

Common Stock Delisting: An Empirical Analysis of Firms Performance

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Received: May 6, 2022

Accepted: June 10, 2022

Online Published: June 21, 2022

doi:10.5539/ibr.v15n7p50

URL: <https://doi.org/10.5539/ibr.v15n7p50>

Abstract

This work presents an empirical analysis of delisting effects on shareholder wealth in a sample of firms delisted from European stock exchanges. The analysis was conducted at two levels. At the first one, through an event study, the effect on common stock price of delisting, on announcement day and around it is studied. At the second level, it is tested to see if the delisting improved the operating performance in the post-delisting years. The results confirm the main international evidence. The delisting causes the stock price rise in the pre-announcement period and in the few days around the announcement. The leverage and size of the firm are determinants of these effects. Conversely, prices declined in the post-announcement period. The operating performance in the year after delisting does not change much concerning the year before the delisting, but the size remains a determinant.

Keywords: delisting, event study, shareholder wealth, abnormal returns, cumulative abnormal returns

1. Introduction

Macey et al. (2008) distinguish involuntary delisting from voluntary delisting. In the first case, the company is involuntarily forced to cancel itself from the stock exchange due to non-compliance with regulatory requirements or because the company incurs bankruptcy/liquidation.

Voluntary delisting is, on the other hand, a consequence of managerial choice and in this specific case, we refer to the concept of GPTs. GPTs are heterogeneous. They can lead to simultaneous delisting from all lists (domestic or otherwise) without subsequent trading, or to cancellation from a market, but with trading maintained on less regulated stock exchanges or other markets. When companies are canceled from a stock exchange, but continue to be traded in another (foreign, less regulated, or not regulated at all), the transaction is called “going dark” or “deregistration”. It is not a real delisting but a form of delisting that describes a step down in the firm’s quotation cycle.

Over the last 20 years, empirical literature has paid a great deal of attention to firm delisting decisions, commonly defined as “going private transactions” (GPT) or “public-to-private” (PTP) operations. There are essentially three streams of empirical literature on delisting. The first one studies the link between the decision to undertake the operation and the determinants (the firm’s financial structure and performance characteristics, business characteristics, and stock liquidity) in accordance with the different theoretical models. The second strands highlight the reasons that lead to involuntary delisting and finally there are many studies on the effects of delisting on firm value.

This work is placed in this latest line of studies and has the objective of testing which is the effect of delisting announcement on firm value with an event study to verify how the stock prices change around the announcement.

With reference to this general framework, the paper is organized as described below.

In section 2, the international empirical literature on the topic of this paper is reviewed by analyzing several studies, the intention being to give both a synthetic and synoptic view by referring to the methodological aspects of empirical tests, the hypotheses and their consistency with the results obtained. Section 3 describes the sample, while section 4 examines the methodology used in this study. Section 5 examines the effects of delisting on shareholder value and firm operating performance and the results of event study and the determinants of abnormal returns and of ROA change are described. In section 6 there are the conclusions.

2. International Literature Review

Fidanza (2018) provides the following synoptic overview of the empirical literature.

The economic and financial consequences of delisting vary according to the type of delisting. Involuntary delisting is not the consequence of a choice; therefore, it is often accompanied by a destruction of firm value. It is normally induced by a reduction in the price of the company's shares and/or productivity and, in some cases, by the persistence of situations of financial distress. This means that involuntary delisting is bad news for the market which suffers a value loss. On the other hand, voluntary delisting is a decision taken by management and its economic consequences vary according to the strategies the managers want to pursue by taking this decision. In this case, the value creation will depend on the ability of the company to create synergies after the deal.

Value effect is generally examined in literature through event studies or the observation of the premium between the offer price and the pre-delisting market price. The average premium paid by the buyers to the pre-transaction shareholders should be an expression of the potential additional value that will be generated after the company goes private.

Angel et al. (2004) and Harris et al. (2008) note that the quality of the stock deteriorates when delisting is linked to financial distress. The authors observe quoted spread, the trading volumes and the volatility of delisted securities: trading volumes lose two thirds of their value, the spread triples from 12.1% to 33.6%, and volatility also triples. Sanger and Peterson (1990) also show that the value of the company is negatively influenced by the decision to delist on the NYSE or the AMEX. They note that the value is reduced and the share price drops 8.5% on the day of delisting announcement. This loss of value can be caused by a reduction in liquidity. Another explanation for the decline in the value of the company is the negative signal regarding the quality of the company that is issued with the decision of the stock exchange. From another point of view, Eisdorfer (2008) examines the effects of delisting on profitability through testing of the momentum strategy. The author compares the momentum profits of the delisting due to mergers or bankruptcy and finds that, on average, about 40% of momentum profits is generated by the delisting yields. This difference is due to the firm's characteristics before delisting: failed companies show negative price trends before delisting due to their poor performance and thus produce momentum profits after delisting.

Table 1. The effect of delisting on shareholder wealth

Hypothesis	Effect on value: sign	Empirical study	
		Effect on value *	Study
Voluntary delisting can have both a positive and a negative effect on performance	+	CARs (-30, +30) = 24.2%	Andres et al. (2007)
		premium = 18.98%	Bajo et al. (2013)
		CARs (-30,+30) = 22.3%; premium = 36.27%	Boubaker et al. (2014)
		CARs (-30,+30) = 10.19%	Croci & Del Giudice (2014)
		CARs (-20,+20) = 29.74%; premium = 56.3%	De Angelo et al. (1984)
		CARs (-30,+30) = 18.7%	Geranio & Zanotti (2012)
		CARs (-40, +60) = 26%; premium = 40%	Kaplan (1989a, 1989b)
		CARs (-20,+20) = 20.5%; premium = 36.1%	Lehn & Poulsen (1989)
		CARs (-40,+40)=19.28%; premium=40%	Renneboog et al. (2007)
		premium Europe = 20%, premium USA = 34.08%, premium UK = 29%; CARs (-20, +20) Europe = 12.53%, CARs (-20, +20) USA = 34.08%; CARs (-20, +20) UK = 14.93%	Sannajust (2010)
Involuntary delisting has a negative effect on performance	-	CARs (-20, +20) = -7.6%	Leuz et al. (2008)
		CARs (0, +1) = -10.99%	Marosi & Massoud (2007)
	-	CARs (-2,+2)=-17.79%	Angel et al. (2007)
		negative momentum profits = 40%	Eisdorfer (2008)
		quoted spread triples	Harris et al. (2008)
		AR (0) = -8.5%	Sanger & Peterson (1990)

* AR = abnormal return on event day; CARs = cumulative abnormal returns; premium = % difference between the offer price and the pre-delisting market price

In contrast, although involuntary delisting destroys shareholder wealth, significant wealth creation is expected from a voluntary delisting (via an LBO or a freeze-out) since the cancellation from the public market allows the firm to save on the costs of listing (compliance costs and agency costs). In the United Kingdom and the USA, the CARs are positive (between 19% and 30%, depending on the days on which they are calculated) and the premium is between 40% and 57% (De Angelo et al., 1984; Kaplan, 1989a; Lehn & Poulsen, 1989; Renneboog et al., 2007).

The geographical location of delisted companies appears to be a determinant of the size of the premium. Except for Boubaker et al. (2014), in the European GPTs, the premium is lower than that examined in the USA and the United Kingdom. For example, Bajo et al. (2013) observes a premium of 18.98% and Sannajust (2010) finds that the shareholder who sells his shares will earn a 34% premium in the US, 29% in the UK and 20% in Europe.

A similar difference is also found in the event studies in terms of cumulative abnormal returns. Depending on the event window, CARs change between 13% and 38% in the USA (Lehn & Poulsen, 1989 on a window of -20/+20 find CARs equal to 20.5%; Kaplan, 1989a on a window of -40/+60 of 26%). Cumulative abnormal returns are much lower in Europe: 18.7% in Geranio & Zanotti (2012), 18.2% in Bajo et al. (2013), 24% in Croci & Del Giudice (2014) and 22.3% in Boubaker et al. (2014), all on a window of -30/+30 days. Sannajust (2010) reports the following CARs: 12.53% in Europe versus 14.93% in the United Kingdom and 34.08% in the USA (window -20/+ 20).

The results of Marosi & Massoud (2007) and Leuz et al. (2008) contrast with these. They focus on two reasons for going dark, poor performances on the one hand and the possibility of obtaining private benefits on the other. For these two reasons, deregistration has a negative effect on shareholders' wealth. The cumulative abnormal return in the twenty days close to the event for the first study is about -11% whereas for the second one, it stands at around -7%.

To summarize, the involuntary delisting typically produces negative effects on value and the voluntary delisting positive effects, that however depend on the geographical location. The characteristics of governance and the tax profile of an LBO can also justify these results.

With reference to the corporate governance, the weaker positive effect in Europe compared to the UK and the US is often explained by the characteristics of the different legal and governance systems. Faccio & Lang (2002) show that the ownership structure of most European companies is concentrated with a majority shareholder (often a family) exercising strong control. Achleitner et al. (2013) note that the shareholding held by majority shareholders in the LBO targets in Europe is double that of both the UK and the US.

Renneboog et al. (2007) argue that the presence of a strong concentration before delisting implies lower wealth creation in GPTs because the company incurs lower agency costs and the benefit of delisting is therefore lower. The authors argue that the larger the stake held by another company, the stronger this result becomes. Andres et al. (2007) confirm the importance of monitoring and believe that the pre-LBO quality of governance influences the ability to create wealth for shareholders in Europe: companies with weak monitoring by shareholders tend to observe higher abnormal returns.

Other studies have rejected the hypothesis of the shareholder monitoring role. Croci & Del Giudice (2014) verify the impact of family control on shareholder wealth and observe that the market reaction is negatively linked to the degree of ownership concentration. Boubaker et al. (2014) analyze the role of large shareholders in detail by studying the effect of the separation between ownership and control. They highlight that the greater the separation between ownership and control, the less wealth is created for shareholders. Furthermore, they find that the wealth created is lower for companies with a second large shareholder compared to companies with only one major shareholder. This result is explained by the monitoring effect of the second largest shareholder. Bajo et al. (2013) believe that the presence of institutional investors plays a role in explaining the value creation in Italian delisting via BOSO. They find a positive association between the wealth created for the shareholders of delisted companies and the presence of a foreign institutional investor, that is also independent and active in the ownership structure. Institutional investors seem to play a monitoring role on majority shareholders.

Geranio & Zanotti (2012) obtain conflicting results: they show that delisting wanted by shareholders of family firms produces more wealth for shareholders whereas the presence of institutional investors and the participation of companies have no significant impact. Using a sample of German firms delisted via BOSO, Croci & Del Giudice (2013) show that CARs are greater when delisting is carried out by a family shareholder or by German shareholders.

Considering the tax motivations, Kaplan (1989b) highlights the importance of tax advantages as one of the main sources of wealth for the shareholders of companies delisted through an LBO. The debt used to finance the LBO creates benefits for companies because interest payments are tax deductible. The tax shield increases liquidity and shareholder value both in the US (Kieschnick, 1998; Halpern et al., 1999) and in Europe (Achleitner et al., 2013). However, as noted by Renneboog et al. (2007), the amount of tax benefits depends on the tax regime and the marginal tax rate applied to the company's income: the tax benefit of financing companies by debt rather than equity is greater in the United States than in the United Kingdom.

Some recent studies investigate the relationship between agency costs, management earning, regulations and delisting.

Based on a sample of non-financial firms delisted from the most important European stock markets between 1997 and 2017, Magni et al. (2021) applied an OLS regression to analyze the main variables influencing going private processes. The authors found that a high level of stock market performance, associated with a high level of free cash flows, favors privatization as a means of anticipating and preventing future declines in value.

Laureiro & Silva (2022) consider earnings management aspects to be important in explaining the greater positive impact on the risk of share price collapses after delisting compared to a control group of companies that remain listed. Another determinant of this effect is the country of listing; the effect is more pronounced for firms listed in countries with weaker investor protection, a lower quality information environment and less conservative accounting practices.

Results of Hien & Anh (2020) reveals that delisting due to violations of stock exchanges' regulations and transferring stock to lower stock exchanges has had significant and adverse effects on Vietnam shareholders' wealth and stocks' liquidity. However, delisting following the decision of the management board does not affect the market value and stock liquidity of Vietnam delisted firms.

3. Sample

The delisting operations are selected in European stock exchanges from 2001 to 2019, 293 operations are observed, but 91 firms composed the final sample because:

- only the common stocks delisting and the voluntary delisting are included;
- the delisting following M&A operations is excluded, the analysis is concentrated on the OPA effects;
- the firms listed in other markets are excluded (regulated or OTC);
- the financial and insurance firms are excluded to avoid distortion linked to high level of leverage (it would not be confrontable with the same index of firms of other sectors);
- the firms with data lacking in Datastream databases are excluded.

The sample characteristics, in terms of size and sector of firms, are shown in Table 2. The sample is largely composed of medium firms (70%), while with reference to the sectors, the manufacturing firms prevail over all the others.

Table 2. Firm distribution in the sample

Panel A: size	
Small	20%
Medium	70%
Big	10%
Panel B: sectors	
Manufacturing	52%
Agriculture, fishing, hunting	1%
Catering	4%
Real estate	6%
Consulting	3%
Wholesale, repairing of motor vehicles and motorcycles	8%
Building	4%
Mineral extraction	2%
Public services	4%
Communication	8%
Transport	8%

4. The Methodology

The testing is conducted in two steps.

The first one consists of an event study through which is verified whether the decision of delisting affects the stock price. The objective is to investigate the market reaction around the delisting announcements and to measure whether the decision creates value for the firm's shareholders. At this level, it is verified which determinants are significant to justify the results.

In the second step the effects of delisting on post-deal operating performance is tested and the potential determinants of these effects are defined.

4.1 Event Study and Abnormal Returns Determinants

In an event study, for every stock, the return is defined from two components: the normal return (the return that would have been achieved if the event had not occurred) and a disturb term (abnormal return) able to measure the specific effect due to the event, consequently:

$$R_{jt} = AR_{jt} + E(R_{jt}) \quad (1)$$

when

R_{jt} is the return of stock j in day t ;

AR_{jt} is the abnormal daily return, the disturb term linked to the event;

$E(R_{jt})$ is the normal return, the expected return.

The study period of the event is rather short, generally a few days around the event date, the use of weekly or monthly data to measure return would not allow an acceptable number of observations, therefore, daily data are used. The AR_{jt} sign shows the direction of shareholders' wealth change on the day around the event.

The expected return $E(R_{jt})$ is estimated with market model¹.

Using the market model ($R_{jt} = \alpha_j + \beta_j R_{mkt}$), the relationship between the stock return (R_{jt}) and the market return (R_{mkt}) is estimated by identifying the regression coefficient (α_j and β_j). The application of the method requires the distinction of a period of estimation, a prior study period, in which the relationship is determined. In this study, the regression parameters are estimated using the least squares method for each security j in the 756 days (3 trading years) preceding the announcement date by sixty days, consequently from -816 to -61 (estimation period).

The abnormal daily returns on the period study, therefore, are determined based on the following model:

$$AR_{jt} = R_{jt} - \alpha_j - \beta_j R_{mkt} \quad (2)$$

where AR_{jt} is the abnormal return of stock j on day t . In every day t (both in the estimate period or study period), the daily market return is calculated using FTSE Italia MIB – Price Index, while the adjusted price is used for the stock return.

By defining "0" the day of a hypothetical event, for each day t of the study period, consisting of a time interval $(-N, +N)$, the average returns of the sample are calculated (\overline{AR}_t):

$$\overline{AR}_t = \sum_{j=1}^M \frac{AR_{jt}}{M} \quad (3)$$

M is the number of stocks in the sample.

The event day corresponds to the date on which the delisting is made public, the day on which the press reports the announcement or the first following day of the open stock exchange (if the announcement was posted on a closed market day). It is excluded those articles bearing uncertain information, preferring, when possible, the articles that communicated to the public the decision to exit the market (generally by the Board).

Identifying the correct event date is crucial. The extent of the study period depends on the accuracy of the event day: the greater certainty in its definition justifies a shorter interval. However, in an efficient market, prices adjust based on future expectations of company policies; it is, therefore, difficult to identify the exact moment in which the market forms and changes these expectations. It may happen that the price response to a business decision does not occur entirely on the day of the announcement, but even earlier if it is expected that such a decision will be made. This aspect pushes to lengthen the study period, any partial anticipation must in some way be considered to avoid underestimating the effect on the value due to the announcement of the event.

Here, two event windows were selected with respect to the event day "0": $(-1; +1)$ and $(-30; +30)$. The consideration of the three-day window around the announcement is justified by the objective of observing the

¹ Alternative methods for estimating normal return are the index model and the comparison period method. The first one assumes that a market yield on day t can explain the expected return rate of stock j on the same day; the abnormal yield is measured as the difference between the actual observed yield of the stock and the market yield. With the comparison period return approach two periods are distinguished, one of comparison which does not include the days of the event, the other of the event. The expected return is defined as the average one in the non-event period. and it follows that the effect of the event is calculated as the difference between the cumulative returns of the event period and the cumulative returns of the non-event period.

instantaneous behavior of the stock price upon the announcement. Instead, the sixty-day event window around the announcement is used, on the one hand, to consider any late price reaction, and on the other, to consider possible "information leaks" from the market before the announcement. Finally, a wider window allows you to observe possible market corrections to an excessive reaction to the event.

Several firm characteristics affect shareholder wealth creation around acquisition announcement. Then with single and multivariate regression the following were conducted: the dependent variable (cumulative abnormal returns for each firm j) was related to seven independent variables (pre-announcement return growth, Tobin's Q, idiosyncratic volatility, leverage, bidder's company share in the takeover, size, return on sales) referring to the last available budget. Table 3 contains, for each variable (dependent and independent), their abbreviation, calculation method and expected sign between dependent and independent variables.

Pre-announcement return growth

Several studies show an inefficient market in the pre-announcement period (Gao & Oler, 2004): the market anticipates announcement with return growth in prior months. However, these results do not necessarily depend on insider trading, they could depend on the fact that there are investors capable of choosing the best companies. The cumulative positive abnormal returns over the three days around the event could be justified by both aspects, the expected sign is positive.

Tobin's Q

Tobin's Q is the ratio between the sum of the market values of shares and bonds of a company and the replacement value (or replenishment) of the assets necessary for the operation of the company itself. The market to book ratio is a proxy of Tobin's Q because the market value of the equity can be an expression of a future value while the book value is of historical valuation. The ratio is a proxy of the company's ability to create value with its growth opportunities.

Dong et al. (2006) find a negative link between the market to book ratio and the equity returns of the target stocks. These results are compatible with the hypothesis that the companies being acquired are undervalued and that with the announcement of delisting and acquisition they recover value.

Table 3. Dependent and independent variables

dependent variable	abbreviation	calculation method	
cumulative abnormal return	CARs	$\sum_{t=-1}^{+1} AR_t$	
independent variables	abbreviation	calculation method	expected sign
pre-announcement return growth	PARG	$\prod_{t=-240}^{-6} (1 + R_{jt}) - \prod_{t=-240}^{-6} (1 + R_{mkt})$	+
Tobin's Q	QTOBIN	$\frac{\text{market value}}{\text{book value}}$	-
idiosyncratic volatility	VOL	$\sqrt{\frac{\sum_{t=-240}^{-6} [(R_{jt} - R_{mkt}) - (\overline{R_{jt}} - \overline{R_{mkt}})]^2}{234}}$	+
leverage	LEV	$\frac{\text{financial debt}}{\text{total asset}}$	-
bidder's company share in takeover	TAK	share in takeover bid document CONSOB	-
size	SIZE	$\ln(\text{stock market capitalization})$	-
return on asset	ROA	$\frac{\text{ebit}}{\text{asset}}$	-

Idiosyncratic volatility

The CAPM states that only systematic risk should be priced, however some studies, on samples of deleted stock, have shown a relationship between stock returns and their idiosyncratic volatility. For example, Croci & Del

Giudice (2014) argue that delisted stocks with higher volatility in the pre-event period achieve higher returns and higher abnormal returns.

Leverage

Financial structure theories state that financial leverage positively influences the cost of equity, but the international empirical literature does not find unidirectional evidence. It is difficult to consider the effects that leverage can have on abnormal returns following an announcement of a takeover bid for delisting, however, Croci & Del Giudice (2014) and Geranio & Zanotti (2012) obtain a negative link between anomalous returns and pre-delisting leverage.

Takeover bidder's company share

In a takeover bid for the delisting, the bidder's company share is a determinant of the cumulative abnormal returns, if it is higher there are two consequences: when the purchasable shareholding is smaller, the remaining shareholders are reluctant to sell their shares because in this way the bidder considerably increases his share.

According to the asymmetric information theory, controlling shareholders have private information that others do not have, so if they forecast unexpected positive results, they could want to delist the company to avoid sharing these positive results with other shareholders. These considerations lead to the hypothesis that the higher the bidder's company share is associated with lower premium and the abnormal returns at the announcement will offer (Renneboog et al., 2007).

Size and Return on Asset

The size and ROA are included as control variables. Several studies show that the size and profit margins of delisted firms affect the abnormal return at the time of the announcement. For both variables, the relationship is predominantly negative (Croci & Del Giudice, 2014).

4.2 Post-Deal Operating Performance Determinants

In the second step of the analysis, the firms operating performance after the cancellation and its determinants is analyzed. The question was: what specific characteristics of firms influence this performance? To answer this question, the cross-sectional regression model was used as follows:

$$\text{operating performance change}_t = \alpha + \beta_1 LEV_{t-1} + \beta_2 TAK_{t-1} + \beta_3 SIZE_{t-1} + \beta_4 ROA_{t-1} \quad (4)$$

where the *operating performance change*, in delisting year t , is the dependent variable and LEV , TAK , $SIZE$ and ROA , in the pre-delisting year, are independent variables. All variables are described as follows.

Dependent variable

The operating performance change was measured in two ways and with two different time perspectives. For both, the operating performance was estimated using the ROA index (ebit/total assets).

In the first one (ΔROA), ROA in the pre-delisting year was compared with the post-delisting ROA year and with the post-delisting ROA third year. Defining t the delisting year:

$$\Delta ROA_1 = ROA_{t+1} - ROA_{t-1};$$

$$\Delta ROA_3 = ROA_{t+3} - ROA_{t-1}.$$

In the second one (ΔROA^{adg}) the ROA change (pre-delisting vs post-delisting) was compared with a benchmark. ΔROA^{adg} is useful for understanding which part of the operating performance is dependent on the delisting and what would have occurred even under normal conditions, regardless of the delisting (Guo et al., 2011). For this purpose, for each firm the operating performance (ΔROA) was compared with the same variable calculated, in the same period, for its comparable firm (ΔROA_{1c} and ΔROA_{3c}). The comparable firm is a firm operating in the same sector and with a total asset between 70% and 130% of the observed firm. The variables ΔROA_1^{adg} and ΔROA_3^{adg} are described as follows:

$$\Delta ROA_1^{adg} = \Delta ROA_1 - \Delta ROA_{1c};$$

$$\Delta ROA_3^{adg} = \Delta ROA_3 - \Delta ROA_{3c}.$$

Independent variables

The description of the independent variables is in Table 4.

Table 4. Independent variables

variables	abbreviation	calculation method
leverage	LEV_{t-1}	$\frac{financial\ debt_{t-1}}{total\ asset_{t-1}}$
bidder's company share in takeover	TAK_{t-1}	bidder's company share in takeover bid document (CONSOB)
size	$SIZE_{t-1}$	$Ln(total\ asset_{t-1})$

5. The Results

5.1 The Abnormal Returns

In Table 5 there are the daily average abnormal returns in sixty days (+30; -30) around the event date, and Graphic 1 shows their distribution.

Looking at abnormal returns around the event date, the average abnormal return is about 6% in the event date and is statistically significant. The abnormal returns on days -1 and +1 are positive and significant too. These results tell us that the delisting decision has a positive effect on stakeholder wealth.

In the day range (-30; -2) there is the major concentration of positive abnormal returns compared to the day range (+2; +30). This evidence is confirmed from cumulative abnormal returns calculated for ranges (-30; -2) and (+2; +30) in Table 6. In the pre-delisting period and around the delisting announcement, the shareholder wealth increased by, respectively, 7.54% and 11.45%, all the growth (18.82% from day -30 and day +30) is obtained in the pre-announcement period. In the post-announcement period the shareholder wealth decreased (the cumulative abnormal return is -0.18%).

Table 5. Daily average abnormal returns in sixty days (+30; -30)

<i>days</i>	<i>AR</i>
-30	0.84%
-29	0.11%
-28	0.08%
-27	0.44%
-26	0.20%
-25	-0.25%
-24	0.04%
-23	0.01%
-22	0.05%
-21	0.25%
-20	0.07%
-19	0.11%
-18	-0.42% *
-17	0.41% *
-16	0.28%
-15	0.28%
-14	-0.37% *
-13	0.29%
-12	0.20%
-11	0.41%
-10	0.69% *
-9	-0.20%
-8	0.07%
-7	0.33%
-6	1.06% ***
-5	0.48%
-4	1.09% ***
-3	0.05%
-2	0.94% ***
-1	1.91% ***
0	6.19% ***
1	3.35% ***
2	-0.16%
3	0.10%
4	-0.14%
5	-0.09%
6	0.07%
7	0.09%
8	-0.03%
9	0.27% **
10	0.14%
11	-0.02%
12	0.17%
13	-0.03%
14	-0.10%
15	0.02%
16	-0.19%
17	0.10%
18	0.11%
19	-0.04%
20	-0.11%
21	-0.06%
22	0.20%
23	-0.26%
24	0.06%
25	0.18%
26	-0.19% **
27	-0.02%
28	-0.11%
29	0.06%
30	-0.20% **

Note. Statistically significant at: (***)1%, (**)5%, (*)10%

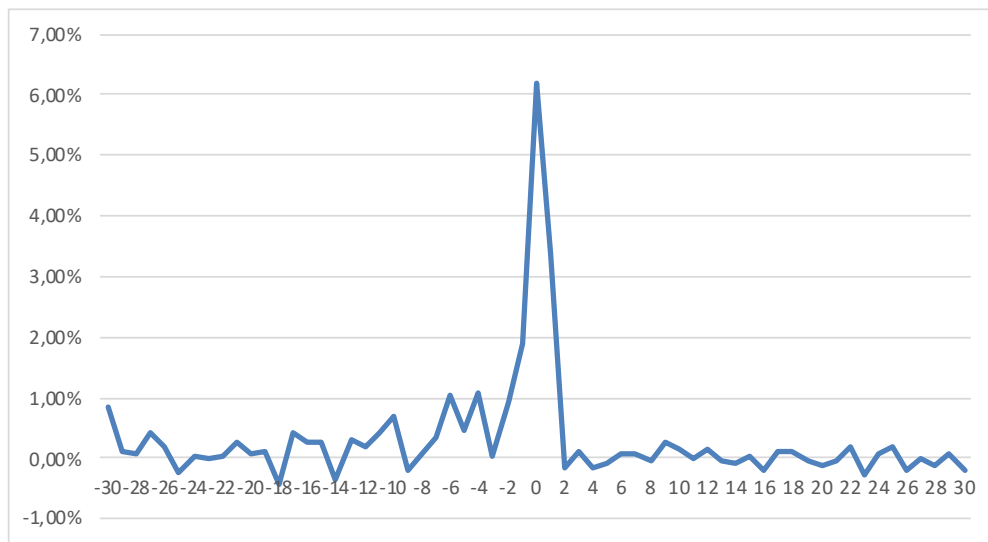


Figure 1. Daily average abnormal returns distribution in sixty days (+30; -30)

Table 6. Cumulative abnormal returns

<i>CARs</i> (-30. +30)	<i>CARs</i> (-1. +1)	<i>CARs</i> (-30. -2)	<i>CARs</i> (+2. +30)
18.82%	11.45%	7.54%	-0.18%

5.2 The Determinants of Abnormal Returns

Two series of regressions are conducted:

- single regression from the dependent variable and every independent variable (Table 7);
- multivariate regression from the dependent variable and independent variable groups (Table 8).

Table 7. Single regression results

observations	α	<i>PARG</i>	<i>QTOBIN</i>	<i>VOL</i>	<i>LEV</i>	<i>TAK</i>	<i>SIZE</i>	<i>ROA</i>	R^2
86	0.104***	0.045							0.031
83	0.119***		-0.005						0.006
86	0.128**			-0.547					0.001
41	0.215***				-0.221**				0.099
86	0.191***					-0.132*			0.044
86	-0.499**						0.033***		0.091
41	0.091***							-0.040	0.062

Note. Statistically significant at: (***)1%, (**)5%, (*)10%

Table 7 shows the results of the single regressions. Unfortunately, the R^2 are too low but the results that find an acceptable statistical significance are described below:

- the regression coefficient concerning the leverage is negative (-0.221 with a statistical significance level of 5%);
- when the bidder's company share is higher, the cumulative abnormal returns are lower (regression coefficient of -0.132 with a significance of 1%);
- the size is positively linked to *CARs*, the coefficient is 0.033, statistically significant at 1%.

These indicators confirm the results obtained in international literature; delisting creates wealth for shareholders or involves a less negative reduction in wealth when the leverage and bidder's company share are lower, or the size is greater.

Table 8. Multivariate regression results

	CARs		
	I	II	III
α	-0.574**	-0.577**	-1.151**
PARG	0.119	-0.080	0.072
VOL	0.118	0.083	0.253
TAK	-0.132	-0.068	0.095
SIZE	0.331***	0.340***	0.575***
QTOBIN		-0.072	0.299
LEV			-0.368**
ROA			-0.334**
R ²	0.103	0.064	0.222
observations	86	83	41

Note. Statistically significant at: (***)1%, (**)5%, (*)10%

From the results of the three multivariate regressions presented in Table 8, there is confirmation of the results obtained from the single regressions, where, also in this case, the leverage and the size show, respectively, negative and positive coefficients (statistically significant). The results obtained for the *TAK* variable are not confirmed, while the profitability indicator (*ROA*) is a determinant in multivariate regressions: the higher it is the lower the *CARs*. Model III obtained the higher *R*², the independent variables together explain *CARs* better.

Below is a summary of the results obtained.

- There is no relationship between the increase in pre-announcement equity returns and abnormal returns. These findings are not in accord with those of Bauguess et al. (2009) & Croci & Del Giudice (2014), which show a negative and significant relationship.
- Tobin's Q does not affect the returns of the delisted target. This is not in agreement with the studies and evidence of some authors such Dong et al. (2006), which instead show a negative and significant relationship.
- The idiosyncratic volatility does not affect the company's returns around the event.
- The degree of leverage affects the abnormal returns of the company. The results show that leverage significantly affects cumulative abnormal returns with negative coefficients. The evidence obtained here is similar to the results obtained by Croci & Del Giudice (2014) and the thesis of Geranio & Zanotti (2012).
- The stake held by the offeror does not affect the returns of the target company. From the simple regression on the cumulative abnormal returns around the announcement date, it is observed that the stake held by the bidder at the time of the offer has a negative influence. This does not appear to agree with the evidence of Andres et al. (2007), Renneboog et al. (2007) and Croci & Del Giudice (2014), which reveals a negative and statistically significant relationship.
- Market capitalization affects positively and significantly the cumulative abnormal returns, enhancing shareholder value creation. This evidence appears to be in opposition to the results obtained by Croci & Del Giudice (2014).
- The *ROA* appears to have a negative and significant effect on cumulative abnormal returns, reducing the creation of wealth for shareholders.

5.3 The Operating Performance and Its Determinants

Table 9 shows the average and median values of leverage, total asset and *ROA* in years -1, +1 and +3 compared to the year of delisting (0). There aren't significant differences in terms of average values, but observing the median values, the value of total assets is higher in year +3.

Table 9. Average and median values: leverage, total asset, operating performance

	Anno -1			Anno +1			Anno +3		
	Average	Median	Obs.	Average	Median	Obs.	Average	Median	Obs.
Leverage	0.5344***	0.56***	41	0.5777***	0.57***	30	0.5678***	0.66***	22
Total Asset (mil Euro)	554,546***	271,924***	41	674,644***	285,645***	30	673,129***	404,719***	22
ROA	0.0347*	0.03*	41	-0.0274	0.01	30	-0.0203	-0.01	22

Note. Statistically significant at: (***)1%, (**)5%, (*)10%

Table 10 shows the results of the simple regressions between the four independent variables and each of the independent variables.

Observing the impact of the selected variables on the operating performance change in the first year post-delisting, no relevant differences are observed with respect to simple *ROA* and adjusted *ROA*. *SIZE* is the only variable that has a statistically significant impact at 1%; the change in operative performance is better when the size is greater, both if we observe the simple ΔROA and adjusted ΔROA , the coefficients are, respectively, 0.082 and 0.090 (with R^2 of 0.362 and 0.357).

Regarding the change in operating performance three years after the delisting, the results are different. Leverage is the only statistically significant determinant (1%) and only concerning the ΔROA variable, its positive coefficient is equal to 0.212.

From multivariate regressions (Table 11) it emerges that the variables *LEV* and *TAK* are never significant in explaining the adjusted and unadjusted changes in operating performance. The company size appears to be significant (at 1%) with a positive influence on both ΔROA and adjusted ΔROA only referring to the first year after the delisting. This result contrasts with the evidence obtained by Croci & Del Giudice (2014). They show a significant negative relationship between size and ΔROA at a level of 5%, both in the first and the third year after delisting.

Finally, it is necessary to highlight the greater quality of the regression models referring to the first year operating performance change rather than to the third-year post-delisting. The first one presents an R^2 of 0.776 and 0.792 with, respectively, ΔROA_1 and ΔROA_1^{adj} . The second one obtains an R^2 of 0.469 on the ΔROA_3 and only 0.013 on the ΔROA_3^{adj} .

Table 10. Determinants of operating performance: single regression coefficients

dependent variable: ΔROA_1				
α	LEV	TAK	SIZE	R^2
0.013	-0.122			0.014
-0.054		-0.005		0.000
-1.628***			0.082***	0.362
dependent variable: ΔROA_1^{adj}				
α	LEV	TAK	SIZE	R^2
0.061	-0.232			0.039
-0.045		-0.045		0.001
-1.814***			0.090***	0.357
dependent variable: ΔROA_3				
α	LEV	TAK	SIZE	R^2
-0.145***	0.212***			0.297
-0.111*		0.150		0.127
-0.031			0.001	0.000
dependent variable: ΔROA_3^{adj}				
α	LEV	TAK	SIZE	R^2
-0.054	0.037			0.013
-0.090*		0.094		0.074
-0.190			0.008	0.017

Note. Statistically significant at: (***)1%, (**)5%, (*)10%

Table 11. Determinants of operating performance: multivariate regression coefficients

	ΔROA_1	ΔROA_1^{adj}	ΔROA_3	ΔROA_3^{adj}
α	-0.850***	-0.903***	0.004	-0.216
LEV	0.027	-0.054	0.323	-0.201
TAK	0.061	0.045	0.316	0.215
SIZE	0.302***	0.306***	-0.129	0.133
R^2	0.776	0.792	0.469	0.013

Note. Statistically significant at: (***)1%, (**)5%, (*)10%

6. Conclusions

This paper investigates the effects on shareholder wealth of the announcement of a voluntary delisting, the determinants of the price changes observed and the effects on firms' operating performance of the decision to exit the market.

Regarding price behavior, looking at abnormal returns around the event date and their determinant:

- the announcement causes a positive abnormal return;
- the positive abnormal return is anticipated in the pre-announcement period, while in the post-announcement period prices show a negative abnormal trend;
- Tobin's Q, idiosyncratic volatility and stake held by the offeror don't affect the returns of the delisted target;
- abnormal returns increase when leverage is reduced;
- market capitalization affects positively and significantly the cumulative abnormal returns, enhancing shareholder value creation;
- the ROA appears to have a negative and significant effect on cumulative abnormal returns, reducing the creation of wealth for shareholders.

Observing the impact of the selected variables on the operating performance change in the first year post-delisting, the size is the only variable that has a statistically significant impact: the change in operative performance is better when the size is greater. Regarding the change in operating performance three years after the delisting, the results are different, the leverage is statistically significant: when leverage increases the operating performance increases too.

The investigation in this article was intended to offer a preliminary analysis of the effects of delisting on company performance, but opens for future extensions of the empirical test. For example, one could investigate how financial crises influence the control of companies and consequently their decision to exit the market and what role private equity can play in this process. In particular, we will extend our worldwide research on delisting by studying if the private equity is the driver of going private and, in other words, if the firms performance around the delisting is different when in ownership was a private equity.

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