event for the competitors is differentiated by the characteristics of the sector in which these companies operate. There is a positive effect on rival market valuation (competitive effect) observed in the sectors with a high level of concentration and a negative effect (contagion effect) in the industries with a low level of concentration. There is no information transfer for companies operating in the sectors with a relatively high leverage level, while companies from the industries with a relatively low leverage experience a positive impact of the event on their market valuation (competitive effect).

In the future, the foregoing analyzes should be extended both in terms of the sample enlargement as well as in terms of more sector characteristics considered. It would be also advisable to construct a model that would take into account the various characteristics of the sectors.

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