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Article

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The impact of divestitures on shareholder wealth – The DACH case

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Divestitures
and shareholder
wealth

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Abstract

Purpose – The purpose of this research is to study the impact of divestitures on shareholder wealth. This study covers selloffs of publicly traded companies in Germany, Austria and Switzerland (DACH region) during the period 2002–2018. It aims to understand the overall effect of selloffs on shareholder wealth as well as the impact of important influencing factors.

Design/methodology/approach – This study is part of capital market studies which investigate shareholder wealth effects (abnormal returns) using event study methodology. To determine the significance of abnormal returns, a standardized cross-sectional test as suggested by Boehmer *et al.* (1991) was applied. The sample consists of 393 selloffs of publicly traded companies with a deal value of at least EUR 10m.

Findings – The findings confirm the overall positive impact of selloffs on shareholder wealth. The average abnormal return on the announcement day of the sample companies amounts to 1.33%. The type of buyer, the relative size of the transaction as well as the financial situation of the seller in particular seem to influence abnormal returns positively.

Originality/value – This study investigates shareholder wealth creation through selloffs in the DACH region, a largely neglected region in divestiture research, but now very relevant due to increasing pressure of active foreign investors. Sophisticated statistical methods were used to generate robust findings, which are in line with the results of similar studies for the US and the UK.

Keywords Divestitures, Selloffs, Shareholder wealth, Abnormal return, Event study methodology, DACH region

Paper type Research paper

1. Introduction

In recent years, corporate divestitures, which cover different forms such as selloffs, equity carve-outs or spinoffs, have become increasingly important as a means of corporate strategy. However, compared to mergers and acquisitions (M&A), they receive limited attention from academics and practitioners (Feldman and McGrath, 2016). The reason for this negligence might be the stigma associated with the divestment of a business, as divestitures are seen as signals of weakness or failure (Dranikoff *et al.*, 2002). Further arguments against divestitures relate to the fear of decreasing economies of scale, acknowledging sunk costs, disadvantages concerning analyst coverage or damaged employee morale (Huyett and Koller, 2011). The underlying cause of this stigma relates to psychological biases, such as the sunk cost fallacy, which lead to unrealistic expectations about possible future performance improvements. As a consequence,



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managers often decide to divest an asset only if there is strong outside pressure due to heavy losses, high debt burdens, downgraded credit ratings or negative analyst comments ([Dranikoff et al., 2002](#); [Horn et al., 2006](#)). Hence, divestitures are mostly reactive rather than proactive and occur only rarely and often too late, which may again reinforce the abovementioned stigma.

Although this might be true in some cases, there are good reasons to consider divestitures as a viable strategic option rather than just an opportunistic action. A recent example was the divestment of Delivery Hero's German food delivery service to its Dutch competitor Takeaway for €0.9bn in 2018. Merging the food delivery operations of both companies in Germany should lead to substantial synergies, in which Delivery Hero shareholders participated through an attractive sales price. Another interesting example was the sale of several large German regional newspapers by Axel Springer Verlag to Funke Media Gruppe for €0.9bn in 2013. Axel Springer Verlag shareholders benefited because this allowed the company to strengthen its focus on digital media. When reviewing companies' publicly stated motives for voluntary corporate divestitures, e.g. divestments of noncore assets, underperformance of the divested assets or financing reasons, it appears that most should lead to shareholder wealth creation by improving the remaining businesses, reducing complexity and supporting growth. Involuntary divestitures, which are often triggered by regulatory issues or used as takeover defense, are generally considered as shareholder wealth destroying, but play only a small role. In fact, divestiture research, which so far mainly focused on the US and more recently the UK, shows that corporate divestitures on average create significant shareholder wealth. The average abnormal returns (ARs) of parent firms in selloff transactions are almost always positive and range between 0.20% ([Brauer and Wiersema, 2012](#)) and 3.55% ([Hearth and Zaima, 1984](#)) based on capital market studies that investigate the immediate announcement effects using event study methodology [1]. Similar results are reported for selloffs of UK companies (cf. [Lasfer et al., 1996](#); [Wang, 2000](#); [Alexandrou and Sudarsanam, 2001](#); [Kaiser and Stouraitis, 2001](#); [Gadad and Thomas, 2005](#); [Cao et al., 2008](#); [Hillier et al., 2009](#)). However, divestiture research has been widely neglected in one of the most important economic regions in Europe, i.e. the DACH region, comprising Germany, Austria and Switzerland, which historically share close political and economic ties.

This research is motivated by several reasons: (1) There are only a few studies available for the DACH region, almost all using data from the 1990s and in many cases with relatively small sample sizes making generalizations difficult; (2) corporate divestitures became considerably more important after the German Government enacted in January 2002 a landmark tax reform package containing tax exemptions for capital gains related to the sale of shares in other companies and (3) especially during the past few years foreign financial investors put increasingly pressure on several traditional companies in the DACH region to increase shareholder wealth. A recent example is ThyssenKrupp. Financial investors pressured the company to restructure its operations and sell its elevator business (still in progress).

This study focuses on the most common form of divestitures, i.e. selloffs, defined as the sale of certain assets of a parent firm, such as subsidiaries, divisions, rights, plants, property or product lines, to third parties (cf. [Alexander et al., 1984](#)) and is based on a large sample of new data covering the period 2002–2018. It answers the question to what extent divestitures in the DACH region impact shareholder wealth, which is especially important given the pressure from currently active financial investors. Furthermore, it helps managers to identify key value drivers to consider when making divestiture decisions.

2. Expected impact of corporate selloffs on shareholder wealth

2.1 Overall shareholder wealth creation

The basic principle behind the creation of shareholder wealth through divestitures is linked to the idea of the sum of the parts valuation. This concept suggests that the value of the whole

exceeds the aggregated value of the individual parts due to synergies and economies of scale. In the case of divestitures, however, it is argued that the so-called break-up value, i.e. the sum of the parts, exceeds the market value of the assets as a whole. This encourages firms to divest what would be worth more when sold individually than when retained within the company.

Such a situation occurs, for example, if not all business areas fit to the company's core competences, thus consuming resources that could be used more profitably in its core business. Furthermore, there could be a buyer that could utilize these resources more profitably and who is therefore willing to pay a purchase price that exceeds the value of the assets for the seller.

In addition, there are numerous other reasons why divestments can be beneficial for the seller's shareholder wealth such as selling underperforming or loss-making divisions, reducing agency costs, increasing transparency regarding the value of the individual assets or raising funds for investments which would be more expensive to raise via the capital market (cf. Kirchmaier, 2003; Sewing, 2010; Fischer *et al.*, 2013). Also, regulatory restrictions or sanctions for one business area that would negatively impact the entire company can be avoided.

Consequently, the first hypothesis covering the overall impact of divestments on shareholder wealth is formulated as below.

H1. Corporate selloffs of publicly traded companies headquartered in the DACH region on average create significant wealth for their shareholders.

In line with comparable studies, shareholder wealth creation is measured via ARs using event study methodology.

2.2 Factors influencing shareholder wealth creation

Aside from the overall effect, this study examines in particular the effect of a reallocation of a firm's resources to better performing business divisions and the participation of the shareholders of the seller in the value creation potential of the buyer. Based on a thorough literature review of empirical research for the US, the UK and the DACH region three hypotheses were formulated.

2.2.1 Increase in the corporate industrial focus. One of the most frequently announced reasons for divestitures is that the divested assets no longer belong to the company's core business and, hence, a divestment increases the corporate industrial focus. According to a study by Deloitte, 80% of the responding firms claimed that the disposal of noncore assets is their primary or secondary reason for a divestiture (Clark *et al.*, 2013).

The main approach to explain a positive effect on shareholder wealth related to the resource-based view. The resource-based view argues that firms with specific resources gain the highest returns when they transfer their excess resources to the markets close to the core business, whereas the average returns decline with an increasing degree of diversification. Hence, unrelated diversification seems to be particularly harmful for shareholder wealth. Diversification into related business fields, however, may create even more shareholder wealth compared to a very focused strategy. In this case firms can utilize the excess resources across several related businesses and earn extra returns (Wan *et al.*, 2011; Montgomery and Wernerfelt, 1988).

Based on this theory, divestitures of noncore assets can help to avoid over- or unrelated diversification and free-up resources for investments in core or related businesses. Furthermore, negative synergies between different divisions as well as the misallocation of capital through internal capital markets decrease and efficiency increases.

The overwhelming majority of previous studies report findings that are in line with the explanations above and attribute a positive effect of selling unrelated assets on

announcement returns (c.f. Afshar *et al.*, 1992; John and Ofek, 1995; Kaiser and Stouraitis, 1995; Datta and Iskandar-Datta, 1996; Daley *et al.*, 1997; Desai and Jain, 1999; Löffler, 2001; Bergh *et al.*, 2008; Coakley *et al.*, 2008; Chen and Feldman, 2018). However, there are also a few researchers who find no evidence for a positive effect, for example Wang (2000); Alexandrou and Sudarsanam (2001); Eichinger (2001); Clayton and Reisel (2013); Hege *et al.* (2018) and Finlay *et al.* (2018). Bartsch (2005) and Bergh *et al.* (2019) even find a negative relationship.

In line with the resource-based view, divesting noncore assets is expected to have a significant positive effect on shareholder wealth creation from corporate selloffs in the DACH region.

H2. The disposal of noncore assets on average has a significantly positive effect on shareholder wealth creation from corporate selloffs.

In order to operationalize the divestiture of noncore assets in terms of an increase in corporate industrial focus, the authors consider selloffs as increasing industrial focus if the sold-off unit's two-digit SIC code differs from the parent's primary two-digit SIC code. Focusing on the two-digit SIC code (instead of the four-digit SIC code) ensures that only selloffs of assets unrelated to the core business are classified as increasing focus. This approach corresponds to previous research (cf. John and Ofek, 1995; Daley *et al.*, 1997; Desai and Jain, 1999; Brauer and Wiersema, 2012; Vollmar, 2014; Finlay *et al.*, 2018; Chen and Feldman, 2018).

2.2.2 Participation in buyer's value creation potential. Beyond the expected positive effects of an increase in the corporate industrial focus, shareholder wealth creation in divestiture transactions can be positively influenced if the parent firm is able to participate in the value creation potential of the buyer. The expected positive effects can be explained with two key factors, which are partially related: (1) a strategic fit between the asset sold and the buyer and (2) the type of buyer.

2.2.2.1 Strategic fit between asset sold and buyer. Positive shareholder wealth effects may, for instance, emerge if the disposed asset was poorly managed by the seller and has a better strategic fit in the organization of the buyer, if the buyer has a "superior organizational form", or if the buyer has a comparative advantage in running the asset due to synergies with the buyer's other assets. In this way, a part of those value gains can be captured by the seller via premiums on the transaction price (John and Ofek, 1995). Hence the seller participates in the value creation potential of the asset sold because it is more valuable to the new owner. Similarly, Clubb and Stouraitis (2002) state that there is a very strong impact on ARs due to the profitability of the sale, which is defined as the difference between transaction price and value-in-use of the asset for the seller. As explained, this difference is mainly the result of a good strategic fit and synergies between the asset sold and the buyer. However, there may be also the possibility of an overpayment by the buyer due to large free cash flows in combination with low growth opportunities (cf. John and Ofek, 1995).

2.2.2.2 Type of buyer. Whereas the argumentation regarding strategic fit is generally accepted, there are contrasting arguments as to whether a financial or a strategic buyer should be preferred in terms of shareholder wealth maximization. On the one hand, John and Ofek (1995) and more recently Hege *et al.* (2018) would expect ARs to be higher if the buyer is a leveraged buyout group, because it can improve the performance of the divested asset due to better corporate governance structures, better managerial and restructuring capabilities that are difficult to replicate for strategic buyers, as well as more aggressive incentives. Similar to the strategic fit, the efficiency gains may be shared with the seller. Ostrowski (2007) would also expect a positive effect in the case of a financial buyer. However, she argues that in general the greater financial resources of financial buyers mean they can often outbid strategic buyers. On the other hand, Stienemann (2003) and Bartsch (2005) argue that only strategic buyers can realize synergies and thereby increase the value of the asset sold, which correlates with the strategic fit argument presented above. Since financial investors tend to

search for undervalued assets on the basis of superior information, which indicates low interest from strategic buyers and consequently weak seller bargaining power, the authors expect a low acquisition price in the case of a financial buyer and consequently lower ARs. Hence, they do not follow the argumentation by [John and Ofek \(1995\)](#) and [Hege et al. \(2018\)](#), but, like [Stienemann \(2003\)](#) and [Bartsch \(2005\)](#), expect the positive effect of potential synergies to outweigh the advantage of the financial strength of financial investors.

The discussion above leads to the following assumptions: first, the strategic fit between the asset sold and the buyer's core business should play an important role in explaining ARs. Second, selloffs to strategic investors should lead to higher ARs than selloffs to financial investors as only strategic investors are able to develop substantial synergies based on the cooperation between business divisions.

H3a. The industrial relatedness between the buyer and the asset sold has a significantly positive impact on shareholder wealth creation.

H3b. Selloffs to strategic investors create significantly more shareholder wealth than selloffs to private equity investors.

The strategic fit between the divested asset and the buyer is determined through the asset's and buyer's four-digit SIC codes. The classification of whether a buyer is strategic or financial is determined manually by the authors based on the announcement information.

2.2.3 Control variables. *2.2.3.1 Relative size.* The relative size of a divestiture, which is measured as the transaction value in relation to the market value of the seller, shows a significant positive impact on ARs in a variety of empirical studies (cf. [Hearth and Zaima, 1984](#); [Afshar et al., 1992](#); [Lasfer et al., 1996](#); [Mulherin and Boone, 2000](#); [Wang, 2000](#); [Alexandrou and Sudarsanam, 2001](#); [Kaiser and Stouraitis, 2001](#); [Mittnacht, 2005](#); [Nguyen, 2016](#); [Finlay et al., 2018](#); [Humphery-Jenner et al., 2019](#)). The reason for the positive influence of the relative size on ARs goes hand in hand with the generally expected positive overall performance. According to [Mittnacht \(2005\)](#), the positive effects of the divestiture purpose, e.g. an increase in corporate focus, should increase in magnitude as the relative size of the transaction increases. Thus, the relative size can also serve as a proxy for the degree of restructuring ([Kaiser and Stouraitis, 2001](#)).

The relative size of the divested unit is calculated as proportion of the transaction price in relation to the market capitalization of the seller 10 trading days prior to the divestiture announcement. This approach helps to obtain a relatively accurate estimate of the market capitalization of the seller at the announcement, while avoiding that the market capitalization is influenced by the event itself.

2.2.3.2 Current financial condition and outlook. As comparable studies show, the financial situation of the divesting firm plays a role in explaining ARs as well. However, the results – even when applying the same proxies – vary between the studies (cf. [Wang, 2000](#); [Stienemann, 2003](#); [Bartsch, 2005](#)) and range from a significant positive impact to a significant negative impact. There are two contrasting views on the impact of the financial situation on announcement returns. Some authors, such as [Hearth and Zaima \(1984\)](#), argue that a seller in a good financial situation should earn higher on ARs as the seller has a better negotiating position with no direct pressure to sell the assets. Therefore, higher prices can be negotiated. [Sicherman and Pettway \(1992\)](#), [Kaiser and Stouraitis \(2001\)](#); [Wang \(2000\)](#) and [Stienemann \(2003\)](#) argue in a similar manner. [Wang \(2000\)](#) describes divestitures in a good financial situation as restructuring for strategic reasons, which should provoke a more positive reaction in the capital market compared to reactive divestitures. However, [Sicherman and Pettway \(1992\)](#) add that in the case of a divestiture under financial distress, capital markets may still react positively as it may generate desperately needed cash to reduce the probability of default, which would have been very costly to raise through the capital market. [Afshar et al. \(1992\)](#) present a similar view. However, they add

that selloffs due to a weak financial situation could also be seen as a “harbinger of doom”, which could lead to a negative reaction. Also, Nguyen (2016) expects a weak financial situation, measured by a poor stock performance, to positively influence ARs as the divestiture may allow to realize the optimal value of the divested business.

An often applied proxy for the financial condition of the seller is the S&P rating (cf. [Hearth and Zaima, 1984](#); [Rosenfeld, 1984](#)). Since the S&P rating in particular is oriented toward the past, the authors refrain from using this proxy. Instead, they apply two different proxies to capture the financial condition of the seller. First, the stock performance of the seller during the estimation period is used to capture the performance prospects of the seller. It is measured via the buy-and-hold return of the seller over the estimation period. Second, the seller’s return on assets accounts for the current profitability of the seller. The return on assets is the favored substitute for profitability because it is less sensitive to the capital structure of the seller compared to other financial ratios (cf. [Vollmar, 2014](#)).

3. Research methodology and sample data

3.1 Methodology

3.1.1 Event studies. As in comparable studies, the authors use event study methodology to assess the shareholder wealth effects. Event study methodology assumes efficient capital markets in the semi-strong form, which means that security prices at any time fully reflect all obviously publicly available information (c.f. [Fama, 1970](#)). Hence, since all available information in the public domain is reflected in the share prices, investors cannot gain an AR over the market return. When a corporate event is made public, e.g. a selloff, new information becomes available, which is at that point not considered in the share prices. Based on the substance of the new information, investors are expected to change their valuation. As a consequence, prices quickly adjust to the new expectations. Then an AR, which is defined as the difference between the expected return based on the publicly available information before the announcement and the actual return through the adjustment of the prices to the new information, exists until the market reaches equilibrium again. This AR can be considered as the shareholder wealth that is created or destroyed through the divestiture. The AR is defined as:

$$\varepsilon_{i,t} = R_{i,t} - E(R_{i,t}|X_t), \quad (1)$$

where $\varepsilon_{i,t}$ is the AR of security i for the period t , $R_{i,t}$ is the actual return of security i for the period t and $E(R_{i,t}|X_t)$ is the normal return that would have been expected based on the information available before the announcement of the event X_t .

For the purpose of this article, the market model is used for the estimation of the expected normal return, which corresponds to the widely accepted standard in divestiture research [2]. The market model “[. . .] relates the return of any given security to the return of the market portfolio [. . .]” ([Campbell et al., 1997](#), p. 155) and is defined as:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (2)$$

with

$$E[\varepsilon_{i,t}] = 0 \text{ and } \text{Var}[\varepsilon_{i,t}] = \sigma_{\varepsilon_i}^2$$

where $R_{i,t}$ is the return of security i in the period t , $R_{m,t}$ is the return of the market portfolio in the period t and $\varepsilon_{i,t}$ is the AR. α_i and β_i as well as the variance of the AR $\sigma_{\varepsilon_i}^2$ are the parameters of the market model.

As in comparable studies, the parameters of the market model are estimated using an ordinary least square (OLS) regression over an estimation period of 200 trading day

immediately preceding the event window (Figure 1). This ensures that estimation errors are reduced to a minimum while still covering recent parameter changes and ensuring that there is no overlap with the event window to prevent the event from affecting the estimated market model parameters themselves. The regressor is given by the market return.

In contrast to many prior studies, the market return is represented by an industry index related to the divesting firm in order to increase the explanatory power of the market model. For this purpose, the STOXX[®] Europe 600 supersector indices are utilized, which use the Industry Classification Benchmark for the classification of companies. Due to their presumed characteristics regarding normal distribution, logarithmized daily returns are applied. Moreover, logarithmized returns can be aggregated more easily than discrete returns and provide some additional benefits, e.g. regarding the homoscedasticity assumption of the residuals.

The market model defines the AR of an individual security on a single day t as:

$$AR_{i,t} = \varepsilon_{i,t} = R_{i,t} - E(R_{i,t}|X_t) = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t}), \quad (3)$$

where X_t (as the conditioning information for the expected return) is the market return and the other parameters are defined as before. To draw conclusions from the observations, the (single) ARs must be aggregated (1) through time and (2) across the cases investigated (Campbell *et al.*, 1997).

3.1.1.1 Aggregation through time. To capture the full effect of the announcement of a divestiture, the trading days before and following the announcement are included in the calculation of the ARs. This corresponds to earlier research studies, which were mostly based on event windows of two ($[-1;0]$, $[0;1]$) or three ($[-1;1]$) days surrounding the announcement date. The reason for covering the day before the announcement is to include potential ARs through information leakages. The day after the announcement is covered since in many cases it is not clear whether the announcement took place during the day or after the closing of the stock market and to capture a potential overreaction on the announcement day. The cumulative abnormal return (CAR) over the respective event window is defined as:

$$CAR_{i,(T_2, T_3)} = \sum_{t=T_2}^{T_3} AR_{i,t}. \quad (4)$$

3.1.1.2 Aggregation across cases. In order to draw inferences for the whole sample, the ARs must be averaged. This occurs by assuming an equally weighted portfolio of divesting firms on the respective day of interest. Thus, the formula for the average abnormal return (AAR) is:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{i,t}, \quad (5)$$

where N represents the sample size and the other terms are defined as before. The cumulative average abnormal return (CAAR), which is of primary interest for this research, is defined as:

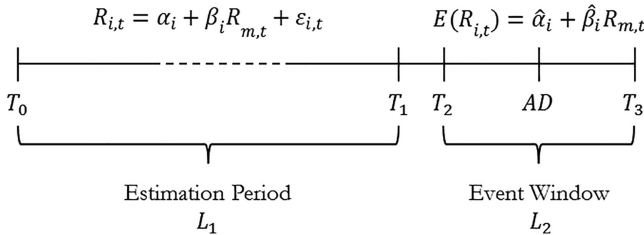


Figure 1.
Estimation period and
event window

$$CAAR_{(T_2, T_3)} = \frac{1}{N} \sum_{i=1}^N CAR_i. \quad (6)$$

3.1.2 Univariate tests. In order to test for the significance of the ARs (H_1), the null hypothesis H_0 rejects the existence of ARs within the respective event window. As, for the purpose of this research, the CAAR (cross-sectional) is of interest, the authors tests that the CAAR over the entire sample is significantly positive. This leads to the following hypotheses:

$$H_0 : CAAR_{(T_2, T_3)} = 0$$

$$H_1 : CAAR_{(T_2, T_3)} > 0$$

In order to apply parametric tests on the CAAR, for small samples, the ARs must be independently and identically distributed (iid) as normal. As the distribution of AARs over the entire sample should converge to normality with an increasing sample size (cf. [Brown and Warner, 1985](#)), a possible violation of the normality assumption does not pose a problem. Whereas for a sample size of 5, [Brown and Warner \(1985\)](#) observe a distinct deviation from normality, they confirm their statement regarding the normality assumption for a sample size of 50 securities. Hence, they conclude that parametric tests for the significance of the AARs are well specified.

To test for the significance of the ARs, the authors apply the “standardized cross-sectional test” as introduced by [Boehmer et al. \(1991\)](#). This test standardizes the ARs by adjusting the standard error by the forecast error. The test statistic under the standardized cross-sectional test is explained in the appendix.

3.1.3 Multivariate tests. After generating the dependent variable for the research, i.e. the CAAR that addresses whether selloffs on average create shareholder wealth, the second step analyses which factors influence this shareholder wealth creation. For this purpose, the authors use a cross-sectional multiple regression, where qualitative variables such as an increase in the corporate industrial focus are included as dummy variables in the model. The advantage of a multiple regression over simple bivariate models is that it allows to control for factors that simultaneously influence the dependent variable, thus providing more reliable results. It also has the advantage that a larger portion of the variation in the ARs can be explained. As in the case of the univariate tests, the standardized ARs are used as the dependent variable to account for event-induced variance increases. The parameters of the regression are estimated using OLS method.

3.2 Sample and data

3.2.1 Sample selection. The sample comprises 393 selloffs announced by German, Austrian and Swiss publicly listed companies between January 2002 and December 2018. The sample was drawn from the SDC Platinum M&A database. The initial sample was reduced from 7,111 to 393 cases after screening, as described below.

- (1) Following [Fama and French \(1992\)](#), financial firms were excluded from the sample because the leverage for these firms may have a different meaning as for nonfinancial firms. This procedure is in line with common research practice and ensures comparability with peer studies.
- (2) The deal value had to be at least EUR 10m.
- (3) Announcement dates obtained from SDC Platinum were cross-checked with press reports, ad-hoc releases and the Bloomberg Corporate Action Calendar to obtain the initial formal announcement. Cases with ambiguous announcement dates were excluded from the sample.

- (4) The Bloomberg Corporate Action Calendar was checked for confounding announcements within the window of five trading days surrounding the initial announcement. Cases with confounding news were excluded.
- (5) Cases with no or insufficient market data (e.g. due to thin-trading) were excluded.

3.2.2 Data collection. The data were collected from several sources. Individual deal characteristics such as the deal value or motive were obtained from the SDC Platinum database and – if necessary – validated or amended by company press releases, ad-hoc messages, news articles or the Bloomberg Corporate Action Calendar. Market data as daily share prices were obtained from Datastream. Further information, such as seller SIC codes, was gathered from the Thomson Financial database. Accounting data like the income statement, profitability ratios, cash-flow statements or the balance sheet were obtained from Worldscope.

3.2.3 Variable description. Table 1 describes the variables used in this research.

The variable *I_FOCUS* (H2) is a dummy variable that takes the value one if a company sells a noncore asset and thus, increases its corporate industrial focus through the divestiture, and zero otherwise. In the underlying sample, a noncore asset is sold in almost 50% of the cases. The variable *FIT* (H3a) is also a dummy variable and takes the value one if a noncore asset of the seller is bought by a buyer for whom the asset belongs to the core business based on the two companies' SIC codes. This is the case in 44 of 393 divestiture cases. The variable *STRATEGIC* (H3b) indicates a strategic buyer, which constitute the majority of the sample. In only 89 of the 393 cases, the respective asset is sold to a financial buyer. Our measure for the relative size of the deal is represented by the dummy variables *SMALL* (deal value between 0% and 10% of the seller's market capitalization), *MEDIUM* (10% – 50%) and *LARGE* (from 50% upward). The distribution of the divestiture cases is clearly skewed toward small divestitures with a share of 66%. A positive stock performance in the estimation window is indicated by the variable *STOCK* (60% of the cases); variable *ROA* represents the seller's profitability as its return on assets which averages 6.63%.

4. Empirical results

4.1 Positive overall effect of corporate divestitures on shareholder wealth

The event study results show that, in line with the expectations formulated in H1, corporate selloffs of companies located in the DACH region create significant shareholder wealth. With an AAR of 1.33% on the announcement day, the effect is not particularly large, but still significantly positive. Also, the proportion of divestitures with a positive AR is significantly positive with about 60%, as well as the absolute AAR with nearly EUR 70m. The median is

Variable	N	Mean	Median	Std. Dev	Percentiles	
					25%	75%
<i>I_FOCUS</i>	393	0.50	0	0.50	0	1
<i>FIT</i>	393	0.11	0	0.32	0	0
<i>STRATEGIC</i>	393	0.77	1	0.42	1	1
<i>SMALL</i>	393	0.66	1	0.48	0	1
<i>MEDIUM</i>	393	0.21	0	0.41	0	0
<i>LARGE</i>	393	0.13	0	0.34	0	0
<i>STOCK</i>	393	0.60	1	0.49	0	1
<i>ROA</i>	379	6.63	4.72	14.32	1.83	8.44

Note(s): Return on assets in %

Table 1.
Variable description

about 0.40%. Table 2 summarizes the results for the announcement day and three additional event windows, which include the day before and after the announcement.

Furthermore, an extended event window, containing the 21 trading days surrounding the announcement, reveals that a noticeable AAR can only be observed at the immediate announcement, which supports the assumption of efficient capital markets in the semi-strong form. In addition, it becomes apparent that the announcement effects are sustainable and are not lost in the following days (Figure 2).

4.2 No clear evidence for impact of focus hypothesis

The theoretical reasoning for an expected positive effect for the disposal of noncore assets as formulated in hypothesis two cannot be clearly proven. Even though the results of the multivariate regression (Table 3) show a positive effect for focus-increasing divestitures, the effect is only significant for the $[-1;1]$ event window. This finding is in line with recent US and UK studies, which – in comparison to previous studies – could not prove a positive effect. Similar results were observed for the DACH region.

A possible explanation for this result could be the increasing importance of shareholder value thinking since the mid-1990s when some companies started to rethink their business structure and began to focus on more narrowly defined core businesses. This might cause less pronounced effects for further (minor) increases in focus. In line with the resource-based view,

Event window	CAAR	SCAAR ¹	Absolute CAAR	Proportion positive CARs
[0]	1.33***	0.68***	68.67***	61.83***
$[-1;0]$	1.36***	0.51***	79.14**	58.02***
$[-1;1]$	1.59***	0.47***	63.46**	59.03***
$[0;1]$	1.56***	0.55***	52.99**	60.05***

Note(s): CAAR and proportion of positive CARs in %; Absolute CAAR in EUR 1,000,000
 $N = 393$; *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively, based on a right-tailed cross-sectional test for CAAR and absolute CAAR, a right-tailed standardized cross-sectional test for SCAAR and a right-tailed Fisher's exact test for the proportion of positive abnormal returns
¹Standardized cumulative average abnormal return as explained in the appendix

Table 2.
Event period average
abnormal returns

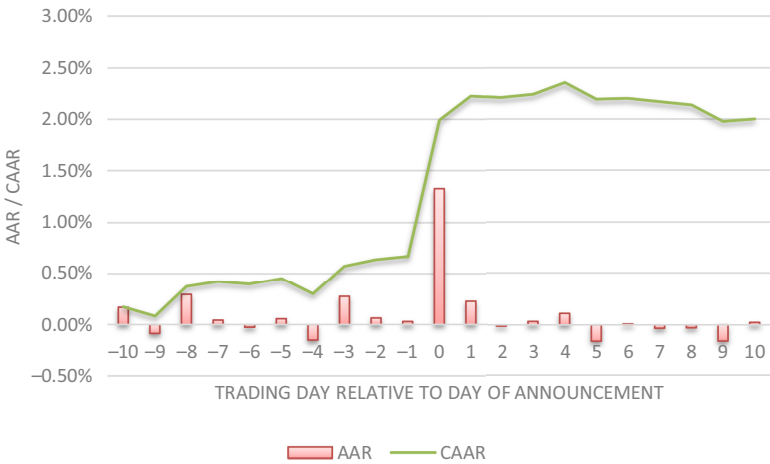


Figure 2.
Event period daily and
cumulative average
abnormal returns

the key issue, however, presumably relates to the financial resources freed-up through the divestiture and how these resources are used to contribute to wealth creation, regardless of whether a core business or a noncore business was divested.

4.3 Positive impact of strategic buyers

With regard to the theoretical reasoning for a potential participation of the seller in the value creation potential of the buyer, the empirical results (Table 3) do not unambiguously support the earlier considerations formulated in hypotheses 3a and 3b. The effect of the sale of an asset, which is unrelated to the core business of the seller but would fit to the core business of the buyer, is only insignificantly higher compared to other constellations [3]. However, the announcement effects are in all event windows significantly higher for sales to strategic investors compared to financial buyers. Hence, the results indicate that the type of buyer is more important regarding a possible participation in the value creation potential of the buyer than the strategic fit.

The finding of a significant better performance of sales to strategic compared to financial investors is in line with the expectations of the authors, since strategic investors should be able to exploit substantial more synergies than financial investors, which justifies paying a higher price for the assets.

4.4 Relative size of the divestiture as key driver of wealth creation

The relative size of the divestiture has a major impact on ARs, which corresponds to previous research. The regression (Table 3) reports significantly higher ARs for both, medium and large divestitures compared to small divestitures in all event windows. For small divestitures, i.e. divestitures with a transaction value up to 10% of the market capitalization of the seller, the announcement effect averages at just 0.32%. For the event windows including the day before and the day after the announcement, the effect is partly insignificant. By contrast, divestitures of medium size, i.e. with a relative size up to 50% of the market capitalization of the seller, show significantly higher ARs, averaging 1.97%, and large divestitures (>50%) even higher with 5.33%. Figure 3 shows the significant impact of the relative size of the transaction on ARs.

The observed effect of the relative size on announcement effects seems logical, as the sale of some minor assets is presumably only under certain circumstances able to influence the share price of the seller, for example in the case of a sale of a small entity producing heavy

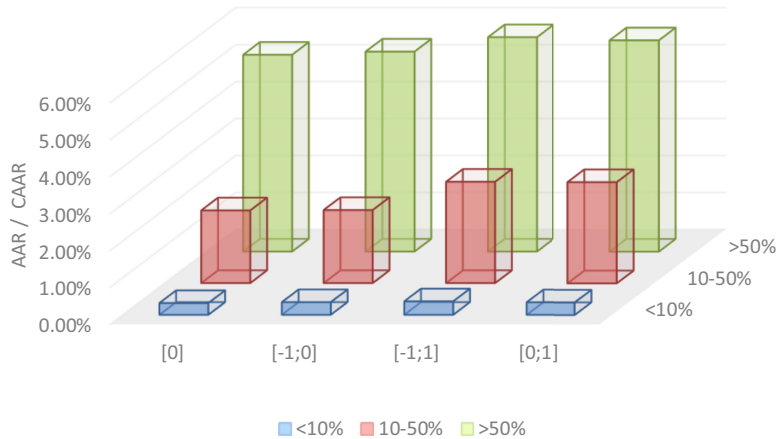
	SAAR [0]	SCAAR [-1;0]	SCAAR [0;1]	SCAAR [-1;1]
I_FOCUS	0.032 (0.183)	0.220 (0.153)	0.157 (0.160)	0.290* (0.148)
STRATEGIC	0.632*** (0.230)	0.469** (0.186)	0.316* (0.184)	0.276* (0.163)
FIT	0.360 (0.411)	0.120 (0.320)	0.259 (0.352)	0.103 (0.317)
MEDIUM	0.698*** (0.246)	0.517** (0.201)	0.604*** (0.201)	0.510*** (0.181)
LARGE	2.238*** (0.553)	1.648*** (0.413)	1.732*** (0.512)	1.464*** (0.427)
ROA	0.034** (0.013)	0.025** (0.010)	0.022*** (0.007)	0.019*** (0.006)
STOCK	-0.673*** (0.202)	-0.566*** (0.165)	-0.416** (0.171)	-0.413*** (0.155)
Cons	-0.055 (0.226)	-0.057 (0.191)	-0.002 (0.210)	-0.413 (0.188)
F-Statistic	6.69***	6.90***	7.33***	7.11***
R ²	0.260	0.227	0.197	0.186
Observations	371	371	371	371

Note(s): SMALL deals omitted

*, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. Robust standard errors in parentheses

Table 3.
Multiple regression of
abnormal returns on
investigated factors

Figure 3.
Average abnormal
returns by relative size
of the deal



losses. In contrast, large divestitures can impact the share price substantially. Consequently, companies should handle divestitures courageously – the larger the transaction, the larger the effect on shareholder wealth.

The results regarding the financial situation of the seller are somewhat ambiguous. On the one hand, as expected, sellers that can act from a strong position capture higher ARs than less profitable sellers. On the other hand, sellers with a negative buy-and-hold return in the estimation window capture higher ARs than sellers with a positive stock performance, which was not expected by the authors. Combining these findings, ARs seem to be highest, if the performance prospects for the seller worsen and corporate action is needed, but the seller can still act from a position of strength and take a strong negotiating position.

5. Conclusions

The findings of this research for the DACH region show that most selloffs increase shareholder wealth. When looking at the origins of the wealth effects, this study indicates that the relative size of the transaction as well as the financial situation of the seller are particularly important factors. Furthermore, the results of the analysis reveal that the sale to strategic investors leads to higher announcement effects than the sale to financial investors, which makes sense in regard to the possibility of creating synergies. The hypotheses regarding the influence of the sale of noncore assets as well as a strategic fit between the asset sold and the buyer can, however, not be clearly substantiated by the quantitative analysis.

In terms of practical recommendations managers considering a divestment should show courage and not be afraid of selling relatively large business units because the ARs are positively related to the deal value in relation to the market value of the seller. Furthermore, managers should not wait too long with divestments and initiate divestments when performance prospects start to worsen, but they can still act from a position of strength. Such an approach would also allow them to search for a suitable strategic buyer. Following these recommendations can influence announcement returns positively as both, courage and a strong negotiating position are rewarded by the market.

Regarding this research several limitations must be considered. First, event study methodology assumes efficient capital markets in the semi-strong form. Since there may be occasional exceptions from capital market efficiency, certain individual cases might be misleading. However, the results regarding the overall sample should be robust. Second, in

order to gain stronger statements about the origins of the shareholder wealth effects, better information would also improve the quality of the results. This would require an ongoing data collection as well as access to additional private information (beyond publicly announced data) instead of relying on often incomplete, ex-post financial database-recorded information. Especially the second point, i.e. improved information, could be very beneficial for future research. Better proxies for the circumstances of the divestiture, e.g. the financial situation of the seller, the use of proceeds, but also economy-wide or industry-related factors, are likely to enhance the explanatory power of the research results.

Notes

1. Using event study methodology, divestiture performance is defined as the net change in shareholder wealth, i.e. the change in share prices during a specific event window surrounding the divestiture announcement that exceeds the expected return without the divestiture announcement (abnormal return). The expected return is estimated using statistical or economic models. Usually, a short-term event window of a few days surrounding the immediate announcement day is applied to isolate the divestiture event from other unrelated events.
2. Following this approach ensures the comparability of our research results with earlier studies in this field, which almost without exception have used the market model.
3. Other constellations include: (1) the asset fits to the core business of seller and buyer, (2) the asset fits to the core business of the seller but not to the core business of the buyer, (3) the asset neither fits to the core business of the seller nor to the core business of the buyer.

References

- Alexandrou, G. and Sudarsanam, S. (2001), "Shareholder wealth effects of corporate selloffs: impact of growth opportunities, economic cycle and bargaining power", *European Financial Management*, Vol. 7 No. 2, pp. 237-258.
- Bartsch, D. (2005), *Unternehmenswertsteigerung durch strategische Desinvestitionen: eine Ereignisstudie am deutschen Kapitalmarkt*, Deutscher Universitäts-Verlag, Wiesbaden.
- Boehmer, E., Musumeci, J. and Poulsen, A.B. (1991), "Event-study methodology under conditions of event-induced variance", *Journal of Financial Economics*, Vol. 30 No. 2, pp. 253-272.
- Brauer, M.F. and Wiersema, M.F. (2012), "Industry divestiture waves: how a firm's position influences investor returns", *Academy of Management Journal*, Vol. 55 No. 6, pp. 1472-1492.
- Chen, S. and Feldman, E.R. (2018), "Activist-impelled divestitures and shareholder value", *Strategic Management Journal*, Vol. 39 No. 10, pp. 2726-2744.
- Clark, E., Doyle, A.L., Wilson, A., Coury, B. and Weirens, J. (2013), "Divestiture survey report – sharpening your strategy", available at: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/mergers-acquisitions/us-ma-divestiture-survey-report-2013.pdf> (accessed 06 March 2018).
- Clayton, M.J. and Reisel, N. (2013), "Value creation from asset sales: new evidence from bond and stock markets", *Journal of Corporate Finance*, Vol. 22, pp. 1-15.
- Clubb, C. and Stouraitis, A. (2002), "The significance of sell-off profitability in explaining the market reaction to divestiture announcements", *Journal of Banking & Finance*, Vol. 26 No. 4, pp. 671-688.
- Coakley, J., Thomas, H. and Wang, H.M. (2008), "The short-run wealth effects of foreign divestitures by UK firms", *Applied Financial Economics*, Vol. 18 No. 3, pp. 173-184.
- Daley, L., Mehrotra, V. and Sivakumar, R. (1997), "Corporate focus and value creation: evidence from spinoffs", *Journal of Financial Economics*, Vol. 45 No. 2, pp. 257-281.
- Datta, S. and Iskandar-Datta, M.E. (1996), "Who gains from corporate asset sales?", *The Journal of Financial Research*, Vol. 19 No. 1, pp. 41-58.

- Desai, H. and Jain, P.C. (1999), "Firm performance and focus: long-run stock market performance following spinoffs", *Journal of Financial Economics*, Vol. 54 No. 1, pp. 75-101.
- Dranikoff, L., Koller, T. and Schneider, A. (2002), "Divestiture: strategy's missing link", *Harvard Business Review*, Vol. 80 No. 5, pp. 74-83.
- Fama, E.F. and French, K.R. (1992), "The cross-section of expected stock returns", *The Journal of Finance*, Vol. 47 No. 2, pp. 427-465.
- Feldman, E.R. and McGrath, P.J. (2016), "Divestitures", *Journal of Organization Design*, Vol. 5 No. 1, doi: [10.1186/s41469-016-0002-x](https://doi.org/10.1186/s41469-016-0002-x) (accessed 28 December 2019).
- Finlay, W., Marshall, A. and McColgan, P. (2018), "Financing, fire sales, and the stockholder wealth effects of asset divestiture announcements", *Journal of Corporate Finance*, Vol. 50, pp. 323-348.
- Fischer, T.M., Müller, C.W. and Ober, A. (2013), "Wertsteigerung durch Sell-Offs: eine Meta-Analyse", *Journal für Betriebswirtschaft*, Vol. 63 No. 3, pp. 157-205.
- Hege, U., Lovo, S., Slovin, M.B. and Shushka, M.E. (2018), "Divisional buyouts by private equity and the market for divested assets", *Journal of Corporate Finance*, Vol. 53, pp. 21-37.
- Hillier, D., McColgan, P. and Werema, S. (2009), "Asset sales and firm strategy: an analysis of divestitures by UK companies", *The European Journal of Finance*, Vol. 15 No. 1, pp. 71-87.
- Horn, J.T., Lovallo, D.P. and Viguerie, S.P. (2006), "Learning to let go: making better exit decisions", *McKinsey Quarterly*, Vol. 2006 No. 2, pp. 64-75.
- Humphery-Jenner, M., Powell, R. and Zhang, E.J. (2019), "Practice makes progress: evidence from divestitures", *Journal of Banking and Finance*, Vol. 105, pp. 1-19.
- Huyett, B. and Koller, T. (2011), "Finding the courage to shrink", *McKinsey Quarterly*, Vol. 2011 No. 3, pp. 1-6.
- John, K. and Ofek, E. (1995), "Asset sales and increase in focus", *Journal of Financial Economics*, Vol. 37 No. 1, pp. 105-126.
- Kaiser, K. and Stouraitis, A. (1995), "Value creation through corporate restructuring: European divestitures", *European Management Journal*, Vol. 13 No. 2, pp. 164-174.
- Kaiser, K.M.J. and Stouraitis, A. (2001), "Agency costs and strategic considerations behind sell-offs: the UK evidence", *European Financial Management*, Vol. 7 No. 3, pp. 319-349.
- Kirchmaier, T. (2003), "The performance effects of european demergers", Discussion paper [566], London School of Economics and Political Science, London.
- Lasfer, M.A., Sudarsanam, P.S. and Taffler, R.J. (1996), "Financial distress, asset sales, and lender monitoring", *Financial Management*, Vol. 25 No. 3, pp. 57-66.
- Löffler, Y. (2001), *Desinvestitionen durch Verkäufe und Börseneinführungen von Tochterunternehmen: eine empirische Untersuchung der Bewertung am deutschen Kapitalmarkt*, Josef Eul Verlag, Lohmar.
- Mitnacht, J. (2005), *Die Kapitalmarktbewertung von Desinvestitionen – eine Ereignisstudie über Selloffs und Unit Buyouts in Kontinentaleuropa*, Verlag Wissenschaft & Praxis, Sternenfels.
- Montgomery, C.A. and Wernerfelt, B. (1988), "Diversification, ricardian rents, and tobin's q", *The RAND Journal of Economics*, Vol. 19 No. 4, pp. 623-632.
- Nguyen, P. (2016), "The role of the seller's stock performance in the market reaction to divestiture announcements", *Journal of Economics and Finance*, Vol. 40 No. 1, pp. 19-40.
- Rosenfeld, J.D. (1984), "Additional evidence on the relation between divestiture announcements and shareholder wealth", *The Journal of Finance*, Vol. 39 No. 5, pp. 1437-1448.
- Sewing, J.-H. (2010), *Corporate Divestiture Management: Organizational Techniques for Proactive Divestiture Decision-Making*, Gabler, Wiesbaden.
- Stienemann, M. (2003), *Wertsteigerung durch Desinvestitionen*, Cuvillier Verlag, Göttingen.

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- Vollmar, J. (2014), *Spin-offs, Diversifikation und Shareholder Value, Eine theorie- und hypothesengeleitete empirische Analyse europäischer Unternehmensabspaltungen*, Springer Gabler, Wiesbaden.
- Afshar, K.A., Taffler, R.J. and Sudarsanam, P.S. (1992), "The effect of corporate divestments on shareholder wealth: the UK experience", *Journal of Banking and Finance*, Vol. 16 No. 1, pp. 115-135.
- Alexander, G.J., Benson, P.G. and Kampmeyer, J.M. (1984), "Investigating the valuation effects of announcements of voluntary corporate selloffs", *The Journal of Finance*, Vol. 39 No. 2, pp. 503-517.
- Bergh, D.D., Johnson, R.A. and Dewitt, R.L. (2008), "Restructuring through spin-off or sell-off: transforming information asymmetries into financial gain", *Strategic Management Journal*, Vol. 29 No. 2, pp. 133-148.
- Bergh, D.D., Peruffo, E., Chiu, W.T., Connelly, B. and Hitt, M.A. (2019), "Market response to divestiture announcements: a screening theory perspective", *Strategic Organization*. doi: [10.1177/2F1476127019851083](https://doi.org/10.1177/2F1476127019851083) (accessed 29 December 2019).
- Brown, S.J. and Warner, J.B. (1985), "Using daily stock returns – the case of event studies", *Journal of Financial Economics*, Vol. 14 No. 1, pp. 3-31.
- Campbell, J.Y., Lo, A.W. and MacKinlay, A.C. (1997), *The Econometrics of Financial Studies*, Princeton University Press, Princeton.
- Cao, J., Owen, S. and Yawson, A. (2008), "Analysing the wealth effects of UK divestitures: an examination of domestic and international sales", *Research in International Business and Finance*, Vol. 22 No. 1, pp. 68-84.
- Eichinger, A. (2001), *Desinvestitionen in Deutschland: eine empirische Untersuchung der Kapitalmarktreaktionen auf die Ankündigung von Sell-offs*, VVW, Karlsruhe.
- Fama, E.F. (1970), "Efficient capital markets: a review of theory and empirical work", *The Journal of Finance*, Vol. 25 No. 2, pp. 383-417.
- Gadad, A.M. and Thomas, H.M. (2005), "Sources of shareholders' wealth gains from asset sales", *Applied Financial Economics*, Vol. 15 No. 2, pp. 137-141.
- Hearth, D. and Zaima, J.K. (1984), "Voluntary corporate divestitures and value", *Financial Management*, Vol. 13 No. 1, pp. 10-16.
- Mikkelsen, W.H. and Partch, M.N. (1988), "Withdrawn security offerings", *Journal of Financial and Quantitative Analysis*, Vol. 23 No. 2, pp. 119-133.
- Mulherin, J.H. and Boone, A.L. (2000), "Comparing acquisitions and divestitures", *Journal of Corporate Finance*, Vol. 6 No. 2, pp. 117-139.
- Ostrowski, O. (2007), *Erfolg durch Desinvestitionen: eine theoretische und empirische Analyse*, Deutscher Universitäts-Verlag, Wiesbaden.
- Patell, J.M. (1976), "Corporate forecasts of earnings per share and stock price behaviour: empirical test", *Journal of Accounting Research*, Vol. 14 No. 2, pp. 246-276.
- Sicherman, N.W. and Pettway, R.H. (1992), "Wealth effects for buyers and sellers of the same divested assets", *Financial Management*, Vol. 21 No. 4, pp. 119-128.
- Wan, W.P., Hoskisson, R.E., Short, J.C. and Yiu, D.W. (2011), "Resource-based theory and corporate diversification: accomplishments and opportunities", *Journal of Management*, Vol. 37 No. 5, pp. 1335-1368.
- Wang, H. M. (2000), "The wealth effects of voluntary foreign divestitures: the uk evidence", Working paper, University of Essex, available at: <http://ssrn.com/abstract=234430> (accessed 24 August 2015).

Test statistic under the standardized cross-sectional test

Under the standardized cross-sectional test, the test statistic for $H_0 : AAR_t = 0$ is denoted by z_{BMP} (BMP stands for the authors Boehmer, Musumeci and Poulsen) and is defined as:

$$z_{BMP_t} = \frac{SAAR_t}{S_{SAAR_t}} \sqrt{N}, \quad (7)$$

with:

$$SAAR_t = \frac{1}{N} \sum_{i=1}^N SAR_{i,t}. \quad (8)$$

The standardized abnormal return of company i at time t ($SAR_{i,t}$) is defined, as in [Patell \(1976\)](#), by:

$$SAR_{i,t} = \frac{AR_{i,t}}{S_{AR_{i,t}}} \quad (9)$$

with forecast error corrected standard error:

$$S_{AR_{i,t}}^2 = S_{AR_i}^2 \left(1 + \frac{1}{L_1} + \frac{(R_{m,t} - \bar{R}_m)^2}{\sum_{t=T_0}^{T_1} (R_{m,t} - \bar{R}_m)^2} \right). \quad (10)$$

The standard deviation S_{SAAR_t} is defined as in [Boehmer et al. \(1991\)](#) with:

$$S_{SAAR_t}^2 = \frac{1}{N-1} \sum_{i=1}^N \left(SAR_{i,t} - \frac{1}{N} \sum_{i=1}^N SAR_{i,t} \right)^2. \quad (11)$$

For $H_0 : CAAR = 0$, the test statistic reads as follows:

$$z_{BMP} = \frac{SCAAR}{S_{SCAAR}} \sqrt{N} \quad (12)$$

with:

$$SCAAR = \frac{1}{N} \sum_{i=1}^N SCAR_i. \quad (13)$$

The standardized cumulative abnormal return of company i ($SCAR_i$) is given by:

$$SCAR_i = \frac{CAR_i}{S_{CAR_i}} \quad (14)$$

and forecast error corrected standard deviation S_{CAR_i} , which corrects the abnormal returns of the individual companies for serial correlation, defined as in [Mikkelsen and Partch \(1988\)](#), with:

$$S_{CAR_i}^2 = S_{AR_i}^2 \left(L_2 + \frac{L_2^2}{M_i} + \frac{\left(\sum_{t=T_2}^{T_3} (R_{m,t} - \bar{R}_m) \right)^2}{\sum_{t=T_0}^{T_1} (R_{m,t} - \bar{R}_m)^2} \right). \quad (15)$$

The standard deviation S_{SCAAR} is defined as:

$$S_{\text{SCAAR}}^2 = \frac{1}{N-1} \sum_{i=1}^N (\text{SCAR}_i - \text{SCAAR})^2.$$

(16) Divestitures
and shareholder
wealth

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