Structure, motives, and performance effects of divestitures

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Structure, motives, and performance effects of divestitures

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ABSTRACT

When firms divest to reconfigure their portfolio of businesses, they separate businesses or assets from their firm through sell-offs, spin-offs, equity carve-outs, or split-ups. Divestitures are complex events, structured in diverse ways, undertaken for manifold motives, and ultimately affect the future performance of the divesting firm. While their causes and consequences have been well-examined in literature, research gaps remain. This dissertation undertakes three comprehensive studies to resolve existing research gaps concerning the structure, motives, and performance effects of divestitures.

The first study seeks to further differentiate research by considering the role of motive and structure when examining the effects of divestiture and divestiture experience on post-divestiture accounting performance. It specifically examines the effects of sell-offs in general, sell-offs driven by a strategic motive, and sell-offs structured as part of a divestiture program. The second study acknowledges the diversity of divestitures and undertakes an in-depth exploration of divestiture programs. It describes their nature, examines when firms announce such programs in contrast to stand-alone divestitures, and measures how the market reacts to their announcement. The third study provides evidence from a consolidating industry where players usually seek efficiency gains and growth through mergers and acquisitions. The study is set in the global brewing industry, where the five largest players accounted for 60% of the global volume in 2018. It analyzes the market reaction to divestitures and its determinants.

ZUSAMMENFASSUNG

Mit einer Desinvestition verändern Unternehmen ihr Beteiligungsportfolio und trennen sich von Geschäftsbereichen oder Vermögenswerten. Sie machen das entweder durch einen Verkauf, eine Abspaltung, eine Ausgliederung mit dem Verkauf von Anteilen oder eine Aufspaltung. Desinvestitionen sind komplexe Vorgänge, auf verschiedene Weisen strukturiert, von vielfältigen Motiven getrieben und beeinflussen letztendlich den zukünftigen Erfolg eines Unternehmens. Obwohl die Ursachen und Folgen von Desinvestitionen bereits sorgfältig erforscht wurden, gibt es eine Vielzahl von Ansätzen für weitere Forschung. Diese Dissertation widmet sich im Rahmen von drei umfangreichen Studien der Struktur von Desinvestitionen, ihren Motiven und ihren Implikationen für den Unternehmenserfolg.

Die erste Studie berücksichtigt Motiv und Struktur bei der Untersuchung der Auswirkung von Desinvestitionen und der Erfahrung mit Desinvestitionen auf den buchhalterischen Unternehmenserfolg. Insbesondere werden differenziert die Auswirkungen von Desinvestitionen im Allgemeinen, von solchen, die mit einem strategischen Motiv begründet wurden, und solchen, die einem strukturierten Desinvestitionsprogramm zugeordnet werden konnten, untersucht. Die zweite Studie würdigt ebenfalls die strukturelle Vielfalt von Desinvestitionen und untersucht Desinvestitionsprogramme. Die Studie beschreibt das Auftreten von Desinvestitionsprogrammen, untersucht, wann Firmen sich dazu entscheiden, ein Programm im Gegensatz zu einer Einzeldesinvestition anzukündigen und misst die Reaktion des Aktienmarktes auf die Ankündigung eines solchen Programms. Die dritte Studie untersucht Desinvestitionen in einer sich konsolidierenden Industrie. In solch einem Umfeld verfolgen große Unternehmen Effiziensteigerungen in der Regel mit Hilfe von weiteren Unternehmenszusammenschlüssen und -übernahmen. Die Studie analysiert die Reaktion des Aktienmarktes auf Desinvestitionen und deren Determinanten in der globalen Brauindustrie, in der die fünf größten Markteilnehmer, in 2018, 60% des globalen Produktionsvolumens verantworteten.

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Ludwig Sebastian Erl
March 27, 2020

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LIST OF ABBREVIATIONS

AR	Abnormal return
AAR	Average abnormal return
ABHAR	Average buy-and-hold abnormal return
BHAR	Buy-and-hold abnormal return
CAR	Cumulative abnormal return
CAAR	Cumulative average abnormal return
CEO	Chief executive officer
CR	Concentration ratio
FF3F	Fama-French-3-Factor Model
HHI	Herfindahl-Hirschmann Index
HML	High minus low (book to market ratio, factor in the FF3F model)
M&A	Mergers and acquisitions
MM	Market Model
OLS	Ordinary least squares
ROA	Return on assets
ROCE	Return on capital employed
ROS	Return on sales
SIC	Standard Industrial Classification (four-digit code)
SMB	Small minus big (market capitalization, factor in the FF3F model)
US	United States
VIF	Variance inflation factor

1 GENERAL INTRODUCTION

As part of their corporate strategy, firms restructure their portfolio of businesses in a number of ways. The most common restructuring modes are mergers, acquisitions, divestitures, and liquidations (Bowman & Singh, 1993; Bowman, Singh, Useem, & Bhadury, 1999). This dissertation focuses on divestitures. If a firm reconfigures its line of businesses and adjusts the ownership status through a divestiture, it does so through either a sell-off, spin-off, equity carve-out, or split-up (Bergh, Johnson, & Dewitt, 2008; Mulherin & Boone, 2000). Divestitures are complex in the making, structured in diverse ways, undertaken for manifold motives, and ultimately affect the future performance of the divesting firm. While their causes and consequences have been well-examined in literature, research gaps remain (cf. Brauer, 2006; Kolev, 2016; Lee & Madhavan, 2010; Moschieri & Mair, 2008). This dissertation undertakes three comprehensive studies to resolve existing research gaps and further advance research regarding the **structure**, **motives**, and **performance** effects of divestitures. In the following, I provide a brief overview of the previous research on the three topics and highlight to what extent the dissertation contributes to it.

Divestiture literature has thus far drawn only little attention to the diverse **structure** of divestitures. While divestiture research has acknowledged that restructuring often includes multiple divestitures (e.g., Haynes, Thompson, & Wright, 2002), divestitures have mostly been examined as "isolated, self-contained events" (Brauer & Schimmer, 2010: 85) or "one-off activities" (Mankins, Harding, & Weddigen, 2008: 99). Only a few studies have explicitly considered divestitures structured as a program in their research and analyzed their short-term capital market reaction (Berger & Ofek, 1999; Brauer & Schimmer, 2010). In contrast, acquisition research has exhaustively examined acquisition series or programs (Bhabra, Bhabra, & Boyle, 1999; Kronenwett, 2010; Laamanen & Keil, 2008; Schipper & Thompson, 1983).

A divestiture program is a series of divestitures that share a common rationale. The transactions that form such a structured program are interrelated, coordinated, and strategically consistent (Brauer & Schimmer, 2010; Kronenwett, 2010). Divestiture programs can be clearly contrasted to stand-alone divestitures. First, they likely mark a major adjustment to a firm, its strategy, and its business portfolio. Second, multiple restructuring moves over a period of time signal a strong commitment of a firm's management towards a course of action. Overall, a divestiture program is likely undertaken for a strategic rather than a tactical rationale (Brauer & Schimmer, 2010). Prior literature has found that divestitures structured as part of a program are rewarded with a superior stock market reaction (Brauer & Schimmer, 2010).

This dissertation considers the structure of divestitures in all three studies. The first study examines the effect of sell-offs that are part of a structured divestiture program and the associated experience on the post-divestiture accounting performance of a firm in a longitudinal panel model. The second study examines when firms announce a divestiture program in contrast to a stand-alone divestiture and how the stock price reacts to the announcement of a divestiture program. The third study examines the capital market reaction to divestiture announcements that can be attributed to a previously announced divestiture program in contrast to non-program divestiture announcements in a consolidating industry.

A variety of divestiture **motives** have been highlighted by previous research. Montgomery, Thomas, and Kamath (1984) list four primary motives. First, firms have been found to divest for a strategic motive linked to the firm or business unit strategy, often involving the reduction of a firm's diversification to refocus on the core industry (Berger & Ofek, 1999; Johnson, 1996; Montgomery et al., 1984). Second, divestitures have been argued to aim at the selling of undesired units in a streamlining fashion to clean the business portfolio (Lee & Madhavan, 2010; Montgomery et al., 1984). Third, research has highlighted the divesting for financial motives, e.g., when a firm faces financial distress, liquidity concerns, or overwhelming debt levels (Brauer, 2006; Johnson, 1996; Montgomery et al., 1984). Finally, literature has drawn attention to forced divestitures in response to regulatory or antitrust pressure (Brauer, 2006; Shleifer & Vishny, 1991; Wright & Ferris, 1997).

Divestiture research has predominantly drawn attention to the refocusing motive (cf., Johnson, 1996), has rarely considered all motives at a time, and has not yet considered motives in a longitudinal setting or with regard to divestiture programs.

This dissertation addresses the motives of divestiture in various ways. The first study examines the effect of sell-offs driven by a strategic motive, e.g., refocusing, and the associated experience on the post-divestiture accounting performance of a firm in a longitudinal panel model. The second study describes the motives of divestiture programs, the linkage of the antecedents of divestiture programs to these motives, and differentiates by motive when analyzing the effect of information disclosure on the market reaction to divestiture programs.

A large body of extant literature has analyzed the relation between divestitures and firm **performance**. While results are mixed, a majority of studies find the relation to be positive (Brauer, 2006). In their meta-analysis of 94 studies, Lee and Madhavan (2010) support an averagely positive relationship, however, do also prescribe caution and note that "managers

should not pursue divestiture actions without context or contingency" (Lee & Madhavan, 2010: 1363). Methodologically, scholars have examined the effects of divestiture on performance in two principal ways: the majority adopts an event study approach evaluating the stock market reaction (e.g., Bergh, Peruffo, Chiu, Connelly, & Hitt, 2019; Brauer & Schimmer, 2010; Depecik, van Everdingen, & van Bruggen, 2014; Owen, Shi, & Yawson, 2010), others explore the post-divestiture accounting performance of the divesting firm (e.g., Brauer, Mammen, & Luger, 2017; Feldman, Amit, & Villalonga, 2016; Haynes et al., 2002; Vidal & Mitchell, 2018).[1] While most of these studies report a positive performance effect of divestitures, studies have also highlighted limiting factors of such a positive effect (e.g., Bergh, 1995; Cho & Cohen, 1997; Depecik et al., 2014; Feldman et al., 2016; Kaiser & Obermaier, 2020; Montgomery & Thomas, 1988; Vidal & Mitchell, 2018; Wright & Ferris, 1997).

Literature has mostly drawn on transaction cost economics and agency theory to explain post-divestiture performance gains (Lee & Madhavan, 2010). It has argued that a divesting firm's performance increases through an efficient reallocation of freed up financial and managerial resources, increasing corporate efficiency, and resolving inefficiencies across its businesses (Brauer, 2006; Vidal & Mitchell, 2018). More recently, literature has begun to also consider experience when examining the performance effects of divestiture (Bergh & Lim, 2008; Brauer et al., 2017; Humphery-Jenner, Powell, & Zhang, 2019).

This dissertation follows the call of Lee and Madhavan (2010) and Brauer et al. (2017) to take further contingencies into account when examining divestitures. The first study considers the contingencies of strategy and structure when analyzing the effect of sell-offs and sell-off experience on post-divestiture accounting performance in a longitudinal panel setting. Prior literature has considered such contingencies only when analyzing the short-term market performance of divestitures (e.g., Brauer & Schimmer, 2010; Montgomery et al., 1984). The second study analyzes the market reaction to the announcement of divestiture programs, whereas previous literature has mostly analyzed the announcement of stand-alone divestitures. Further, it examines the signaling effect of disclosing program specifics on the market reaction. The third study analyzes the market reaction and the influential effect of determinants in a novel setting, a consolidating industry.

[1] To a lesser extent, research has analyzed market-based performance, applying measures such as Jensen's alpha, the Sharpe or Treynor ratio (e.g., Hoskisson, Johnson, and Moesel, 1994).

Figure 1-1: *Key characteristics of the three studies*

Study	**The role of motive and structure:** performance effects of sell-offs and sell-off experience	**The diversity of divestiture:** when firms announce divestiture programs and its market reaction	**Divestiture and its market reaction in a consolidating industry:** the global brewing industry
Aim & scope	Examines the experience and performance effects of sell-offs explicitly considering strategic sell-offs and program sell-offs.	Contrasts the causes of divestiture program announcements with stand-alone divestitures, and measures the market reaction to program announcements considering the signaling effect of program specifics.	Describes the consolidation of the brewing industry, measures the market reaction to divestiture announcements, and examines the determinants of the market reaction.
Research design	Empirical analysis of a longitudinal cross-industry panel of 150 European public firms from 2000-2014 based on data covering 1997-2017.	Empirical analysis of a panel of 101 European public firms that announced at least one program from 1997-2014 and the abnormal returns to 144 program announcements.	Empirical analysis of the abnormal return to 66 divestitures by publicly listed brewing groups between 1999 and 2018.

Next, I provide a summary of the **three studies** and their results. ***Figure 1-1*** provides an overview of the studies. It outlines for each study the respective aim & scope, and research design.

The **first study** examines the effect of strategic motive and structure of divestitures, and of divestiture experience on a firm's long-term accounting performance. It sets out to further differentiate the findings of previous research on divestiture performance and the more recent research on divestiture experience that found the latter to relate solely positive to post-divestiture performance (Bergh & Lim, 2008; Brauer et al., 2017; Humphery-Jenner et al., 2019). It analyzes a 15-year cross-industry and cross-country panel of 150 of the largest European public firms based on a dataset from 1997 to 2017. The analysis focuses specifically on sell-offs. It examines the effects of strategic sell-offs that are driven by a strategic motive and program sell-offs that are part of a structured divestiture program.

In a fixed-effects regression, the study reveals a negative effect of program-related experience on post-divestiture performance. This suggests that a potential learning transfer is outweighed by the negative performance associated with years of restructuring or inherent to firms undergoing a divestiture program. The results contribute to and challenge prior research on the

performance effects of divestiture experience that has found divestiture experience to be related solely positively to performance. Further initial evidence suggests a non-linear relationship between program-related sell-off intensity in the focal period and post-divestiture performance. Overall, the results stress the importance of considering the program nature of divestitures. Total and strategic sell-off intensity and the respective sell-off experience are not found to affect post-divestiture accounting performance.

The **second study** analyzes when firms decide to announce a divestiture program and its capital market reaction. Thus, it takes up the findings on divestiture programs from the first study and seeks to advance the limited previous work on divestiture programs (Berger & Ofek, 1999; Brauer & Schimmer, 2010). The study is based on a unique, hand-collected dataset of 101 firms that announced 148 divestiture programs between 1997 and 2014. The study acknowledges the multiplicity of programs and provides a detailed description of their rationales and occurrence. Further, it considers the diversity of divestitures and analyzes when firms decide to announce a program in contrast to a stand-alone divestiture. Finally, it examines the market reaction to program announcements and considers the signaling effect of information disclosure on the market reaction.

A multinomial logit regression shows that firms choose to announce divestiture programs in contrast to stand-alone divestitures when they are financially distressed or after a change in top management. Thus, they seem to prefer divestiture programs when facing uncertainty or when they need to restore market trust. Further, the study picks up on recent research on divestiture experience (e.g., Bergh & Lim, 2008; Peruffo, Marchegiani, & Vicentini, 2018) and industry divestiture waves (e.g., Brauer & Wiersema, 2012). The likelihood of announcing a program is found to increase only with distant experience and decrease after a divestiture wave in a firm's primary industry. In an analysis of the market reaction to divestiture program announcements, the reaction is found to vary and to increase when a program value is disclosed – particularly for programs driven by a financial rationale or announced as part of a broader restructuring program. For programs with a refocusing rationale, the specification of assets is found to increase market returns. I argue that the disclosure of such program specifics increases the signaling effectiveness and credibility of a divestiture program.

Finally, the **third study** sets out to answer the question to which extent capital markets value divestitures in a consolidating industry where players usually seek efficiency gains and growth through mergers and acquisitions. The study is set in the global brewing industry, where the five largest players accounted for 60% of the global beer volume in 2018. The study describes

the consolidation of the industry and the divestiture activity of publicly listed brewing groups. Further, it studies the reaction of capital markets to 66 divestitures undertaken by publicly listed breweries in the period from 1999 to 2018 and examines its success determinants.

The results show that capital markets receive divestitures by publicly listed brewing groups on average positively. The study does not find a significant relation of consolidation over time to the market reaction. An identified negative relation of a firm's global market share to the market reaction suggests that investors find little additional value creation potential in divestitures of market leaders. Among divestitures of core brewing operations, the sale of brand licenses for specific countries or regions is found to relate positively to the market reaction. Regarding the structure of divestitures, I find divestitures that are part of a program to be valued positively by the market. Surprisingly, firm diversification relates negatively to the market reaction. Thus, the capital market seems to reward firms that are more invested in brewing operations and naturally more likely to reinvest in their concentrated core industry. This is consistent with the argument that firms earn above-average returns in concentrated industries, and that these industries are more attractive to refocus on (Markides, 1992b, 1995; Powell & Yawson, 2005).

The following dissertation is structured in five chapters, including this general introduction. Chapters two, three, and four present the three studies outlined in ***Figure 1-1***. Each of the chapters consists of an individual introduction, a section on the theoretical background, a section on the applied methodology, a results section, and finally, a section discussing the results. Chapter five draws a general conclusion. Finally, chapter six presents the references cited throughout the dissertation.

2 THE ROLE OF MOTIVE AND STRUCTURE: PERFORMANCE EFFECTS OF SELL-OFFS AND SELL-OFF EXPERIENCE

ABSTRACT

Divestitures are complex events undertaken for manifold motives and structured in multiple ways. This study analyzes the long-term effects of sell-offs and sell-offs experience on performance considering two contingencies: strategic motive and structure. The analysis reveals significant results for the effect of sell-offs structured as part of a divestiture program. Results suggest that in the context of such programs, potential learning transfers are outweighed by the negative performance associated with years of restructuring or inherent to firms undergoing a program. Thus, this study contributes to research on the performance effects of divestiture experience and stresses the importance of considering the program nature of divestitures in research.

Keywords: *divestitures (sell-offs, programs, motives), firm performance, organizational learning*

This chapter is based on a working paper co-authored by Florian Kiesel and Dirk Schiereck.

2.1 Introduction

As part of their strategy, firms restructure their business through both acquisitions and divestitures. Such moves are complex in their process and may entail comprehensive changes to a firm's business portfolio. Following organizational learning theory, firms should profit from accumulating knowledge and learning over time as they repeatedly engage in such transactions (Levitt & March, 1988). Acquisition research has extensively examined the relationship between experience and performance and come to contradictory and inconclusive results (cf. Laamanen & Keil, 2008). Studies find either a positive (Fowler & Schmidt, 1989), a negative (Kusewitt, 1985), none at all (Ravenscraft & Scherer, 1987), or an u-shaped relation (Haleblian & Finkelstein, 1999). In contrast to the acquirer, the seller of a business should face less uncertainty. The seller most certainly knows the business to be divested, knows in which way the business is entangled with other operations, or where difficulties of disentanglement may lie. With less uncertainty to overcome, mastering and professionalizing the process becomes the differentiating factor. Only lately, divestiture research has adopted an experience stance. It outlines the multi-stage divestiture process, finds the effect of divestiture experience on performance to be positive, and calls for these results to be challenged considering motive and structure (Bergh & Lim, 2008; Brauer et al., 2017; Humphery-Jenner et al., 2019). Both strategically driven divestitures and those structured as part of a program are likely more carefully planned and initiated than opportunistic transactions (Brauer & Schimmer, 2010). Thus, they should instill a superior learning environment. Literature has previously found divestitures linked to strategy (Montgomery et al., 1984) and those structured as part of a broader program (Brauer & Schimmer, 2010) to yield superior stock market reactions. However, in both cases and large parts of literature, divestitures are treated as discrete events and examined in settings that take a transactional perspective emphasizing the short-term market reaction to such events (cf. Brauer, 2006; Haynes et al., 2002). This neglects their effects over time (Haynes et al., 2002) and their complexity (Brauer, 2006; Kolev, 2016). Also, due to limited information, the capital market may find it difficult to accurately assess divestitures (Bergh et al., 2019). Only few researchers assume a longitudinal perspective and track divesting firms over time to analyze the performance effects of divestitures (e.g., Brauer et al., 2017; Haynes et al., 2002; Vidal & Mitchell, 2018).

This study seeks to advance prior finance and strategy research in several ways. It measures the long-term performance effects of divestitures and experience. Based on a dataset covering the years 1997 to 2017, the study analyzes a cross-industry and cross-country panel of 150 of the

largest European public firms over 15 years from 2000 to 2014. In line with previous research on divestiture experience, it acknowledges fundamental process differences between sell-offs and spin-offs and focuses on sell-offs (cf. Bergh & Lim, 2008). The study advances prior literature in considering two contingencies when studying long-term performance and experience effects. First, it examines the effects of strategic sell-offs that are driven by a strategic motive, such as the selling of non-core assets. Second, it considers the structure of the strategic move in analyzing the effects of program sell-offs. Multiple program sell-offs form a divestiture program and are marked by a consistent rationale across a series of sell-offs.

In a fixed-effects regression, significant results are found when examining sell-offs that are part of a divestiture program. Program-related experience is found to negatively moderate the relationship between program sell-off intensity, operationalized as relative size divested, and post-divestiture accounting performance. Thus, the study adds to the understanding of experience effects and challenges prior research that has found divestiture experience to be generally positively related to performance (Bergh & Lim, 2008; Brauer et al., 2017; Humphery-Jenner et al., 2019). Specifically, the results show that the more years a firm has been undergoing divestiture programs and the more sell-offs were undertaken as part of these programs, the more detrimental is the moderating effect. Analyses on the relationship between program sell-off intensity and post-divestiture performance provide initial evidence of a non-linear s-shaped relationship. This would suggest that sell-offs, as part of a broader program, need to be material enough in size to have a positive effect on performance, while too much of it may diminish future firm performance. Further, total and strategic sell-off intensity and the respective sell-off experience are not found to have an effect on post-divestiture accounting performance. In contrast, shareholder wealth effects of a sub-sample, chosen based on a transaction size threshold, are both significant and positive.

This study is structured as follows. The second section provides a review of the theoretical background and develops the hypotheses for performance effects, experience effects, and motive and structure. Section 3 describes the sample, presents the variables, and outlines the chosen data analysis methods. Section 4 provides the results of the fixed-effects regression, the supplementary analyses, and shareholder wealth effects. Finally, Section 5 discusses the results, theoretical and practical implications, limitations, and avenues for future research, and draws the conclusion.

2.2 Theoretical background and hypotheses

Firms choose among different divestiture modes: sell-offs, spin-offs, equity carve-out, and split-ups (e.g., Bergh et al., 2008; Mulherin & Boone, 2000). Prior literature finds that learning differs across divestiture modes (Bergh & Lim, 2008). In line with prior research, this study focuses on sell-offs, as the most common type to divest (Brauer et al., 2017). In the following, I provide the theorization and the background for the development of the research hypotheses. Specifically, I discuss the **performance** effects of sell-offs, the moderating effect of sell-off **experience**, and elaborate on the characteristics of **strategic** and **program** sell-offs.

2.2.1 Performance effects

A large body of literature analyzes the relation between divestiture and subsequent firm performance. While the results of prior literature are mixed, overall, research hints to a positive relation (cf. Lee & Madhavan, 2010). However, only few studies analyze divestitures in a setting that acknowledges both their complexity (Brauer, 2006) and the difficulty of markets to assess them accurately (Bergh et al., 2019). The most recent longitudinal studies on accounting performance provide mixed results. Brauer et al. (2017) find divestitures to be positively associated with performance. Vidal and Mitchell (2018) note the contingency of prior performance and find high performers to have a lower ROA post-divestiture; however, find no effect of divestitures itself. Feldman et al. (2016) find positive performance effects only for family firms.

In general, literature argues that post-divestiture performance increases from efficiently reallocating freed up financial and managerial resources and higher corporate efficiency across the entire business (Brauer, 2006; Vidal & Mitchell, 2018). Based on both finance and strategy literature, three economic drivers for a performance increase following divestiture can be derived: efficient re-allocation of freed-up resources (Burgelman, 1994; Hoskisson & Johnson, 1992), avoidance of negative synergies (Berger & Ofek, 1995; John & Ofek, 1995), and divestiture as a cheap source of financing (Lang, Poulsen, & Stulz, 1995). Negative synergies are often argued to stem from over-diversification (Berger & Ofek, 1995; Hoskisson, Johnson, & Moesel, 1994; Hoskisson & Turk, 1990; Markides, 1992a; Schipper & Smith, 1983) or a misfit between parent and subsidiary (John & Ofek, 1995; Markides & Singh, 1997; Schipper & Smith, 1983). However, research has also identified limitations to a performance increase: The sale of related units (Bergh, 1995), non-economic pressures (Durand & Vergne, 2015; Shleifer & Vishny, 1991; Wright & Ferris, 1997), and managerial opportunism (Pathak,

Hoskisson, & Johnson, 2014; Sanders, 2001). Overall, the results of prior research and the arguments outlined above hint to a positive relation of sell-offs and performance:

> **Hypothesis 2.1:** Sell-off intensity is positively associated with a firm's post-divestiture accounting performance.

2.2.2 Divestiture experience and learning

Performance implications of divestitures are traditionally argued to stem primarily from eliminating organizational and managerial inefficiencies (John & Ofek, 1995). More recently, scholars have begun to acknowledge the complexity of divestitures by taking a more process-focused approach when examining its antecedents and outcomes. In this vein, they have also begun to augment the very rudimentary understanding of learning in the context of divestiture through organizational learning theory (Bergh et al., 2008; Brauer et al., 2017). Firms that repeatedly engage in sell-offs are found to experience higher post-divestiture performance (Bergh & Lim, 2008; Brauer et al., 2017; Humphery-Jenner et al., 2019). While findings on divestitures are so far unanimous, there are more and contradictory results on acquisitions (cf. Laamanen & Keil, 2008).

Organizational learning theory argues that firms create knowledge from prior experience and that this experience is stored in and retrieved from a collective organizational memory (Levitt & March, 1988). Thus, prior experience shapes the routines of an organization and guides future behavior in similar circumstances. In repeatedly performing an activity, a firm learns from direct experience or "learning by doing" (Levitt & March, 1988; Zollo & Winter, 2002). However, to learn effectively, it is argued that a firm needs to develop "absorptive capacity": it "needs … related knowledge to assimilate and use new knowledge", which "increases both the ability to put new knowledge into memory ... and the ability to recall and use it" (Cohen & Levinthal, 1990: 129). Consequently, cumulative learning potential is the highest when related knowledge is readily available. Absorptive capacity does then enable firms to "learn from experiences, make inferences, and store knowledge that can be codified and applied to future decisions" to improve and facilitate decision-making (Bergh & Lim, 2008: 596). Also, once patterns for activities and decision-making exist, they create pressure for managers to follow these patterns (Kolev, 2016). Without experience in a particular action, it may not even be considered a legitimate alternative and violate past routines (Shimizu & Hitt, 2005).

Divestitures are commonly described as complex events (Brauer, 2006; Kolev, 2016). In learning from prior divestitures, firms may be able to overcome the complexity of the multistage

divestiture process. Brauer et al. (2017) describe a four-stage process at which learning occurs when executing a sell-off: asset identification, asset transaction, asset separation, and asset reallocation. Along this process, they argue, that managers and firms profit from repeated experience when identifying assets, a better understanding of the process, the unbundling of resources in a way that generates two freestanding firms, and from refining their expertise to redeploy resources both timely and effectively. Extant literature finds that firms learn from divestitures in that they adjust their behavior following previous divestitures and are more likely to divest again (Kolev, 2016; Peruffo et al., 2018; Shimizu & Hitt, 2005; Villalonga & McGahan, 2005). In the first study on the effects of divestiture experience on performance, Bergh and Lim (2008) find evidence linking sell-off experience to better financial performance. They argue that the theory of absorptive capacity mostly applies to sell-offs. In contrast, spin-offs are argued to require organizational improvisation capabilities, given that they are more idiosyncratic and occur less often. For spin-offs, knowledge is argued to be accumulated by managers rather than being absorbed by the organization as a whole. Further, for acquisitions, it was established that transactions need to be similar, e.g., in terms of industry or context, for a firm to profit from experience (Haleblian & Finkelstein, 1999). Otherwise, connections between actions and outcomes are misspecified, and wrong inferences may be drawn from prior experience (Levitt & March, 1988). For divestitures, the amount of industries from which a firm's experience is drawn is found to moderate the performance relationship negatively, whereas divestiture experience within a firm's core industry is found to be a positive moderator (Brauer et al., 2017). Direct learning enables a firm to accumulate knowledge on sell-offs and to apply this knowledge to improve and refine the sell-off process with each transaction. Further, given the complexity of sell-offs, firms should not solely rely on internal but also external experience and knowledge sources (Brauer et al., 2017). In line with prior research on divestiture experience, I hypothesize that firms learn from cumulated and repetitive sell-off experience, that they build up procedural knowledge that helps them to avoid errors and disadvantageous situations, and that they ultimately achieve superior performance:

> **Hypothesis 2.2:** Sell-off experience positively moderates the relationship between sell-off intensity and post-divestiture accounting performance.

2.2.3 Divestiture motive and structure

Divestiture research has highlighted the contrast of strategically motivated divestitures to opportunistic or tactical divestitures (Lee & Madhavan, 2010). Montgomery et al. (1984: 831) argue that "divestitures should be rooted in corporate strategy" and not undertaken in a

"reactionary or piecemeal manner". More recently, research has also begun to carve out the performance implications of structural differences in comparing divestitures that are part of a program with stand-alone transactions (Brauer & Schimmer, 2010). This study draws upon this research. It examines the effects of sell-offs with a clearly communicated strategic motive and of program sell-offs structured as part of a series and marked by strategic consistency.

Strategic vs. non-strategic sell-offs

Strategically motivated divestitures are undertaken for various reasons. The most prominent one is the reduction of scope in operations to refocus on the core (Berger & Ofek, 1999; Hoskisson & Hitt, 1994; Hoskisson & Johnson, 1992; John & Ofek, 1995; Markides, 1995). Hoskisson and Hitt (1994) argue that long-run competitiveness requires strong strategic control and an emphasis on innovation and product quality. Firms are suggested to regain strategic control and be able to compete successfully through the downscoping of their operations and the refocusing on their core business. However, it is also noted that this only enhances value if the core of a firm is sufficiently attractive to justify a shift of resources (Markides, 1992b). Research examined downscoping and refocusing in-depth with regard to large conglomerates' reduction of diversification in the 1980s and 1990s (Comment & Jarrell, 1995; Hoskisson & Hitt, 1994; Williams, Paez, & Sanders, 1988). Further, reductions in diversification have been linked to increased investments in research and development, suggesting that downscoping firms use the proceeds to invest in their remaining assets and to improve competitiveness (Hoskisson & Turk, 1990). Also, research links an explicit increase in focus to value creation (Berger & Ofek, 1999; Comment & Jarrell, 1995; Daley, Mehrotra, & Sivakumar, 1997; John & Ofek, 1995). John and Ofek (1995) find firm performance to improve in each of the three years after a divestiture primarily for those firms that increase their focus. In addition, Bergh (1998) has found firms following a refocusing strategy to perform better than firms that pursue a portfolio management strategy in the presence of product uncertainty.

In contrast to strategic divestitures, Montgomery et al. (1984), list the selling of undesired units, the selling in response to liquidity concerns and the forced divesting of units. In general, literature has linked strategically motivated divestitures to superior performance (Lee & Madhavan, 2010). Also, research finds divestitures linked to a change in corporate strategy to result in positive shareholder wealth effects (Berger & Ofek, 1999; Brauer & Schimmer, 2010; Montgomery et al., 1984), whereas "routine, non-strategic divestitures" (Montgomery et al., 1984: 838) are valued negatively. Thus, stockholders expect superior performance in terms of higher future income streams from strategically driven divestitures.

Based on the theoretical arguments, I argue that selling non-core or non-strategic businesses should result in performance improvement by lowering negative synergies and freeing up resources that can be reinvested into a firm's core. Thus, sell-offs that are driven by a strategic rationale and rooted in a firm's strategy should have a positive effect on firm performance:

> **Hypothesis 2.3:** Strategic sell-off intensity is positively associated with a firm's post-divestiture accounting performance.

As noted, this study aims to advance organizational learning for divestitures by differentiating between strategic and non-strategic sell-offs. Bergh and Lim (2008) argue that effective learning requires repetition, explicit knowledge, and routines. I argue that strategic sell-offs are undertaken in a more carefully planned and rationally driven manner. They do not only facilitate the gathering of explicit knowledge and the translation into routines, but also ease the refinement, extension, and application of existing experience. Overall, I expect strategic sell-off experience to have a positive effect on the relation of strategic sell-offs and performance:

> **Hypothesis 2.4:** Strategic sell-off experience positively moderates the relationship between strategic sell-off intensity and post-divestiture accounting performance.

Program vs. non-program sell-offs

As a way of restructuring, divestitures alter the configuration of a firm's businesses, challenge its status quo and respond to changes in corporate strategy and firm environment (Bowman & Singh, 1993; Brauer, 2006; Lee & Madhavan, 2010). In research, divestitures were long treated as "isolated, self-contained events" (Brauer & Schimmer, 2010: 85) or "one-off activities" (Mankins et al., 2008: 99). Research has only reluctantly picked up the idea of strategic consistency across a series of divestitures. It recognizes the occurrence of divestitures as part of a series or examines restructuring or refocusing programs with multiple transactions (Berger & Ofek, 1999; Haynes et al., 2002; Hoskisson et al., 1994; Hoskisson & Johnson, 1992; Markides, 1995). Brauer and Schimmer (2010) are the only ones to differentiate between program and non-program divestitures. In an event study setting, they find program divestitures to yield superior shareholder returns. Practitioner-oriented literature underscores the potential value add from carefully planned divestiture programs (Dranikoff, Koller, & Schneider, 2002) and proactive management of the divestiture process (Mankins et al., 2008).

Divestiture programs often mark major adjustments in a firm's strategy (Brauer, 2006). Such adjustments often require multiple divestitures. In undertaking multiple transactions over a longer period, a firm commits towards a specific course of strategy. Strategy research links

firms that exhibit a high commitment to their strategy to higher performance (Robinson & Pearce, 1988). Commitment signals that management has confidence in the initiated change. It suggests that a program is strategic rather than tactical, that it is driven by a clear rationale, and that it is rooted in corporate strategy (Brauer & Schimmer, 2010). The transactions that constitute a program are then marked by strategic consistency in pursuing the same strategy and in forming an interrelated and "coordinated series" over time (Brauer & Schimmer, 2010: 90; Kronenwett, 2010). Literature suggests that a series of strategically consistent decisions is superior to non-consistent decisions (Sen, 1993). This is supported by findings from Robinson and Pearce (1988), who identify a positive relationship between the consistency of strategic moves and firm performance. Consistently, Brauer and Schimmer (2010) reason that internal consistency and strategic relevance drives the identified positive performance effects of program transactions. However, programs may not always follow a strictly strategic rationale, as presented above. The driving force may just as well be the reduction of a firm's debt burden or complying with antitrust regulation following a large acquisition. Nonetheless, a program would then still follow a strategy focused on improving a firm's health and competitiveness or be part of a greater restructuring strategy including both acquisitions and divestitures.

A firm accumulates knowledge with each divestiture of a program shaping the routines and patterns with which the further components of the program are undertaken. Research argues that learning is more effective if similar knowledge already exists (Cohen & Levinthal, 1990) and that multiple repetitions are necessary to draw correct inferences (Haleblian & Finkelstein, 1999). Both arguments hold for divestiture programs. Accordingly, I argue that firms learn along a series of divestitures that constitute a program due to the similarity of sold assets, unchanged management team, short temporal intervals, and a more structured approach. Research argues that similar characteristics allow for a more specific, more likely, and thus more value-enhancing experience transfer (Bergh & Lim, 2008; Brauer et al., 2017; Singh & Zollo, 1998; Zollo & Winter, 2002). Program sell-offs are argued to share a common rationale. Thus, on many occasions, its components will be similar and homogenous rather than heterogeneous – be it because of size, financial situation, or a related industry of the units to be divested. Further, while effective learning relies on people (Levitt & March, 1988), the knowledge that is stored with people but not codified can easily be lost (Hayward, 2002). Along a divestiture program, employees and managers will likely develop an explicit knowledge and understanding of a specific program and it's scope. It is likely that management remains the same throughout a program, and that the likelihood of effective learning and its application

increases. Moreover, research on acquisitions argues that benefits from experience are driven by recent but not distant acquisitions (Hayward, 2002). Given the shorter intervals between program sell-offs (Brauer & Schimmer, 2010), benefits from experience should materialize more likely. Further, divesting multiple units as part of a program requires a structured and systematic approach (Brauer & Schimmer, 2010). Such a structured approach should facilitate and increase learning effectiveness. Though prior literature does not find significant wealth effects both for general as well as specific program experience (Brauer & Schimmer, 2010), I argue that benefits from learning do hold and should be superior within divestiture programs.

First, as argued, a divestiture program may serve as a strong signal that a firm is divesting based on a strategic rationale and to implement a major adjustment to corporate strategy. Second, program sell-offs are not only interrelated but also strategically consistent in their shared rationale. Third, firms may profit from learning within a series of divestitures that share similar characteristics. Thus, divestiture programs should be associated with a positive effect on the performance implications of divesting:

> **Hypothesis 2.5:** Program sell-off intensity is positively associated with a firm's post-divestiture accounting performance.

Firms will not only profit from an environment that facilitates learning within a program but also from learning across multiple programs due to: similarity of sold assets, unchanged management team, short temporal intervals, and a more structured approach. I employ two measures for program-related experience. First, I argue that program sell-off experience, in terms of the number of program sell-offs undertaken prior to the focal period, should positively moderate the performance relation. Second, the divestiture program experience, in terms of the cumulated time a firm has been undergoing a single, or multiple divestiture programs should also serve as a signal for multiple opportunities for superior learning. Thus, in addition to the number of program sell-offs, experience is also operationalized as years with an active divestiture program prior to the focal period:

> **Hypothesis 2.6:** Program sell-off experience/ divestiture program experience positively moderates the relationship between program sell-off intensity and post-divestiture accounting performance.

To control for consistency of effects, I also test the effect of program end. The end of an extensive restructuring period should positively moderate the effect of sell-offs on performance.

2.3 Methods

This section outlines the data sample, the dependent, independent, and control measures, and the method of data analysis that was applied to test the aforementioned hypotheses.

2.3.1 Sample

This study chose a cross-industry European setting to test its hypotheses. Extant literature on the accounting relationship of divestitures focused mostly on US firms (e.g., Bergh & Lim, 2008; Feldman et al., 2016; Montgomery & Thomas, 1988). More recent studies have also relied on European (Brauer et al., 2017; Haynes et al., 2002) or global but often industry-specific samples (Vidal & Mitchell, 2018). The basis for the sample was the STOXX Europe 600 at the beginning of the observation period in 2000. This index covers a wide variety of industries and European countries.[2] Similar to previous literature, financial industry firms, trading firms (e.g., Berger & Ofek, 1999; Haynes et al., 2002), and the utility sector were excluded to assure comparability of data. Further, firms were required to have at least six consecutive years of accounting data.[3] From all 254 firms that fulfilled the stated selection criteria, 150 were then sampled randomly to ensure a manageable sample size given a manual review of all transaction data. The final sample contained firms from 14 countries and covered industrials, basic materials, consumer goods, consumer services, technology, health care, and telecommunications. I rely on data for the years 1995-2017, to study a panel over the period from 2000-2014.[4] To avoid endogeneity problems, the sample included firms that divested frequently, firms that divested only seldom, firms that did not divest, firms that left the sample, and firms that entered later than 2000 because they had been formed after 1995 but before 2000. This resulted in an unbalanced panel of **1,923 observations** across **150 firms** (see ***Table 2-1***).

Table 2-1: *Balance of the panel*

No of years	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
No. of firms	1	5	4	7	1	2	3	3	6	3	3	8	9	95

[2] Greece was deliberately excluded given that transaction activity on *SDC* was strongly below that of other countries suggesting incomplete coverage.

[3] The analysis included a control variable for past year's performance. Further, the dependent variable captured the performance of the three years following the focal period. Six consecutive years of accounting data did then allow for two observation periods as a minimum threshold for this study.

[4] The independent variable for divestiture experience captured the five years prior to the focal period. As stated above, the dependent variable captured the three years following the focal period.

Table 2-2: *Distribution of sell-offs by firm*

No of sell-offs	**0**	**1-5**	**6-10**	**11-20**	**21-30**	**31-50**	**>50**	**Total**
No. of firms	3	20	32	36	25	21	13	150
% of firms	2.0%	13.3%	21.3%	24.0%	16.7%	14.0%	8.7%	100.0%

Thomson Reuters' *SDC* database was used to obtain an initial list of sell-offs undertaken by the firm sample. Transactions needed to fulfill the following criteria to be included in the analysis:

i. The transaction was flagged as a divestiture deal by *SDC*. Deals that were also marked as spin-offs were excluded in line with prior literature on learning and the different learning characteristics (Bergh & Lim, 2008; Brauer et al., 2017).

ii. The completion date of the transaction was within the relevant period of 1995 to 2014, five years before the observation period, to account also for divestiture experience.[5]

iii. The transaction was a sell-off of operational assets – non-operational divestitures, e.g., the sale of property or buildings were excluded from this study.

iv. The sell-off reduced the holding to a minority holding, e.g., the formation of a joint venture where a 50% share is retained, were excluded.

Overall, 3,126 operational sell-offs were identified in *SDC* for the 150 firms over the observation period (see ***Table 2-2***).[6] In addition, 190 divestitures were identified as part of the manual review of divestiture announcements in primary and secondary sources. This resulted in a final sample of 3,316 or 22.1 sell-offs per firm between 1995 and 2014. Between 2000 and 2014, **2,421 sell-offs** were undertaken across all 1,923 firm-year observations.

2.3.2 Measures

Data to construct the variables presented in the following was taken from *Worldscope* (through Thomson Reuters). Strategic divestitures and divestiture programs were identified based on divestiture announcements, other press releases, and secondary sources obtained from *Factiva*

[5] The actual observation period varied from firm to firm based on availability of accounting data.

[6] The number excludes transactions that were duplicates or falsely labelled as divestitures by *SDC*, e.g., if a seller and acquirer shared the same parent, if primary and secondary sources revealed only a minority interest in the sold assets, if transactions were falsely allocated to a parent or the target is a unit or subsidiary of a unit that was already divested before.

and *LexisNexis*. In this vein, I also augmented the initial list of sell-offs with missing financials and validated the information obtained from Thomson Reuters' *SDC* database. In the following, dependent, independent, and control variables are outlined.

Dependent variable

Firm performance. Following prior literature, profitability was measured as return on assets (ROA). A three-year average following the focal year was chosen, given that prior research has shown that performance effects of divestitures take time to materialize (Bergh, 1998; Markides, 1995) and has frequently applied three-year averages to measure performance (e.g., Bergh & Lim, 2008; Brauer et al., 2017; Woo, Willard, & Daellenbach, 1992). Also, in excluding the focal year, the influence of one-time effects, such as restructuring costs or proceeds from selling the assets, was minimized (Brauer et al., 2017). A majority of prior research has relied on ROA as the primary performance measure (e.g., Hoskisson & Johnson, 1992; Montgomery & Thomas, 1988; Vidal & Mitchell, 2018). I measured ROA as operating income relative to average total assets. Average total assets were calculated as the average of total assets at the beginning and the end of a period, acknowledging that profits are a flow that cumulates over time (Dickerson, Gibson, & Tsakalotos, 1997; Haynes et al., 2002).

Independent variables

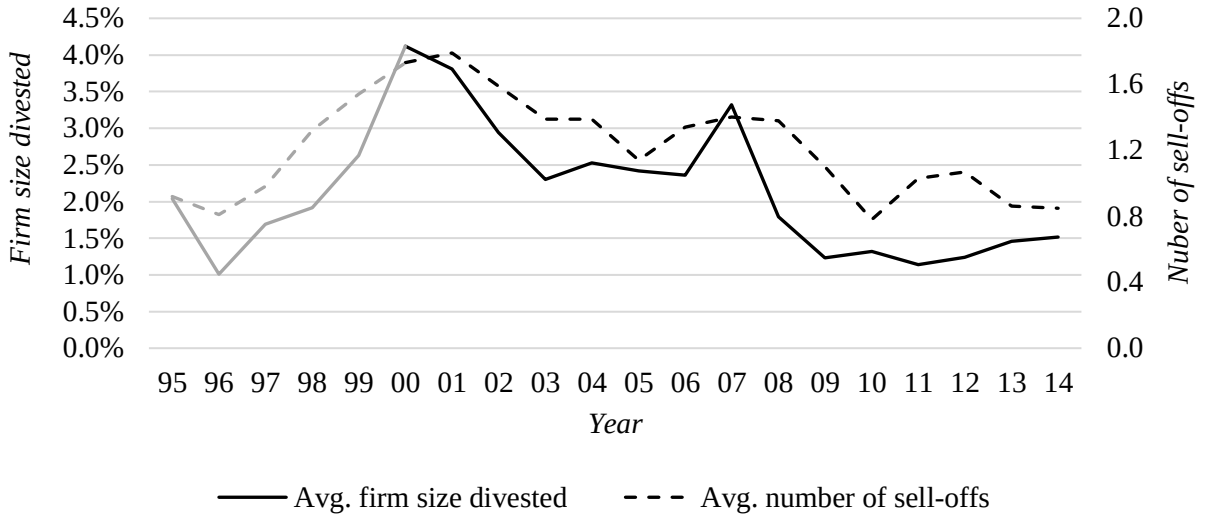
Total sell-off intensity. Consistent with prior research, I operationalized sell-off intensity as relative firm size divested during a period. Previous research on divestitures has drawn on the target's transaction price (e.g., Cho & Cohen, 1997; Haynes et al., 2002; Klein, 1986) or the target's sales (e.g., Bethel & Liebeskind, 1993; Hoskisson et al., 1994; Pathak et al., 2014) to calculate the relative size. Further, measuring sell-off intensity as a percentage of firm size does also account for acquisitions, which increase firm size, and thus decrease relative divestiture

***Table 2-3**: Distribution of sell-off size*

Sell-off size (relative size divested)	**0 to 0.5%**	**>0.5 to 1%**	**>1 to 5%**	**>5 to 10%**	**>10 to 20%**	**>20 to 50%**	**>50%**	**No size data**
No. sell-offs	1260	343	544	137	97	51	4	880
% of sample	38.0%	10.3%	16.4%	4.1%	2.9%	1.5%	0.1%	26.5%

Note: Sell-off size relative to firm size for all transactions where sales, transaction price, assets, or employees were available.

Figure 2-1: *Development of average sell-off activity across firm sample over time*



size (Pathak et al., 2014). Research has also relied on the number of sell-offs to operationalize sell-off activity (e.g., Brauer et al., 2017; Vidal & Mitchell, 2018). However, this overvalues small and likely unsubstantial sell-offs and neglects the concentration of sell-offs at the lower tail of the size distribution (see ***Table 2-3***). At the same time, it undervalues the less frequent large sell-offs, e.g., only 8.6% of sell-offs divest more than 5% of firm size (see ***Table 2-3***). The average firm size divested in a given period peaked in 2000 with 4.1% and 2007 with 3.3% (see ***Figure 2-1***). To control for robustness, I substituted sell-off intensity with the number of sell-offs as part of the supplementary analysis. As illustrated in ***Figure 2-1***, both average firm size divested and average number of sell-offs developed similarly over the observation period.

Literature has previously noted the issue of incomplete transaction and unit financials (Haynes et al., 2002; Nanda & Narayanan, 1999). I chose a multi-step approach to overcome this difficulty and operationalized the variable based on data availability. As a first choice, I

Table 2-4: *Distribution of sell-off size by quartile*

Quartile	**Lower boundary**	**Upper boundary**
1	0.00%	0.13%
2	0.13%	0.48%
3	0.48%	1.72%
4	1.72%	72.43%

Note: Sell-off size relative to firm size for all transactions where sales, transaction price, assets, or employees were available.

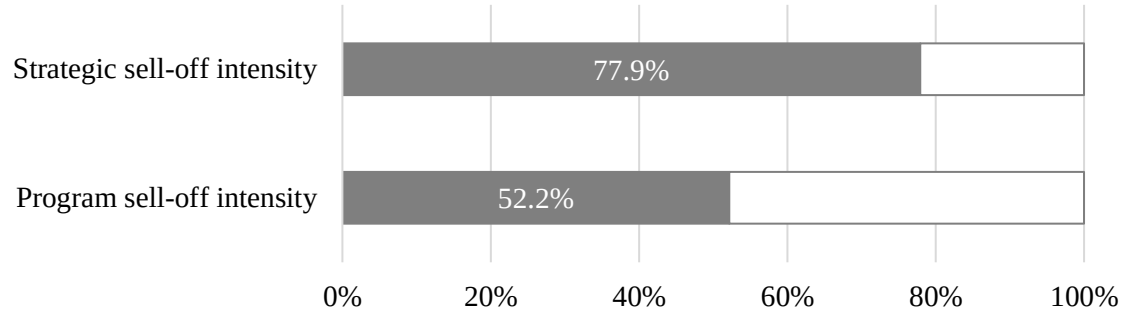
employed unit sales data relative to parent's sales in the previous year. As a second choice, I used transaction price, including net debt relative to the previous year's enterprise value. As a third and fourth choice, the variable was calculated using the unit's assets relative to the previous' year's total assets or the divested employees relative to the previous year's total employees. In line with Haynes et al. (2002), I argue that the remaining 26% of the sample, where no data was disclosed, should most likely be located at the lower tail of the sample. Accordingly, I allocated to these divestitures a value of 0.13%, the upper boundary of the first quartile of the divestiture size distribution across the sample (see ***Table 2-4***).

Strategic sell-off intensity. I identified strategic sell-offs based on divestiture announcements and further primary and secondary sources. The analysis of announcements to identify intent has been frequently employed in divestiture research (e.g., Berger & Ofek, 1999; Markides, 1995; Montgomery et al., 1984). However, firms do not necessarily state their rationale in their announcement, or a divestiture may be below a minimum size threshold to mandate an announcement. Thus, I also reviewed other primary sources that refer to a divestiture, e.g., conference call transcripts or press coverage that provides a broader context and often further official statements. Sell-offs were considered strategic if the announcement or secondary press coverage explicitly referred to a refocusing course, the sale of non-core or non-strategic assets, or linked the divestiture to a broader strategy or program with such an objective. For example:

> *This disposal is part of the firm's announced strategy to refocus its industry sector.*
>
> *The sale is part of a strategy announced in May by the chairman, whereby the firm would sell all non-strategic assets.*
>
> *The operation is the first divestment carried out in accordance with an action plan, announced last March that aims to reduce costs and increase efficiency and includes the disposal of non-strategic assets.*

Program sell-off intensity. Previous research has applied different methods to differentiate between program and non-program transactions. Acquisition research has either assigned all transactions following the initial announcement of a program to a program (Bhabra et al., 1999; Schipper & Thompson, 1983) or has required acquisitions to be clustered in time (Conn, Cosh, Guest, & Hughes, 2004; Kronenwett, 2010; Laamanen & Keil, 2008). However, both methods do only consider uninterrupted series of transactions (Brauer & Schimmer, 2010). Previous divestiture research has relied on the textual analysis of divestiture announcements to identify

Figure 2-2: *Share of strategic and program sell-off intensity*

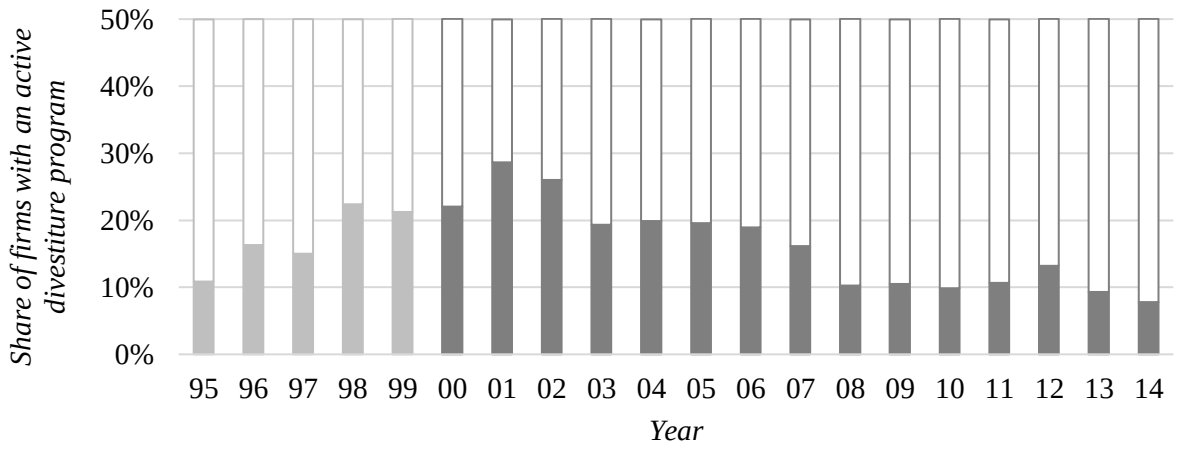


Note: Share relative to total sell-off intensity for the entire observation period from 2000 to 2014.

programs (Brauer & Schimmer, 2010). This study assumed a two-fold approach in considering both explicit program announcements and individual divestiture announcements through primary and secondary sources. I determined for each divestiture individually whether it was part of a program. To constitute a program, multiple divestitures had to be linked to an explicitly stated rationale or an explicit divestiture program announcement. Throughout the sample, recurring rationales of divestiture programs were refocusing, streamlining, or debt repayment efforts often following the strategic review of a newly instated CEO or a large acquisition.

Figure 2-2 shows to which extent sell-off intensity across all firms and periods included in this study was considered strategic or part of a divestiture program based on the aforementioned criteria. 77.9% of the total sell-off intensity was considered strategic. 52.2% could be attributed to a program. ***Figure 2-3*** shows the share of firms with divestiture programs during the study. The share could be seen to spike at the end of the 1990s and the beginning of the 2000s.

Figure 2-3: *Share of firms with an active divestiture program over time*



Total sell-off experience. Sell-off experience was measured as the number of sell-offs undertaken in the five years prior to the focal period. The number of sell-offs is the more intuitive choice to measure experience given that learning and accumulation of knowledge have been argued to occur from repetition of actions (e.g., Zollo & Winter, 2002). In contrast, using deal size would suggest that a firm learns equally much from one large sell-off as it does from multiple smaller ones (Brauer et al., 2017). Nonetheless, given the concentration of divestiture size on the lower tail of the distribution (see ***Table 2-3***), I required divestitures to be greater in size than 0.48%, the upper boundary of the second quartile (see ***Table 2-4***). This guaranteed that any sell-off included in the variable offers a meaningful learning opportunity to the organization. Learning theory has argued that experience is fading over time (Levitt & March, 1988). Accordingly, studies on transaction experience have often relied on a five-year window for measuring experience (e.g., Hayward, 2002; Laamanen & Keil, 2008; Peruffo et al., 2018). Further, to test for robustness, I varied the size threshold and the experience window as part of the supplementary analyses.

Strategic sell-off experience. I constructed strategic sell-off experience in the same way as total sell-off experience based on the sell-offs that were previously clustered as strategic.

I measured a firm's experience concerning divestiture programs in two ways:

Program sell-off experience. In a first variation, program sell-off experience was operationalized in coherence with the other experience variables based on the sell-offs that could be attributed to a divestiture program.

Divestiture program experience. In the second variation, experience with divestiture programs was operationalized as the number of years with an active divestiture program in the previous five years.

Program end. The end of a program was operationalized as a dummy variable. It takes the value of 1 if the firm had an active divestiture program in the focal period and if there was no active program in the subsequent period.

Control variables

I included several control variables and lagged them by one period: prior firm performance, firm current ratio, firm leverage, firm size, and year effects. *Prior firm performance* was measured as return on assets in the previous year. Extant literature has found pre-divestiture performance to strongly predict post-divestiture performance (Bergh, 1998; Bergh & Lim,

2008; Vidal & Mitchell, 2018). This is supported by profitability research that has argued and found profits to be persistent in time (Geroski & Jacquemin, 1988). *Firm current ratio* was measured as current assets over current liabilities and measures the level of slack resources (Feldman et al., 2016). *Firm size* was defined as the natural logarithm of total assets (Bergh & Sharp, 2015; Brauer et al., 2017). I measured *firm leverage* as total debt relative to total assets (Berger & Ofek, 1999; Dickerson et al., 1997; Haynes et al., 2002). Further, I included *year dummies* to account for possible time-dependent influences (Brauer et al., 2017; Haynes et al., 2002).[7] As part of the supplementary analysis, I also controlled for the level of *product diversification* measured using the entropy index (Palepu, 1985).[8]

2.3.3 Data analysis

Fixed-effects regression

The research hypotheses were tested in a longitudinal panel setting. The panel setting comes with the advantage that it fully recognizes the multi-transaction and often multi-year perspective of experience effects and divestiture programs. In contrast, the event study methodology measures the market expectation to discrete events. Nonetheless, I also included measurements of market reaction to assure comparability with previous research and control for robustness. A Hausman (1978) test comparing the fixed-effects estimator with a random-effects estimator and a simple ordinary least squares (OLS) regression clearly suggested the consistency of fixed-effects estimators. Thus, in the following, I present the results of the fixed-effects panel regression with robust standard errors. The application of the fixed effects model and inclusion of a time-invariant firm-specific error term for each cross-section (firm dummies) ensured the consideration of unobservable firm-specific effects. Variables that were part of interactions were mean-centered to ease the interpretation of coefficients (Echambadi & Hess, 2007).

Shareholder wealth effects

Cumulative abnormal returns (CAR) were estimated based on a standard Market Model (MM) and the Fama-French-3-Factor Model (FF3F) to capture the short-term market reaction (Fama

[7] In light of the mandatory change from local to IFRS reporting during the observation period, I did also run a robustness variation including a dummy that takes a value of 1 for a firm's change to IFRS. However, it should be noted that *Worldscope* explicitly addresses the complexity of different financial accounting practices by providing uniform definitions and standardized financial statement organization.

[8] Sales per segment were obtained from *Worldscope.* Data differed significantly in granularity between firms but also within. One firm may have reported brands the one period and product segments the other period. Given the limited quality of the data to construct this variable, it was only included as part of the supplementary analysis.

& French, 1993). Abnormal returns are frequently measured in divestiture research to capture the shareholder wealth effects of divestitures (Lee & Madhavan, 2010). To measure the long-term reaction, I calculated buy-and-hold abnormal returns (BHAR). The calculation of buy-and-hold returns is the most commonly used method to measure the long-term performance of events (Barber & Lyon, 1997; Lyon, Barber, & Tsai, 1999). Thus far, divestiture research has only seldom measured long-term stock market reactions (e.g., Chen & Feldman, 2018; Hanson & Song, 2003).

The sell-offs that were identified for the main regression were mostly concentrated on the lower tail of the size distribution (see ***Table 2-3***). Concerning the measurement of shareholder wealth effects, such smaller deals are unlikely to attract sufficient shareholder attention. Thus, prior literature has argued in favor of a minimum transaction size threshold (e.g., Owen et al., 2010; Rosenfeld, 1984). Accordingly, I set a threshold at a deal value of EUR 50M or at least 5% of relative firm size – calculated as deal value, including net debt, relative to enterprise value. Further, in line with the observation period of the main analysis, only divestitures announced in the firms' fiscal years 2000 to 2014 were considered. 582 transactions of the initial sample matched these criteria. I employed *Factiva* to verify the announcement date reported in Thomson Reuters' *SDC* database. To eliminate the effect of confounding events in the sample, I followed the recommendations of McWilliams and Siegel (1997). Specifically, I used *Factiva* to screen the press coverage of a firm in the five days around an announcement for financial events (e.g., firm results, earnings guidance, declaration of dividends, unexpected earnings), restructuring events (e.g., mergers, acquisitions, other divestitures, layoffs), major new product launches, major order placements, changes in key executives, and legal suits/disputes. This resulted in a final sample of 319 transactions undertaken by 98 firms. The S&P Europe 350 index was chosen as the reference index. The STOXX Europe 600, from which the sample was drawn, had been created in 2000, and thus did not cover the estimation period for divestitures undertaken at the beginning of 2000. The required return data for firms and the reference index were obtained through *Datastream*. I set an estimation window of 120 days to comply with prior literature differentiating between program and non-program transactions (Brauer & Schimmer, 2010).

In the MM, return follows a single-factor model. The model assumes the return of a stock on a day t to be $R_{i,t} = \propto_i + \beta_i \times R_{M,t} + \varepsilon_{i,t}$, with $R_{M,t}$ measuring the return of the reference market on day t, $\varepsilon_{i,t}$ the error term and β_i the sensitivity of $R_{i,t}$ on the reference market. The abnormal return $AR_{i,t}$ was then calculated as the difference between the observed return and the expected

return measured by the model: $AR_{i,t} = R_{i,t} - (\propto_i + \beta_i \times R_{M,t})$. The CAR over an event window was calculated as $CAR\ (t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{i,t}$. Next, the cumulative average abnormal return (CAAR) was calculated as the arithmetic mean across all events. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer, Musumeci, and Poulsen (1991), and the non-parametric generalized sign test following Cowan (1992).

In contrast, the FF3F uses three factors to describe the expected return of a stock: market risk, outperformance of small-cap firms, and outperformance of high book-to-market firms. The expected return is measured as $R_{i,t} - r_{f,t} = \propto_i + \beta_{i,M}(R_{M,t} - r_{f,t}) + \beta_{i,s} SMB_t + \beta_{i,h} HML_t + \varepsilon_{i,t}$. $r_{f,t}$ is the risk-free return on day t. SMB is the difference in return of small and big firms measured by market capitalization. HML measures the difference in return between firms with a high book to market ratio and those with a small ratio. CAR and CAAR were calculated accordingly to the MM. Fama/French European 3 Factors daily data for market return, SMB, HML, and risk-free return was retrieved from Kenneth French's Fama/French data library as published by Dartmouth College. In addition to the inclusion of further factors, this served as a robustness control of the selected underlying index for the MM.

The third measurement of shareholder wealth effects, BHAR, were computed as the difference between the buy-and-hold returns of the stock and the reference index for each day t over a period T: $BHAR_{i,T} = \left[\prod_{t=1}^{T}(1 + R_{i,t})\right] - \left[\prod_{t=1}^{T}(1 + R_{M,t})\right]$. Given that the sample was drawn from the largest public European firms by market capitalization at the beginning of 2000, the S&P Europe 350, which covers the 350 largest firms by market capitalization, was again used as reference index. I measured BHAR for the 250 days before the divestment and the 250, 500, and 750 days after the event. To assure the reliability of results in case of overlapping holding periods, I excluded divestitures undertaken within the holding period of an earlier divestiture of the same firm. A sample of 181 out of the 319 transactions remains. The average BHAR (ABHAR) for the total sample was calculated as the equal-weighted average across all events for each period. To test for the robustness of the average returns, I followed Lyon et al.'s (1999) suggestion of applying a bootstrapped version of Johnson's (1978) skewness-adjusted t-statistic to account for the skewness of BHAR within the sample and receive well-specified test statistics. This approach involves the drawing of 1,000 bootstrapped resamples of size $n_b = n/4$. From these resamples, I calculated the critical values of the 1%, 5%, and 10% confidence intervals to reject the null hypothesis that the ABHAR is zero.

Table 2-5: *Results of the fixed-effects panel regression with 3-year average ROA as the dependent variable*

Sell-off intensity and sell-off experience variables were varied based on the header row of the table to reflect total, strategic, or program sell-offs.

Model	**Base**	**Total sell-offs**			**Strategic sell-offs**			**Program sell-offs**								
		1	**2a**	**2b**	**3**	**4a**	**4b**	**5**	**6a**	**6b**	**7a**	**7b**	**8a**	**8b**	**9a**	**9b**
Sell-off intensity	-	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.03**	**0.00**	**0.00**	**0.02**	**0.00**	**0.03**	**0.00**	**-0.04** *	**-0.05**	**-0.13** *
		(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.07)
Sell-off intensity^2	-	-	-		-	-	-	-	-	-	-	-	-	-	**0.16**	**0.78** **
															(0.11)	(0.38)
Sell-off intensity^3	-	-	-		-	-	-	-	-	-	-	-	-	-	-	**-0.91** *
																(0.51)
Sell-off experience	-	-	**0.00**	**0.00**	-	**0.00**	**0.00**	-	**0.00**	**0.00**	-	-	-	-	-	-
			(0.00)	(0.00)		(0.00)	(0.00)		(0.00)	(0.00)						
Sell-off intensity x Sell-off experience	-	-	-	**0.00**	-	-	**-0.01**	-	-	**-0.01** **	-	-	-	-	-	-
				(0.01)			(0.01)			(0.01)						
Program experience	-	-	-	-	-	-	-	-	-	-	**0.00**	**0.00**	-	-	-	-
											(0.00)	(0.00)				
Sell-off intensity x Program experience	-	-	-	-	-	-	-	-	-	-	-	**-0.03** **	-	-	-	-
												(0.01)				
Program end	-	-	-	-	-	-	-	-	-	-	-	-	**0.00**	**0.00**	-	-
													(0.00)	(0.00)		
Sell-off intensity x Program end	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.08** **	-	-
													-	(0.03)		
Control - Firm prior performance	**0.24** ***	**0.24** ***	**0.24** ***	**0.25** ***	**0.24** ***	**0.25** ***	**0.25** ***	**0.24** ***	**0.24** ***	**0.24** ***	**0.24** ***	**0.24** ***	**0.24** ***	**0.24** ***	**0.24** ***	**0.24** ***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Control - Firm current ratio	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table 2-5: *Results of the fixed-effects panel regression with 3-year average ROA as the dependent variable (continued)*

Sell-off intensity and sell-off experience variables were varied based on the header row of the table to reflect total, strategic, or program sell-offs.

Model	**Base**	**Total sell-offs**			**Strategic sell-offs**			**Program sell-offs**								
		1	**2a**	**2b**	**3**	**4a**	**4b**	**5**	**6a**	**6b**	**7a**	**7b**	**8a**	**8b**	**9a**	**9b**
Control - Firm size	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control - Firm leverage	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Constant	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.23**	**0.24**	**0.23**	**0.24**	**0.23**
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 within	0.143	0.144	0.144	0.144	0.144	0.144	0.146	0.143	0.143	0.145	0.143	0.146	0.143	0.145	0.144	0.145
F-value	12.16 ***	11.61 ***	11.13 ***	11.07 ***	11.63 ***	11.50 ***	11.16 ***	11.73 ***	11.41 ***	10.73 ***	11.41 ***	10.21 ***	11.13 ***	11.09 ***	11.60 ***	11.41 ***
Ø VIF	2.30	2.30	2.31	2.31	2.30	2.32	2.31	2.29	2.31	2.30	2.31	2.31	2.29	2.30	2.34	3.10

Note: Firm post-divestiture 3-year average ROA was set as the dependent variable; N=1,923 year observations across 150 firms between the years 2000 and 2014; Firm- and year-specific dummies were included in the analysis. Robust standard errors were clustered by firm and are reported in parentheses.

* p < 0.10, ** p < 0.05, *** p < 0.01

Tested Hypotheses:

- Hypothesis 2.1 (Model 1): Sell-off intensity is positively associated with a firm's post-divestiture accounting performance.
- Hypothesis 2.2 (Model 2a, 2b): Sell-off experience positively moderates the relationship between sell-off intensity and post-divestiture accounting performance.
- Hypothesis 2.3 (Model 3): Strategic sell-off intensity is positively associated with a firm's post-divestiture accounting performance.
- Hypothesis 2.4 (Model 4a, 4b): Strategic sell-off experience positively moderates the relationship between strategic sell-off intensity and post-divestiture accounting performance.
- Hypothesis 2.5 (Model 5, 9a, 9b): Program sell-off intensity is positively associated with a firm's post-divestiture accounting performance.
- Hypothesis 2.6 (Models 6a, 6b, 7a, 7b): Program sell-off experience/ divestiture program experience positively moderates the relationship between program sell-off intensity and post-divestiture accounting performance.

2.4 Results

In the following, I present the results of the fixed-effects regression, its supplementary analysis, and the event study analysis measuring the shareholder wealth effects.

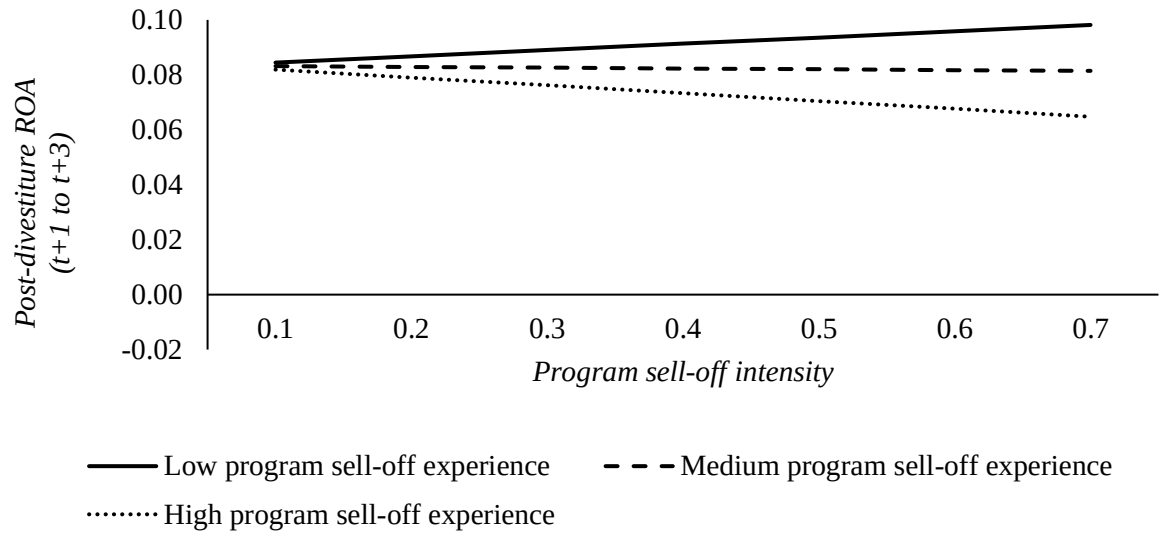
2.4.1 Fixed-effects regression

Table 2-5 reports the results of the fixed-effects panel regression. For each variable and interaction term, I report the *coefficient*, in the brackets below the *robust standard errors*, and next to the coefficient the *significance* based on the *p-value*. The base regression includes only the control variables. As expected, firm prior performance is a strong predictor of post-divestiture performance. The same hypotheses are tested for total sell-offs (Models 1 to 2b) and strategic sell-offs (Models 3 to 4b). For program sell-offs, further variations are tested (Models 5 to 9b). Sell-off intensity and sell-off experience variables are varied based on the header row of the table to reflect total, strategic, or program sell-offs. For example, Model 1 shows in the first row the coefficient of total sell-off intensity and Model 3 the coefficient of strategic sell-off intensity. Also, R^2 *within*, *F-value*, and average variance inflation factor (*Ø VIF*) are reported for each model. The means, standard deviation, and correlations of the variables used throughout the analysis are presented in ***Appendix 2-1***.

Model 1a provides a test of Hypothesis 2.1, which hypothesizes a positive relation of total sell-off intensity and post-divestiture performance. Toal sell-off intensity does not have a significant effect on subsequent ROA (b = 0.02, not significant). Hypothesis 2.1 cannot be confirmed. Next, Models 2a and 2b address Hypothesis 2.2, which predicts a positive moderating effect of total sell-off experience on total sell-off intensity. The regressions do not indicate an effect of experience itself (b = 0.00, not significant) nor a moderating effect (b = 0.00, not significant). Thus, the results do not support Hypothesis 2.2.

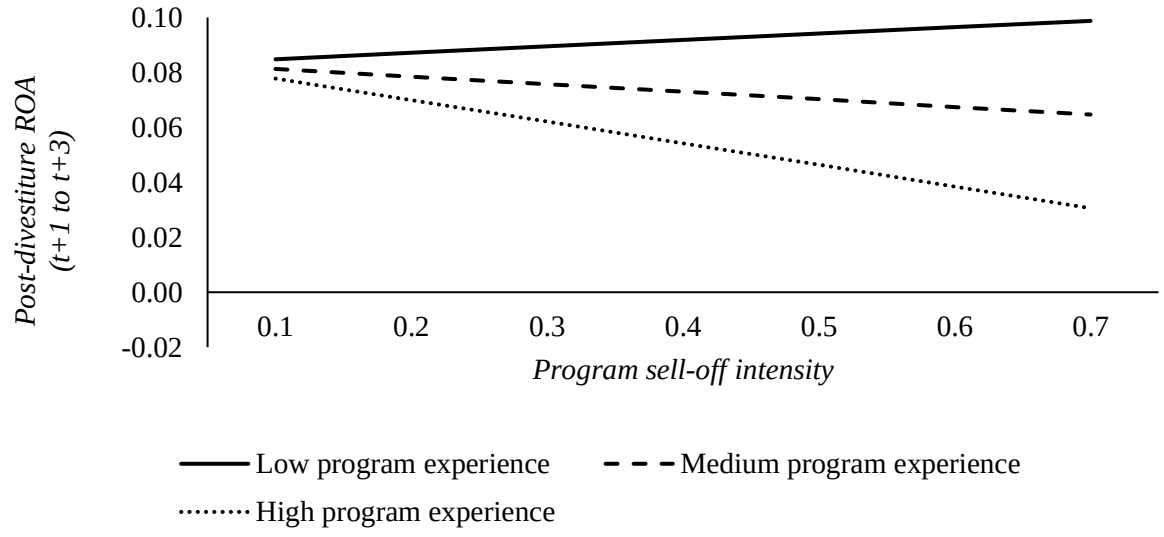
In the next step, I differentiated between strategic and non-strategic sell-offs. More specifically, strategic sell-offs were defined as sell-offs that are linked to a refocusing strategy or the selling of non-core assets either explicitly or implicitly through a shared program rationale. Hypothesis 2.3 predicts a positive effect of strategic sell-off intensity on performance. The regression, as presented in Model 3, does not confirm the significance of such an effect (b = 0.02, not significant). Model 4a and 4b present the results for strategic sell-off experience. Hypothesis 2.4 states a positive moderating effect of strategic sell-off intensity on strategic sell-off

Figure 2-4: *Moderating effect of program sell-off experience on the relationship between program sell-off intensity and post-divestiture ROA based on Model 6b.*



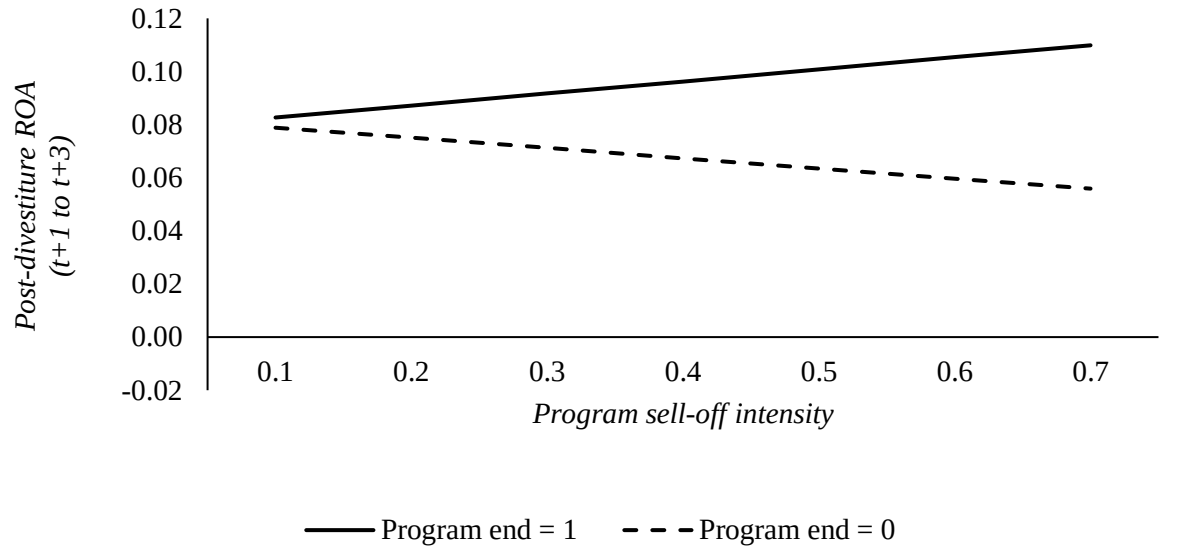
Note: Program sell-off experience was operationalized as the number of sell-offs in the five years prior to the focal period that were part of a divestiture program and exceeded the size threshold of 0.48%.

Figure 2-5: *Moderating effect of divestiture program experience on the relationship between program sell-off intensity and post-divestiture ROA based on Model 7b.*



Note: Program experience was operationalized as the number of years with an active divestiture program in the previous five years.

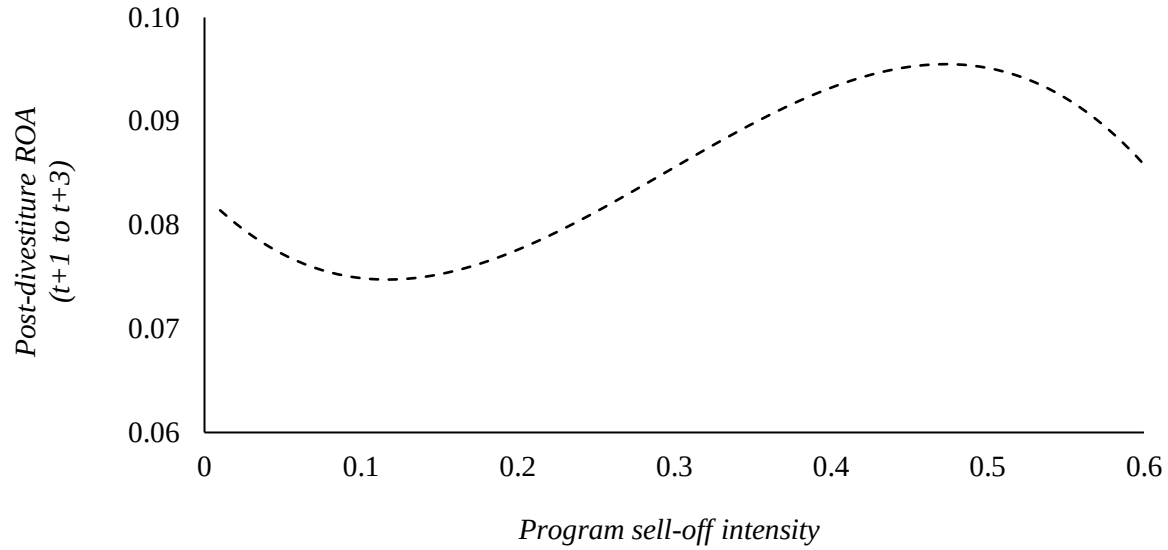
Figure 2-6: *Moderating effect of program end on the relationship between program sell-off intensity and post-divestiture ROA based on Model 8b.*



intensity. The results indicate no effect of strategic sell-off experience by itself (b = 0.00, not significant) nor as moderator of sell-off intensity (b = -0.01, not significant).

Models 5 tests Hypothesis 2.5. It predicts a positive relation of program sell-off intensity and post-divestiture performance. The results show no significant linear relationship (b = 0.00). Hypothesis 2.5 cannot be confirmed. Models 6a through 7b report the results for the effect of program-related experience. Hypothesis 2.6 suggests a positive moderating effect of program sell-off experience on program sell-off intensity. While there is no effect of program experience itself as tested in Model 6a (b = 0.00, not significant), the moderating effect on program sell-off intensity as reported in Model 6b is significantly negative (b = -0.01, p = 0.03). Model 7b tests a variation of Hypothesis 2.6, where experience is defined in active program years in the five years prior to the focal period. Similar as in Model 6b, the moderating effect of program experience on program sell-off intensity is significantly negative (b = -0.03, p = 0.02). The effects of experience are depicted in ***Figure 2-4*** and ***Figure 2-5***. The results indicate that the more times a firm has divested as part of a divestiture program or undergone divestiture programs within the past years, the more likely is it to exhibit negative performance effects. The validity of results is further supported by Model 8b. It finds a strongly significant and positive moderating effect of the divestiture program end on the performance relation (b = 0.08,

Figure 2-7: *Relationship between program sell-off intensity and post-divestiture ROA based on Model 9b.*



p = 0.02). This moderating effect is shown in ***Figure 2-6***. Again, the program end variable itself, as reported in Model 8a, does not affect performance (b = 0.00, not significant).

Given that the linear relation is not significant, I tested for non-linear relationships between the sell-off intensity variations and post-divestiture performance. Results for total sell-off intensity and strategic sell-off intensity remain insignificant. For program sell-offs, results provide initial evidence for an s-shaped performance relation. Model 9b reports the results of including all three terms. The normal term (b = -0.13, p = 0.06), the squared term (b = 0.78, p = 0.04) and the cubic term (b = -0.91, p = 0.08) reach all significance at the 10%-level (for a graphical depiction see ***Figure 2-7***). The results are intriguing. They provide initial evidence that a program needs to divest a minimum proportion of a firm in a focal year for sell-offs to be positively associated with post-divestiture performance. At the same time, they indicate that little divestment or too much divestment can be negatively related to performance. However, it should be noted that only a handful of firms reach sell-off levels close to or above 45% of firm size as part of a program in a given period (see ***Table 2-3***).

Supplementary analyses

To supplement the main analysis and control for robustness, I ran a number of variations of the main regression. First, I varied the sell-off intensity variable. I repeated the regression with a minimum size threshold for divestitures to be included in sell-off intensity of 0.13% (see ***Table***

2-4), the upper boundary of the first quartile of the divestiture size distribution. Results are robust under this variation. Further, the regression was repeated with the number of sell-offs as predictor variable instead of sell-off intensity. I ran three variations and counted either all sell-offs in the focal period, sell-offs larger than 0.13%, or larger than 0.48%. Model 6b is not significant. Model 7b is only significant for the 0.48% threshold. Model 8b maintains its significance in all three variations. Second, I varied the experience variable to include either all transactions or those that exceed a lowered size threshold of 0.13% instead of 0.48%. Results are robust – Model 6b remains significant. Next, the operationalization of experience changed from quantity to a dummy variable, taking a value of one if a firm had divested at all in the previous five years. Results are not significant. Further, I varied the experience horizon to reflect sell-off activity above the threshold of 0.48% of only the three years prior to the focal period instead of five years. Model 7b remains significant, and in Model 6b the direction of coefficients is robust. Fourth, the direction of results is robust to changing the performance measure to return on sales (ROS) and return on capital employed (ROCE). Fifth, I included a product diversification variable, which was not part of the main model due to poor data quality. Results are robust against the inclusion of product diversification. Sixth, results are robust when including a dummy variable for a firm's change from local to IFRS reporting.

In addition, I ran several robustness tests on the fixed-effects regression. The null hypothesis of homoscedasticity (Breusch-Pagan/Cook-Weisberg, modified Wald-test) was clearly rejected. Further, clustered robust standard errors were estimated to account for both heteroscedasticity and serial correlation. Log-Likelihood tests were employed to control for an increase in model fit comparing models for total sell-off intensity with Model 1, models for strategic sell-off intensity with Model 3, and models for program sell-off intensity with Model 5. The $\chi 2$ statistic is significant for Model 4b compared to Model 3, and for Models 6b, 7b, and 8b compared to Model 5. Also, the $\chi 2$ statistic is significant for Model 4b compared to Model 4a, Model 6b compared to Model 6a, 7b compared to 7a, as well as 8b compared to 8a, confirming the increase in model fit for these models through the inclusion of the interaction terms. Further, variance inflations factors (VIFs) were calculated to test for multicollinearity (see ***Table 2-5)***. Average VIFs were below four for all models. Only for firm size, the VIF took a value higher than 10. Given the firm size's role as a control variable without research interest, the increased VIF is unlikely to have severe consequences for model design and predictive power. Also, unsurprisingly, the self-moderated terms in models 9a and 9b exhibited inflated VIFs.

Table 2-6: *CAAR over different event windows*

Market Model

Event window	**Total** (in %)					**Program sell-offs** (in %)					**Non-Program sell-offs** (in %)				
	AAR/ CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test	**AAR/ CAAR**	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test	**AAR/ CAAR**	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
-1 to 0	0.94	***	***	54.55	**	0.97	***	**	56.74	*	0.90	***	*	51.77	-
0	0.99	***	***	56.43	***	0.93	***	***	58.43	***	1.06	***	***	53.90	***
-1 to 1	1.10	***	***	52.66	**	1.09	***	**	53.37	*	1.11	***	**	51.77	-
-1 to 2	1.09	***	***	55.49	**	1.28	***	***	56.18	**	0.86	***	-	54.61	-
-1 to 3	1.08	***	***	53.29	-	1.34	***	**	52.25	*	0.74	***	-	54.61	-
-1 to 4	1.15	***	**	51.72	-	1.52	***	**	51.69	-	0.68	**	-	51.77	-
-1 to 5	1.09	***	**	53.29	-	1.57	***	**	53.37	-	0.48	*	-	53.19	-

Fama-French-3-Factor Model

Event window	**Total** (in %)					**Program sell-offs** (in %)					**Non-Program sell-offs** (in %)				
	AAR/ CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test	**AAR/ CAAR**	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test	**AAR/ CAAR**	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
-1 to 0	0.93	***	***	52.04	**	0.94	***	**	53.93	**	0.92	***	-	49.65	-
0	1.04	***	***	57.68	***	0.98	***	***	58.99	***	1.11	***	***	56.03	***
-1 to 1	1.13	***	***	55.80	***	1.08	***	**	56.74	**	1.18	***	**	54.61	-
-1 to 2	1.06	***	***	53.61	**	1.18	***	***	55.06	**	0.91	***	-	51.77	-
-1 to 3	1.01	***	**	54.23	-	1.23	***	**	55.06	*	0.72	**	-	53.19	-
-1 to 4	1.06	***	**	51.41	-	1.34	***	**	53.93	-	0.71	**	-	48.23	-
-1 to 5	0.96	***	*	54.55	-	1.28	***	**	54.49	-	0.55	*	-	54.61	-

Note: The table shows average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) in % based on a Market Model and a Fama-French-3-Factor Model. The estimation was based on a window of 120 days prior to 10 days before the announcement. The sample of 319 divestitures undertaken by 98 firms comprises all those divestitures from the initial sample that were announced within fiscal periods 2000 to 2014, for which the deal value exceeded a threshold of EUR 50M or 5% compared to enterprise value, and for which no confounding event was identified. 178 transactions were attributed to a divestiture program, whereas 141 divestitures were classified as stand-alone transactions. Positive denotes the share of events exhibiting positive CAR. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer et al. (1991) and the generalized sign test, according to Cowan (1992).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.4.2 Event study analysis

In addition to the fixed-effects analysis, I assessed the magnitude of abnormal returns for sell-off announcements and differentiated between program and non-program sell-offs.

***Table 2-7**: ABHAR over different holding periods*

Buy-and-hold abnormal returns

Holding period in days		**Total** (in %)			**Program sell-offs** (in %)			**Non-Program sell-offs** (in %)		
		ABHAR	Positive	Skewness-adjusted t-test (Lyon et al., 1999)	**ABHAR**	Positive	Skewness-adjusted t-test (Lyon et al., 1999)	**ABHAR**	Positive	Skewness-adjusted t-test (Lyon et al., 1999)
0	-250 to 0	4.78	52.49	***	4.63	48.19	*	4.92	56.12	**
1	**0 to 250**	**6.22**	**53.59**	-	**9.26**	**53.01**	-	**3.65**	**54.08**	***
2a	**0 to 500**	**9.33**	**51.38**	*	**7.10**	**50.60**	-	**11.21**	**52.04**	*
2b	250 to 500	3.01	51.93	***	-0.86	49.40	-	6.29	54.08	***
3a	**0 to 750**	**13.52**	**56.91**	-	**6.69**	**51.81**	-	**19.30**	**61.22**	-
3b	500 to 750	6.82	52.49	***	4.93	50.60	-	8.41	54.08	***

Note: The table shows the average buy-and-hold abnormal returns (ABHAR). The sample consists of 181 divestitures after controlling the initial transaction sample of 319 divestitures for overlapping 750-day holding periods. 83 transactions were attributed to a divestiture program, whereas 98 divestitures were classified as stand-alone transactions. Positive denotes the share of events exhibiting positive BHAR. Returns for each holding period are calculated including shown starting day and excluding the ending day of a period.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ as derived from the bootstrapping procedure suggested by Lyon et al. (1999).

Table 2-6 reports the cumulative average abnormal returns (CAAR) obtained from the Market Model (MM) and the Fama-French-3-Factor (FF3F) Model for a sub-sample of 319 transactions of the initial analysis. On average sell-offs create wealth. CAAR for program sell-offs are slightly lower on the event day and the following day ($CAAR_{P, MM, -1, +1} = 1.09\%$, $CAAR_{P, FF3F, -1, +1} = 1.08\%$) compared to non-program sell-offs ($CAAR_{NP, MM, -1, +1} = 1.11\%$, $CAAR_{NP, FF3F, -1, +1} = 1.18\%$). CAAR including the subsequent days are greater and increase for program sell-offs ($CAAR_{P, MM, -1, +5} = 1.57\%$, $CAAR_{P, FF3F, -1, +5} = 1.28\%$). In contrast, the wealth effects of non-program sell-offs diminish over time ($CAAR_{NP, MM, -1, +5} = 0.48\%$, $CAAR_{NP, FF3F, -1, +5} = 0.55\%$). However, conservative two-tailed tests rejected a significance of the difference in CAAR between program and non-program sell-offs.

Table 2-7 provides the average buy-and-hold abnormal returns (ABHAR) to the divesting firms. ABHAR is positive for a 250-day holding period before the event and found to increase thereafter. The significance of BHAR varies across holding periods based on the bootstrapped skewness-adjusted t-test (Lyon et al., 1999).

Divesting firms perform slightly lower in the second year ($ABHAR_{250, 500} = 3.01$) after the sell-off compared with their performance prior to the sell-off ($ABHAR_{-250, 0} = 4.78$). The returns in the first ($ABHAR_{0, 250} = 6.22$) and third year ($ABHAR_{500, 749} = 6.82$) exceed prior performance.

Table 2-8: *Results of OLS regressions with different CAR as the dependent variable*

Returns	**CAR**		**CAR**		**CAR**		**CAR**		**CAR**	
Event window	**-1 to 1**		**-1 to 2**		**-1 to 3**		**-1 to 4**		**-1 to 5**	
Sell-off experience	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Program dummy	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Deal value (rel. size divested)	**0.12** ***	**0.10** ***	**0.12** ***	**0.08** **	**0.13** ***	**0.09** *	**0.15** ***	**0.08**	**0.15** ***	**0.07**
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
Deal value x program dummy	-	**0.07**	-	**0.11**	-	**0.13**	-	**0.21** *	-	**0.24** *
		(0.06)		(0.07)		(0.10)		(0.13)		(0.14)
Constant	**0.00**	**0.01** **	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**-0.01**	**0.01**
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	304	304	304	304	304	304	304	304	304	304
R^2	0.10	0.11	0.08	0.09	0.08	0.09	0.07	0.10	0.06	0.09
Adj. R^2	0.10	0.10	0.07	0.08	0.07	0.08	0.06	0.09	0.05	0.08
F-value	5.30 ***	5.22 ***	4.07 ***	4.10 ***	3.30 **	2.90 **	2.70 *	2.35 *	2.60 *	2.09 *
Root MSE	0.05	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.07

Note: The dependent variable is the CAR based on a MM. The estimation was based on a window of 120 days prior to 10 days before the announcement. 15 transactions from the original sample of 319 divestitures were dropped, given that the dataset did not allow for the construction of sell-off experience based on the five previous years. Robust standard errors are reported in parentheses. Similar models for BHAR failed to reach overall significance.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

ABHAR for the first year is largest for firms that undertake program sell-offs and increase compared to the control period ($ABHAR_{P, -250, 0} = 4.63$, $ABHAR_{P, 0, 250} = 9.26$). For non-program sell-offs ABHAR is found to decrease in the first year ($ABHAR_{NP, -250, 0} = 4.92$, $ABHAR_{NP, 0, 250} = 3.65$). For the two- and three-year period after a sell-off, firms that undertook non-program sell-offs ($ABHAR_{NP, 0, 500} = 11.21$, $ABHAR_{NP, 0, 750} = 19.30$) outperform those that divested as part of a program ($ABHAR_{P, 0, 500} = 7.10$, $ABHAR_{P, 0, 750} = 6.69$). However, the bootstrapped skewness-adjusted t-test rejects the significance of the BHAR of program sell-offs. For non-program sell-offs, ABHAR for the one- and two-year period is significant.

Given that these first analyses did not consider contingency factors, an additional OLS regression with robust standard errors was run (see ***Table 2-8***). Cumulative abnormal returns (CAR) based on the MM for different event windows were set as dependent variables. As independent variables, I considered sell-off experience, a program dummy, and deal value as the relative size divested (e.g., Owen et al., 2010). These unreported results show a highly positive and significant relation between size divested and CAR. Experience is not found to be a significant predictor. The program dummy is not significant itself, but it is a significant positive moderator of deal value for $CAR_{-1, +4}$ and $CAR_{-1, +5}$. Thus, it magnifies the effect of

deal value. In unreported models, I repeated the regression for BHAR. However, the overall significance of the models was low. Also, I repeated the main fixed-effects regression with the sample of 98 firms from which the 319 transactions for the event study are drawn. Results are robust and support the main analysis.

To test for significant differences in the performance measures, I applied Spearman's (1904) rank correlation coefficients (see ***Appendix 2-2***). This nonparametric test allows for the measurement of both linear and non-linear relationships. Generally, the correlation across measures is low. Across measures, only $CAR_{-1, 5}$ is found to share a significant and positive, yet, very limited correlation with $BHAR_{0, 250}$, and $BHAR_{0, 500}$.

2.5 Discussion

This study examines the performance and experience effects of sell-offs in a longitudinal setting, considering both strategy and structure.

I find no significant effect of total sell-off intensity on post-divestiture ROA. This is in line with the recent study of Vidal and Mitchell (2018). However, the results stand in contrast to other recent research, which identifies a significant positive relationship (Brauer et al., 2017). It should be noted that firms in this study exhibit a by far higher sell-off activity of, on average, 1.26 divestitures in each focal period compared to 0.56 in the study of Brauer et al. (2017). Also, given that the sample of this study is drawn from the 600 largest European firms by market capitalization, the average firm in this sample is likely considerably larger. Thus, for many firms in the sample of this study, divesting is part of day-to-day operations and professionalized portfolio management.

With regard to sell-off experience, this study does not find significant positive performance effects. Even more, concerning sell-offs undertaken as part of a divestiture program, I find evidence for a negative experience effect. Thus, the findings advance other research in this field, which has identified a positive and significant relation for sell-offs in general (Bergh & Lim, 2008; Brauer et al., 2017; Humphery-Jenner et al., 2019). However, as stated in the literature review, research on the relation between divestiture experience and performance is scarce and has only recently been adopted by scholars. In contrast, the many studies on the relation of experience and performance in the context of acquisitions showed mixed results (cf. Haleblian & Finkelstein, 1999; Laamanen & Keil, 2008). They have found either a positive (Fowler & Schmidt, 1989), a negative (Kusewitt, 1985), none at all (Ravenscraft & Scherer, 1987), or an u-shaped relation (Haleblian & Finkelstein, 1999).

As presented in the previous section, results for strategic or non-strategic sell-offs are insignificant. However, there is a strong theoretical argument that a strategic move or action should be superior to a non-strategic one. This is supported by the findings of prior research concerning refocusing (Berger & Ofek, 1999). Thus, the issue is most likely to be found in the classification of strategic and non-strategic sell-offs. Analysis of the sample shows that 49.7% of the number of sell-offs between 2000 and 2014, and 77.9% of sell-off intensity are marked as strategic. This classification is based on explicitly announced motives such as a focus on core assets, the disposal of non-core or non-strategic assets, or the implicit linkage to a broader strategy or a program with such an objective. The classification may be biased in a way that corporate language as part of a professionalized portfolio management may tend to classify most and especially large sell-offs as a sale of non-core or non-strategic assets.

The findings concerning program sell-offs add to a more differentiated view when examining the performance relationship of divestitures. In contrast to classifying a sell-off as strategic, the program classification sets a higher threshold. Only 39.0% of sell-offs are explicitly linked to a program, translating to 52.2% of sell-off intensity. The finding of a negative moderating effect of program experience and program sell-off experience on program sell-off intensity suggests that a potential learning transfer is outweighed by the negative performance associated with years of restructuring or inherent to firms undergoing a program. The more years a firm has been undergoing divestiture programs and the more program sell-offs it has already undertaken, the more detrimental is the impact of program sell-off intensity on post-divestiture performance. Further, the completion of a firm's program efforts is found to be a positive moderator of the effect of program sell-off intensity on post-divestiture performance. In this vein, it should be noted that divestiture programs are in many cases undertaken as part of restructuring efforts, the ending of which often marks a firm's return into more shallow and stable waters. Thus, the presence of a divestiture program does likely entail some information with regard to a firm's health status. While several of the included control variables account for a firm's health, some degree of information could have been accounted neither for in the control variables nor in the unobserved fixed-effects. While I identify no linear relationship between program sell-off intensity and post-divestiture performance, the results show initial evidence for an s-shaped relation. Prior longitudinal research has described the performance relation of divestitures and sell-offs in general as strictly linear and found divestiture to have a positive performance effect irrespective of the amount divested (e.g., Brauer et al., 2017; Haynes et al., 2002). The findings of this study suggest that this does not necessarily hold for sell-offs that are part of a divestiture

program. This underscores the negative impact of program-related experience and underscores the downsides of program sell-offs with regard to performance. An s-shaped relation implicates that a divestiture program needs to be sufficiently large and material to result in a positive effect on performance. It suggests that little divestment may do more harm than good to performance. Further, divesting substantial parts of a firm can be detrimental to performance, e.g., in an extreme shift of corporate focus. Also, programs may be initiated in an effort to reduce heavy debt burdens. In such a context, a firm may act more opportunistic than strategic and sell off units to cater to immediate debt needs instead of carefully considering the long-term performance effects.

Given the insignificant relation of total sell-off intensity and post-divestiture performance, shareholder wealth effects are measured. Indeed, the event study shows significant and positive CAAR for sell-offs. This is in line with prior research (cf. Brauer & Schimmer, 2010; Lee & Madhavan, 2010; Vidal & Mitchell, 2018). Both the MM and FF3F Model find wealth effects for non-program sell-offs to be higher on the event day itself and the following day. However, while the wealth effects of non-program sell-offs sharply diminish thereafter, returns for program sell-offs are persistent and increase over time. Non-program transactions should, in general, come as more of a surprise to the market, explaining higher returns on day zero and one. For program sell-offs, the market has likely already incorporated some reaction to a program before the announcement of one of the program's components. As the market further processes the information and gains a greater understanding of the sell-offs' circumstances, the surprise effect of non-program sell-offs then seems to diminish, whereas program sell-offs are received more favorably. The general direction of results supports prior findings on superior abnormal returns of program divestitures (Brauer & Schimmer, 2010). However, the difference in return between program and non-program sell-offs, as identified in this study, is not significant. Also, an OLS regression finds a program dummy itself to have no significant effect. However, its moderating effect of deal value, the strongest predictor for CAAR, is significantly positive for longer event windows. Thus, providing partial support for greater wealth effects of program sell-offs.

Long-term shareholder wealth effects are positive for sell-offs, though only partially significant. Positive long-term wealth effects are in line with prior literature (Hanson & Song, 2003). ABHAR increases for all sell-offs and when differentiating between program and non-program sell-offs in the first year, with program sell-offs yielding a higher ABHAR. In years two and three, ABHAR is higher for firms that undertake non-program sell-offs. However, only non-

program sell-offs are significantly positive, based on Lyon et al.'s (1999) bootstrapped skewness-adjusted t-statistic. Results are in line with the main analysis. As discussed before, many firms that divest as part of a program often undergo extensive restructuring for multiple years to follow. The results of the fixed-effects regression have shown that the more a firm has divested as part of a program and the longer it has undergone divestiture programs, the less likely is an increase in post-divestiture performance. However, it should be noted that skewness-adjusted significance strongly varies over the different holding periods.

A comparison of the different performance measures applied in the main and supplementary analysis of this study shows little correlation across measures. This finding stresses the importance and the impact the chosen performance measure can have on the results of divestiture research.

2.5.1 Theoretical and practical implications

This study adds in several meaningful ways to divestiture research. First, it adds to the emerging stream of research that assumes a process perspective and leaves behind the transactional understanding of divestiture (e.g., Bergh & Lim, 2008; Brauer et al., 2017; Brauer & Schimmer, 2010; Damaraju, Barney, & Makhija, 2015; Moschieri & Mair, 2011; Thywissen, Pidun, & Knyphausen-Aufseß, 2018). Results add to a more nuanced analysis of divestiture performance and experience effects in considering the two contingencies of motive and structure.

Second, with regard to structure, the results of this study demonstrate the importance of considering the program nature of divestitures and provide a substantial extension of the limited prior research in this area (Brauer & Schimmer, 2010). The study differentiates between program and non-program sell-off effects in a longitudinal setting and provides further evidence on the differences in shareholder wealth effects based on the program character of divestitures.

The third contribution is the consideration of the strategic motive of the seller. While results do not confirm the significance of strategic divestitures, the study adds to earlier research on strategy and motives of divestitures (e.g., Markides, 1995; Montgomery & Thomas, 1988).

Fourth, with regard to experience, it answers the explicit calls of research to consider the aforementioned contingencies and challenges the results of prior research on the experience-performance relation of divestitures (e.g., Bergh & Lim, 2008; Brauer et al., 2017).

Last, it contributes to the mature field of divestiture performance research in adding a pan-European and cross-industry setting to a field which has except for few notable exceptions

primarily been focused on the US, UK, and single-industry settings (Brauer et al., 2017; Lee & Madhavan, 2010; Vidal & Mitchell, 2018). The findings of this study provide initial and weak evidence for a non-linear relationship between divestiture and post-divestiture accounting performance when it comes to divestiture programs. Thus, they add to and challenge the existing research on accounting performance that has identified this relationship to be strictly linear (e.g., Brauer et al., 2017; Haynes et al., 2002).

This study also provides valuable insights to practitioners concerning divestiture programs. It was previously argued that firms should divest in a structured, deliberate, and proactive manner (Dranikoff et al., 2002; Mankins et al., 2008). The results of this study highlight that the liberating impact and potentially positive effect of divestitures on performance, as identified in prior literature, may diminish after many years of intensive divestment. Further, managers have to make sure to free sufficient resources and initiate real change. At the same time, they have to careful not to overwhelm their organization and not to introduce too high levels of uncertainty and complexity associated with too much change, e.g., when selling the main business of a firm and focusing on a smaller high-growth segment.

2.5.2 Limitations and future research

This study is subject to multiple limitations and opens avenues for future research. First, the results imply that future divestiture research should further explore and test the possibility of a non-linear performance relationship, the existence of experience effects, and program effects.

Second, future studies should test the generalizability of results in different geographic and industrial settings. This study takes a European perspective, while most prior research has focused on the US. Future research could, for example, test results in global or other regional settings. Divestiture research (e.g., Haynes et al., 2002) has deliberately excluded industries based on data comparability such as the financial services or real estate industries. It would be valuable to explore similar research questions in longitudinal settings for those industries.

Third, the clustering of the transactions obtained from the *SDC* database as program or strategic sell-offs is based on firm announcements and, in many cases, other primary or secondary coverage. This does require not only an explicit communication of the rationale or program but also the availability of the original coverage. However, due to the length of the panel, primary sources such as a firm's press archives were not readily available for earlier periods. Thus, operationalization often relies on secondary sources and databases and the prerequisite that these provide sufficient and complete coverage for those periods. Future research can diminish

this issue by focusing on markets where official disclosure is required and stored, or by focusing on shorter, more recent periods. While M&A databases provide additional information, such as the deal synopsis in *SDC* or announcement documents for more recent deals in *Zephyr*, these mostly take the perspective of the acquirer and only seldom that of the seller.

A fourth limitation is that sell-offs are operationalized as relative firm size divested based on unit sales, transaction price, unit assets, and unit employees. This approach is chosen as not deliberately to exclude transactions. While lack of transaction financials and unit data is a well-known issue (Haynes et al., 2002; Nanda & Narayanan, 1999), an ideal setting should be based on either one of the size alternatives, preferably, unit sales or transaction price.

Fifth, the insignificant results concerning total sell-off experience challenge previous research. Further work is necessary to confirm or repel experience effects on performance. When assessing experience, one difficulty that emerges is how to operationalize experience. Following prior research, I operationalize experience as the number of previous sell-offs (Bergh & Lim, 2008). At the same time, I acknowledge this difficulty and vary both the year and size thresholds for sell-offs to be considered. However, the results remain robust. Future research should test further variations of experience.

2.5.3 Conclusion

This study finds significant performance and experience effects for sell-offs that form a divestiture program. The results suggest that a potential learning transfer from program sell-offs is outweighed by the negative performance associated with years of restructuring or inherent to firms undergoing a divestiture program. Thus, the study contributes to research on the performance effects of divestiture experience and challenges prior research that has found this effect to be generally positive (Bergh & Lim, 2008; Brauer et al., 2017; Humphery-Jenner et al., 2019). Further, initial evidence suggests that it may be decisive for program sell-offs in a focal period to be substantial enough in size for a performance effect to be positive. At the same time, it suggests that while divestiture programs can lead to improved performance, they do not serve as a universal solution to improve firm performance. Overall, the results indicate that frequent divestiture programs can be detrimental to long-term performance and that the completion of a divestiture program marks the entering of more shallow and stable waters. Finally, the results stress the importance of considering divestiture programs in divestiture research. Further research is necessary to confirm the insignificant results concerning sell-offs in general and strategic sell-offs.

2.6 Appendix

Appendix 2-1: *Means, standard deviations and correlations*

	Mean	**Std. Dev.**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1. Firm performance	0.08	0.07	1.00*												
2. Total sell-off intensity	0.02	0.07	-0.08*	1.00*											
3. Strategic sell-off intensity	0.02	0.06	-0.06*	0.93*	1.00*										
4. Program sell-off intensity	0.01	0.05	-0.06*	0.71*	0.73*	1.00*									
5. Total sell-off experience	2.42	2.79	-0.12*	0.18*	0.17*	0.17*	1.00*								
6. Strategic sell-off experience	1.76	2.38	-0.08*	0.17*	0.17*	0.17*	0.93*	1.00*							
7. Program sell-off experience	1.37	2.48	-0.07*	0.15*	0.15*	0.18*	0.89*	0.90*	1.00*						
8. Program experience	0.91	1.32	-0.09*	0.18*	0.17*	0.21*	0.74*	0.75*	0.83*	1.00*					
9. Program end	0.08	0.27	-0.04	0.24*	0.27*	0.38*	0.18*	0.17*	0.20*	0.24*	1.00*				
10. Firm prior performance	0.09	0.07	0.72*	-0.11*	-0.09*	-0.08*	-0.20*	-0.17*	-0.14*	-0.16*	-0.07*	1.00*			
11. Firm current ratio	1.48	0.74	0.16*	-0.03	-0.03	-0.08*	-0.09*	-0.08*	-0.10*	-0.10*	-0.06*	0.18*	1.00*		
12. Firm size	15.70	1.38	-0.15*	-0.01	-0.01	0.03	0.12*	0.07*	0.10*	0.14*	0.06*	-0.21*	-0.33*	1.00*	
13. Firm leverage	0.26	0.15	-0.05*	0.07*	0.04	0.07*	0.05*	0.01	0.03	0.05*	0.05*	-0.09*	-0.38*	0.19*	1.00*

* $p < 0.05$

Appendix 2-2: *Spearman's rank correlation coefficients*

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. CAR $_{-1, 1}$	1.00							
2. CAR $_{-1, 5}$	0.74***	1.00						
3. BHAR $_{0, 250}$	0.09	0.18**	1.00					
4. BHAR $_{0, 500}$	0.09	0.12*	0.75***	1.00				
5. BHAR $_{0, 750}$	0.09	0.12	0.75	0.83*	1.00			
6. ROA $_{t+1}$	0.06	0.06	0.05	0.06	0.06	1.00		
7. ROA $_{t+1, t+2}$	0.06	0.07	0.05	0.07	0.08	0.99***	1.00	
8. ROA $_{t+1, t+3}$	0.07	0.07	0.04	0.06	0.08	0.98***	0.99***	1.00

Note: CAR based on the MM.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3 THE DIVERSITY OF DIVESTITURE: WHEN FIRMS ANNOUNCE DIVESTITURE PROGRAMS AND ITS MARKET REACTION

ABSTRACT

Divestitures mark a substantial adjustment of a firm's strategy. Based on a sample of 101 European firms, this study examines when firms announce a divestiture program – a series of divestitures that share a common rationale – in contrast to a stand-alone divestiture and how the market reacts to the announcement of such a program. The results show that firms choose to announce divestiture programs when they are financially distressed or after a change in top management. I find the market reaction to divestiture program announcements to vary and to increase when a program value is disclosed – particularly for programs driven by a financial rationale or announced as part of a broader restructuring program. For programs with a refocusing rationale, the specification of assets is found to increase market returns.

Keywords: *divestiture programs (characteristics, antecedents, announcement returns), management turnover, financial distress, signaling*

This chapter is based on a working paper co-authored by Florian Kiesel and Dirk Schiereck.

3.1 Introduction

The causes and consequences of divestitures have already been well examined in literature (e.g., Brauer, 2006; Kolev, 2016; Lee & Madhavan, 2010; Vidal & Mitchell, 2018). Most studies examine divestitures as "isolated, self-contained events" (Brauer & Schimmer, 2010: 85) or "one-off activities" (Mankins et al., 2008: 99). However, when firms adjust their strategy and restructure their portfolio of business units, they often engage in a series of transactions rather than single transactions (Bhabra et al., 1999; Bowman & Singh, 1993; Brauer & Schimmer, 2010; Haynes et al., 2002; Laamanen & Keil, 2008; Schipper & Thompson, 1983). A series of divestitures that share a common rationale constitutes a divestiture program. Divestitures that are part of a program are interrelated, coordinated, and strategically consistent (Brauer & Schimmer, 2010; Kronenwett, 2010). Divestiture programs can be clearly distinguished from stand-alone divestitures. In contrast to a single transaction, a series of transactions that are undertaken in a coherent manner marks a major adjustment of a firm's strategy and, eventually, its portfolio of businesses. Further, in covering a more prolonged, often multi-year period, it signals a substantial commitment of management to the initiated change. Thus, it indicates a strategic rather than a tactical rationale (Brauer & Schimmer, 2010). Prior research has only selectively examined divestitures as part of a series (Berger & Ofek, 1999; Brauer & Schimmer, 2010). Berger and Ofek (1999) find refocusing programs to be often preceded by a corporate control event, and that abnormal returns for the related announcements are positive and significant. Brauer and Schimmer (2010) examine the market reaction to divestitures that are part of a program and find them to be superior to stand-alone divestitures.

In this study, I analyze when firms decide to announce divestiture programs and its capital market reaction. Therefore, I collect a unique dataset of 148 divestiture programs announced by a cross-industry and cross-country sample of 101 European firms between 1997 and 2014. The study seeks to advance divestiture research in multiple ways. First, it provides a detailed description of the occurrence and rationales of divestiture programs. Second, it considers the diversity of divestiture by comparing when firms decide to announce a divestiture program in contrast to a stand-alone divestiture. Third, it examines the market reaction to programs by rationale and considers the degree of information disclosure in program announcements.

Three primary program rationales emerge in this study. Programs are, to a similar extent, undertaken for financial motives in response to debt or liquidity concerns, out of a refocusing rationale in a move to exit specific industries or geographies, or out of a streamlining rationale aimed at cleaning up a firm's business portfolio. The study acknowledges the multiplicity of

rationales in contrast to prior research that focused solely on refocusing (Berger & Ofek, 1999). Further, regarding the announcement timing, divestiture programs are found to either be announced solely, as part of a broader restructuring program, or as part of an acquisition. Overall, program announcements are found to often coincide with a firm's results presentation.

I consider a variety of antecedents to help explain a firm's decision to announce a divestiture program in contrast to a stand-alone divestiture. I find that firms often choose to announce a program after a change in top management or when financially distressed. Thus, they seem to consider programs as the preferred choice when they face uncertainty and need to restore market trust. This confirms the proposition that programs mark major and likely more far-reaching changes than stand-alone divestitures. As such, they allow firms to restore financial health and serve as strong signaling to the market. Further, I acknowledge recent divestiture research and consider prior divestiture experience (e.g., Bergh & Lim, 2008; Peruffo et al., 2018) and industry waves (e.g., Brauer & Wiersema, 2012; McNamara, Haleblian, & Dykes, 2008). I find that only distant experience increases the likelihood of a divestiture program and that firms are less likely to announce a program after a divestiture wave in their primary industry.

In line with prior divestiture research (cf. Brauer & Schimmer, 2010; Lee & Madhavan, 2010), programs are found to result in positive abnormal returns. Returns and their drivers vary by program rationale. Generally, while program announcements often provide a strategic context, they may lack the specificity of stand-alone divestiture announcements. I draw on signaling theory to argue that the effectiveness of the seller's signaling is dependent on the degree of information shared with investors and that the provision of sufficient information increases the credibility of a program. Indeed, communicating a program value is found to be a significant positive predictor of abnormal returns. The results suggest that it is primarily for programs with a financial rationale or those announced as part of a restructuring program, where program value increases the signaling effectiveness and credibility of a divestiture program. Further, for divestiture programs with a refocusing rationale, the results indicate that specifying the assets to be divested is found to predict positive abnormal returns significantly.

This study is divided into five sections, including this introduction. The second section provides the theory and hypotheses. The third section describes the sample, presents the variables under study, and outlines the methods for analysis. The fourth section reports the results. The final section discusses the results, its implications, its limitations, and draws the conclusion.

3.2 Theoretical background and hypotheses

In the following, I present the theoretical background to derive the research hypotheses. First, I elaborate on the effect of an array of antecedents of divestiture on a firm's decision when to announce a program in contrast to a stand-alone transaction. Second, I discuss the relation between the provision of program specifics and the market reaction to program announcements.

3.2.1 The decision between divestiture programs and stand-alone divestitures

Prior literature has exhaustively discussed the antecedents of divestitures (e.g., Brauer, 2006; Kolev, 2016). However, it has mostly focused on stand-alone divestitures and has not examined the antecedents of divestitures programs, nor has it examined how antecedents differ between stand-alone divestitures and divestiture programs. Generally, literature has examined and identified antecedents of divestitures concerning governance, performance, strategy, and firm environment (Brauer, 2006; Johnson, 1996). In their study on refocusing firms, Berger and Ofek (1999) have come closest to examining the antecedents of divestiture programs. They examine firms that decrease diversification through divestiture, however, without differentiating between refocusing that involves single in contrast to multiple transactions. They find refocusing to be often preceded by a corporate control event such as a new CEO, compensation changes, shareholder pressure, or financial distress. I built on their findings and other antecedents that were examined in the context of stand-alone divestitures when differentiating between programs and stand-alone divestitures. Given that divestiture programs often mark a major adjustment of a firm's strategy and its portfolio of businesses, I examined antecedents that are most likely to ignite such major changes: **CEO turnover**, **new blockholder**, **financial distress**, prior **divestiture experience**, and **industry divestiture waves**.

CEO turnover

The appointment of a new CEO often changes future corporate decision-making (Weisbach, 1995). Research shows that CEO tenure is related to an economic investment cycle and that agency problems increase with tenure, spurring both overinvestment and inefficiencies (Pan, Wang, & Weisbach, 2016). Managerial decisions that do not consider the economic interests of a firm but serve personal interests, e.g., in the form of "empire building", constitute managerial opportunism. Such opportunism can easily lead to disadvantageous situations, e.g., an overly diversified firm or the accumulation of debt as a consequence of too many or too large acquisitions (Haynes et al., 2002; Hoskisson & Turk, 1990; Markides, 1995). In such a situation, new CEOs will try to reverse errors from the past before they are attributed to them (Weisbach,

1995). Even if firms operate efficiently and are well-managed, new CEOs may want to clean their house to have a solid foundation for their policies. Research shows that this holds independent of whether a new CEO follows a successful but retiring or a poorly performing and fired predecessor (Weisbach, 1995). Further, the likelihood of significant changes in strategy is higher when a new CEO comes from outside the organization (Wiersema, 1992). Restructuring through divestitures is an option to reverse poor prior decisions (Haynes et al., 2002). Prior studies on divestitures and refocusing unanimously identify a change in top management as an antecedent for divestment (Berger & Ofek, 1999; Feldman et al., 2016; Hayward & Shimizu, 2006; Pan et al., 2016; Shimizu & Hitt, 2005; Weisbach, 1995). Also, poorly performing acquired units are likely to be divested following a change in CEO (Weisbach, 1995). Accordingly, Pan et al. (2016) find the probability of divesting to increase sharply in the year of turnover, peak in the following year, and continuously decrease thereafter.

The announcement of a divestiture serves as a strong and easily observable signal to stakeholders that the new CEO is in full control and is taking immediate action. This effect and the house-cleaning signal is likely even stronger if the new CEO announces a divestiture program and a full portfolio review instead of a single transaction. Further, in contrast to a stand-alone divestiture, the announcement of a program does not yet require the identification of specific assets to divest. Instead, it allows an outsider to signal immediate action to the firm's stakeholders while at the same time granting time to reach a full understanding of the business portfolio.

> **Hypothesis 3.1:** Firms will engage in divestiture programs rather than stand-alone divestitures following the appointment of a new CEO.

New blockholder

Blockholders are shareholders that hold more than 5% of a firm's stock (Bergh et al., 2019). They are argued to serve as a monitoring instance and have a disciplinary effect on a firm's management (Bethel & Liebeskind, 1993; Jensen & Meckling, 1976). As such, they help to overcome agency problems and to align interests between shareholders and managers (Kolev, 2016). New large shareholders may find themselves just as motivated as a new CEO to challenge inefficient strategies in an attempt to maximize the value of their holding. However, research also finds dividend payout rates to increase with blockholder ownership (Bethel & Liebeskind, 1993), suggesting that they may also be driven by short-term motivation when initiating divestments. When an investor enters a firm that is believed to be mismanaged and uses the power of his voting rights to exert pressure on managers and "influence the processes

or outcomes" of decision-making, he engages in what is termed "activism" (Chen & Feldman, 2018; Ryan & Schneider, 2002: 555). Activist investors are typically hedge funds. Their behavior includes voting proxies to counter management positions, shareholder proposals, and frequent contact with a firm's management (Ryan & Schneider, 2002). Other investors that actively engage with the management and its strategy are private equity funds, competitors, or strategic investors. In contrast, most of the blockholders that typically buy into large corporations are global asset management firms, banks, and other financial institutions. Prior research has offered mixed results concerning the impact of blockholders on divestiture decisions. In a meta-analysis on the antecedents of corporate divestitures, Kolev (2016) does not find an effect. In contrast, some studies have associated blockholder equity or shareholder pressure with an increased likelihood to divest (Berger & Ofek, 1999; Bethel & Liebeskind, 1993; Hoskisson et al., 1994) and to favor spin-offs over other modes of divestiture (Bergh & Sharp, 2015).

A new blockholder that exerts pressure on managers will likely do so in a targeted fashion to maximize the outcome of his actions. Thus, the investor is more likely to focus on specific units instead of initiating a wide-ranging program, whose outcome is difficult to foresee. This is also supported by Bergh's (1995) finding that blockholder ownership is related negatively to size and relatedness of units sold, suggesting that blockholders favor the sale of small and unrelated units, whose impact on firm operations is more predictable and less disruptive.

> **Hypothesis 3.2:** Firms will engage in stand-alone divestitures rather than divestiture programs following the buy-in of a new blockholder.

Financial distress

A firm that is in financial distress and under pressure from its investors or its banks may consider restructuring through divestitures as a possible way out (Dranikoff et al., 2002; Ravenscraft & Scherer, 1987). Indeed, financial distress has been described as the most prominent predictor for divestitures (Brauer, 2006; Johnson, 1996). Pressure on firm management may have exacerbated due to poor stock market performance, the incurrence of losses, or because the firm has accumulated sizeable amounts of debt. Research has argued that poor performance indicates organizational efficiency problems, whereas strong performance indicates the effectiveness of current strategies (Iyer & Miller, 2008; Johnson, 1996; Kolev, 2016; Ravenscraft & Scherer, 1987). Other than organizational or financial restructuring, portfolio restructuring in terms of divestitures may then be an option to reduce efficiency problems or provide financial leeway (Hamilton & Chow, 1993; John & Ofek, 1995; Lang et

al., 1995). An overwhelming body of literature has linked divestiture to financial distress or poor performance (Berger & Ofek, 1999; Brauer, 2006; Chang, 1996; Duhaime & Grant, 1984; Feldman et al., 2016; Montgomery & Thomas, 1988; Ravenscraft & Scherer, 1987). Berger and Ofek (1999) find the occurrence of debt restructuring and Chapter 11 filing to be significantly higher for refocusing firms. Interestingly, while research has also found that low-performing firms can increase performance through divestitures, they have been found to still perform below competitors (Montgomery & Thomas, 1988; Vidal & Mitchell, 2018).

When a firm is financially distressed, a single divestiture may not be enough to satisfy its financial needs and demands from investors and banks. In contrast, the announcement of a divestiture program signals action at times when action is demanded and allows reinstating corporate efficiency through systematically reviewing the portfolio.

> **Hypothesis 3.3:** Firms will engage in divestiture programs rather than stand-alone divestitures when they are in financial distress.

Divestiture experience

Learning theory argues that a firm's capability to perform an action increases as it accumulates knowledge and learns over time from repeatedly engaging in similar actions (Levitt & March, 1988). Given that divestitures are complex events involving a multi-stage process, knowledge and learning from previous divestitures may help firms to master the complexity and increase their likelihood to divest again (Bergh & Lim, 2008; Brauer, 2006; Brauer et al., 2017; Kolev, 2016). Indeed, a large body of literature has found that divestiture likelihood increases with divestiture experience (Kolev, 2016; Peruffo et al., 2018; Shimizu & Hitt, 2005; Villalonga & McGahan, 2005). It has been argued that the patterns established from prior experience create pressure for managers to follow in future decision-making (Kolev, 2016). On the contrary, firms that have never engaged in divestitures may not even consider them as a viable move at all (Shimizu & Hitt, 2005). The expectation of a positive performance effect as described by large parts of literature (e.g., Lee & Madhavan, 2010) and the confidence from prior experience should then increase the likelihood of management to divest again (Kolev, 2016).

The frequency of divestitures in prior years does not only allow for inferences on a firm’s capability to divest in the future but also its need to do so. The opportunities for divestiture in a firm’s portfolio of businesses are naturally limited as long as divestitures are supposed to be in line with a firm’s strategy and to create value. Thus, while firms may still undertake single divestitures, recent divestitures should lower the need for a wide-ranging divestiture program.

Hypothesis 3.4: Firms will engage in stand-alone divestitures rather than divestiture programs based on their prior divestiture experience.

Industry divestiture wave

Acquisitions and divestitures alike often cluster within industries and occur in what has been termed "industry waves" (Brauer & Wiersema, 2012; McNamara et al., 2008; Mulherin & Boone, 2000). Such waves are characterized by a sharp surge in the number of undertaken transactions. After some years with heightened transaction levels, their number drops back to pre-wave levels (Brauer & Wiersema, 2012; Haleblian, McNamara, Kolev, & Dykes, 2012; McNamara et al., 2008). Although, a number of explanations for acquisition waves have been discussed, the financial theory was so far unable to explain their occurrence satisfactory (Harford, 2005; Park, Morel, & Madhavan, 2009). Prior research has mostly examined the relation between industry waves and abnormal returns. It has found the timing or positioning of a firm's restructuring moves to influence stock market reaction. Firms that divest at the peak of a wave have been found to receive the lowest abnormal returns (e.g., Brauer & Wiersema, 2012; McNamara et al., 2008). Due to high levels of information asymmetry, firms that divest at a late stage of a wave will likely be perceived to imitate the behavior of their industry peers (Brauer & Wiersema, 2012). The decision for when a firm enters a wave has been argued to be shaped by their awareness for the firm environment, their motivation to act, and their capability to do so (Haleblian et al., 2012). Also, divestors are more likely to divest during industry merger waves given more favorable market conditions (Humphery-Jenner et al., 2019).

While valuation during an industry divestiture wave is typically higher (cf. Humphery-Jenner et al., 2019), investors may react less enthusiastic to late movers suspecting them to act imitative or opportunistic rather than to improve a firm's efficiency (cf. Brauer & Wiersema, 2012). Information asymmetry may hamper the liberating effect of a divestiture program on the stock market. Thus, firms may prefer other restructuring moves or stand-alone divestitures over divestiture programs at a late stage of an industry divestiture wave.

Hypothesis 3.5: Firms will be less likely to engage in divestiture programs during a divestiture wave in their primary industry.

3.2.2 The market reaction to divestiture program announcements

Divestiture research has extensively examined divestiture wealth effects in the context of stand-alone divestiture announcements and agrees that these effects are positive (cf. Brauer & Schimmer, 2010; Lee & Madhavan, 2010; Vidal & Mitchell, 2018). Further, research has found

the market reaction to the announcement of individual divestitures that are part of a program to be superior compared to stand-alone divestitures (Brauer & Schimmer, 2010). In analyses in ***Chapters 2 and 4,*** I compare program sell-offs and non-program sell-offs, I find abnormal returns for both to be significant. While returns for program sell-offs are higher, the difference is not significant. However, an OLS regression predicts a positive and significant effect of program affiliation on the market reaction in a consolidating industry (see ***Chapter 4).***

In contrast to stand-alone divestiture announcements, this study focuses on divestiture program announcements that will likely result in multiple divestitures. The effects of announcements that entail multiple divestitures have primarily been examined in the context of refocusing or downscoping moves of large US corporations during the 1980s (cf. Johnson, 1996). These studies find that such refocusing announcements that may or may not entail multiple transactions are rewarded with positive abnormal returns (Berger & Ofek, 1999; Markides, 1992a; Slovin, Sushka, & Ferraro, 1995). This study extends the research scope beyond the refocusing rationale by also considering such moves that do not necessarily narrow a firm's focus, such as streamlining or financial motives.

A divestiture program is an interrelated, coordinated, and strategically consistent series of divestitures (Brauer & Schimmer, 2010; Kronenwett, 2010). In contrast to a single divestiture, divestiture programs often entail a significant change in strategy and signal a commitment to this change in terms of future transactions. When announcing a program, the firm antedates part of the signaling that would otherwise occur at the time of the individual divestitures' announcements. Through a divestiture program announcement, a firm induces and commits to a coherent strategy for the subsequent individual announcements to follow. If the restructuring move signals such a coherent strategy, has an impact on future income, was not already expected before, and did not fall short of investors' expectations, it should result in positive abnormal returns (Bowman & Singh, 1993).

This study draws from signaling theory to explain the abnormal returns around divestiture program announcements. Signaling theory describes a behavior where "one party, the sender must choose whether and how to communicate (or signal) ... information, and the other party, the receiver, must choose how to interpret the signal" (Connelly, Certo, Ireland, & Reutzel, 2011: 39). Thus, in signaling theory, a divestor's behavior ultimately reduces information asymmetry by providing information to the uninformed investor. Research has also relied on screening theory to explain the functioning of information markets (Bergh et al., 2019). It focuses on the buyer-side and the usage of screens to reduce information asymmetry (Stiglitz,

1975, 1979). Bergh et al. (2019) argue that investors use screens to overcome information disadvantages in the context of divestitures, such as changes in blockholder equity.

In the following, I focus on the information problems that arise with the announcement of a divestiture program. Given high levels of information asymmetry and ambiguity about the source of value creation, investors will likely find it challenging to assess the consequences of divestitures (Bergh et al., 2019; Brauer & Wiersema, 2012). This issue becomes even more pressing when firms announce divestiture programs in a state of uncertainty or when financially distressed. Divestiture announcements often lack financials (Haynes et al., 2002; Lee & Madhavan, 2010), and fail to reveal the motivation behind divestitures or conceal it behind professionalized corporate communications. However, while individual announcements call out the assets to divest, divestiture program announcements may not even reveal those and refer to unspecified asset sales.

The quality and subsequent reception of the signal sent to the investors in the form of the program announcement will likely depend on what information concerning the scope and scale of the program is shared with the market. The provision of such data is what differentiates a credible divestiture program from an unspecific mulling of assets sales. If sufficient information is both provided and perceived positively by investors, it should be a predictor of market reaction. In particular, I examine **program value**, **program length,** and whether specific **program assets** were **named**, in terms of industries or business units. The sending of these signals comes at a certain cost to a firm in that they shape the future expectations of investors, who will ultimately hold the firm accountable to its commitment through the market valuation. Thus, a firm that is unable to fulfill what it announced will have to bear additional costs in terms of higher market return penalties.

Prior divestiture research finds the deal value or transaction price and its declaration to be a predictor of abnormal returns in many instances (e.g., Afshar, Taffler, & Sudarsanam, 1992; Klein, 1986; Mulherin & Boone, 2000). Not disclosing a price can easily be interpreted as concealing unfavorable information (Haynes et al., 2002). The same should hold for divestiture **program value**. Many of the firms in the sample divest for financial reasons, e.g., debt reduction, liquidity, or profitability concerns. In such cases, the market may already anticipate a divestiture program and have expectations on its scope and scale. For the market reaction to be positive, the announced program value may not fall short of these expectations. Thus, the program value should play an even more pronounced role for programs undertaken out of a financial rationale. For such programs, the perceived commitment to successfully address a

firm's financial issues is likely to increase with the provision of a program value. In the same vein, for programs announced with a refocusing rationale, the value to be divested should be of less importance than the refocusing move itself.

> **Hypothesis 3.6:** The provision of a program value is associated positively with the abnormal returns of a divestiture program; this effect is greater for programs with a financial rationale.

For programs undertaken for a financial rationale or as one of multiple restructuring moves, it should be not only the provision of program value but also the size of it that signals commitment, allows inferences on its economic significance, and thus increases the credibility of such a divestiture program.

> **Hypothesis 3.7:** Abnormal return increases with the value of a divestiture program for programs that are announced as part of a restructuring program or are undertaken for a financial rationale.

It the same vein, the provision of a timeline or **program length** should reduce information asymmetries. However, the importance of program length likely differs by program rationale. For programs with a financial rationale, the provision of program length should be less critical. The financial rationale itself does already imply a timely implementation of the program. On the other hand, for refocusing moves, which are often long-term oriented, the provision of a timeline may significantly increase the credibility of such an announcement. Thus, the provision of program length should be valued more positively in the context of refocusing:

> **Hypothesis 3.8:** Program length is associated positively with the abnormal returns of a divestiture program; this effect is greater for programs with a refocusing rationale.

The **naming** of specific **assets** to be targeted by a **program** should add further value to the information quality of a divestiture program announcement. For programs driven by a refocusing rationale, it contributes to the credibility of a firm's refocusing intent if specific assets can be named. For firms that divest out of financial motivations, the naming of specific assets should be less important than the mere fact that the firm is willing to divest exhaustively.

> **Hypothesis 3.9:** The naming of specific assets to be divested is associated positively with the abnormal returns of a divestiture program; this effect is greater for programs with a refocusing rationale.

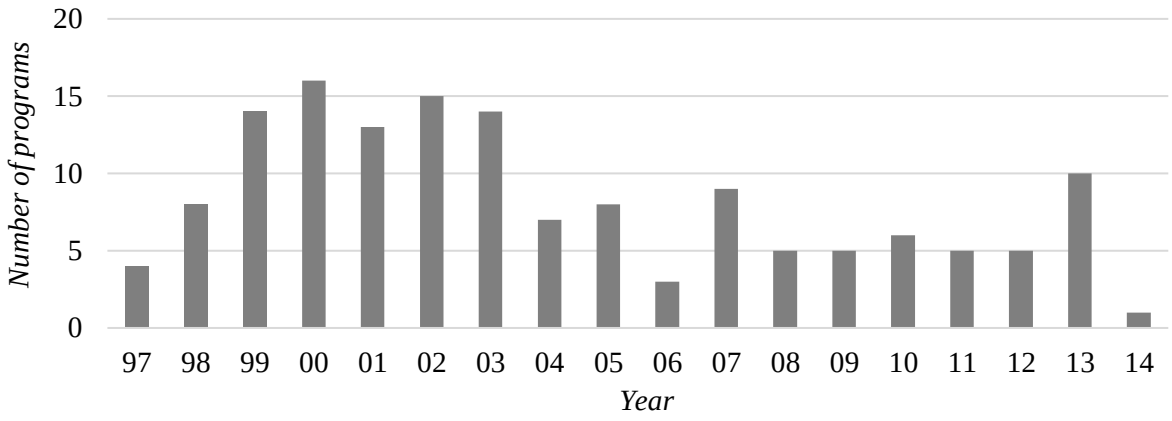
3.3 Methods

In the methods section, I describe the underlying sample, the employed measures, and the methods of analysis to test the research hypotheses.

3.3.1 Sample

The sample was drawn from the constituents of the STOXX Europe 600 in 2000. This index covers the largest European firms by market capitalization from a broad range of industries. Prior literature on divestitures has mostly focused on the US (e.g., Berger & Ofek, 1999; Feldman et al., 2016), while more recent studies have also taken a European or global but industry-specific perspective (e.g., Bergh et al., 2019; Brauer & Schimmer, 2010). In line with prior literature, I excluded industries that allow for limited comparability of accounting data across industries: the financial industry, trading/ retail industry (Berger & Ofek, 1999; Haynes et al., 2002) and the regulated energy sector. The study covers divestiture program announcements in the period from 1997 to 2014. At least four consecutive years of data between 1995 and 2014 were required for a firm to be included in the analysis.[9] This resulted in a sample of 271 firms across Europe. Next, I systematically searched primary (e.g., press releases) and secondary sources (e.g., financial press, newswires) using the *Factiva* database for explicit announcements of divestiture programs. Divestiture programs are often also labeled as disposal programs or asset sales plans. To be considered in the analysis, a single announcement needed to refer to the divestiture of multiple units or assets, the divestiture of a certain amount of sales

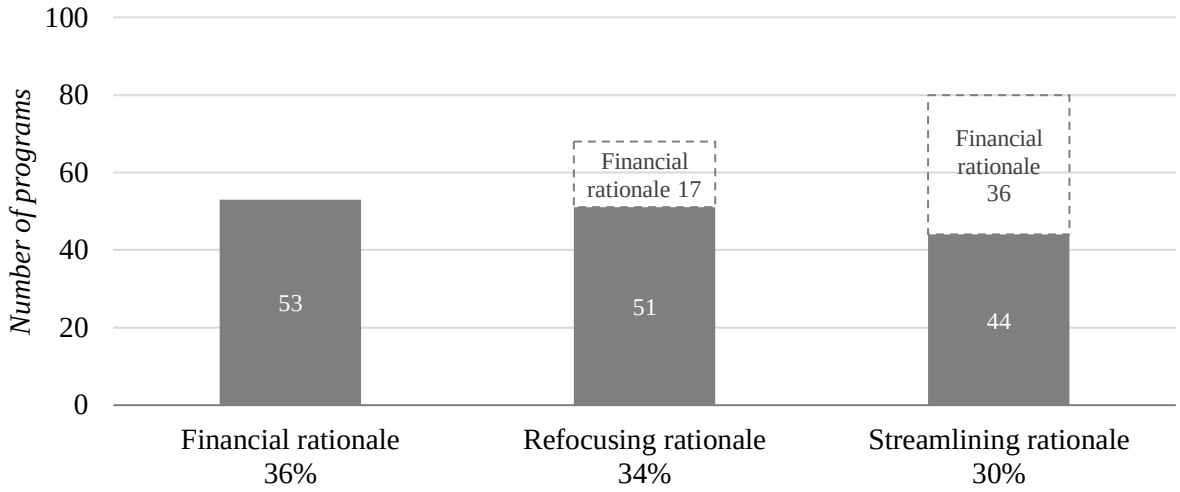
Figure 3-1: *Development of divestiture programs over time*



Note: N=148, excludes follow-up announcements

[9] Construction of variables required data for the two years prior to a focal year. Thus, a minimum of four years allowed for at least two observation periods.

Figure 3-2: *Divestiture programs by rationale*



Note: N=148, excludes follow-up announcements

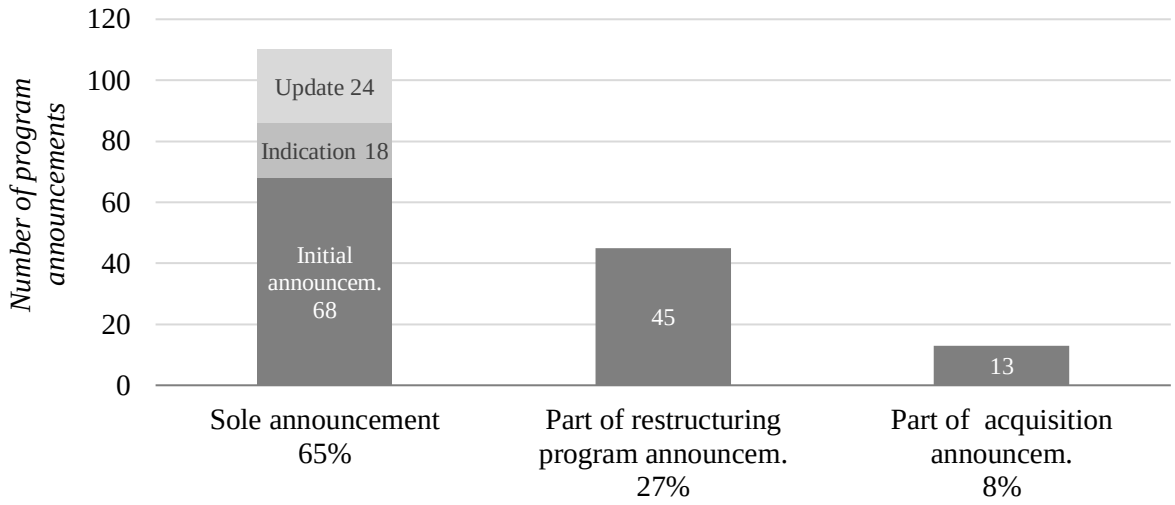
or assets, or the general intent to restructure the business portfolio or parts thereof. Finally, a sample of 101 firms that have made 168 announcements for 148 divestiture programs between 1997 and 2014 remained. Announcements peaked between 1999 and 2003 (see ***Figure 3-1*****).**

Program rationale

Following a thorough analysis of the divestiture program announcements and their coverage by secondary sources, three program rationales stood out: **financial** motives, **refocusing**, and **streamlining**. These rationales are in line with prior literature on divestitures (Berger & Ofek, 1999; Brauer, 2006; Brauer & Schimmer, 2010; Hamilton & Chow, 1993; Montgomery et al., 1984). Programs that are undertaken out of **financial** motives divest businesses or assets in response to debt or liquidity concerns, e.g., a struggling industrial conglomerate that tries to reduce its massive debt.[10] Firms that divest out of a financial rationale may also intend to refocus through their program. In such a case, refocusing is considered a secondary rationale, with the primary rationale still being the financial motive (see ***Figure 3-2***, dotted bar segments). **Refocusing** programs divest businesses or assets to exit specific industries or geographies and consequently increase the focus of the business portfolio, e.g., an industrial conglomerate exiting its chemicals business to focus on its engineering core. Prior divestiture research has also referred to refocusing as downscoping (e.g., Johnson, 1996) and framed divestitures that follow a refocusing rationale as strategic (Montgomery et al., 1984). **Streamlining** programs

[10] All program announcements that referred concerning the usage of proceeds primarily to the reduction of debt or the restoring of cash flows are categorized as financially motivated programs.

Figure 3-3: *Divestiture program announcements by announcement type*



Note: N=168, includes follow-up announcements

divest businesses or assets as part of a portfolio review in a "housecleaning fashion as a means of ridding the firm of unwanted or undesired units" (Montgomery et al., 1984: 833) or with the intention of "clearing the decks" (Lee & Madhavan, 2010: 1352). In contrast to refocusing programs, streamlining programs do not imply exiting an industry or geography, e.g., a hotel conglomerate that announces to review and divest part of its hotel portfolio. In addition to the aforementioned rationales, programs may be linked to or directly follow a previous **acquisition.** Thus, the presented rationale may be a direct consequence of the acquisition. It may involve both acquired and previously owned units, e.g., a firm may refocus through both acquisitions and divestitures, a firm may divest to streamline its portfolio or to reduce its debt levels following a significant acquisition.

Announcement types

The context in which divestiture programs are announced varies and does so often with the program rationale. Three major divestiture program announcement types were identified: **sole announcement**, **part of an acquisition announcement**, and **part of a restructuring program announcement** (see ***Figure 3-3***). In a **sole announcement**, the firm announces a divestiture program without the announcement of other restructuring moves. Based on the sample, those were clustered as *initial announcement*, *indications*, and *updates*. An *initial announcement* is, for example, the announcement to realize EUR 1.0 billion from divesting non-core assets over the next 12 months. When tracking programs back to their original announcement, it became apparent that firms often refer to *indications* or single statements made by their top management

Table 3-1: *Specifics of the largest divestiture programs in the sample*

Divestor		Program name	Year	Primary program rationale	Announcement type	Program characteristics					Description
						Program assets named	**Program value** (in % to be divested)	**Expected proceeds** (in EUR M)	**Sales to be divested** (in EUR M)	**Program length** (in months)	
Top-5 by program value	Hays	Sale of non-personnel business	2003	Refocusing	Sole announcement	Express mail delivery, document storage, goods distribution	56	n/a	2200	n/a	Strategic review of new CEO concluded insufficient linkages between divisions. Exit three divisions and focus on personnel unit.
	GEA/ MG	Sale of chemicals business	2003	Refocusing	Sole announcement	Dynamit Nobel AG, Solvadis AG	46	n/a	n/a	15	New strategy by new CEO to focus on engineering and exit chemicals.
	Alcatel-Lucent	Shift Plan	2013	Streamlining	Part of a restructuring program announcem.	Unspecified	44	1000	n/a	30	Three-year plan by new CEO incl. EUR 1B in unspecified asset sales & further measures.
	Lonmin	Sale of coal business	1999	Refocusing	Sole announcement (Indication)	Ashanti, coal interests	42	800	n/a	n/a	Focus on pure precious metals business and exit coal business and interests.
	Scottish & Newcastle	Sale of pubs	2002	Streamlining	Sole announcement	Unspecified – 1,500 pubs	40	3500	n/a	10	Sale of up to 1,500 UK pubs with the possibility of a lease-back option.
Top-5 by expected proceeds	Deutsche Telekom	Sale of non-core assets	2001	Financial motives	Sole announcement (Indication)	Real estate, cable assets, Sprint stake, etc.	10	16500	n/a	10	Confirmation by a spokesperson that operations may be sold to reduce debt.
	Vivendi	Vivendi debt reduction program	2002	Financial motives	Sole announcement	Houghton Mifflin, others	10	10000	n/a	9	Program by new CEO to sell EUR 5B in assets amid pressure to restructure.
	Deutsche Telekom	Sale of non-core assets	2002	Financial motives	Sole announcement	Real estate, cable assets, minority stakes	6	8500	n/a	14	Announcem. by new CEO to reduce debt through the sale of non-strategic assets.
	BT group	BT transformation program	2000	Financial motives	Part of a restructuring program announcem.	Unspecified	6	8200	n/a	12	Transformation program including GBP 5B disposals to to reduce debt by 2001.
	Rio Tinto	Alcan acquisition financing	2007	Refocusing	Part of an acquisition announcement	Alcan's packaging business, others	13	7300	n/a	n/a	Exit packaging & others to finance part of the GBP 18.7B Rio Tinto-Alcan deal.
Top-5 by sales to be divested	Thyssen Krupp	Portfolio optimization	2011	Financial motives	Sole announcement	Waupaca, Tailored Blanks, others	23	n/a	10000	n/a	Portfolio optimization initiative by new CEO to expand finan. base & increase flexibility.
	Siemens	10-Point-Program	1998	Financial motives	Sole announcement (Update)	Components businesses, IC copper com. cables, Siemens Nixdorf, others	14	n/a	8700	n/a	Update on portfolio measures of 10-Point-Program to revitalize & restore profitability – overall DM 17B to be divested.
	Thyssen Krupp	ThyssenKrupp disposal program	2003	Financial motives	Sole announcement	Unspecified	19	n/a	7000	n/a	Disposal of EUR 7B in a bid to further cut high debt levels bolstering finances.
	Fiat	Sale of Magneti Marelli units	2001	Financial motives	Sole announcement (Indication)	Unspecified - various Marelli units	8	n/a	4500	n/a	Review of options for the portfolio of Marelli to improve financial position.
	Unilever	Sale of specialty chemicals	1997	Refocusing	Sole announcement	Four specialty chemical businesses	9	n/a	3600	6	Exit of specialty chemicals w/ sale of four units over the next three to six months.

Note: Program value based on the sales to be divested or the expected proceeds relative to total sales or enterprise value at the end of the previous fiscal year

and not a detailed program announcement. In an indication, the CEO or CFO announces that the firm is considering divestitures or has initiated a portfolio review that may result in the divestment of assets yet to be identified, e.g., a CFO attends an investor meeting and announces that the firm is currently undertaking a portfolio review to identify assets for divestment. When a firm realizes that the announced scope is not broad enough, refines the original announcement, or adds more specifics, it announces a program *update*. A firm could, for example, announce that its previously outlined program will be extended for another 12 months and that the target will be increased to EUR 1.5 billion. Given that divestiture is not the only way to increase firm efficiency, firms may also resort to restructure in other ways. The decision to divest may then be announced as **part of a restructuring program announcement** among a bundle of various restructuring moves, e.g., a firm announces to tackle its massive debt load and profitability concerns, through divestitures, workforce reductions, and cost-cutting. In other cases, the intent to divest is announced as **part of an acquisition announcement**, e.g., a firm announces the acquisition of a major competitor and announces the divestment of units to refocus on its core or finance the acquisition. With regard to timing, the sample of this study showed that divestiture programs are often announced together with the firm's quarterly or annual **results**. In fact, 48% of the divestiture program announcements in this study were made on the same day or as part of a firm's results announcement. This was accounted for in the event study and the analysis of returns through variables explicitly considering the results announcements.

Table 3-1 provides a perspective on the variety of the sample. It shows the largest divestiture programs in the sample. Respectively, it presents the five largest programs by relative program value and absolute value in terms of expected proceeds and sales to be divested.

3.3.2 Measures

In the following, I describe the variables to examine a firm's decision when to announce a divestiture program and the capital market reaction to such announcements. All accounting data was taken from *Worldscope,* stock and market index data from Thomson Reuters' *Datastream,* and divestitures from *SDC.* Program-specific characteristics were hand-collected based on the program announcements obtained from *Factiva*. Additional variables were compiled manually, as described below.

The decision between divestiture programs and stand-alone divestitures

The **dependent variable** for the first research question describes a firm's choice between a *divestiture program*, a *stand-alone divestiture*, and *non-divesting*. Thus, it draws a clear

distinction to stand-alone divestitures. *Divestitures program* announcements were identified as described in the sample section. The 148 programs were undertaken over 146 firm periods. To avoid sample bias, follow-up announcements to a prior announcement were excluded if that prior announcement was already included in the study. For *stand-alone divestitures*, an initial list of sell-offs undertaken by the sample was obtained from *SDC*.[11] Transactions needed to be flagged as a divestiture deal by *SDC*, be announced between 1997 and 2014 and eventually be completed. Further, I excluded the sale of non-operational assets such as property or buildings and divestitures, where the holding is not reduced to minority holding, e.g., the formation of a 50/50 joint venture. These criteria were applied based on the *SDC* fields *deal type* and *deal synopsis*. Given that the sample included the largest European firms divesting is likely part of their organizational routines. To ensure that only substantial divestitures were included, I required each transaction to divest at least 5% of firm size.[12] The median of the divested firm size of the 101 firms in the sample takes a value of 0.42% for all 2,641 transactions for which size was available. This confirms that most divestitures in the sample were rather small in size and supported setting a size threshold. To avoid the inclusion of divestitures that were part of the identified divestiture programs, I excluded divestitures in the year prior to and the two years past a divestiture program. Overall, I identified 152 divestitures that fulfilled the aforementioned criteria. They were undertaken over 142 firm periods.

The **independent variables** describe those antecedents of divestiture whose effect on the decision between a divestiture program and a stand-alone divestiture was under examination.

CEO turnover. The variable takes a value of 1 if the firm's top executive changed in the focal or the previous year.[13] Depending on the country and the firm, a top executive could either be the chief executive officer (CEO) or the executive chairman of the board of directors. To identify management changes, I built an executive database for the sample by systematically

[11] I built on the divestiture sample presented in ***Chapter 2.*** 57 firms included in that prior study were also part of the current study. For the remaining 44 firms, I obtained new data from *SDC*.

[12] Prior literature has mostly measured divestiture size based on transaction price (e.g., Haynes, Thompson, and Wright, 2002) or unit sales (e.g., Pathak, Hoskisson, and Johnson, 2014). However, given the issue of incomplete transaction financials (Haynes et al., 2002; Nanda and Narayanan, 1999), I employed a multi-step approach to ensure a sample size as large as possible. Where available, I scaled unit sales data with the previous year's parent's sales to measure size. If sales were not available, I used based on their availability in the following order transaction price, including net debt, relative to previous year's enterprise value, unit's assets relative to previous' year's total assets, or divested employees relative to previous year's total employees.

[13] Capturing CEO change and new blockholders in the previous and the focal year, assured that the variable also considers a proper period for programs announced at the end of a year. Applying this approach came closest to measuring the 360 days prior to the actual announcement. Given that the model compared firm periods, also those without any divestiture, it was not possible to operationalize CEO turnover relative to an announcement date.

searching primary (e.g., press releases) and secondary sources (e.g., financial press, newswires) using the *Factiva* database and filtering for the subject "management moves".

New blockholder. The variable takes the value of 1 if the firm received a new blockholder in the focal or previous year. Prior literature has considered shareholders with a holding greater than 5% to be blockholders (e.g., Bergh et al., 2019; Owen et al., 2010). Given, limited off-the-shelf availability of ownership data for Europe and different disclosure requirements, I relied on three sources to build a comprehensive database: annual reports, Factiva, and Bloomberg. Annual reports served as a starting point to identify blockholders for the sample firms. Most firms reported shareholdings above 3% or 5% in their reports. Also, I systematically searched primary (e.g., press releases) and secondary sources (e.g., financial press, newswires) using the Factiva database and filtering for ownership changes. In a last step, I manually reviewed ownership changes through the Bloomberg Terminal, which lists institutional ownership by quarters for most of the periods covered in the observation period. To be considered, a new blockholder needed to take a stake above 5% of the share capital and voting rights. A threshold of 5% assures mandatory disclosure for all of the sample firms. Further, I required a new blockholder to hold a stake above this threshold for at least one year to be considered. As part of the supplementary analysis, I differentiated between passive and non-passive blockholders.

Financial distress variables. I captured financial distress based on three measures: dividend cut, negative net income, and stock underperformance. *Dividend cut* takes a value of 1 if the dividend per share in the past fiscal year is lower than in the year before (e.g., Berger & Ofek, 1999; Owen et al., 2010). *Negative net income* takes the value of 1 if a firm has reported a negative income in the past fiscal year (e.g., Feldman et al., 2016; Lang et al., 1995). Divestiture literature has previously considered prior stock performance as an indicator of financial distress (e.g., Owen et al., 2010). *Stock underperformance* was measured by calculating the cumulative excess returns for the two years prior to the focal period and ranking the firms.[14] The excess returns were calculated by deducting the return of a reference index from the realized return. Given that the STOXX Europe 600, from which the sample was drawn, did not offer return data for the entire observation period, I choose the S&P Europe 350 as the reference index. The bottom quartile of firms was considered to underperform.[15]

[14] In line with prior literature, I also measured stock performance as buy-and-hold abnormal returns (Owen, Shi, and Yawson, 2010). Results were robust.

[15] Prior literature has also considered *interest coverage*. I operationalized it to take a value of 1 if earnings before interest, taxes, depreciation and amortization (EBITDA) relative to total interest expense (e.g. Bergh and Sharp,

Divestiture experience. I measured divestiture experience as the number of divestitures in all three years prior to the focal period (e.g., Humphery-Jenner et al., 2019). Further, I included individual variables for each of the three years. The transaction needed to be a divestiture of operational assets and to capture the entire holding in a unit or reduce the holding to a minority. Again, I required divestitures to exceed a minimum size threshold to be included in the analysis. This ensured that each transaction offered meaningful learning opportunities for the organization. I required divestitures to be greater in size than 0.42%, the upper boundary of the second quartile of the divestiture size distribution. I used experience dummies for the proportion tests.

Divestiture wave. The variable takes a value of 1 if the focal period is within an industry divestiture wave. In case no divestiture wave was identified for the respective industry and period, the variable takes a value of 0. Further, I differentiated in the same manner whether the focal period is before, at, or after the peak of a wave. An industry was defined as all firms sharing the same four-digit SIC code. To identify industry divestiture waves, I followed the methodology proposed by Brauer and Wiersema (2012). I filtered those industries of the sample firms that had at least one year in which more than 30 divestitures were undertaken.[16] Next, I identified the peak of a wave as the year with the highest number of divestitures. The start of a wave was determined as the year where the number of divestitures was less than 50 percent of the peak number. The end was determined as the year where the number of divestitures declined by 50% compared to the peak (McNamara et al., 2008). McNamara et al. (2008) limit the length of waves to a maximum of six periods. Given that many of the waves identified in this study exceeded such a limit, I relaxed this constraint. However, to assure that these further waves constitute a substantial deviation from normal divestiture levels, I required their peak to reach at least double the level of the median divestiture amount in the respective industry. The non-randomness of the identified divestiture waves was confirmed by applying the procedure developed by Harford (2005). The identified divestiture waves are outlined in ***Table 3-2***.

In line with prior literature, I included a number of **control variables** in the analysis and lagged them by one period: *Firm current ratio, firm size, firm leverage,* and *year dummies*. *Firm current ratio* is the level of slack resources and was operationalized as the firm's current assets

2015; Lang, Poulsen, and Stulz, 1995) is less than three (Demiroglu and James, 2015). Given that, the variable exhibited a correlation of 0.75 with *negative net income*. I omitted the variable to avoid multicollinearity issues. Results are robust to replacing the negative net income with interest coverage, which itself is not significant.

[16] The announcement date was used to allocate a divestiture to a certain year.

Table 3-2: *Identified industry divestiture waves in the sample*

SIC Code	Industry Description	Wave date range	Peak year	Total n	First year n	Peak year n	Last year n
2721	Periodicals: Publishing, Or Publishing And Printing	1995-2003	2000	264	19	43	19
2731	Books: Publishing, Or Publishing And Printing	1997-2002	1999	175	14	45	21
2899	Chemicals And Chemical Preparations, Not Elsewhere Classified	1997-2002	2000	181	22	47	21
4412	Deep Sea Foreign Transportation Of Freight	1995-1998	1997	105	-	37	11
4812	Radiotelephone Communications	1999-2004	2000	168	21	43	16
4813	Telephone Communications, Except Radiotelephone	1999-2008	2002	579	37	85	41
7011	Hotels And Motels	1997-2002	1999	246	18	60	28
		2009-2014	2010	268	24	66	-
7376	Computer Facilities Management Services	2004-2013	2006	256	17	34	14
8748	Business Consulting Services, Not Elsewhere Classified	2006-2014	2010	241	15	40	-

over current liabilities (Feldman et al., 2016). *Firm size* was calculated as the natural logarithm of total assets (Bergh & Sharp, 2015; Brauer et al., 2017). *Firm leverage* was operationalized as total debt scaled by total assets (Berger & Ofek, 1999; Dickerson et al., 1997; Haynes et al., 2002). I also considered year-dependent effects through *year dummies* (Brauer et al., 2017; Haynes et al., 2002).[17]

The market reaction to divestiture programs

The **dependent variable** for the second research question is the *divestiture program market return*. It was measured as the cumulative abnormal return (CAR) on the three days surrounding a divestiture program announcement using event study methodology. For event studies to be a valid method of analysis, several criteria have to be fulfilled according to McWilliams and Siegel (1997): market efficiency, unanticipated event, no confounding effects. First, the study relied on a European sample. All firms were listed and traded on the most important stock

[17] In unreported models, I also included previous year's industry sales growth as a control variable to account for the industry environment (e.g., Haynes et al., 2002). Results were robust.

market in their respective countries at the time of the study and were subject to their communication regulations. Second, each announcement signaled new information to investors. I relied on *Factiva* to identify traces for program announcements and to track those back to the initial announcement. This has been the reason why "indications" were included in the sample. While an informed investor may anticipate a divestiture program in advance, this approach assured that it was neither discussed in primary nor secondary sources before the announcement. Third, I accounted for confounding effects in two ways. Divestiture programs are often announced in the context of and on the same day as other events such as results presentations, restructuring programs, or acquisitions. Results presentations and restructuring program announcements were accounted for through control variables in the main analysis. Acquisition announcements that included a divestiture program announcement were excluded. To eliminate further confounding effects, I adhered to the methods suggested by McWilliams and Siegel (1997). I excluded confounding events in the 5-day window around the announcement date using *Factiva* to screen the press coverage of a firm. After excluding acquisitions and confounded announcements, 144 out of 168 announcements remained in the final sample. Further, to account for the OLS regression's sensitivity to outliers and avoid distortions, I winsorized the sample at the 2.5% and 97.5% levels based on the CAR (-1, +1) (e.g., Owen et al., 2010).

The **independent variables** describe the program characteristics that were obtained from primary and secondary coverage of divestiture programs through *Factiva*.

Program value dummy. Announced program value was measured as a dummy that takes the value of 1 if a program value was provided and 0 if no value was provided.

Program value. The actual program value was calculated as the relative share to be divested. Based on the sales to be divested or the expected proceeds, the share was measured relative to total sales or enterprise value at the end of the latest prior fiscal year. For program updates, the increase in sales to be divested or expected proceeds was measured. For programs where no value was provided, the variable was set to a value of 0. As shown in ***Table 3-3***, 68% of all announcements in the OLS sample stated a program value. On average, the announced programs divested 14.5% of firm size, and the median size was 9.8%. Thus, many of the programs likely altered a firm's operations significantly.

Program length dummy. Announced program length was measured as a dummy that takes the value of 1 if a timeline was provided. For the descriptives, shown in ***Table 3-3***, the length was

Table 3-3: *Descriptive program characteristics*

Full sample	**Total sample**					**Financial rationale**		**Refocusing rationale**		**Streamlining rationale**	
	N (% of sample)	**Avg.**	**Min**	**Me-dian**	**Max**	**N** (% of sample)	**Avg.**	**N** (% of sample)	**Avg.**	**N** (% of sample)	**Avg.**
Program value *(as % of overall firm)*	115 (68%)	14.2%	0.5%	9.5%	55.6%	53 (76%)	11.3%	37 (65%)	19.2%	28 (58%)	13.0%
Program length *(in years)*	99 (59%)	1.49	0.33	1.17	4.17	48 (69%)	1.37	27 (47%)	1.32	27 (56%)	1.90
Program assets named	104 (62%)					38 (54%)		52 (91%)		19 (40%)	
Value, length and specific assets provided	45 (27%)					22 (64%)		19 (33%)		6 (13%)	
Total sample	168					70		57		48	

OLS Sample	**Total sample**					**Financial rationale**		**Refocusing rationale**		**Streamlining rationale**	
	N (% of sample)	**Avg.**	**Min**	**Me-dian**	**Max**	**N** (% of sample)	**Avg.**	**N** (% of sample)	**Avg.**	**N** (% of sample)	**Avg.**
Program value *(as % of overall firm)*	98 (68%)	14.5%	0.5%	9.8%	55.6%	45 (79%)	11.8%	30 (65%)	18.8%	23 (56%)	14.0%
Program length *(in years)*	87 (60%)	1.49	0.33	1.17	4.17	40 (70%)	1.33	25 (54%)	1.34	22 (54%)	1.95
Program assets named	89 (62%)					31 (54%)		42 (91%)		16 (39%)	
Value, length and specific assets provided	40 (28%)					18 (32%)		18 (39%)		4 (10%)	
Total sample	144					57		46		41	

Note: OLS sample excludes confounded events and acquisition announcements.

measured in years. If programs were announced to be concluded within the next few months, it was measured as half a year. For programs that announced to be concluded by the end of the year, the remaining months' share of the calendar year were measured. 60% of all announced divestiture programs in the OLS sample provided a timeline and were, on average, scheduled to run for 1.49 years or 18 months (see ***Table 3-4***).

Program assets named dummy. The variable captures whether the announcement names specific assets, industries, or geographies to be divested. This was the case for 89 announcements or 62% of the OLS sample (see ***Table 3-4***). For divestiture programs with a refocusing rationale, 91% of all announcements named specific assets to be divested.

All information points were available for 40 observations or 28% of the OLS sample.

Many divestiture programs are announced concurrently with other events. Thus, I included **control variables** to account for these cases and to avoid the reduction of sample size. The *restructuring program* dummy takes a value of 1 if the divestiture program was announced alongside other restructuring measures, e.g., workforce reductions, or cost-cutting. Three controls were included to account for the fact that close to half of all divestiture programs were announced on the same day as a firm's results. *Net profit negative* takes a value of 1 in the case negative results were reported. *Net profit change* is the change in net profit for the reported period relative to the previous comparable period. I capped the variable at -100% and +100%. In case a firm changed from profit to loss, the variable was set to -100%. Coherently, when it changed from loss to profit, it was set to +100%. The variable takes a value of 0 if no results were reported. In addition, I included the firm control variables outlined for the first research question for those analyses where sample size allowed further variables, namely: *Firm current ratio*, *firm size*, and *firm leverage*. Further, in unreported models, dummy variables for the usage of the program proceeds were included (debt repayment, core/acquisitions, return to shareholders). However, their inclusion did not increase model fit.

3.3.3 Data analysis

Two approaches were applied to examine the decision between the announcement of a divestiture program and a stand-alone divestiture. First, **proportion tests** were used to test for equality of proportions for each independent variable between the years in which a *divestiture program* is announced with those years of a *stand-alone divestiture* and the *non-divesting years*. In addition, I also tested for equality of proportions between divestiture programs by a specific rationale (refocusing, streamlining, and financial) and all other divestiture programs. Second, a **multinomial logit model** was estimated to compare the effects of the independent variables on the likelihood to undertake a *divestiture program* or a *stand-alone divestiture* that was not part of a program against the base case of *non-divesting*.[18] The application of the multinomial logit model is in line with prior divestiture research that has examined similar research settings (e.g., Damaraju et al., 2015; Vidal & Mitchell, 2018).

The presented hypotheses with regard to the market reaction were tested through an **event study analysis** and **ordinary least squares** (OLS) **regressions** with cumulative abnormal returns as

[18] The multinomial regression was fitted using STATA's *mlogit* command.

the dependent variable. For the event study, I applied the Fama-French-3-Factor (FF3F) Model. In contrast to single-factor models, a multi-factor model allows capturing abnormal market performance more accurately. The FF3F regresses firm excess returns ($R_{i,t} - r_{f,t}$) over an estimation window with market excess returns ($R_{M,t} - r_{f,t}$), the differences in return of small and big firms measured by market capitalization (small minus big, SMB), and the difference in return between firms with a high book to market ratio and those with a low ratio (high minus low, HML):

$$R_{i,t} - r_{f,t} = \propto_i + \beta_{i,M}\left(R_{M,t} - r_{f,t}\right) + \beta_{i,s}SMB_t + \beta_{i,h}HML_t + \varepsilon_{i,t}. \quad (1)$$

$R_{i,t}$ is a firm's actual return on day t, $R_{M,t}$ is the market return on day t and $r_{f,t}$ is the risk-free return on day t. The estimation was based on a window of one trading year (255 days) prior to 30 days before the announcement (e.g., Brauer & Wiersema, 2012; Depecik et al., 2014)

The abnormal return $AR_{i,t}$ was calculated as the difference between the actual return and the expected return measured by the FF3F model:

$$AR_{i,t} = R_{i,t} - (r_{f,t} + \beta_{i,M}\left(R_{M,t} - r_{f,t}\right) + \beta_{i,s}SMB_t + \beta_{i,h}HML_t) \quad (2)$$

The cumulative abnormal returns (CAR) over the event windows were calculated as:

$$CAR\ (t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{i,t}. \quad (3)$$

In the next step, the cumulative average abnormal return (CAAR) was calculated as the arithmetic mean across all events. Statistical significance was tested using the parametric Patell (1976) z-test and cross-sectional z-test as proposed by Boehmer et al. (1991), as well as the non-parametric generalized sign test according to Cowan (1992). I obtained Fama/French European 3 Factors daily data for market return, SMB, HML, and risk-free return from Kenneth French's Fama/French data library published by Dartmouth College.

Next, to identify the impact of program characteristics on the market reaction, I ran a regression with cumulative abnormal returns as the dependent variable. The analysis is based on a pooled cross-sectional sample, with some firms announcing multiple divestiture programs in the study. Prior divestiture research has highlighted the issue of unobserved heterogeneity in similar settings and proposed the application of a random-effects model, including firm-specific error terms (Brauer & Wiersema, 2012). For the sample of this study, a Hausman (1978) test rejected the consistency of a fixed-effects estimator, and a Breusch and Pagan (1980) Lagrange multiplier test rejected the appropriateness of random-effects. Thus, I ran pooled cross-sectional

OLS regressions on the cumulative abnormal returns in the three days around an announcement. The application of an OLS regression to explain abnormal returns is a common practice in divestiture research (e.g., Humphery-Jenner et al., 2019; Owen et al., 2010). Also, I performed quantile regressions at the 25th quantile, the median, and the 75th quantile. This allows highlighting differences in the explanatory power of the variables at different points in the distribution of the cumulative abnormal returns (e.g., Humphery-Jenner et al., 2019).

3.4 Results

In the following, I present the results of the multinomial logit regression and proportion tests to analyze the decision between divestiture programs and stand-alone divestitures. Subsequently, the results of the event study and the respective OLS regressions to determine the drivers of the market reaction are provided.

3.4.1 Multinomial logit regression and proportion tests

Table 3-4 presents the proportions per antecedent for *divestiture program* years, *stand-alone divestiture* years, and *non-divesting* years and reports the results of *z-tests* for differences in proportions. ***Table 3-5*** presents the same for different program rationales. ***Table 3-6*** presents the correlations among the variables that are part of the multinomial logit model. The correlations suggested no multicollinearity problem.[19] ***Table 3-7*** reports the main effects of the multinomial logit models: the *coefficients*, the *robust standard errors* in the brackets below, and the *significance* based on the *p-value*. Further, it reports the *average marginal effects* (AME), their robust standard errors, and significance based on the p_{AME}*-value*. Also, *Wald* chi^2, *Pseudo* $R^{2,}$ and *Log pseudolikelihood* are reported for all four iterations of the analysis. Model 1 is the base model, Model 2 differentiates the financial distress variable, Model 3 the divestiture experience variable, and Model 4 the industry divestiture wave variable. The results for the different antecedents are presented in the same order as the theoretical background: CEO turnover, new blockholder, financial distress, prior divestiture experience, and industry divestiture waves.

CEO turnover

As hypothesized in Hypothesis 3.1, the announcement of a divestiture program is closely related to a change in top management. 45% of all divestiture program announcements were preceded

[19] Correlations were only high between the category variables financial distress and divestiture experience, and those variables that determine their value (5.1 through 5.3 and 6.1 through 6.3). Given that these were never part of the same model iterations, this correlation was neglected.

***Table 3-4**: Proportions and proportion tests comparing firm years with divestiture programs to such with stand-alone divestitures and non-divesting years*

	Divestiture program announcem.	Stand-alone divestiture announcem.	**z-statistic**	Non-divesting	**z-statistic**
CEO turnover	45%	26%	**3.28*** **	28%	**4.16*** **
New blockholder	34%	35%	**-0.17**	33%	**0.27**
Financial distress	60%	39%	**3.54*** **	39%	**4.84*** **
Dividend cut	21%	13%	**1.61***	14%	**2.28*** **
Negative net income	25%	19%	**1.16**	14%	**3.36*** **
Stock underperformance	41%	24%	**3.10*** **	26%	**3.97*** **
Divestiture experience	81%	82%	**-0.34**	70%	**2.67*** **
Divestiture exp. t-1	48%	54%	**-0.95**	41%	**1.54****
Divestiture exp. t-2	51%	51%	**-0.13**	41%	**2.30****
Divestiture exp. t-3	49%	51%	**-0.59**	39%	**2.01****
Divestiture wave	13%	8%	**1.25**	11%	**0.64**
Before peak	5.5%	4.2%	**0.49**	2.8%	**1.76****
At peak	4.1%	0.7%	**1.88****	1.5%	**2.34*** **
After peak	3.4%	3.5%	**-0.04**	7.0%	**-1.63***
N	146	142		1309	

Note: The table shows the results of tests on the equality of proportions. It tests for no difference in proportions for two subsamples. Specifically, it tests the difference of the proportion for years with a divestiture program compared to years with a stand-alone divestiture and non-divesting years. A negative z-statistics indicates a lower proportion in comparison, and a positive z-statistics indicates a higher proportion. Significance levels are indicated next to the z-statistics:

* p < 0.10 ** p <0.05 *** p <0.01

by a CEO change in the previous or focal period. This is a significantly higher proportion than for stand-alone divestitures or non-divesting periods (see ***Table 3-4***). Programs with a financial rationale followed a CEO turnover more often than refocusing or streamlining programs (see ***Table 3-5***). The multinomial logit regression, as presented in ***Table 3-7***, confirms this. CEO turnover is a highly significant determinant of a divestiture program announcement in the base model (b = 0.60, p = 0.000) and all other models. CEO turnover increases the average probability of a divestiture program announcement by 0.05 (p_{AME} = 0.000). For stand-alone divestitures, no significant effect of CEO turnover was identified.

***Table 3-5**: Proportions and proportion tests comparing program announcements by different rationales*

	Divestiture program announcements						
	Total	Financial	**z-statistic**	Re-focusing	**z-statistic**	Stream-lining	**z-statistic**
CEO turnover	45%	54%	**1.69****	38%	**-1.14**	41%	**-0.58**
New blockholder	34%	31%	**-0.66**	40%	**1.06**	32%	**-0.41**
Financial distress	60%	79%	**3.53*****	46%	**-2.41*****	52%	**-1.18**
Dividend cut	21%	35%	**3.13*****	18%	**-0.55**	7%	**-2.70*****
Negative net income	25%	42%	**3.68*****	10%	**-2.97*****	20%	**-0.77**
Stock underperformance	41%	50%	**1.63***	30%	**-1.97****	43%	**0.34**
Divestiture experience	81%	83%	**0.43**	76%	**-1.07**	84%	**0.66**
Divestiture exp. t-1	48%	50%	**0.37**	50%	**0.36**	43%	**-0.76**
Divestiture exp. t-2	51%	48%	**-0.47**	50%	**-0.12**	55%	**0.61**
Divestiture exp. t-3	49%	52%	**0.37**	44%	**-0.67**	50%	**0.33**
Divestiture wave	13%	19%	**1.66****	8%	**-1.30***	11%	**-0.39**
Before peak	5.4%	9.6%	**1.63***	2.0%	**-1.33***	4.5%	**-0.33**
At peak	4.1%	7.7%	**1.62***	2.0%	**-0.93**	2.3%	**-0.73**
After peak	3.4%	1.9%	**-0.74**	4.0%	**0.28**	4.5%	**0.49**
N	146	52		50		44	

Note: The table shows the results of tests on the equality of proportions. It tests for no difference in proportions for two subsamples. Specifically, it tests the difference of the proportion for programs driven by a specific rationale, e.g., refocusing compared to all programs of a different rationale. A negative z-statistics indicates a lower proportion in comparison, and a positive z-statistics indicates a higher proportion. Significance levels are indicated next to the z-statistics:

* p < 0.10 ** p <0.05 *** p <0.01

New blockholder

The analysis did not show a significant effect of a new blockholder on the probability of either a divestiture program or a stand-alone divestiture announcement. Thus, Hypothesis 2, which predicted a new blockholder to be a significant antecedent of stand-alone divestitures, could not be confirmed. The proportion of stand-alone divestiture announcements preceded by a new blockholder amounted to 35%, only slightly more than the 33% for non-divesting periods and 34% for divestiture program announcements. The proportion does not significantly differ across program rationales (see ***Table 3-4***). Accordingly, the multinomial logit model revealed no significant effect of the arrival of a new blockholder (see ***Table 3-7***).

Financial distress

Hypothesis 3.3 predicts that firms engage in divestiture programs rather than stand-alone divestitures when financially distressed. Divestiture program announcements were preceded in 60% of all instances by a financial distress event. This is a significantly higher proportion than the 39% for stand-alone divestitures and non-divesting periods. All three financial distress events (dividend cut, negative net income, stock underperformance) exhibited the highest proportions for divestiture programs (see ***Table 3-4***). When differentiating by program rationale, intuitively, the proportion was highest for financially motivated programs at 79%. The proportion for refocusing programs was 46%, significantly lower than the 60% for all programs (see ***Table 3-5***). Accordingly, as shown in Model 1, financial distress is a significant predictor in the multinomial logit regression (b = 0.87, p = 0.000). It increases the average probability of a divestiture program announcement by 0.07 (p_{AME} = 0.000). Model 2 shows that dividend cuts and stock underperformance have a significant impact on the occurrence of a program. The average probability of a program is increased following a dividend cut by 0.04 (b = 0.49, p = 0.08, p_{AME} = 0.09), stock underperformance by 0.05 (b = 0.58, p = 0.008, p_{AME} = 0.005). The effect of negative net income is 0.03 (b = 0.39, p = 0.11, p_{AME} = 0.14) and slightly below significance. In contrast to the significantly explanatory power for program announcements, the probability of stand-alone divestitures is not found to increase following any of the three financial distress events (see ***Table 3-7***).

Divestiture experience

Hypothesis 3.4 predicts that firms with high levels of divestiture experience would be less likely to initiate a divestiture program due to limited opportunities to divest and instead engage in stand-alone divestitures. The proportion of prior experience was similar for divestiture program announcements and stand-alone divestitures with 81% and 82%, respectively. Both were significantly higher than the 70% for non-divesting periods. The proportion of experience in t-2 and t-3 was similar for both divestiture programs and stand-alone divestitures, at 49-51%. The proportion of experience in t-1 was lower for divestiture programs compared with stand-alone divestitures at 48% vs. 54% (see ***Table 3-4***). Differences in proportion between different program rationales are non-significant (see ***Table 3-5***). The regression, as presented in Model 1 of ***Table 3-7***, shows that experience from the previous three years does not increase the probability of a divestiture program announcement. As argued, for stand-alone divestitures there is a significant effect of 0.01 (b = 0.15, p = 0.000, p_{AME} = 0.000). When differentiating experience by year of occurrence (Model 3), only distant experience (in t-3) is a significant

Table 3-6: *Correlations of the multinomial logit regression sample*

	1.	**2.**	**3.**	**4.**	**5.**	**5.1**	**5.2**	**5.3.**	**6.**	**6.1**	**6.2**	**6.3**	**7**	**8.**	**9**	**10**
1. Divestiture Program	1.00															
2. Stand-alone divestiture	-0.10*	1.00														
3. CEO turnover	0.11*	-0.01	1.00													
4. New Blockholder	0.01	0.00	0.05*	1.00												
5. Financial Distress	0.12*	0.00	0.14*	0.07*	1.00											
5.1 Dividend cut	0.06*	-0.01	0.02	0.01	0.49*	1.00										
5.2 Negative net income	0.08*	0.03	0.21*	0.07*	0.52*	0.17*	1.00									
5.3 Stock underperform.	0.10*	-0.01	0.12*	0.05	0.73*	0.10*	0.29*	1.00								
6. Div. experience	0.04	0.09*	0.03	0.01	0.10*	0.07*	0.15*	0.06*	1.00							
6.1 Div. experience t-1	0.03	0.05	0.03	0.01	0.11*	0.01	0.12*	0.11*	0.68*	1.00						
6.2 Div. experience t-2	0.01	0.07*	0.01	0.00	0.04	0.04	0.10*	0.00	0.73*	0.26*	1.00					
6.3 Div. experience t-3	0.04	0.07*	0.02	0.00	0.07*	0.10*	0.09*	0.00	0.68*	0.17*	0.26*	1.00				
7. Divestiture Wave	0.02	-0.02	-0.01	-0.12*	0.02	0.06*	0.02	0.01	0.03	0.02	0.03	0.02	1.00			
8. Firm current ratio	-0.04	0.02	-0.07*	0.01	-0.06*	-0.04	-0.02	-0.06*	0.01	-0.02	0.01	0.02	-0.09*	1.00		
9. Firm size	0.06*	-0.05*	-0.01	-0.19*	-0.06*	-0.02	-0.05*	-0.06*	0.04	0.0*5	0.02	0.02	0.05*	-0.15*	1.00	
10. Firm leverage	-0.01	0.03	0.05	0.06*	0.15*	0.07*	0.15*	0.13*	0.04	0.05	0.02	0.01	0.07*	-0.22*	-0.01	1.00

* $p < 0.05$

Table 3-7: Results of the multinomial logit regression

Model	1 – Base model				2 – Financial distress				3 – Divestiture experience				4 – Divestiture waves			
	Main effects		Marginal effects		Main effects		Marginal effects		Main effects		Marginal effects		Main effects		Marginal effects	
	Divestiture program vs. non-divesting	Stand-alone divestiture vs. non-divesting	Divestiture program	Stand-alone divestiture	Divestiture program vs. non-divesting	Stand-alone divestiture vs. non-divesting	Divestiture program	Stand-alone divestiture	Divestiture program vs. non-divesting	Stand-alone divestiture vs. non-divesting	Divestiture program	Stand-alone divestiture	Divestiture program vs. non-divesting	Stand-alone divestiture vs. non-divesting	Divestiture program	Stand-alone divestiture
CEO turnover	**0.60** ***	**-0.11**	**0.05** ***	**-0.01**	**0.58** ***	**-0.13**	**0.05** ***	**-0.01**	**0.60** ***	**-0.11**	**0.05** ***	**-0.01**	**0.59** ***	**-0.10**	**0.05** ***	**-0.01**
	(0.17)	(0.22)	(0.01)	(0.02)	(0.16)	(0.23)	(0.01)	(0.02)	(0.17)	(0.22)	(0.01)	(0.02)	(0.16)	(0.22)	(0.01)	(0.02)
New blockholder	**0.23**	**0.04**	**0.02**	**0.00**	**0.25**	**0.03**	**0.02**	**0.00**	**0.24**	**0.05**	**0.02**	**0.00**	**0.20**	**0.02**	**0.02**	**0.00**
	(0.19)	(0.16)	(0.01)	(0.01)	(0.19)	(0.16)	(0.01)	(0.01)	(0.19)	(0.17)	(0.01)	(0.01)	(0.19)	(0.16)	(0.01)	(0.01)
Financial distress	**0.87** ***	**0.02**	**0.07** ***	**-0.01**	-	-	-	-	**0.88** ***	**0.06**	**0.07** ***	**0.00**	**0.89** ***	**0.02**	**0.07** ***	**-0.01**
	(0.20)	(0.17)	(0.01)	(0.01)					(0.20)	(0.18)	(0.01)	(0.01)	(0.20)	(0.18)	(0.01)	(0.01)
Dividend cut	-	-	-	-	**0.49** *	**0.20**	**0.04** *	**0.01**	-	-	-	-	-	-	-	-
					(0.28)	(0.27)	(0.02)	(0.02)								
Negative net income	-	-	-	-	**0.39**	**0.38**	**0.03**	**0.03**	-	-	-	-	-	-	-	-
					(0.25)	(0.28)	(0.02)	(0.02)								
Stock underperform.	-	-	-	-	**0.58** ***	**-0.26**	**0.05** ***	**-0.02**	-	-	-	-	-	-	-	-
					(0.22)	(0.22)	(0.02)	(0.02)								
Div. experience	**0.03**	**0.15** ***	**0.00**	**0.01** ***	**0.02**	**0.14** ***	**0.00**	**0.01** ***	-	-	-	-	**0.03**	**0.15** ***	**0.00**	**0.01** ***
	(0.03)	(0.03)	(0.00)	(0.00)	(0.03)	(0.03)	(0.00)	(0.00)					(0.03)	(0.03)	(0.00)	(0.00)
Div. experience t-1	-	-	-	-	-	-	-	-	**-0.05**	**0.02**	**0.00**	**0.00**	-	-	-	-
									(0.08)	(0.06)	(0.01)	(0)				
Div. experience t-2	-	-	-	-	-	-	-	-	**0.00**	**0.22** ***	**0.00**	**0.02** ***	-	-	-	-
									(0.08)	(0.07)	(0.01)	(0.01)				
Div. experience t-3	-	-	-	-	-	-	-	-	**0.14** *	**0.19** **	**0.01**	**0.01** **	-	-	-	-
									(0.08)	(0.08)	(0.01)	(0.01)				
Divestiture wave	**-0.21**	**-0.36**	**-0.01**	**-0.03**	**-0.25**	**-0.41**	**-0.02**	**-0.03**	**-0.23**	**-0.39**	**-0.02**	**-0.03**	-	-	-	-
	(0.20)	(0.34)	(0.02)	(0.03)	(0.20)	(0.34)	(0.02)	(0.03)	(0.20)	(0.35)	(0.02)	(0.03)				
Before peak	-	-	-	-	-	-	-	-	-	-	-	-	**0.40**	**0.43**	**0.03**	**0.03**
													(0.38)	(0.39)	(0.03)	(0.03)
At peak	-	-	-	-	-	-	-	-	-	-	-	-	**0.43**	**-0.89**	**0.04**	**-0.07**
													(0.50)	(1.16)	(0.04)	(0.09)
After peak	-	-	-	-	-	-	-	-	-	-	-	-	**-1.02** **	**-0.77** *	**-0.07** **	**-0.05**
													(0.40)	(0.44)	(0.03)	(0.03)

***Table 3-7**: Results of the multinomial logit regression (continued)*

Model	**1 – Base model**				**2 – Financial distress**				**3 – Divestiture experience**				**4 – Divestiture waves**			
	Main effects		Marginal effects		Main effects		Marginal effects		Main effects		Marginal effects		Main effects		Marginal effects	
	Divestiture program vs. non-divesting	Stand-alone divestiture vs. non-divesting	Divestiture program	Stand-alone divestiture	Divestiture program vs. non-divesting	Stand-alone divestiture vs. non-divesting	Divestiture program	Stand-alone divestiture	Divestiture program vs. non-divesting	Stand-alone divestiture vs. non-divesting	Divestiture program	Stand-alone divestiture	Divestiture program vs. non-divesting	Stand-alone divestiture vs. non-divesting	Divestiture program	Stand-alone divestiture
Firm current ratio	**-0.23**	**0.06**	**-0.02**	**0.01**	**-0.26**	**0.05**	**-0.02**	**0.01**	**-0.24**	**0.05**	**-0.02**	**0.01**	**-0.22**	**0.06**	**-0.02**	**0.01**
	(0.19)	(0.1)	(0.01)	(0.01)	(0.2)	(0.11)	(0.02)	(0.01)	(0.19)	(0.11)	(0.01)	(0.01)	(0.19)	(0.1)	(0.02)	(0.01)
Firm size	**0.23** ***	**-0.09**	**0.02** ***	**-0.01**	**0.23** ***	**-0.08**	**0.02** ***	**-0.01**	**0.23** ***	**-0.08**	**0.02** ***	**-0.01**	**0.22** ***	**-0.10**	**0.02** ***	**-0.01**
	(0.06)	(0.08)	(0.00)	(0.01)	(0.06)	(0.08)	(0.00)	(0.01)	(0.06)	(0.08)	(0.00)	(0.01)	(0.06)	(0.08)	(0.00)	(0.01)
Firm leverage	**-0.75**	**0.83**	**-0.06**	**0.07**	**-0.83**	**0.79**	**-0.07** *	**0.07**	**-0.71**	**0.85**	**-0.06**	**0.07**	**-0.73**	**0.81**	**-0.06**	**0.07**
	(0.53)	(0.56)	(0.04)	(0.04)	(0.53)	(0.58)	(0.04)	(0.05)	(0.53)	(0.56)	(0.04)	(0.04)	(0.52)	(0.55)	(0.04)	(0.04)
Constant	**-6.56** ***	**-1.83**			**-6.47** ***	**-1.86**			**-6.62** ***	**-1.95**			**-6.57** ***	**-1.84**		
	(1.22)	(1.28)			(1.22)	(1.28)			(1.24)	(1.31)			(1.28)	(1.27)		
Year effects	Yes				Yes				Yes				Yes			
No. of observations	1,597				1,597				1,597				1,597			
Per reference state	146	142			146	142			146	142			146	142		
Wald chi^2	301.68				356.38				339.46				351.11			
Prob > chi^2	0.0000				0.0000				0.0000				0.0000			
Pseudo R^2	0.079				0.079				0.082				0.084			
Log pseudolikelihood	-878.40				-877.72				-875.51				-873.52			

*Note***:** The 1,597 firm-year observations split in 146 years with a divestiture program announcement, 142 years with a stand-alone divestiture announcement and 1,309 non-divesting years. Non-divesting is the base outcome, and thus not shown in the table. Robust standard errors clustered by firm are reported in parentheses.

* p < 0.10 ** p < 0.05 *** p < 0.01

predictor of a divestiture program announcement (b = 0.14, p = 0.08). In contrast, for stand-alone divestitures experience is a significant positive predictor in t-2 (b = 0.22, p = 0.003) and t-3 (b = 0.19, p = 0.011). Experience in t-1 is not found to have a significant effect (b = 0.02, p = 0.72). In unreported models, I used dummies instead of the number of divestitures to operationalize experience. All three experience dummies (t-1, t-2, t-3) are positive and significant for stand-alone divestitures. For divestiture programs, none of the dummies is significant

Industry divestiture wave

In line with Hypothesis 3.5, the proportion tests presented in ***Table 3-4*** show significantly higher proportions for divestiture programs in contrast to non-divesting periods before (5.5% vs. 2.8%) and at the peak (4.1% vs. 1.5%) of an industry divestiture wave. After the peak, the proportion was significantly lower (3.4% vs. 7.0%). Given the generally low occurrence of industry divestiture waves within the sample, interpretation of the sub-samples by program rationale should be trodden carefully. It could be seen that occurrence is highest for programs with a financial rationale at and before the peak of a wave (see ***Table 3-5***). While the coefficient is negative, the occurrence of a wave itself, as examined in Model 1 of ***Table 3-7***, is no significant indicator of a divestiture program (b = -0.21, p = 0.27). However, the differentiation by timing (see Model 4) supports Hypothesis 3.5. It shows that after its peak, an industry wave is a significant negative predictor of a divestiture program announcement. The average probability of a divestiture program announcement decreases by 0.07 (b = -1.02, p = 0.011, p_{AME} = 0.020) after the peak of an industry wave. Further, the same is found to hold for stand-alone divestitures, for which the average probability decreases by 0.05 (b = -0.77, p = 0.08, p_{AME} = 0.14) after the peak of an industry wave.

Supplementary analyses

To test for the robustness of the analysis, I ran two alternate models of the regression in addition to the main model. Given the panel nature of the data, a panel model recommends itself. A Hausman test rejected a fixed effects estimator. Thus, a multinomial logit model was fitted using STATA's *gsem* command in connection with a latent variable at the firm level to capture the random effect. However, the full models could not be fitted, and computation was only possible for the base model without year effects. Results were robust compared with the mlogit regressions reported in the results section. The same holds for unreported *xtlogit* regressions for a choice between stand-alone divestitures and divestiture program announcements.

To ensure the robustness of the analysis, I performed further variations concerning the definition of variables and included further controls. First, to avoid the inclusion of divestitures that were part of a divestiture program in the stand-alone divestiture sample, the main regression excluded divestitures in the year prior and the two years after an announced divestiture program. When relaxing this restriction to one year prior and only one year after, 162 divestitures are included in the analysis, and results remain robust. Second, I replaced divestiture experience with dummies. The experience dummy over all three previous years is positive and significant for both divestiture programs and stand-alone divestitures. When differentiating by year, all three dummies are positive and significant for stand-alone divestitures. For divestiture programs, none of the individual dummies is significant. Third, I included the previous year's industry sales growth as a control variable to account for the industry environment (e.g., Haynes et al., 2002). However, given a low explanatory power, the variable was not included in the reported analysis. The results remain robust. Fourth, I differentiated new blockholder in passive and non-passive blockholders. I deemed blockholders to be passive if they were a financial company without activist record, e.g., asset management firms, institutional funds, banks, and insurance companies. I categorized investors as non-passive if they were strategic or activist investors, e.g., activist funds, private equity funds, non-financial companies, or private investors. I employed *Factiva* to identify traces of activism for all financial companies. Differences for passive and non-passive blockholders between divestiture programs, stand-alone divestitures, and non-divesting periods are not significant.

3.4.2 Event study analysis

Table 3-8 presents the average abnormal returns (AAR) for days -1, 0, 1 and the cumulative average abnormal returns (CAAR) in the *AAR/ CAAR* column for all three days both by announcement type and announcement rationale. *Positive* denotes the share of announcements exhibiting positive abnormal returns (AR) or cumulative abnormal returns (CAR), respectively. Statistical *significance* of the abnormal returns and the share of announcements with positive returns is reported next to the *AAR/ CAAR* and the *Positive* columns.

As shown in ***Table 3-8***, divestiture programs, on average, create wealth in the three days surrounding the announcement ($CAAR_{All, NR, -1, +1} = 5.03\%$, $CAAR_{All, All, -1, +1} = 2.30\%$). Both the parametric and non-parametric tests indicate significance of the CAAR for all announcements, excluding those made together with a firm's results presentation. When also considering the latter, parametric tests still indicate significance while the non-parametric generalized sign-test (Cowan, 1992) failed to confirm significance. When excluding those

Table 3-8: *AAR and CAAR by program announcement type and program rationale*

Sample	**Event window**	**NR - Announcements excl. results announcements** (in %)					**All - Announcements incl. results announcements** (in %)				
		AAR/ CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test	**AAR/ CAAR**	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
All *(w/o acq.)*	Day -1	0.66	**	*	54.41	-	0.43	*	-	51.39	-
	Day 0	4.03	***	-	63.24	***	1.79	***	-	55.56	-
N_{NR} = 68	Day +1	0.34	*	-	50.00	-	0.08	-	-	48.61	-
N_{All} = 144	**-1 to +1**	**5.03**	***	**	**60.29**	***	**2.30**	***	*	**55.56**	-
All_2 *(w/o acq., w/o winsorized events)*	Day -1	0.38	-	-	52.31	-	0.26	-	-	50.00	-
	Day 0	0.47	**	-	63.08	***	0.37	***	-	56.62	*
	Day +1	0.39	*	-	50.77	-	0.15	-	-	49.26	-
N_{NR} = 65	**-1 to +1**	**1.25**	***	**	**60.00**	***	**0.78**	***	**	**55.88**	-
N_{All} = 136											
Returns by program announcement type											
Sole announcements	Day -1	0.96	**	*	54.76	-	0.50	**	-	50.55	-
	Day 0	1.28	***	**	66.67	***	0.75	***	**	60.40	***
N_{NR} = 48	Day +1	0.74	**	-	47.92	-	0.32	*	-	48.51	-
N_{All} = 101	**-1 to +1**	**2.98**	***	***	**62.50**	***	**1.57**	***	**	**59.41**	**
Part of restructuring program announcements	Day -1	10.61	-	-	50.00	-	0.26	-	-	50.00	-
	Day 0	-0.61	***	-	55.00	-	4.25	*	-	44.19	*
N_{NR} = 20	Day +1	9.96	-	-	55.00	-	-0.52	-	-	48.84	-
N_{All} = 43	**-1 to +1**	**10.04**	***	-	**55.00**	-	**3.99**	-	-	**46.51**	-
Part of acquisition announcements	Day -1	0.16	-	-	66.67	*	0.32	-	-	69.23	**
	Day 0	-1.72	***	-	33.33	*	-1.84	***	-	30.77	**
N_{NR} = 12	Day +1	0.08	-	-	50.00	-	0.19	-	-	53.85	-
N_{All} = 13	**-1 to +1**	**-1.47**	-	-	**66.67**	-	**-1.34**	-	-	**69.23**	-
Returns by program rationale											
Financial rationale *(w/o acq.)*	Day -1	1.70	***	**	70.83	**	1.13	**	*	59.65	*
	Day 0	10.18	***	-	62.50	-	2.72	**	-	42.11	-
	Day +1	0.91	***	-	58.33	-	-0.13	-	-	49.12	-
N_{NR} = 24	**-1 to +1**	**12.80**	***	*	**66.67**	***	**3.72**	***	-	**54.39**	-
N_{All} = 57											
Refocusing rationale *(w/o acq.)*	Day -1	0.14	-	-	43.48	-	0.20	-	-	52.17	-
	Day 0	1.01	***	*	69.57	**	1.06	***	**	71.74	***
	Day +1	0.64	-	*	56.52	-	0.42	-	-	50.00	-
N_{NR} = 23	**-1 to +1**	**1.80**	***	*	**69.57**	**	**1.69**	***	**	**65.22**	***
N_{All} = 46											
Streamlining rationale (w/o acq.)	Day -1	0.05	-	-	47.62	-	-0.27	-	-	39.02	-
	Day 0	0.29	-	-	57.14	-	1.30	**	-	56.10	-
	Day +1	-0.63	-	-	33.33	-	-0.01	-	-	46.34	-
N_{NR} = 21	**-1 to +1**	**-0.30**	-	-	**42.86**	-	**1.01**	-	-	**46.34**	-
N_{All} = 41											

Note: The table shows cumulative abnormal returns in % based on a Fama-French-3-Factor Model. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement. After controlling for confounding events, and excluding acquisition announcements, 144 remained from the original sample of 168 announcements. I measured abnormal returns for those announcements that were not made concurrently with a firm's results presentation (N_{NR}) and for all announcements, including those announced with a firm's results (N_{All}). Positive denotes the share of events exhibiting positive AR and CAR. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer et al. (1991) and the generalized sign test, according to Cowan (1992).

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

announcements that were winsorized for the subsequent OLS regressions at the 2.5% and 97.5% levels, market reaction remains positive and significant, though at lower magnitude ($CAAR_{All\_2, NR, -1, +1}$ = 1.25%, $CAAR_{All\_2, All, -1, +1}$ = 0.78%).

Sole divestiture program announcements yield, on average, positive and significant returns both when announced by themselves and when announced alongside a firm's results' ($CAAR_{Sole, NR, -1, +1}$ = 2.98%, $CAAR_{Sole, All, -1, +1}$ = 1.57%). Restructuring programs exhibit the largest returns for all announcement types in the sample ($CAAR_{Restructuring, NR, -1, +1}$ = 10.04%, $CAAR_{Restructuring, All, -1, +1}$ = 3.99%), however, are only partially significant. The reason is that the restructuring program sample is home to the largest outlier in the sample, and thus is heavily inflated.

When differentiating by divestiture program rationale, returns for programs with a refocusing rationale are positive and significant across all tests ($CAAR_{Refocus, NR, -1, +1}$ = 1.80%, $CAAR_{Refocus, All, -1, +1}$ = 1.69%). Returns for programs with a financial rationale are positive and partially significant ($CAAR_{Financial, NR, -1, +1}$ = 12.80%, $CAAR_{Financial, All, -1, +1}$ = 3.72%). The extremely high CAAR for programs with a financial rationale and restructuring programs is driven by the strongest outlier in the sample. Returns for streamlining programs are not significant when examined by themselves.

The daily abnormal return is highest on the day of the announcement ($CAAR_{All, NR, 0}$ = 4.03%, $CAAR_{All, All, 0}$ = 1.79%) followed by the day before ($CAAR_{All, NR, -1}$ = 0.66%, $CAAR_{All, All, -1}$ = 0.43%). On the day after the announcement, abnormal returns are considerably lower ($CAAR_{All, NR, +1}$ = 0.34%, $CAAR_{All, All, +1}$ = 0.08%) and even negative for streamlining programs.

Unreported conservative two-tailed tests rejected a statistically significant difference in the means of CAR (-1, +1) between the different announcement types and between the different program rationales. Thus, a regression with CAR (-1, +1) as the dependent variable recommended itself to carve out the drivers of the market reaction.

3.4.3 Ordinary least squares regression

Next, I analyzed the effect of program characteristics on the market reaction to divestiture program announcements. ***Table 3-9*** presents the correlations among the variables that are part of the performed regressions. The correlations indicate no multicollinearity problem. ***Table 3-10*** reports the results of the OLS and quantile regressions with a winsorized CAR (-1, +1) as

Table 3-9: *Correlations of the OLS sample*

	1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**
1. CAR (-1, +1)	1.00										
2. Program value dummy	0.17*	1.00									
3. Program value	0.26*	0.56*	1.00								
4. Program length dummy	0.09	0.21*	0.05	1.00							
5. Program assets named dummy	0.05	-0.05	0.09	-0.05	1.00						
6. Restructuring program	-0.10	-0.04	-0.12	0.12	-0.21*	1.00					
7. Netprofit negative	-0.18*	0.10	-0.01	0.04	-0.13	0.21*	1.00				
8. Netprofit change	0.06	-0.04	0.05	-0.10	0.00	-0.25*	-0.62*	1.00			
9. Current ratio	0.05	0.01	-0.05	-0.13	-0.03	0.01	0.00	-0.01	1.00		
10. Size	-0.08	0.05	-0.27*	0.07	-0.06	0.00	-0.01	-0.07	-0.14	1.00	
11. Leverage	-0.11	0.01	-0.09	-0.07	0.02	0.02	0.13	-0.06	-0.12	0.05	1.00

* $p < 0.05$, *Note*: Excludes announcements with confounding events and acquisition announcements

the dependent variable for the total sample and the OLS regressions for sub-samples by program announcement type and program rationale. As stated, acquisition announcements were not included in the total OLS sample. Further, no individual regression is performed on them due to their low N. The table shows the *coefficient*, the *robust standard errors* in the brackets below, and the *significance* based on the *p-value*. Further, I provide R^2*/Pseudo* R^2, the a*djusted* R^2, the *F-value*, the root mean squared error (*Root MSE*), and the average variance inflation factor (*Ø VIF*).

Hypothesis 3.6 states that program value is a positive determinant of abnormal returns and that this effect is greater for firms with a financial rationale. Indeed, as shown in ***Table 3-10*** the provision of program value has a positive effect on CAR (-1, +1) at a significant level (Model 1a, b = 0.03, p = 0.02). When regressed at the 25th quantile and median quantile, program value is not significant. For the 75th quantile, program value is a positive and strongly significant predictor (Model 1c, b = 0.03, p = 0.007). This suggests that the provision of program value well explains positive and especially large abnormal returns. For sole program announcements, thus, excluding restructuring programs, the program value dummy is also a significant predictor (Model 2, b = 0.03, p = 0.04). As hypothesized, when differentiating by rationale, the provision of program value seems to drive financially motivated programs (Model 4a, b = 0.05, p = 0.02) but not refocusing or streamlining programs.

***Table 3-10**: Results of OLS and quantile regressions with CAR (-1,+1) as the dependent variable*

Program announcement type	**All**				**Sole announcement**	**Part of restruct. program**		**Part of acquisition**	**All**		**All**	**All**
Program rationale	**All**				**All**	**All**		**All**	**Financial**		**Refocusing**	**Streamlining**
Method	**OLS**	**Quantile regression**			**OLS**	**OLS**		**OLS**	**OLS**		**OLS**	**OLS**
		25th	**50th**	**75th**								
Model	**1a**	**1b**	**1c**	**1d**	**2**	**3a**	**3b**	**-**	**4a**	**4b**	**5**	**6**
Program value dummy	**0.03** ** (0.01)	**0.01** (0.01)	**0.02** (0.01)	**0.03** *** (0.01)	**0.03** ** (0.01)	**0.02** (0.02)	-	-	**0.05** ** (0.02)		**0.02** (0.02)	**0.00** (0.01)
Program value (Share div.)	-	-	-	-	-	-	**0.34** ** (0.14)	-	-	**0.24** * (0.13)	-	-
Program length dummy	**0.01** (0.01)	**0.01** (0.01)	**0.00** (0.01)	**-0.01** (0.01)	**0.01** (0.01)	**0.02** (0.03)	-	-	**0.01** (0.02)	-	**0.01** (0.02)	**0.01** (0.02)
Program assets named dummy	**0.00** (0.01)	**0.00** (0.01)	**0.01** (0.01)	**0.02** (0.01)	**0.01** (0.01)	**0.00** (0.02)	-	-	**-0.01** (0.02)	-	**0.05** ** (0.02)	**0.01** (0.02)
Type - Restruct. program	**-0.01** (0.01)	**-0.02** (0.01)	**-0.01** (0.02)	**0.01** (0.01)	-	-	-	-	**0.02** (0.02)	**0.01** (0.03)	**-0.03** (0.03)	**-0.03** (0.02)
Results - Net profit neg.	**-0.04** ** (0.02)	**-0.06** ** (0.04)	**-0.04** ** (0.03)	**0.00** (0.03)	**-0.07** ** (0.03)	**-0.01** (0.03)	**0.02** (0.05)	-	**-0.06** (0.03)	**-0.05** (0.03)	-	**0.01** (0.04)
Results - Net profit change	**-0.01** (0.01)	**0.02** (0.02)	**-0.01** (0.01)	**0.00** (0.02)	**-0.01** (0.01)	**-0.02** (0.02)	**0.00** (0.03)	-	**-0.03** * (0.02)	**-0.03** (0.02)	**0.05** (0.03)	**0.00** (0.03)
Control - Firm current ratio	**0.00** (0.01)	**0.00** (0.02)	**0.00** (0.01)	**0.00** (0.02)	**-0.01** (0.01)	-	-	-	-		-	-
Control - Firm size	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**-0.01** ** (0.00)	**-0.01** (0.01)	-	-	-	-		-	-
Control - Firm leverage	**-0.04** (0.05)	**-0.07** (0.05)	**-0.04** (0.04)	**-0.09** (0.05)	**-0.05** (0.06)	-	-	-	-		-	-
Constant	**0.08** (0.08)	**-0.05** (0.09)	**-0.03** (0.08)	**0.14** ** (0.1)	**0.10** (0.09)	**-0.02** (0.02)	**-0.04** ** (0.02)	-	**-0.03** (0.02)	**-0.01** (0.02)	**-0.05** ** (0.02)	**0.01** (0.02)
N	144	144	144	144	101	43	28	13	57	45	46	41
R^2 / Pseudo R^2	0.10	0.10	0.06	0.07	0.16	0.06	0.23		0.13	0.12	0.23	0.15
Adj. R^2	0.04				0.08	0.00	0.14		0.03	0.03	0.13	0.00
F-value	2.11 **	1.57	1.11	4.02 ***	2.12 **	0.73	3.40 **		2.04 *	2.06 *	2.69 **	1.92
Root MSE	0.07				0.06	0.07	0.07		0.08	0.08	0.06	0.05
Ø VIF	1.22				1.20	1.60	2.86		1.30	1.49	1.12	1.35

Note: The dependent variable is the CAR (-1,+1) based on a Fama-French-3-Factor Model. The estimation window covered one year (255 days) prior to 30 days before the announcement. Announcements with confounding events and acquisition announcements were excluded, the top and bottom 2.5% based on the CAR (-1,1) were winsorized. Robust standard errors are reported in parentheses.

* p < 0.10 ** p < 0.05 *** p < 0.01

Models 3b and 4b confirm Hypothesis 3.7. Given that both program length and the naming of specific assets do not increase model fit and their insignificance was already determined in Models 3a and 4a, they are not included in this analysis. The argument was that the program value as share divested is a positive predictor of abnormal returns for those divestiture programs that are part of a restructuring program or financially motivated. Indeed, for such programs, abnormal returns are found to increase with program value (Model 3b, b = 0.34, p = 0.02; Model 4b, b = 0.24, p = 0.07).

The announcement of program length has no effect on abnormal returns in the main model (Model 1a, b = 0.01, not significant) nor when specifically looking at refocusing programs (Model 5, b = 0.01, not significant). Thus, Hypothesis 3.8 cannot be confirmed. Additionally, unreported models tested the impact of program length operationalized in years; no significant effect could be measured.

The naming of specific assets to be divested does not have an effect on abnormal returns in the main model (Model 1a, b = 0.00, not significant). As hypothesized, it is a significant and strong predictor for abnormal returns of programs with a refocusing rationale (Model 5, b = 0.05, p = 0.01). For programs with a streamlining or financial rationale, this is not the case. Thus, Hypothesis 3.9 is partially confirmed. The naming of specific assets has a positive effect on the abnormal returns for refocusing programs, and this effect is more significant compared to programs following other rationales.

Supplementary analyses

I ran variations of the model to test for robustness. I varied both the sample and variables included in the regression.

With regard to the sample, I performed two variations. First, I excluded observations that coincided with a results announcement and the respective controls. This results in a more than halved sample size. The program value dummy continues to be significant in Models 1 and 4a. Program value as share divested is significant in Models 3b and 4b. For the naming of specific assets in programs with a refocusing rationale, the direction of coefficients is robust, however, not significant. Second, I ran the regression without winsorizing at the 2.5% and 97.5% levels. The naming of specific assets continues to predict abnormal returns of refocusing programs significantly. The program value dummy continues to be significant in Model 2. For the other models, the direction of coefficients is robust; however, not significant.

Concerning variables, I ran three variations of the shown regression. First, I operationalized program value and length as variables that take a value of 0 if no information was provided and the share to be divested or the actual length of a program (in years) if the information was provided. Results of all models, except for Model 2, are strongly robust. Second, I included dummies to account for the announced usage of proceeds: debt repayment, investment in core or acquisitions, and distribution to shareholders (e.g., through a dividend or share buyback). The usage of proceeds is not a significant predictor of abnormal returns and does not increase model fit. Third, I included further control variables to account for the fact that programs were often announced as part of a restructuring program or alongside a firm's results: downsizing/layoffs dummy, net profit positive dummy, dividend change (in %). All three variables did not increase model fit and were thus not included in the reported analyses. Fourth, I ran a regression on the antecedents of divestiture programs instead of program characteristics. Only new blockholder is found to have a positive and significant effect on abnormal returns. This is in line with the recent findings of Bergh et al. (2019), who argue that investors use screens to overcome information asymmetries and identify investment-worthy firms and that blockholder equity is such a screen.

3.5 Discussion

This study examines the antecedents of a firm's decision to announce a divestiture program and the drivers of the market reaction to program announcements.

The results of the study suggest that firms choose to announce a divestiture program rather than a stand-alone divestiture when facing uncertainty, change, or distress. In such contexts, managers seem to consider divestiture programs as the more effective move to restore efficiency and market trust. This is the case after a CEO turnover, that has in many studies been identified as a driver of divestiture (Berger & Ofek, 1999; Feldman et al., 2016; Hayward & Shimizu, 2006; Pan et al., 2016; Shimizu & Hitt, 2005; Weisbach, 1995). However, when differentiating between divestiture programs and stand-alone divestitures, CEO turnover is a strong predictor for the former only. In contrast, the proportion of CEO turnover anteceding stand-alone divestiture announcements is similar to that of non-divesting periods. Prior literature has argued that new CEOs aspire to a clean start and reverse errors of their predecessors to avoid that these will be attributed to them (Weisbach, 1995). The results of this study suggest that newly appointed CEOs will choose a divestiture program rather than a single transaction to achieve such objectives. Financial distress is another influential antecedent of a divestiture program announcement. Prior research has identified financial distress as the

strongest predictor of divestiture moves (Brauer, 2006; Johnson, 1996). However, the results of this study suggest that a financially distressed firm is more likely to engage in a divestiture program than a stand-alone divestiture. When financially distressed, a single divestiture may not be able to satisfy financial needs and market demands as effectively as a program or thorough portfolio review. Among, the proxies for financial distress, stock underperformance is the most robust antecedent of a divestiture program. The antecedents of divestiture programs vary by rationale. Intuitively and qua specification of the motives, financially motivated divestiture programs are mostly announced by financially distressed firms. Management turnover also coincides more often with a financially motivated divestiture program.

In line with prior literature, I find divestiture experience to be a strong predictor of stand-alone divestitures (Kolev, 2016; Peruffo et al., 2018; Shimizu & Hitt, 2005; Villalonga & McGahan, 2005). While the supplementary analysis finds an experience dummy to predict not only stand-alone divestitures but also divestiture program announcements, the extent of experience as measured in the main analysis is non-significant. Only when regressing years individually, the results show that distant experience also predicts divestiture programs. This suggests that while experience per se increases the likelihood of a divestiture program announcement, the extent of that experience in recent years does not. This is in line with the argument made as part of the hypothesizing, namely that opportunities for value-enhancing divestitures should naturally be limited. For a frequent divestor, announcing a divestiture program makes less sense than for a firm that divests only seldom. Also, the results suggest that firms consider the industry situation for divestitures. Prior research has argued that market conditions during industry merger waves are more favorable, and thus firms are more likely to divest (Humphery-Jenner et al., 2019). While this study finds programs to occur more often before and at the peak of an industry divestiture wave, this is not a significant antecedent based on the multinomial logit regression. However, the study finds firms are significantly less likely to announce a divestiture program or a stand-alone divestiture after the peak of a divestiture wave in their primary industry.

The announcement of divestiture programs results, on average, in positive cumulative abnormal returns for the three days around an announcement. At the same time, the results show that divestiture programs are often announced by financially distressed firms or after a management change. Naturally, divestiture program announcements entail a higher level of information asymmetry than stand-alone divestitures of specific units. I draw from signaling theory (Connelly et al., 2011) to argue that program announcements may follow the purpose of signaling a dedicated and strong move to the market. Such a move is then not only aimed at

signaling commitment, resolving a firm's pressing financial issues, or reversing errors from predecessors, but also at restoring or increasing investor's confidence. I argue that the extent to which a firm provides specific program details to its investors determines the credibility and, ultimately, the effectiveness of the signal. Accordingly, the provision of a program value is a strong positive predictor of abnormal returns, especially for announcements that yield high abnormal returns. This is in line with prior literature that has found the declaration of a transaction price for divestitures and relative deal size to be a strong predictor of the market reaction to divestiture (Afshar et al., 1992; Klein, 1986; Mulherin & Boone, 2000). This effect is even stronger for firms that announce a divestiture program with a financial rationale, such as the reduction of debt or liquidity concerns. For these programs, the results do also show that abnormal returns increase with the share to be divested by a program. Thus, from an investor's perspective, providing a program value increases the credibility of a firm's financial efforts or restructuring measures. For divestiture programs with a refocusing rationale, the specification of the assets to be divested is found to drive abnormal returns significantly. Therefore, the naming of a specific industry or geography to be exited seemingly increases the credibility of such a move.

3.5.1 Theoretical and practical implications

On a general note, the findings of this study underscore the importance of considering divestiture programs in divestiture research. More specifically, this study generates three primary contributions to prior research. Each of these provides meaningful insights that enhance the understanding of divestiture programs and divestiture in general.

First, the study provides a detailed description of when and for which rationale divestiture programs are announced. In doing so, it enhances prior research on divestiture programs that have focused solely on refocusing programs (e.g., Berger & Ofek, 1999) or on the individual transactions that constitute a program (e.g., Brauer & Schimmer, 2010).

Second, it acknowledges the diversity of divestiture by comparing the contexts in which firms decide to announce a divestiture program in contrast to a stand-alone divestiture. In distinguishing between divestiture programs and stand-alone divestitures, the study advances prior research on the causes and antecedents of divestiture. Prior research has mostly focused on examining when firms generally divest (e.g., Brauer, 2006; Kolev, 2016). In contrast, this study widens the understanding of when firms choose to announce a divestiture program vs. a stand-alone divestiture. The results stress that divestiture antecedents commonly ascribed to

divestitures such as CEO change or financial distress, in fact, are primarily the antecedents of divestiture programs and less so of stand-alone divestitures. In considering both divestiture experience and industry divestiture waves, the study acknowledges, confirms, and extends recent research (e.g., Bergh & Lim, 2008; Brauer et al., 2017; Brauer & Wiersema, 2012; Humphery-Jenner et al., 2019). The study identifies differences in how the extent of experience affects a firm's likelihood to announce a divestiture program in contrast to a stand-alone transaction. With regard to divestiture waves, the study confirms that a firm's divestiture intent is partly dependent on how other firms in its industry divest. Also, it provides a European cross-country and cross-industry perspective on the antecedents of divestiture. Prior research has mostly focused on the US and UK (e.g., Berger & Ofek, 1999; Berry, 2010; Haynes, Thompson, & Wright, 2003; Owen et al., 2010).

Third, it examines the market reaction to the announcement of divestiture programs by rationale, taking into consideration the degree of information disclosure in program announcements. Thus, it contributes to the extensive research done on the wealth effects of divestitures (cf. Lee & Madhavan, 2010) in adding empirical evidence on divestiture program announcements. The study shows that investors reward program announcements that provide details and that the rewarded information differs depending on the context of the program. Thus, the study adds to the more recent research that draws from signaling or screening theory when explaining abnormal returns around divestiture programs (e.g., Bergh et al., 2019).

For managers, the study provides important insights that help to understand how investors respond to divestiture program announcements and that their response differs depending on both the program rationale and the specifics that are communicated to the market. For investors, it is helpful to understand when and how firms announce divestiture programs to be able to interpret the signal of such an announcement accurately.

3.5.2 Limitations and future research

The foregoing results and implications ought to be considered within the context of the limitations of this study.

First, the results of this study are based on divestiture program announcements that were manually collected through *Factiva*. However, firms may also undertake a divestiture program without explicitly making a program announcement. In the study presented in ***Chapter 2***, individual divestitures were categorized as being part of a program based on their own announcements. This study leveraged the data gathered for that first study. However, in some

cases, no initial program announcement was identifiable even if individual transactions explicitly referred to a program or common rationale. This may be because some firms did initially not plan to undertake more than one transaction or did not communicate that decision.

A second caveat resides in the study's sample size. While I went to great lengths to identify divestiture program announcements, the overall sample size is limited. The sample size is sufficiently large for the main analyses of antecedents and the market reaction. However, when examining the market reaction by announcement type or program rationale, I had to drop control variables at the firm level deliberately. Further studies could extend the geographic scope of their studies on divestiture programs, to be able to test results with larger samples.

Third, the study also revealed the difficulty of assessing the market reaction to divestiture programs given their confounded nature. Not only are programs often announced concurrently with restructuring programs or acquisition announcements, but the data gathering also revealed that they were often announced on the same day as a firm's results. I acknowledged this by controlling for such events and intentionally excluding programs announced as part of an acquisition announcement. Future research could examine the market reaction to divestiture programs by considering divestiture program announcements when examining restructuring programs or acquisition announcements.

3.5.3 Conclusion

This study demonstrates that firms seem to consider divestiture programs in contrast to stand-alone divestitures as a more effective means to restore market trust and to signal a commitment to the market. Accordingly, divestiture programs are found to be anteceded by contexts that suggest uncertainty, such as a recent management turnover or financial distress. Further, results on the market reaction to divestiture program announcements suggest that investors receive divestiture programs on average well and reward firms that overcome information asymmetries through providing program specifics.

For researchers, this study stresses the importance of considering divestiture programs in divestiture research. For practitioners, the study provides meaningful insights to understand when firms undertake divestiture programs and why investors respond to some more favorably than to others.

4 DIVESTITURE AND ITS MARKET REACTION IN A CONSOLIDATING INDUSTRY: THE GLOBAL BREWING INDUSTRY

ABSTRACT

This study provides a perspective on the market performance of divestitures in a consolidating industry – the global brewing industry. In 2018, the five largest players accounted for 60% of the global beer volume. The study sets out to answer the question to which extent capital markets value divestitures in an industry where players usually seek efficiency gains and growth through mergers and acquisitions. Based on a sample of 66 divestitures in the period from 1999-2018, the results show that markets receive divestitures by publicly listed brewing groups on average positively. I measure the influential effect of success determinants concerning the underlying industry, the divested business, the divestiture structure, the transaction, and the divestor itself.

Keywords: *divestiture, industry consolidation, brewing industry, announcement returns*

4.1 Introduction

In 2016, when the world's two largest brewing groups, Anheuser-Busch InBev and SABMiller, merged to form AB InBev, the consolidation of the global brewing industry reached a preliminary peak. It were primarily these two groups and their predecessors that pushed consolidation over the previous decades. Their efforts to gain in scale and profit from synergies led to today's highly consolidated and globalized brewing industry (Howard, 2014; Mehta & Schiereck, 2012). While the top 5 players in 1998 accounted for only a quarter of global beer volume, the top 5 players in 2018 already added up to 60% of global volume. Four of the five largest players in 1998 have since then amalgamated into today's largest player, AB InBev. It now holds a volume share of more than 30%. Prior research has described the consolidation of the brewing industry (Adams, 2006; Howard, 2014), its drivers (Kerkvliet, Nebesky, Tremblay, & Tremblay, 1998; Tremblay & Tremblay, 1988), and its effects (Chalk, 1988; Iwasaki, Seldon, & Tremblay, 2008; Lynk, 1985). Research has also drawn attention to the market reaction to mergers and acquisitions (M&A) in the brewing industry and found it to be positive (Ebneth & Theuvsen, 2007; Mehta & Schiereck, 2012).

In a consolidating industry, with fewer opportunities and increased antitrust hurdles for M&A, divestitures constitute one of the few options to restructure (Powell & Yawson, 2005). In line with literature, the example of AB InBev shows that divestitures remain a frequently exercised option in such industries (Markides, 1992b; Powell & Yawson, 2005). Following their announcement to merge, Anheuser-Busch InBev and SABMiller announced the sale of SABMiller's US business and well-known international brands such as Pilsner Urquell and Birra Peroni to address potential antitrust concerns pro-actively. In 2017, AB InBev announced but later canceled the divestiture of its dusty German brands Diebels and Hasseroeder. In 2019, to reduce the debt amounted throughout its prior M&A spree, AB InBev carved-out its Asia-Pacific business and eventually sold its Australian business.

A large body of literature has explored the causes and effects of divestitures (e.g., Brauer, 2006; Kolev, 2016; Lee & Madhavan, 2010). Its market reaction has mostly been found to be positive (cf. Brauer & Schimmer, 2010; Lee & Madhavan, 2010; Vidal & Mitchell, 2018). Further, there is consensus that industry concentration drives the likelihood of large players to refocus on that concentrated industry (Markides, 1992b; Powell & Yawson, 2005).

When considering both the consolidation of the brewing industry and prior divestiture research, the question arises, to which extent the capital markets value divestitures in an industry where

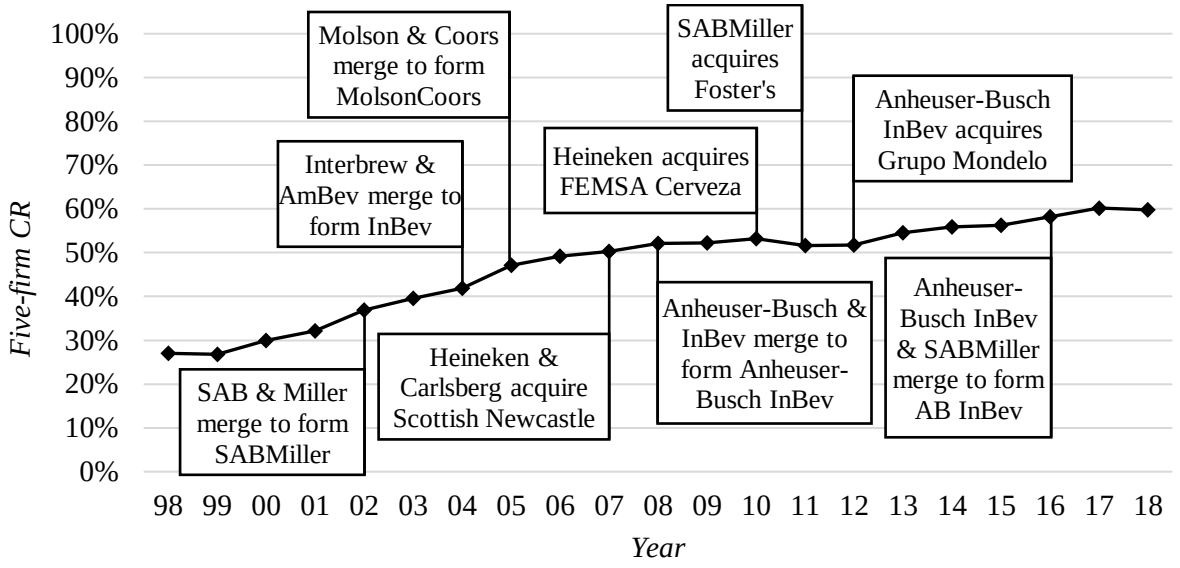
players usually seek efficiency gains and growth through mergers and acquisitions. This study aims to answer that question and to fill the research gap regarding divestitures and the brewing industry. It describes the consolidation of the brewing industry, the divestiture activity of publicly listed brewing groups, studies its market reaction, and identifies success determinants based on a sample of 66 divestitures in the period from 1999-2018. Further, it considers the divestiture of beer units by parent firms that are primarily engaged in other industries.

The results indicate that capital markets react on average positively to divestitures by publicly listed breweries, however, more so to the initial announcement than to the, sometimes subsequent, announcement of a transaction price. Further, also the divestiture of beer units by non-brewing groups is found to be perceived positively.

While the study is unable to link consolidation over time directly to the market reaction, global market share is found to relate negatively to it. Thus, investors seem to find little additional value creation potential in divestitures of firms that hold a competitive position in a concentrated industry. Further, the results show that within the core brewing operations, the sale of brand licenses for specific countries or regions relates positively to the market reaction. In line with prior literature (Brauer & Schimmer, 2010), I find divestitures that are part of a program to be rewarded with a stronger market reaction. One unanticipated finding with regard to firm characteristics was that the reaction to divestiture announcements relates negatively to a firm's share of non-beer sales. This suggests that the market rewards firms that are more invested in their core brewing operations and naturally more likely to reinvest in their concentrated core industry. It is also supportive of prior literature's consensus that firms earn above-average returns in concentrated industries, and thus are more likely to divest and refocus on the attractive, concentrated core industry (Markides, 1992b, 1995; Powell & Yawson, 2005).

This study is organized into six sections. The second section describes consolidation in the global brewing industry. The theoretical background on the influential effect of the different determinants of market reaction is provided in the third section. The fourth section is concerned with the methodology used for the analyses. The results of the analyses are reported in the fifth section. Finally, the sixth section discusses the findings, their implications, limitations, and draws an overall conclusion.

Figure 4-1: *Development of five-firm CR over time and major consolidation events*



Note: Decrease of five-firm concentration ratio (CR) in 2011 was driven by a change in Carlsberg's volume reporting to include the sales of proportionally consolidated entities pro-rata going forward.

4.2 Consolidation of the global brewing industry

Over the past decades, the brewing industry has experienced a massive consolidation and globalization of operations, and the largest players have eventually assumed dominant positions across all continents (Howard, 2014; Madsen, Pedersen, & Lund-Thomsen, 2012). On the one hand, consolidation was driven through mergers between brewing groups and acquisitions of previously independent brewers. The most recent consolidating event was the merger between the two largest players at the time, Anheuser-Busch InBev and SABMiller, in 2016. As ***Figure 4-1*** shows, this was only the latest of many such moves in the last two decades. On the other hand, consolidation was driven by the acquisition of divested brewing units. Divestors included brewing groups consolidating their operations, former brewing groups that exited the industry in light of more attractive alternatives (e.g., FEMSA, Whitbread, Bass), conglomerates refocusing on their core (e.g., Danone, Philip Morris, Fraser & Neave), and financial firms (e.g., HypoVereinsbank, Nomura). For example, FEMSA, rooted in Mexico but home to global brands such as Sol, took the chance to divest their beer assets in exchange for a 20% interest in Heineken and continues to be its second-largest shareholder until today. In addition, divestitures were triggered through antitrust regulation following consolidating moves. While global brands are rarely divested, this has opened opportunities for brewing groups from the second row. For example, Asahi, until 2015, primarily focused on its home market Japan and neighboring

Table 4-1: *Top 10 breweries by beer volume in 2018*

Rank	Name	Country	Beer volume (mhl)	Market share (in %)	Relative market share
1.	AB InBev	Belgium	567.1	29.8	2.27
2.	Heineken	Netherlands	249.5	13.1	0.44
3.	China Resources Breweries	China	112.9	5.9	0.20
4.	Carlsberg	Denmark	112.3	5.9	0.20
5.	MolsonCoors	USA/ Canada	96.6	5.1	0.17
6.	Tsingtao Brewery	China	80.3	4.2	0.14
7.	Asahi	Japan	57.9	3.0	0.10
8.	BGI/ Castel	France	40.0	2.1	0.07
9.	Yanjing	China	38.0	2.0	0.07
10.	Anadolu Efes	Turkey	31.8	2.0	0.06
Total Market size			1905.0	100.0	
Five-firm CR				59.8	
Five-firm HHI				0.12	
Ten-firm CR				72.8	
Ten-firm HHI				0.12	

Note: Total market size and Yanjing volume obtained from the Barth Report 2018/19, volumes for other breweries gathered manually from annual reports and other reportings. Shown values include pro-rata volumes from joint ventures and associated firms

countries, seized the opportunity of the AB InBev merger to increase global reach and acquired the European brands Pilsner Urquell, Peroni, and Grolsch.

The result of decades of consolidation are a five-firm concentration ratio (CR) of roughly 60% and a Herfindahl-Hirschman Index (HHI) of 0.12 in 2018 (see ***Table 4-1***). Both the *n*-firm CR and the HHI[20] are standard measures of industry concentration used both in research and by antitrust authorities.[21] The ten largest firms amounted to 73% of the total beer volume and again an HHI of 0.12. The largest brewery AB InBev held a share of 30% and a relative market share of 2.27 – more than double as high as the market share of the second-largest player, Heineken.

Assembled under the AB InBev umbrella are now such names as Anheuser-Busch, Interbrew, AmBev, South African Breweries, Miller, and Grupo Modelo.

[20] The Herfindahl-Hirschman Index is defined as the sum of the squared market shares of all firms in an industry. Given that the market shares of all firms were not available, it is calculated based on share of the largest *n* firms (e.g., Haynes et al., 2002). However, as can be seen in ***Table 4-1***, the HHI is not sensitive to the inclusion of further firms with low market shares.

[21] A CR of 60% indicates an oligopolistic global brewing industry. In contrast, based on the horizontal merger guidelines by the US Department of Justice, a HHI below 0.15 does not indicate a concentrated market. However, these guidelines and similar ones by the European Comission do not usually examine the global industry structure.

***Table 4-2**: Top 5 breweries by share of beer volume in 1998, '03, '08, '13, and '18*

1998	**%**	**2003**	**%**	**2008**	**%**	**2013**	**%**	**2018**	**%**
Anheuser-Busch	10.0	Anheuser-Busch	10.3	Anheuser-Busch InBev	20.3	Anheuser-Busch InBev	20.2	AB InBev	29.8
Heineken	6.1	SABMiller	8.9	SABMiller	12.0	SABMiller	12.4	Heineken	13.1
Miller	3.8	Interbrew	8.1	Heineken	8.9	Heineken	9.9	China Resources	5.9
South African Breweries	3.6	Heineken	6.7	Carlsberg	7.0	Carlsberg	6.1	Carlsberg	5.9
Interbrew	3.5	Carlsberg	5.5	Tsingtao Brewery*	3.0	Tsingtao Brewery*	4.4	Molson Coors	5.1
Five-firm CR	**27.0**		**39.6**		**51.0**		**53.0**		**59.8**
Five-firm HHI	**0.02**		**0.04**		**0.07**		**0.08**		**0.12**

Note: Market share calculated based on total market size obtained from Barth Reports, volumes for breweries gathered manually from annual reports and other reportings; underlying beer volume includes pro-rata volumes from joint ventures and associated firms.

*China Resources would assume fifth place already both in 2008 and 2013; however, part of its volume was already included on a pro-rata basis in SABMiller's volume, which held a 49% stake until 2016.

Over the past decade, the market has also seen the rise of Chinese players. By 2018, three of the ten largest players were headquartered in China and held an overall market share of 10%. The largest of which, China Resources Breweries, gained full independence only after the AB InBev merger when SABMiller's 49% stake in the joint venture with China Resources Enterprises was sold. It is now the third-largest player in the market. It holds a production volume even slightly higher than that of the long-time top 5 veteran Carlsberg.

The development from 1998 to 2018 shows that both the five-firm CR and HHI have increased dramatically. The CR has more than doubled from 27.0% to 59.8%, and the HHI has increased sixfold (see ***Table 4-2***). Out of the five largest firms in 1998, four have merged to form today's largest player, AB InBev. Their cumulated market share of 20.9% in 1998 increased through both organic growth and further acquisitions to 29.8% in 2018. The second-largest player, Heineken, has held its position at a doubled market share of 13.1% in 2018 compared to 6.1% in 1998. Consolidation has not been limited to the two largest players. The other players in the top 5 of 2018 do each hold a higher share than their counterparts in 1998.

Prior research on the brewing industry has stressed that the pace of consolidation has differed across countries (Adams, 2006). The beer market in the US has been an oligopoly for a long time. Many of the smaller breweries already disappeared in the 1950s, and by the turn of the

Millenium, the four largest players produced more than 90% of the domestic volume (Adams, 2006). Likewise to the US, strong and national players have emerged in Germany, many of which are still operating independently (e.g., Radeberger, Bitburger), others have amalgamated into the global brewing giants (e.g., Becks, Spaten-Löwenbräu, Holsten). However, in contrast to the US, the German market continues to be more fragmented, and smaller breweries continue to compete successfully on a regional and local level (Adams, 2006).

Regarding the initial drivers of the consolidation process, research has cited the automation of brewing and packaging, and television advertising (cf. Adams, 2006). These developments have led to the rise of regional champions by the end of the 1990s, such as Anheuser-Busch in the United States, Interbrew in Belgium, Heineken in the Netherlands, Carlsberg in Denmark, and South African Breweries in South Africa. Faced with limited opportunities in their often declining and mature home markets, a comparatively high fixed cost base, and globalizing suppliers and customers, they pushed their global expansion and the further consolidation of the global brewing industry. This behavior is most rational given that profits increase with industry concentration, while stronger barriers to entry protect the increased profit pools (Chang & Singh, 1999; Markides, 1995). Thus, the leading brewing groups have likely benefited from a persistent increase in their profit levels driven by scale effects such as improved bargaining power and the realization of synergies (Mehta & Schiereck, 2012).

4.3 Theoretical background

Academia agrees that the market reaction to divestiture announcements is positive (Brauer & Schimmer, 2010; Feldman et al., 2016; Lee & Madhavan, 2010; Owen et al., 2010; Vidal & Mitchell, 2018). The same should be expected for divestitures in the brewing industry. Nevertheless, a disparity exists in literature regarding the magnitude of the market reaction, and an array of potential drivers have been identified and discussed (cf. Brauer & Schimmer, 2010; Vidal & Mitchell, 2018). Literature in finance and strategy has often drawn on transaction cost economics and agency theory to explain the gains in market value following divestiture announcements (Lee & Madhavan, 2010). It has argued that future performance increases through an efficient reallocation of freed up financial and managerial resources, an increase in corporate efficiency, and the resolving of inefficiencies across the entire business of the divesting firm (Brauer, 2006; Vidal & Mitchell, 2018). In the following, I provide the theoretical background for potential success determinants of divestitures in the global brewing industry concerning industry characteristics, divested business characteristics, divestiture structure, transaction parameters, and firm characteristics.

Industry characteristics

As outlined above, the brewing industry has undergone massive consolidation over the past decades. Thus, I study the effect of industry structure in terms of **industry consolidation**, **market share,** and **antitrust pressure**.

As an industry consolidates and concentration increases, the industry gains in attractiveness for its incumbents that benefit from above-normal profits and higher barriers to entry (Chang & Singh, 1999; Markides, 1995). In highly concentrated industries, divestitures constitute one of the few remaining restructuring options for firms, given that antitrust regulation is likely to impede further mergers and acquisitions (Powell & Yawson, 2005). Further, the more attractive a core industry is, the more likely is a firm to refocus on that core, and thus the more likely to divest assets that are less related to the core or of little strategic relevance for its position in the core industry (Markides, 1992b). However, research has also argued that firms may divest from concentrated industries because they are unsatisfied with their market position and have little hope to increase market share (Hopkins, 1991). In both cases, the divestitures driven by the **consolidation** of an **industry** over time should be valued positively by investors and result in an increase of the market reaction over time. Consistently, research has found divestiture likelihood to increase with an industry's concentration (Hopkins, 1991; Markides, 1992b; Powell & Yawson, 2005).

Divestiture research has relied on a firm's **market share** to capture the commercial position and competitive performance of a firm (Chang & Singh, 1999; Çolak & Whited, 2007; Haynes et al., 2002). Literature has argued that leaders within a market benefit more from the focus increase from divestitures, and thus they will be more inclined to exit peripheral and less strategic businesses (Haynes et al., 2003; Markides, 1992b). Further, firms with a high market share that are fully profiting from above-average returns should have less reason to divest itself of operations (Hopkins, 1991). Therefore, when firms with a high market share divest, they should be more likely to exit less strategic businesses and spark a positive market reaction. However, when a divestiture is likely to threaten the competitive position of a market leader, it should result in an adverse reaction by the capital market.

Divestitures are a crucial instrument to regulate industries and execute antitrust policy, and as such, they have often been applied in response to mergers and acquisitions (Brauer, 2006; Shleifer & Vishny, 1991). Research has linked involuntary divestitures forced through political pressure or antitrust authorities to a negative capital market reaction (Boudreaux, 1975; Wright & Ferris, 1997). In an industry, where the five largest players account for 60% of the global

production and repeatedly engage in M&A, some divestitures have likely been driven by antitrust authorities. To account for this, I consider whether divestitures were announced to comply with direct **antitrust pressure** (or in anticipation of obedience to such). In line with prior research, I expect divestitures to result in less favorable market reactions if they were sparked by antitrust pressure.

Divested business characteristics

Consolidation in the brewing industry has not only occurred on a global, but also on a regional or national level (Adams, 2006). Brewers are likely to have grown, either from legacy or from acquisitions, a portfolio of businesses not limited to core brewing operations and attractive geographies. Instead, it is likely, that many firms do also hold brewing assets of little geographic relevance, as well as businesses that are not or only distantly related to brewing. I consider how the capital market reacts to divestitures based on their **relatedness** to the core brewing operations and their **geographic scope**.

Firms diversify their product offering for various reasons, e.g., to put excess resources to use, to increase operating efficiency by realizing economies of scale, to create a more efficient debt capacity, or to reduce taxes (Berger & Ofek, 1995; Markides, 1992a). However, with increasing diversification, marginal benefits eventually decline, and marginal costs from organizational inefficiencies, coordination, and "managerial diseconomies of scale" increase (Hoskisson & Hitt, 1994; Markides, 1992a: 399). Literature differentiates between related and unrelated product diversification. Related diversification shares a similar resource profile and has been argued to be superior to unrelated diversification (Bergh, 1995, 1998; Chang & Singh, 1999; Montgomery, 1994). Consistently, it is argued that the less related a resource profile is to a firm's core, the more difficult are the exploitation of synergies and the management across units (Bergh, 1998; Chang & Singh, 1999). To realize the benefits of related diversification and avoid the negative effects of less related diversification, firms need to proactively reconfigure resources through divestitures and acquisitions (Helfat & Eisenhardt, 2004). Further, value gains from selling unrelated units to a buyer with a better fit should be passed on to the seller in the form of a price premium due to a higher willingness to pay (John & Ofek, 1995). Indeed, the sale of unrelated businesses has been linked to higher post-divestiture performance than that of related businesses (Bergh, 1995, 1998; Chang, 1996; Depecik et al., 2014). For the brewing industry, the differentiation between related and unrelated businesses does not suffice. Instead, I differentiate between **core** beer/brewing operations, **beer-related** operations, and **unrelated** operations. These beer-related operations, such as the distribution of beer, ownership of pubs,

or retailers, were considered part of a brewery's core business at some point. For example, the former UK brewers Whitbread or Brass used to own and operate a large number of pubs that were eventually divested during the observation period. In line with prior research, I consider the **relatedness** of the divested unit and argue that the divestiture of unrelated units should be received more positively than the divestiture of core or beer-related units.

Firms diversify geographically to overcome home-market disadvantages, tap opportunities for higher returns, and ultimately reduce the risk of failure (Hoskisson & Hitt, 1994). However, geographic diversification also comes with organizational complexity (Hoskisson & Hitt, 1994; Lu & Beamish, 2001, 2004). While its benefits allow firms to initially overcome complexity, firms will eventually reach a threshold of internationalization at which costs of complexity exceed the benefits (Hitt, Hoskisson, & Kim, 1997; Hitt, Tihanyi, Miller, & Connelly, 2006; Lu & Beamish, 2004). Research has argued that firms refrain from withdrawing from home markets whereas they willingly divest distant units as long as commitment and dependence on the respective region is low (Benito & Welch, 1997; Landier, Nair, & Wulf, 2009). The market reaction to both foreign and domestic divestitures has been found to be positive (Borde, Madura, & Akhigbe, 1998; Gleason, Mathur, & Singh, 2000; Sicherman & Pettway, 1992). However, it is difficult to differentiate between domestic and foreign markets in an often globally operating industry. For example, while AB InBev is headquartered in Belgium, it has a management office in the US and regional headquarters across the world. Neither of its largest brands (Budweiser, Corona, and Stella Artois) is at home in Belgium. Instead, as with other consumer products, when measuring the geographic scope, I argue, that one has to differentiate between **global brands**, their **brand licenses** for specific countries or regions, and **local/ other assets** not associated with a firm's international brands. Global brands are of strategic relevance in a globally consolidating industry, and firms will likely only divest those if forced to do so. Such divestitures should result in a negative market reaction. Their brands' licenses for specific countries or local assets are less relevant and should be easy to disentangle from the rest of the firm. Consistently, in their study on brand divestments, Depecik et al. (2014), find only the divestiture of local or regional brands to have a positive effect on firm value. The divestment of such more distant brand assets unlocks resources that can be invested in core geographies or global brands. Further, compared to the divestment of local assets, it should be more likely to spark capital market interest. Thus, I expect the divestiture of brand licenses for specific countries or regions to be valued positively by the market.

Divestiture structure

Divestitures do often occur as part of a series of multiple transactions (Berger & Ofek, 1999; Haynes et al., 2002; Hoskisson et al., 1994; Hoskisson & Johnson, 1992; Markides, 1995). A structured series of strategically consistent divestitures that extends over a prolonged period – a divestiture program – signals commitment. This commitment suggests a strategic rather than a tactical rationale (Brauer & Schimmer, 2010). Both strategic divestitures (Montgomery et al., 1984) and strategically consistent decisions have been linked to superior performance compared to their respective opposites (Robinson & Pearce, 1988; Sen, 1993). Research has also found that experienced divestors earn higher announcements returns (Humphery-Jenner et al., 2019) and argued that divestiture programs facilitate learning and its application in future divestitures (Brauer & Schimmer, 2010). The analysis in ***Chapter 3*** showed that the announcement of a divestiture program itself results on average in a positive market reaction. Further, the supplementary analysis in ***Chapter 2*** compared market returns for divestitures that constitute a program – program divestitures – with non-program divestitures. While the former were found to yield higher returns, this difference was not significant. Finally, Brauer and Schimmer (2010) have found program divestitures in the pharmaceutical industry to yield superior shareholder returns compared to non-program divestitures. In line with prior literature, I expect **program divestitures** to be superior compared to non-program divestitures.

Transaction parameters

Prior literature has considered transaction parameters such as **transaction price**, **relative deal size,** and **consideration type** when determining the market reaction to divestiture announcements (Afshar et al., 1992; Bergh & Lim, 2008; Brauer & Wiersema, 2012; Klein, 1986; Mulherin & Boone, 2000; Owen et al., 2010; Slovin, Sushka, & Polonchek, 2005).

On many occasions, research has found the declaration of a price, the transaction price, or its relative size to influence stock market returns upon a divestiture announcement (Afshar et al., 1992; Klein, 1986; Mulherin & Boone, 2000). I analyze the relation of the market reaction to both transaction price and relative deal size, given that the latter allows investors to draw inferences on the economic consequences and potential efficiency gains from divestiture (Afshar et al., 1992; Brauer & Wiersema, 2012). I expect both **transaction price** and **relative deal size** to relate positively to the market reaction.

In their study on the method of payment in asset sales, Slovin et al. (2005) find equity deals to be more value-enhancing than cash sales. Divesting for equity instead of cash may suggest the initiation of a strategic alliance or convey favorable information about the seller's perception

and the expected productivity of the sold unit (Slovin et al., 2005). Thus, I expect divestitures where the **consideration type** is equity to result in a more favorable market reaction.

Firm characteristics

In addition and in line with prior literature, I include controls at the firm-level of the divestor: firm **current ratio**, firm **size**, firm **leverage,** and firm **diversification**.

The higher the **current ratio**, the level of slack resources, the lower should be the financial constraints a firm faces, and thus also the necessity to divest (Feldman et al., 2016; Kolev, 2016; Montgomery & Thomas, 1988; Owen et al., 2010). If a firm divests, despite a high current ratio and in a consolidating industry, the divestiture is most likely driven by a strategic instead of a financial motive. Generally, strategic transactions have been found to result in higher performance (Montgomery et al., 1984).

Firms of a large **size**, in many cases, also manage large business portfolios. Large firms have a large asset base, and thus more flexibility to choose which assets to divest (Shleifer & Vishny, 1992). However, firm size creates complexity and inefficiencies, eventually undermining corporate control (Kolev, 2016). Research has found that firm size increases the likelihood of a firm to divest (Feldman et al., 2016; Kolev, 2016; Owen et al., 2010; Shleifer & Vishny, 1992). Prior literature has employed firm size as a control variable when examining the wealth effects of divestiture and has not found a significant effect (e.g., Brauer & Schimmer, 2010).

High **leverage** has been shown to relate positively to a firm's likelihood to divest (Feldman et al., 2016; Haynes et al., 2003; Owen et al., 2010). When faced with limited cash flows and high costs for further external financing, divestitures become an attractive financing source (Lang et al., 1995). Studies have also linked firms that divest to repay debt to a more favorable market reaction (Lang et al., 1995), and have highlighted the positive effect of effective lender monitoring (Lasfer, Sudarsanam, & Taffler, 1996). However, research has also argued that high leverage firms have less negotiating power when selling assets and found returns to be lower for those firms (Hearth & Zaima, 1984; Sicherman & Pettway, 1992).

Divestiture research has associated a firm's **diversification** level with the likelihood to divest and wealth effects gained from its announcement (e.g., Berger & Ofek, 1999; Dittmar & Shivdasani, 2003; Haynes et al., 2003; Kolev, 2016). Similar to firm size, high diversification may indicate complexity and potential control issues (Ravenscraft & Scherer, 1987). Further, a highly diversified firm is less dependent on a single division facilitating the divestiture of such units (Kolev, 2016).

4.4 Methods

In the following, I describe the dataset, the applied dependent, independent, and control measures, and the method of data analysis.

4.4.1 Sample

The sample of divestitures was drawn from Thomson Reuters' *SDC* database. Transactions needed to fulfill several criteria to be included in the initial dataset:

i. The transaction was flagged as a divestiture deal by *SDC*.

ii. The deal status was "completed".

iii. The divestiture was announced between 01.01.1999 and 31.12.2018.

iv. The divestiture reduced the holding to below 50% from a previous majority holding or a 50% stake. The latter were included to account for the fact that the large breweries frequently engage in joint ventures as part of their brand and licensing strategy.

v. The ultimate parent's primary standard industrial classification (SIC) needed to be 2082, "Manufacturing of malt beverages". Non-beer ultimate parents within that industry, e.g., distillers or falsely-classified transactions, were excluded manually.[22]

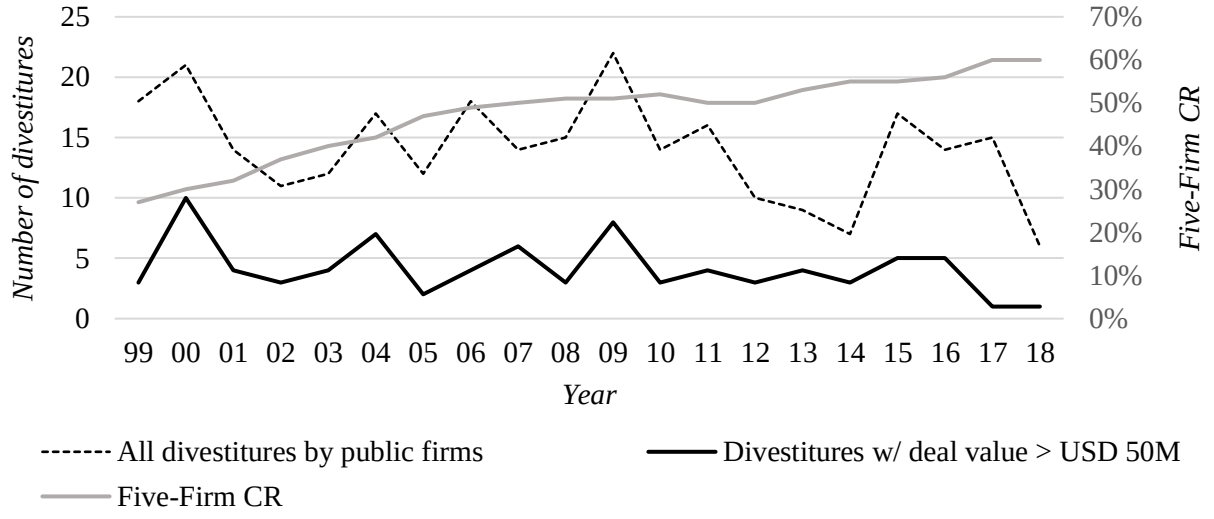
This resulted in 365 transactions.[23] 282 of which were undertaken by publicly listed companies. While coverage of publicly listed companies in databases such as *SDC* should naturally be good, this is less likely for private companies. In many cases, these are substantially smaller, and thus it is likely that a large part of their activities goes unrecorded. Therefore and since this study analyzes the market reaction to divestitures, I focus on publicly listed breweries for the analysis. ***Figure 4-2*** shows the development of these divestitures against the development of the industry's five-firm concentration.

To obtain the final sample for the event study analysis, I set a size threshold for transactions to avoid the inclusion of small and marginal transactions unlikely to attract sufficient shareholder

[22] Exceptions were made in two cases. The sample includes Heineken, whose ultimate parent is the holding company L'Arche Green NV with the primary SIC of 6799, "Investors not elsewhere classified". Further, the sample includes transactions that mark the exit of a firm's beer engagement, e.g. Whitbread, and Bass. In addition, I relied on segment sales data from *Worldscope* to validate that beer constituted a firm's primary business as the segment with the most sales. As a consequence Hitejinro (most sales: distilled beverages), the Swallow Group (most sales: hotels) and Wolverhampton & Dudley (most sales: retail outlets) were excluded.

[23] The number excludes divestitures that were duplicates or falsely labelled as divestitures by *SDC*, e.g., both the divestor and acquirer were subsidiaries of the same parent company, the divestor held only a minority interest in the sold assets or a transaction was falsely allocated to a parent.

Figure 4-2: *Development of divestiture activity of publicly listed brewing groups over time*



Note: Decrease of five-firm CR in 2011 driven by a change in Carlsberg's volume reporting to include the sales of proportionally consolidated entities only pro-rata.

attention. This is in line with prior literature (e.g., Owen et al., 2010; Rosenfeld, 1984). For transactions to be included, I required deal value to be at least USD 50M. This left a sample of 83 divestitures by 23 brewing groups. I employed *Factiva* to verify the announcement dates stored in the *SDC* database. In line with prior research, I tracked for each divestiture the announcement of the intent to divest and of the transaction price (e.g., Afshar et al., 1992). Overall, 110 announcements were made to announce the 83 divestitures. [24]

McWilliams and Siegel (1997) note a number of criteria that need to be fulfilled in the context of event studies: market efficiency, unanticipated event, and no confounding effects. First, a sample of transactions by public firms was chosen, all of which were listed and traded on their home countries' stock markets. As such, they were subject to respective communication regulations. Second, I assured that each divestiture announcement signaled new information to the market and validated the announcement dates stored in *SDC* through a manual search in *Factiva*. Third, I accounted for confounding effects following the methods suggested by McWilliams and Siegel (1997). I controlled for such events on the 5-day window around the

[24] For one of the 83 divestitures, the announcement to divest had to be dropped due to insufficient firm stock price data, the announcement of the transaction price was included. One further divestiture had to be dropped completely given that no stock data was available. Three announcements that solely announced the offer of an acquirer after the announcement of the intent and before the announcement of the transaction pricewere not included.

***Table 4-3**: Sample distribution by parent industry and announcement type*

	Full sample		**Final sample** (after controlling for confounding events)	
	Divestitures	**Announcements**	**Divestitures**	**Announcements**
Brewing groups	**83**	**110**	**66**	**86**
Divestiture announcements (Intent & Price)		55		38
Divestiture intent announcements		28		23
Divestiture price announcements		27		25
Non-brewing parents	**12**	**16**	**11**	**14**
Divestiture announcements (Intent & Price)		8		7
Divestiture intent announcements		4		3
Divestiture price announcements		4		4
Total	**95**	**126**	**77**	**100**

announcement relying on *Factiva* to screen the press coverage of each divestor. **86** announcements for **66** divestitures of brewing groups remained in the sample after controlling for confounding events.

To portray divestiture activity in the brewing industry in its entirety, I include the divestiture of beer operations by parents that are not primarily engaged in brewing. Thus, I relax the constraint with regard to the parent's primary business and apply the criteria to the divested unit. Further, I again require deal value to be greater than USD 50M and the divestor to be a public company. This resulted in 12 divestitures by 10 firms. In total, 16 announcements were made regarding these divestitures. After controlling for confounding events **14** announcements for **11** divestitures remained in the sample.

Table 4-3 shows the sample distribution by both brewing and non-brewing groups and announcement type. ***Table 4-4*** provides the divestiture activity of publicly listed brewing groups that undertook at least one divestiture that fulfilled the aforementioned criteria. For each divestor, it provides the ultimate parent of its brewing operations at the end of the study. Thus, it highlights the continuing consolidation process throughout the observation period. ***Table 4-5*** shows the 15 largest sell-offs in the sample, the majority of which were undertaken by large

Table 4-4: *Sample distribution by divestor*

Divestor at the time of divestiture	**Ultimate parent** of the brewing operations by the end of the study	**Country**	**Divestitures**		
			All	**USD > 50M**	**USD > 50M & no confounding event**
AB InBev (*from 2016 onwards)*	*AB InBev*	Belgium	6	3	1
Anheuser-Busch InBev *(until 2015)*	*AB InBev*	Belgium	22	8	6
SABMiller	*AB InBev*	UK	17	9	5
Foster's Group	*AB InBev*	Australia	21	8	8
Kirin	*Kirin*	Japan	30	8	7
Scottish & Newcastle	*Heineken*	UK	16	8	6
Heineken	*Heineken*	Netherlands	26	7	4
Carlsberg	*Carlsberg*	Denmark	26	6	4
InBev	*AB InBev*	Belgium	9	3	3
Sapporo	*Sapporo*	Japan	6	3	2
Ambev	*AB InBev*	Brazil	2	2	2
Bass	*AB InBev*	UK	5	2	2
Fomento Economico Mexicano	*Heineken*	Mexico	4	1	1
Stichting Interbrew	*AB InBev*	Belgium	4	2	2
Asahi	*Asahi*	Japan	11	2	2
Pivovarna Lasko	*Heineken*	Slovenia	3	2	2
Whitbread	*AB InBev*	UK	5	2	2
Daniel Thwaites	*Daniel Thwaites*	UK	2	1	1
Holsten-Brauerei	*Carlsberg*	Germany	2	1	1
Lion Nathan	*Kirin*	Australia	7	1	1
MolsonCoors	*MolsonCoors*	USA	5	1	1
Tsingtao Brewery	*Tsingtao Brewery*	China	1	1	1
XinJiang Hops	*XinJiang Hops*	China	3	1	1
Molson	*MolsonCoors*	Canada	3	1	1
Total			**233**	**83**	**66**

global players and involved part of their brewing operations. Brewers were able to realize EBITDA multiples of 7.3 - 14.8x for these divestitures. Their motives are in line with prior divestiture research and involve refocusing, debt repayment, and regulatory concerns in light of mergers or large acquisitions. Four out of the 15 largest sell-offs are related to the recent AB InBev-SABMiller merger.

***Table 4-5**: The 15 largest sell-offs by publicly listed breweries between 1999 and 2018*

	Divestor	Year	Acquirer	Divested unit	Unit Industry	Divestiture type	Divested share	Deal value (bn USD)	EBITDA multiple	Description
1.	SABMiller	2015	Molson Coors	MillerCoors US operations & licenses	Brewing	Sell-off	58.0%	12.0	14.0 *(EBITA)*	Adressal of antitrust concerns for AB InBev / SABMiller merger *(confounded)*
2.	AB InBev	2016	Asahi	Plzensky Prazdroj operations & brands (Pilsner Urquell)	Brewing	Sell-off	100.0%	7.8	14.8	Adressal of antitrust concerns for the AB InBev / SABMiller merger
3.	FEMSA	2009	Heineken	Brewing operations, brands & licenses (Sol, Dos Equis)	Brewing	Sell-off	100.0%	7.3	9.1	Focus on soft drinks in exchange for a 20% economic interest in Heineken
4.	Scottish & Newcastle	2003	Investors	SN Retail business	Restaurants, Pubs, Hotels	Sell-off	100.0%	4.2	11.0 *(Op. profit)*	Repay debt and focus on the beer business
5.	Bass	2000	Interbrew	Brewing operations, brands & licenses (Bass, Carling UK, etc.)	Brewing	Sell-off	100.0%	3.5	9.7	Maximize shareholder value and focus on hotel and pub business
6.	AB InBev	2016	Coca-Cola	Coca-Cola Beverages Africa	Other beverages	Sell-off	54.5%	3.2	-	Exercising of change of control clause following AB InBev/ SAB Miller merger
7.	Anh InBev	2009	CVC	CEE brewing operations, brands & licenses (Staropramen)	Brewing	Sell-off	100.0%	3.0	-	Repay debt to pay off loans from Anheuser-Busch takeover
8.	AB InBev	2013	Constellation Brands	Cia Cervecera de Coahuila, Corona & Modelo US perpetual licenses	Brewing	Sell-off	100.0%	2.9	9.4	Sale to gain antitrust approval for the acquisition of Grupo Modelo
9.	SABMiller	2015	Asahi	Various European brands (Peroni, Grolsch, Meantime)	Brewing	Sell-off	100.0%	2.9	13.3	Adressal of antitrust concerns for the AB InBev / SABMiller merger
10.	AB InBev	2009	Blackstone	Busch Entertainment	Other	Sell-off	100.0%	2.7	-	Repay debt to pay off loans from Anheuser-Busch takeover
11.	Molson Coors	2007	SABMiller	MolsonCoors US operations & licenses	Brewing	Sell-off	58.0%	2.6	7.3	Formation of MillerCoors JV, Molson Coors to hold 42% of new company
12.	AB InBev	2012	Constellation Brands Inc	Crown Imports	Brewing / Distribution	Sell-off	50.0%	1.9	-	Sale to gain antitrust approval for the acquisition of Grupo Modelo
13.	AB InBev	2009	Investors	Oriental Brewery operations, brands & licenses (Cass)	Brewing	Sell-off	100.0%	1.8	9.0	Repay debt to pay off loans from Anheuser-Busch takeover – includes buy-back option
14.	Interbrew	2001	Molson	Carling UK operations & brands	Brewing	Sell-off	100.0%	1.7	8.0	Sale to gain antitrust approval for Bass brewing acquisition
15.	SABMiller	2011	Anadolu Efes	SABMiller operations & licenses in RU & UA	Brewing	Sell-off	100.0%	1.6	-	Sale in exchange for a 24% interest in Anadolu Efes *(confounded)*

Note: Based on *SDC* database & press releases; Year reflects the intent announcement year; Transactions with at least one confounded announcement are marked as such under Description

4.4.2 Measures

The data for the construction of the variables was obtained from Thomson Reuters' *Datastream*, *Worldscope*, and *SDC*. In addition, press releases were obtained for all divestiture announcements in the sample to validate the data from the stated databases. Market share was computed based on the *Barth* report and annual reports.

Dependent variable

Divestiture market returns. I applied an event study methodology to measure the cumulative abnormal returns (CAR) on the three days surrounding a divestiture announcement as a proxy for the success of divestitures. A favorable market reaction in terms of a stock price increase reflects a positive change in investors' belief regarding the firm's future. Also, to consider the sensitivity to outliers and avoid distortions of results, I winsorized the CAR of all 110 announcements (-1, +1) at the 2.5% and 97.5% levels (e.g., Owen et al., 2010).

Independent variables

Industry – 2009-2018. I compared the first to the second half of the observation period to account for the consolidation of the brewing industry over the past two decades. This is in line with prior research on the brewing industry (Mehta & Schiereck, 2012). The variable takes a value of 1 if a divestiture was undertaken in the second half, the years 2009-2018.

Industry – Market share top 5. Global market share was calculated based on the production volume reported in the annual report of a firm relative to the total beer production volume, as reported by *Barth*. The variable takes a value of 1 if the divestor was one of the five largest brewing groups by market share at the time of divestiture.

Industry – Antitrust pressure. The variable takes a value of 1 if press releases and secondary press coverage of divestitures obtained through *Factiva* stated that a divestiture was undertaken to comply with direct antitrust pressure or in anticipation of obedience to such.

Relatedness. To capture the relatedness of assets, I differentiated between *core* beer/ brewing, *beer-related*, and *unrelated* assets through three dummy variables. I again relied on the *SDC* database to obtain the divested unit's primary industry *SIC* code (see ***Table 4-6***). The assigned industries in *SDC* were validated manually. 37% of divestitures involved a brewery's core operations in terms of the brewing itself, beer brands, or licenses for specific regions. Another 26% involved related activities, such as pre-production, raw materials, distribution, wholesale, and retail operations. Unrelated activities made up another 36% of transactions. As also shown

***Table 4-6**: Sample distribution by industry relatedness*

Industry		**Full sample**	All public firms	All private firms	**Description**	**Main SIC codes**
Core	Beer/ Brewing	**31** (37%)	91 (32%)	53 (64%)	Brewing, beer brands, licenses	2082
Beer-Related	Pre-production & raw materials	**5** (6%)	14 (5%)	1 (1%)	Malthouses, glass/ container production	2083, 2821, 3221, 3411, 4221
	Distribution & wholsale	**0** (0%)	21 (7%)	1 (1%)	Wholesale, logistics & transport	5181
	Retail outlets	**17** (20%)	46 (16%)	12 (14%)	Pub, restaurants, hotels, grocery stores, markets	5149, 5411, 5812, 5813, 7011
Unrelated	Other beverages	**10** (12%)	41 (15%)	8 (10%)	Soft drinks, wine, liquor	2084, 2085, 2086, 2082 (non-beer)
	Other	**20** (24%)	69 (24%)	8 (10%)	All other	-
Total		**83**	282	83		

Note: SIC code allocation is directional. The allocation was manually reviewed based on the deal synopsis reported in *SDC* and further *Factiva* research in unclear cases.

in ***Table 4-6***, the smaller and likely less diversified private companies in the sample, divested mostly core brewing operations. As part of the multivariate analyses, three dummies were included to account for the differences in relatedness.

Geographic scope. I differentiated divestitures in *global brands*, their *brand licenses* for specific countries or regions, and *local/ other assets*. I relied on press releases and secondary press coverage identified through *Factiva* to identify the geographic scope of divestitures.

Structure - Program. The variable takes a value of 1 in case the divestiture could be related to a divestiture program. Prior research has taken different approaches. It has either assigned all transactions following a program announcement to that program (e.g., Bhabra et al., 1999), required transactions to be clustered in time (e.g., Laamanen & Keil, 2008) or analyzed the individual divestiture announcements (Brauer & Schimmer, 2010). I assumed a two-fold approach and considered both the individual announcements and divestiture program announcements through press releases and secondary press coverage identified through *Factiva.* I required programs to have been publicly known at the time of the announcement.

Transaction – Price. Divestiture size was measured as the log of the transaction price (Bergh, 1995; Bergh et al., 2019). For the CAAR analysis, I compared the top 20 with the bottom 20 divestitures by transaction price.

Transaction – Relative deal size. Relative divestiture size was measured as transaction price plus net debt relative to the previous year's enterprise value. For the CAAR analysis, I compared the top 20 with the bottom 20 divestitures by relative deal size.

Transaction – Consideration. I operationalized consideration type as a dummy variable that takes a value of 1 for equity deals or hybrid deals (Brauer & Wiersema, 2012; Mehta & Schiereck, 2012).

Firm – Current ratio. The level of slack resources was measured as the previous year's current assets over current liabilities (Feldman et al., 2016).

Firm – Size. The size of a firm was calculated as the natural logarithm of the previous year's total assets (Bergh & Sharp, 2015; Brauer et al., 2017).

Firm - Leverage. A firm's indebtedness was operationalized as the previous year's total debt scaled by total assets (Berger & Ofek, 1999; Dickerson et al., 1997; Haynes et al., 2002).

Firm - Diversification. The diversification of a firm was measured as the share of non-beer sales relative to the firm's total sales. For firms where sales per segment were not available through *Worldscope*, annual reports were consulted to approximate non-beer sales based on volume figures.

4.4.3 Data analysis

For each presented determinant, I contrasted the wealth effects measured through an **event study** of the announcements that exhibited the respective characteristic with those that did not exhibit the respective characteristic. Further, I ran multivariate **ordinary least squares** (OLS) **regressions** with cumulative abnormal returns as the dependent variable to gain a complete picture of the influential effects of the determinants.

In line with prior divestiture research (e.g., Dittmar & Shivdasani, 2003; Owen et al., 2010), I applied the standard Market Model (MM) event study methodology to measure the short-term market return of divestiture announcements.

The MM estimates return on day t following a single-factor model:

$$R_{i,t} = \propto_i + \beta_i \times R_{M,t} + \varepsilon_{i,t}, \quad (1)$$

$R_{i,t}$ is a firm's actual return on day t, $R_{M,t}$ is the return of the national reference market on the same day, $\varepsilon_{i,t}$ is the error term and β_i is the sensitivity of $R_{i,t}$ on the reference market. Given

that a global sample was chosen, home market indices (e.g., FTSE 100, BEL 20, S&P/ASX 50) are used for each firm to avoid issues with differences in operating hours (Park, 2004). The estimation window covered one trading year (255 days) prior to 30 days before the announcement date (e.g., Brauer & Wiersema, 2012; Depecik et al., 2014).

The abnormal return $AR_{i,t}$ was calculated by subtracting the expected return measured by the MM from the actual return:

$$AR_{i,t} = R_{i,t} - (\propto_i + \beta_i \times R_{M,t}) \quad (2)$$

Cumulative abnormal returns (CAR) over the different event windows were calculated as:

$$CAR\ (t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{i,t}. \quad (3)$$

Next, the cumulative average abnormal return (CAAR) was calculated as the arithmetic mean across all events. The statistical significance of the returns was tested applying the parametric Patell (1976) z-test and cross-sectional z-test as proposed by Boehmer et al. (1991), as well as the non-parametric generalized sign test according to Cowan (1992).

Finally, to identify the influential effects of the determinants on the market reaction, I ran a multivariate regression with the CAR on the three days surrounding the announcement as the dependent variable. Prior literature has stressed the issue of unobserved heterogeneity in settings with a pooled cross-sectional sample, where some firms announce multiple moves throughout a study and suggested the application of a random-effects model, including firm-specific error terms (Brauer & Wiersema, 2012). I ran both a Hausman (1978) test and a Breusch and Pagan (1980) Lagrange multiplier test to determine the consistency of a fixed-effects and a random-effects estimator, respectively. Both were rejected. Consequently, I relied on pooled cross-sectional OLS regressions. This is in line with prior divestiture research (e.g., Humphery-Jenner et al., 2019; Owen et al., 2010).

4.5 Results

The results section presents the findings of the event study analysis and the ordinary least squares regression.

4.5.1 Event study analysis

Table 4-7 shows the abnormal returns of the 86 of 110 divestiture announcements by brewing groups and 14 of 16 announcements by non-brewing groups for which no confounding events were identified. I show the daily average abnormal returns (AAR) for the days -1, 0, 1 as well

Table 4-7: *AAR and CAAR of divestiture announcements*

Sample	**Event window**	**AAR/ CAAR**	Winsorized CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
Brewing groups	Day -1	0.12	-	-	-	52.33	-
	Day 0	0.38	-	***	**	54.65	-
	Day +1	0.32	-	**	-	58.14	*
N = 86	**-1 to +1**	**0.82**	**0.76**	*******	*******	**62.79**	***
Divestiture announcements (Intent & Price)	Day -1	0.26	-	-	-	52.63	-
	Day 0	0.61	-	***	-	55.26	-
	Day +1	0.79	-	*******	*******	68.42	******
N = 38	**-1 to +1**	**1.66**	**1.49**	*******	*******	**78.95**	***
Divestiture intent announcements	Day -1	0.15	-	-	-	60.87	-
	Day 0	0.78	-	***	*	60.87	-
	Day +1	0.18	-	-	-	56.52	-
N = 23	**-1 to +1**	**1.12**	**1.18**	*******	******	**65.22**	-
Divestiture price announcements	Day -1	-0.11	-	-	-	44.00	-
	Day 0	-0.34	-	-	-	48.00	-
	Day +1	-0.28	-	-	-	44.00	-
N = 25	**-1 to +1**	**-0.73**	**-0.74**	-	-	**36.00**	-
Non-brewing groups	Day -1	-0.71	-	-	-	50.00	-
	Day 0	-0.94	-	-	-	42.86	-
	Day +1	3.89	-	***	-	78.57	**
N = 14	**-1 to +1**	**2.23**	**0.91**	-	-	**57.14**	-

Note: The table shows abnormal returns in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement. Positive denotes the share of events exhibiting positive AR and CAR. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer et al. (1991) and the generalized sign test, according to Cowan (1992).

* p < 0.10 ** p < 0.05 *** p < 0.01

as the cumulative average abnormal returns (CAAR) for the three days surrounding the announcement based on a Market Model (MM). Further, I show the CAAR (-1, +1) after winsorizing the 86 announcements by brewing groups at the 2.5% and 97.5% levels. Positive reports the share of divestiture announcements that displayed positive abnormal returns (AR) or cumulative abnormal returns (CAR). The statistical significance is shown next to the AAR/ CAAR and Positive columns. The means, standard deviation, and correlations of the determinants are presented in ***Appendix 4-1*** and ***Appendix 4-2***.

The divestiture announcements of brewing groups were found to result in a positive market reaction on the three days surrounding the announcement ($CAAR_{-1, +1}$ = 0.82%). Both the parametric and non-parametric tests confirm the significance of these returns. As outlined in the sample section, I differentiated between the announcement to divest and the declaration of the transaction price. The 38 unconfounded divestiture announcements that announced both the

intent to divest and the price concurrently result in positive and highly significant wealth effects (CAAR $_{-1, +1}$ = 1.66%,). Firms that only announced the intent to divest without declaring a transaction price yet, experience also positive returns (CAAR $_{-1, +1}$ = 1.12%,). Parametric tests show the significance of these returns, while the non-parametric generalized sign-test fails to confirm significance. For firms whose announcements only convey the transaction price, returns were found to be insignificant (CAAR $_{-1, +1}$ = -0.73%). However, it should be noted that only 36% of these transactions show positive market returns. Unreported two-tailed tests find the difference between divestiture and divestiture intent announcements on the one side and divestiture price announcements on the other side to be significant.

The market reaction to divestiture announcements of beer units by parent firms that are primarily engaged in other industries, while on average positive, is found to be insignificant (CAAR $_{-1, +1}$ = 2.23%).

Industry characteristics

To control for the impact of the massive industry consolidation in the past decades, I examined how the reaction to divestiture announcements evolved over the observation period from 1999 to 2018. I divided the observation period into two sub-periods of ten years each (see ***Table 4-8***). CAAR for both periods are significant, positive and similar in size (CAAR $_{1999\text{-}08, -1, +1}$ = 1.37%, CAAR $_{2009\text{-}18, -1, +1}$ = 1.57%). The difference in CAAR increases when winsorizing. However, unreported two-tailed tests rejected the significance of the difference. Results are generally robust when considering all 86 announcements, although differences in returns for the two periods are more pronounced.

Further, I consider the market share of the divestor and single out those divestitures that were announced by one of the top 5 brewing groups at the time (see ***Table 4-8***). The 23 divestiture announcements of the largest brewing groups result in a positive and significant CAAR of 1.15% over the three-day window around the announcement. All divestiture announcements by the other brewers result in a higher and significant CAAR of 1.64%. However, an unreported conservative two-tailed test rejects the significance of the difference in CAAR.

Several divestitures in this study were announced in reaction or anticipation of antitrust concerns. However, the events are too few to derive meaningful inferences from testing the significance of abnormal returns. Nevertheless, to provide a perspective as exhaustive as possible, I present the respective announcements in ***Appendix 4-3***. Contrary to the expected, all the announcements by brewing groups except for one result in positive abnormal returns. The

Table 4-8: *AAR and CAAR of divestiture announcements by industry characteristics*

Sample	**Event window**	**AAR/ CAAR**	Winsorized CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
Consolidation							
1999-2008	Day -1	0.19	-	-	-	54.29	-
	Day 0	0.68	-	***	*	57.14	-
	Day +1	0.49	-	-	-	62.86	*
N = 35	**-1 to +1**	**1.37**	**1.22**	***	***	**74.29**	***
2009-2018	Day -1	0.25	-	-	-	57.69	-
	Day 0	0.67	-	**	-	57.69	-
	Day +1	0.65	-	**	**	65.38	-
N = 26	**-1 to +1**	**1.57**	**1.57**	***	***	**73.08**	**
Market share							
Top 5 brewing groups	Day -1	0.22	-	-	-	56.52	-
	Day 0	0.47	-	-	-	52.17	-
	Day +1	0.46	-	-	*	69.57	**
N = 23	**-1 to +1**	**1.15**	**1.15**	**	*	**73.91**	**
Others	Day -1	0.22	-	-	-	55.26	-
	Day 0	0.80	-	***	**	60.53	-
	Day +1	0.62	-	**	*	60.53	-
N = 38	**-1 to +1**	**1.64**	**1.51**	***	***	**73.68**	***
Antitrust pressure							
Antitrust	*Too small N=6, see* ***Appendix 4-3***						
Voluntary	Day -1	0.22	-	-	-	56.36	-
	Day 0	0.72	-	***	**	60.00	-
	Day +1	0.47	-	*	**	60.00	-
N = 55	**-1 to +1**	**1.40**	**1.31**	***	***	**72.73**	***

Note: The 61 announcements comprised the 38 divestiture announcements and the 23 divestiture intent announcements. The table shows abnormal returns in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement. Positive denotes the share of events exhibiting positive AR and CAR. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer et al. (1991) and the generalized sign test, according to Cowan (1992).

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

only divestiture not directly related to previous M&A activities and undertaken by a non-brewing group, the government-forced sale of the Myanmar Brewery by Fraser & Neave, results in a strongly negative CAR. Voluntary divestitures exhibit a positive and significant CAAR of 1.40% on the three days surrounding the announcement date (see ***Table 4-8***).

Divested business characteristics

Table 4-9 shows the CAAR when differentiating announcements by relatedness. I find the CAAR for divestitures for core brewing operations to be positive and significant ($CAAR_{-1, +1} = 2.37\%$). Results are robust when winsorizing. Unexpectedly, the CAAR for

Table 4-9: *AAR and CAAR of divestiture announcements by divested business characteristics*

Sample	**Event window**	**AAR/ CAAR**	Winsorized CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
Relatedness							
Core beer/ brewing	Day -1	0.72	-	*	**	70.00	*
	Day 0	1.28	-	***	**	65.00	-
	Day +1	0.37	-	-	-	70.00	*
N = 20	**-1 to +1**	**2.37**	**2.04**	***	***	**75.00**	**
Beer-related	Day -1	-0.56	-	-	-	40.00	-
	Day 0	0.71	-	**	-	65.00	*
	Day +1	0.95	-	**	*	65.00	-
N = 20	**-1 to +1**	**1.10**	**1.17**	-	-	**70.00**	*
Unrelated	Day -1	0.48	-	*	*	57.14	-
	Day 0	0.07	-	-	-	42.86	-
	Day +1	0.38	-	-	-	57.14	-
N = 21	**-1 to +1**	**0.93**	**0.93**	***	***	**76.19**	***
Geographic Scope							
Global brand	*Too small N=3, see* ***Appendix 4-4***						
Brand license	*Too small N=9, see* ***Appendix 4-4***						
Other/ local	Day -1	-0.01	-	-	-	51.02	-
	Day 0	0.38	-	**	-	53.06	-
	Day +1	0.57	-	**	**	59.18	-
N = 49	**-1 to +1**	**0.94**	**0.97**	*******	*******	**71.43**	***

Note: The 61 announcements comprised the 38 divestiture announcements and the 23 divestiture intent announcements. The table shows returns in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement. Positive denotes the share of events exhibiting positive AR and CAR. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer et al. (1991) and the generalized sign test, according to Cowan (1992).

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

divestitures from the core is higher than that of less related divestitures. An unreported one-tailed test shows the difference return between core divestitures and unrelated divestitures to be significant. When applying a conservative two-tailed test, the significance of this difference is narrowly missed. The market reaction to the divestiture announcement of both beer-related ($CAAR_{-1, +1}$ = 1.10%) and unrelated assets ($CAAR_{-1, +1}$ = 0.93%) is positive and significant. While returns for the divestiture of beer-related assets are higher than for those of unrelated assets. An unreported conservative two-tailed test does not find this difference to be significant.

The divestiture of global brands is rare, and the events are too few to derive meaningful inferences from testing the significance of the CAAR. While divestitures of brand licenses are more frequent and returns are highly significant, their N is still low. Thus, I provide the divestitures and market returns of global brands and their licenses to deliver a perspective as

Table 4-10: *AAR and CAAR of divestiture announcements by divestiture structure*

Sample	**Event window**	**AAR/ CAAR**	Winsorized CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
Program divestitures	Day -1	-0.21	-	-	-	50.00	-
	Day 0	0.97	-	***	**	65.00	-
	Day +1	1.05	-	**	**	75.00	**
N = 20	**-1 to +1**	**1.81**	**1.81**	***	***	**80.00**	***
Non-program divestitures	Day -1	0.43	-	-	-	58.54	-
	Day 0	0.53	-	***	-	53.66	-
	Day +1	0.32	-	-	-	58.54	-
N = 41	**-1 to +1**	**1.28**	**1.16**	***	***	**70.73**	***

Note: The 61 announcements comprised the 38 divestiture announcements and the 23 divestiture intent announcements. The table shows returns in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement. Positive denotes the share of events exhibiting positive AR and CAR. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer et al. (1991) and the generalized sign test, according to Cowan (1992).

* p < 0.10 ** p < 0.05 *** p < 0.01

exhaustive as possible. ***Appendix 4-4*** presents the respective divestitures. It can be observed that returns, with few exceptions, are positive and that the average CAAR is relatively high. The market reaction to the divestiture of local/ other assets is positive and significant ($CAAR_{-1, +1} = 0.94\%$), though at a low level given that it mostly comprises unrelated assets.

The 12 unconfounded divestitures by brewing groups that are shown in ***Appendix 4-4*** are all part of the 20 divestitures from the core shown in ***Table 4-9***.

Divestiture structure

I recognize the diversity of divestiture structure and compare the announcements of divestitures that are part of a structured series with a shared rationale – a divestiture program – with that of divestitures that could not be related to such a program (see ***Table 4-10***). Program divestitures are found to result in a positive and significant CAAR of 1.81% on the three days around an announcement. The CAAR measured for non-program divestitures is also positive and significant, though lower, at 1.28%. The results are in line with expectations. The difference in returns is robust when winsorizing the sample. However, an unreported conservative two-tailed test does not find this difference to be significant.

Transaction parameters

I rely on divestiture and divestiture price announcements to examine the relationship between transaction parameters and abnormal returns.

Table 4-11: *AAR and CAAR of divestiture price announcements by transaction parameters*

Sample	**Event window**	**AAR/ CAAR**	Winsorized CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
Relative deal size							
Top 20	Day -1	-0.28	-	-	-	50.00	-
	Day 0	0.92	-	***	*	65.00	-
	Day +1	0.29	-	**	-	55.00	-
N = 20	**-1 to +1**	**0.93**	**0.59**	***	-	**60.00**	-
Bottom 20	Day -1	0.25	-	-	-	40.00	-
	Day 0	0.00	-	-	-	50.00	-
	Day +1	0.13	-	-	-	55.00	-
N = 20	**-1 to +1**	**0.38**	**0.38**	-	-	**60.00**	-
Transaction price							
Top 20	Day -1	0.02	-	-	-	55.00	-
	Day 0	1.22	-	***	*	70.00	*
	Day +1	-0.21	-	-	-	55.00	-
N = 20	**-1 to +1**	**1.03**	**0.71**	***	-	**55.00**	-
Bottom 20	Day -1	-0.11	-	-	-	35.00	-
	Day 0	-0.63	-	-	*	35.00	-
	Day +1	0.78	-	***	-	70.00	**
N = 20	**-1 to +1**	**0.04**	**0.03**	-	-	**60.00**	-
Consideration type							
Equity consideration	*Too small N=4, see* ***Appendix 4-5***						
Cash only	Day -1	0.04	-	-	-	52.54	-
	Day 0	0.09	-	-	-	55.93	-
	Day +1	0.14	-	-	-	55.93	-
N = 59	**-1 to +1**	**0.26**	**0.30**	-	-	**67.80**	*

Note: The 63 announcements comprised the 38 divestiture announcements and the 25 divestiture price announcements. The table shows abnormal returns in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement. Positive denotes the share of events exhibiting positive AR and CAR. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer et al. (1991) and the generalized sign test, according to Cowan (1992).

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

Table 4-11 shows the CAAR for the top 20 and bottom 20 divestitures by relative deal size and transaction price. The divestitures with the largest relative deal size result in a positive CAAR of 0.93% on the three days around the announcement date, whereas the divestitures with the smallest deal size result in a positive but lower CAAR of 0.38%. An unreported conservative two-tailed test fails to confirm the significance of this difference. While the difference between the abnormal returns for the top ($CAAR_{-1, +1}$ = 1.03%) and bottom ($CAAR_{-1, +1}$ = 0.04%) divestiture announcements by transaction price is more pronounced, an unreported two-tailed test does again not find this difference to be significant.

Further, I examine the effect of consideration type on wealth effects. However, the sample of divestitures with a consideration that included not only cash but also equity is too small to test the significance of abnormal returns. Thus, I provide the respective divestitures, the type of equity consideration, and the abnormal returns in ***Appendix 4-5***. The study of these divestitures conveys interesting insights. Most announcements are found to result in positive CAR. This is irrespective of whether the equity consideration was acquirer stock, a minority holding in a newly formed joint venture, stock of the divestor itself, or in another holding. I identify negative returns only for the transaction price announcement of FEMSA's brewing operations sale to Heineken in 2010, for which it received a 20% shareholding in Heineken. In contrast, the divestiture announcement of this transaction at a time at which no specific price had yet been disclosed resulted in the highest abnormal returns of this study (see ***Appendix 4-4***). Thus, this specific market reaction could also be considered a correction of a CAR of over 25% that the original announcement yielded. Announcements of divestitures with cash-only considerations resulted on average in positive and weakly significant market returns (see ***Table 4-11***, $CAAR_{-1, +1} = 0.26\%$).

Firm characteristics

To examine the firm characteristics, I again rely on the divestiture and divestiture intent announcements to capture only the initial market reaction to a divestiture.

Table 4-12 provides the results of this analysis. I contrasted the 20 divestiture announcements with the highest value of each characteristic with those 20 with the lowest value. The market returns for the groups with higher returns are found to be positive and strongly significant. Significance for the groups that yielded lower returns varies. In line with expectations, the abnormal returns of the firms with high current ratios are higher ($CAAR_{-1, +1} = 1.81\%$) than those of low current ratio firms ($CAAR_{-1, +1} = 0.88\%$). When comparing CAAR dependent on firm size, I find small firms to experience higher returns ($CAAR_{-1, +1} = 1.98\%$) in contrast to larger firms ($CAAR_{-1, +1} = 1.27\%$). With regard to leverage, I find the divestiture announcements of low leverage firms to be rewarded with higher returns ($CAAR_{-1, +1} = 2.36\%$) than those of high leverage firms ($CAAR_{-1, +1} = 1.11\%$). Abnormal returns of firms with a high share of beer sales are found to be higher ($CAAR_{-1, +1} = 2.50\%$) than those of more diversified firms ($CAAR_{-1, +1} = 0.70\%$). Unreported conservative two-tailed tests find only the difference between the reaction to announcements of lightly and highly diversified firms to be significant.

Table 4-12: *AAR and CAAR of divestiture announcements by firm characteristics*

Sample	**Event window**	**AAR/ CAAR**	Winsorized CAAR	Patell (1976) z-Test	Boehmer et al. (1991) z-Test	**Positive**	Cowan (1992) GenSign z-test
Firm current ratio							
Highest 20	Day -1	0.62	-	-	*	70.00	**
	Day 0	0.69	-	***	**	70.00	**
	Day +1	0.49	-	-	-	55.00	-
N = 20	**-1 to +1**	**1.81**	**1.81**	***	***	**80.00**	***
Lowest 20	Day -1	-0.29	-	-	-	40.00	-
	Day 0	-0.15	-	-	-	35.00	-
	Day +1	1.31	-	***	***	80.00	***
N = 20	**-1 to +1**	**0.88**	**0.95**	-	-	**75.00**	**
Firm size							
Largest 20	Day -1	0.27	-	-	-	50.00	-
	Day 0	0.46	-	-	-	55.00	-
	Day +1	0.54	-	-	**	70.00	*
N = 20	**-1 to +1**	**1.27**	**1.27**	**	-	**70.00**	*
Smallest 20	Day -1	0.30	-	-	-	60.00	-
	Day 0	0.13	-	-	-	45.00	-
	Day +1	1.55	-	***	***	85.00	***
N = 20	**-1 to +1**	**1.98**	**1.98**	***	***	**85.00**	***
Firm leverage							
Highest 20	Day -1	0.17	-	-	-	65.00	-
	Day 0	0.31	-	**	-	55.00	-
	Day +1	0.63	-	-	-	70.00	*
N = 20	**-1 to +1**	**1.11**	**1.11**	***	**	**70.00**	*
Lowest 20	Day -1	0.52	-	-	-	45.00	-
	Day 0	1.09	-	***	-	65.00	-
	Day +1	0.75	-	*	*	70.00	**
N = 20	**-1 to +1**	**2.36**	**2.10**	***	**	**90.00**	***
Firm diversification (% of non-beer sales)							
Highest 20	Day -1	0.24	-	-	-	60.00	-
	Day 0	0.04	-	-	-	55.00	-
	Day +1	0.43	-	-	-	55.00	-
N = 20	**-1 to +1**	**0.70**	**0.77**	**	-	**65.00**	-
Lowest 20	Day -1	0.54	-	-	-	55.00	-
	Day 0	0.98	-	***	-	55.00	-
	Day +1	0.99	-	**	***	80.00	***
N = 20	**-1 to +1**	**2.50**	**2.18**	***	**	**80.00**	***

Note: The 61 announcements from which the samples where drawn comprised the 38 divestiture announcements and the 23 divestiture intent announcements. The table shows returns in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement. Positive denotes the share of events exhibiting positive AR and CAR. Statistical significance was tested using the Patell (1976) z-test, the cross-sectional z-test as proposed by Boehmer et al. (1991) and the generalized sign test, according to Cowan (1992).

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

4.5.2 Ordinary least squares regression

Next, I analyzed the influential effects of the determinants on the market reaction to divestitures in multivariate ordinary least squares (OLS) regressions with a winsorized CAR (-1, +1) as the dependent variable. The results are presented in ***Table 4-13***. The table shows the *coefficients*, the *robust standard errors* in the brackets below, and the *significance* based on the *p-value*. Further, I provide R^2, the *adjusted* R^2, the *F-value*, the root mean squared error (*Root MSE*), and the average variance inflation factor (*Ø VIF*). The models 1 through 10 examine the 61 divestiture and intent to divest announcements of the final sample. The models 11 through 16 are based on the final sample of the 63 divestiture and transaction price announcements. As stated above, the means, standard deviations, and correlations of the variables used throughout the analysis are presented in ***Appendix 4-1*** and ***Appendix 4-2***.

Model 1 shows the effect of the control variables – the firm characteristics. Firm diversification is found to be negatively related to the market reaction (Model 1, b = -0.05, p = 0.05). This effect is persistent throughout the other models. The firm current ratio, size, and leverage have no significant relation to the market reaction. Given their function as established control variables, all four variables are included in the further models.

Models 2 through 5 test the effect of the industry characteristics. The time of the announcement, included to test the effect of industry consolidation, is not found to affect the market reaction (Model 2, b = 0.00, not significant). Regarding market share, the regression relates a top 5 market position negatively to the realized abnormal returns (Model 3, b = -0.02, p = 0.01). Antitrust pressure is not found to affect the market reaction (Model 4, b = 0.01, not significant). Model 5 tests all three industry variables concurrently, the significant negative effect of a top 5 market position persists.

Characteristics of the divested business are tested in models 6 through 8. Relatedness in terms of both core beer/ brewing (Model 6, b = 0.00, not significant) or unrelated assets (Model 6, b = -0.01, not significant) is not found to have a determining effect on the market reaction. Concerning geographic scope, the divestiture of brand licenses for specific countries or regions is found to have a statistically significant and positive effect on the measured market reaction (Model 7, b = 0.02, p = 0.01). The divestiture of global brands is not found to have an influential effect (Model 7, b = 0.01, not significant).[25] Model 8 tests all relatedness and geographic scope

[25] It should be noted that the final sample tested includes only three global brand divestitures, given that many of these divestitures were found to be announced near other confounding events.

***Table 4-13**: Results of OLS regressions with CAR (-1,+1) as the dependent variable*

Model	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Industry - 2009-2018	-	**0.00** (0.01)	-	-	**0.00** (0.01)	-	-	-	-	-	-	-	-	-	-	-
Industry - MS Top 5	-	-	**-0.02** ** (0.01)	-	**-0.02** ** (0.01)	-	-	-	-	**-0.01** * (0.01)	-	-	-	-	-	**-0.02** ** (0.01)
Industry - Antitrust	-	-	-	**0.01** (0.01)	**0.01** (0.01)	-	-	-	-	-	-	-	-	-	-	-
Relatedness - Core	-	-	-	-	-	**0.00** (0.01)	-	**-0.02** ** (0.01)	-	**-0.01** (0.01)	-	-	-	-	-	**0.00** (0.01)
Relatedness - Unrelated	-	-	-	-	-	**-0.01** (0.01)	-	**-0.01** (0.01)	-	-	-	-	-	-	-	-
Geography - Global brand	-	-	-	-	-	-	**0.01** (0.01)	**0.02** (0.01)	-	-	-	-	-	-	-	-
Geography - Brand license	-	-	-	-	-	-	**0.02** ** (0.01)	**0.04** *** (0.01)	-	**0.03** *** (0.01)	-	-	-	-	-	**0.01** (0.01)
Structure - Program	-	-	-	-	-	-	-	-	**0.01** ** (0.01)	**0.02** ** (0.01)	-	-	-	-	-	**0.02** ** (0.01)
Transact. - Rel. deal size	-	-	-	-	-	-	-	-	-	-	-	**0.00** (0.06)	-	-	-	-
Transact. - ln(Price)	-	-	-	-	-	-	-	-	-	-	-	-	**0.00** (0.00)	-	**0.00** (0.00)	**0.00** (0.00)
Transact. - Equity cons.	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.04** ** (0.01)	**0.03** ** (0.01)	**0.04** *** (0.01)
Firm - Current ratio	**0.01** (0.01)	**0.01** (0.01)	**0.01** (0.01)	**0.02** (0.01)	**0.01** (0.01)	**0.02** (0.01)	**0.01** (0.01)	**0.01** (0.01)	**0.01** (0.01)	**0.01** (0.01)	**0.02** ** (0.01)	**0.02** ** (0.01)	**0.02** ** (0.01)	**0.02** ** (0.01)	**0.02** ** (0.01)	**0.01** (0.01)
Firm - Size	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.00** (0.00)	**0.01** (0.00)
Firm - Leverage	**-0.04** (0.03)	**-0.04** (0.03)	**-0.04** (0.03)	**-0.04** (0.03)	**-0.03** (0.03)	**-0.05** (0.03)	**-0.05** * (0.03)	**-0.05** * (0.03)	**-0.06** * (0.03)	**-0.07** ** (0.03)	**-0.03** (0.03)	**-0.03** (0.03)	**-0.03** (0.03)	**-0.02** (0.03)	**-0.03** (0.03)	**-0.04** (0.03)
Firm - Diversification	**-0.05** * (0.02)	**-0.05** * (0.02)	**-0.07** *** (0.03)	**-0.05** * (0.02)	**-0.08** *** (0.03)	**-0.04** (0.03)	**-0.04** * (0.02)	**-0.05** ** (0.02)	**-0.05** ** (0.02)	**-0.07** *** (0.03)	**-0.05** *** (0.01)	**-0.05** *** (0.02)	**-0.05** *** (0.02)	**-0.03** * (0.02)	**-0.04** ** (0.02)	**-0.07** *** (0.02)
Constant	**0.04** (0.05)	**0.04** (0.06)	**0.01** (0.05)	**0.04** (0.05)	**0.01** (0.06)	**0.04** (0.05)	**0.06** (0.05)	**0.06** (0.05)	**0.06** (0.05)	**0.05** (0.05)	**0.00** (0.06)	**0.01** (0.06)	**0.01** (0.06)	**-0.04** (0.06)	**-0.03** (0.06)	**-0.06** (0.06)
N	61	61	61	61	61	61	61	61	61	61	63	63	63	63	63	63
R^2	0.17	0.17	0.24	0.18	0.25	0.20	0.28	0.29	0.24	0.39	0.22	0.22	0.24	0.29	0.30	0.44
Adj. R^2	0.11	0.10	0.17	0.10	0.15	0.11	0.20	0.18	0.17	0.29	0.16	0.15	0.17	0.23	0.22	0.33
F-value	3.26 **	2.84 **	3.59 ***	2.57 **	2.68 **	2.85 **	3.72 ***	3.34 ***	3.42 ***	4.27 ***	5.71 ***	4.53 **	4.78 ***	9.00 ***	9.02 ***	11.64 ***
Root MSE	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.02
Ø VIF	1.23	1.27	1.77	1.21	1.67	1.50	1.25	1.72	1.26	1.86	1.20	1.32	1.24	1.30	1.35	1.93

Note: The dependent variable is the CAR (-1,+1) based on a MM. The estimation window covered one year (255 days) prior to 30 days before the announcement. Announcements with confounding events were excluded, the top and bottom 2.5% based on the CAR (-1,1) were winsorized. Robust standard errors are reported in parentheses.

* p < 0.10 ** p < 0.05 *** p < 0.01

variables. The significant effect of the divestiture of brand licenses is robust in this setting. When including the geographic scope variables, relatedness to the core is found to have a diminishing effect on the market reaction to a divestiture announcement (Model 8, b = -0.02, p = 0.04). In addition to the significant control variable, firm diversification, firm leverage is found to relate negatively to the market reaction in Models 7 and 8.[26]

The influential effect of the divestiture structure is tested in Model 9. The affiliation with a previously announced divestiture program is found to have a significantly positive effect on the market reaction to a firm's divestiture announcement (Model 9, b = 0.01, p = 0.05). The negative relation of both firm diversification and firm leverage to the market reaction is robust.

Model 10 tests all those determinants concurrently for which significance was established in the previous models. The negative effect of a top 5 market position (Model 10, b = -0.01, p = 0.1), the positive effect from divesting brand licenses (Model 10, b = 0.03, p = 0.004) and the positive effect from affiliation with a divestiture program (Model 10, b = 0.02, p = 0.03) persist. Relatedness to the core is not found to have a significant effect (Model 10, b = -0.01, p = 0.2). The negative relation of both firm diversification and firm leverage to the market reaction is robust. Model 10 is also found to achieve the highest fit of Models 1 through 10.

Model 11 shows the effect of the control variables – the firm characteristics – against the backdrop of the changed sample with divestiture and divestiture price announcements. Firm diversification is again found to have a significantly negative effect on the market reaction (Model 11, b = -0.05, p = 0.002). In addition, firm current ratio is seen to have a significant positive effect on the market reaction (Model 11, b = 0.02, p = 0.01). Firm size and firm leverage are not found to have a significant effect.

The effect of the examined transaction parameters is tested in Model 12 through 15. Contrary to the expected, relative deal size (Model 12, b = 0.00, not significant) and transaction price (Model 13, b = 0.00, not significant) are not found to have a significant effect on the market reaction the price announcement. In contrast, the type of consideration, in terms of a full or partial equity consideration, is found to have a strongly significantly positive effect on the market reaction (Model 14, b = 0.04, p = 0.01). Model 15 tests both the effect of transaction price and equity consideration concurrently. The significance of equity consideration persists. However, given that only four of the 64 transactions included in the regression analysis resulted

[26] The dummy variables *Relatedness – Related* and *Geography – Local/ Other* were omitted automatically because of collinearity with the other respective relatedness and geographic scope dummy variables.

in full or partial equity consideration, the interpretation of this effect should be trodden carefully. ***Appendix 4-5*** provides a detailed overview of the particular transactions.

Model 16 tests all determinants that have proofed significant throughout the previous models with the changed sample introduced in Model 11. The positive effects of an equity consideration (Model 16, b = 0.04, p = 0.002), and the negative effect of high diversification (Model 16, b = -0.07, p = 0.001) prevail. Also, the positive effect of an affiliation with a divestiture program identified in Models 9 and 10 (Model 16, b = 0.02, p = 0.04), and the negative effect of a top 5 market position identified in Models 3, 5 and 10 are robust (Model 16, b = -0.02, p = 0.03).

To control for the robustness of the model, I varied the dependent variable from the winsorized CAR (-1, 1) to a non-winsorized CAR (-1, 1) and CAR (-1, 2). The results are robust. Further, I varied the variables to capture consolidation over time and re-ran Model 2 with four instead of two time segments. When including variables for 2004-2008, 2009-2013, and 2014-2018, neither of those is found to have a significant effect on the market reaction.

4.6 Discussion

The primary purpose of this study is to examine the capital market reaction to divestiture announcements and its determinants in the consolidating brewing industry. An industry where players usually seek efficiency gains and growth through mergers and acquisitions.

The capital market reaction to divestitures by brewing groups is found to be on average positive. This is in line with prior divestiture research (cf., Brauer & Schimmer, 2010; Lee & Madhavan, 2010; Vidal & Mitchell, 2018). When differentiating between the type of announcement, divestitures that announce both the intent to divest and the transaction price concurrently result in the highest market reaction. This is in agreement with the findings of Afshar et al. (1992). I find announcements that announce the transaction price after the intent to divest has already been declared to result in significantly lower results compared with the announcements that initially declared the intent to divest. Further, the reaction to the divestiture of beer units by non-brewing groups is also found to be on average positive.

With regard to the examined industry characteristics, I find only market share to be a significant determinant of the market reaction. Prior literature has argued that firms with a large market share are likely to profit more from an increase in focus through divestiture (Haynes et al., 2003). In contrast, in the examined brewing industry, the capital markets seem to consider divestitures by market leaders on average to be detrimental to future firm value and penalize

such moves. One explanation may be that investors see little potential for further value creation in divestitures by firms that already hold a competitive position in such a concentrated industry. Further, neither the consolidation of the industry over time nor antitrust pressure is found to relate significantly to the market reaction. The descriptive analysis of divestitures driven by antitrust pressure does not hint towards a strictly negative reaction to such divestitures. A possible explanation for this could be "quasi-forced" divestitures, as noted by Boudreaux (1975: 625). Such divestitures that are undertaken in anticipation of obedience to antitrust regulation are voluntary to the degree that future cash flows are perceived as worth less than the immediate selling price (Boudreaux, 1975). Supportive of the findings of Wright and Ferris (1997), the only government-forced divestiture not related to antitrust regulation results in a sharply negative market reaction.

When examining the effect of characteristics of the divested business, CAAR is found to be the highest for the divestiture of core brewing operations. However, in the multivariate regression, no significant effect of relatedness itself is identified. Only when further differentiating assets by geographic scope, I find that the divestiture of core brewing operations relates negatively to the market reaction. The previously identified higher returns for divestitures from the core seem to have been driven primarily by the high returns for the divestiture of beer brand licenses for specific countries or regions. The divestiture of such assets that are both more distant compared to global beer brands and more relevant than local assets is found to relate significantly positive to the market reaction. This is partly in line with prior research by Depecik et al. (2014) that found only the disposal of local or regional brands to have a positive effect on firm value. In contrast, entire global beer brands were divested only seldom. One of the few opportunities for second-row players to acquire such was the divestitures in anticipation of obedience to antitrust regulation following the Anheuser-Busch InBev and SABMiller merger.

Further, the study confirms the understanding that capital markets value consistency and structure in divestitures. More specifically, the affiliation with a structured divestiture program is found to relate significantly positive to the market reaction. This finding corroborates the findings outlined in ***Chapter 2, Chapter 3***, and the study of Brauer and Schimmer (2010). It again stresses the importance of considering structural characteristics when examining divestitures.

Relative deal size and transaction price are not found to have a significant effect on the market reaction to those announcements that declared the transaction price. The results of ***Chapters 2 and 3,*** and, on many occasions, prior literature (e.g., Afshar et al., 1992; Klein, 1986; Mulherin

& Boone, 2000) have found both to be strong determinants of the market reaction. However, findings in previous research are not unanimous, likewise to the results of this study, it has not always identified a significant relationship (e.g., Brauer & Wiersema, 2012; Owen et al., 2010). Consistent with the findings of Slovin et al. (2005), the partial or full consideration in equity is found to relate positively to the market reaction. This finding should be considered with caution, given that only a small number of the divestitures in the sample was actually paid with equity.

The influential effect of the firm characteristics, included as controls throughout the analysis is mostly in line with prior research. As expected, a firm's current ratio is found to relate significantly positively to the market reaction to divestiture price announcements. This is supportive of the argument made in the literature review that a divestiture despite a high current ratio suggests a careful selection of the assets to divest and a rather strategic rationale. Results also hint towards a negative effect of firm leverage on the market reaction. This is in agreement with the argument that a firm's negotiating power deteriorates with leverage and that high leverage firms select the assets to divest driven rather by financial distress than strategic criteria (Hearth & Zaima, 1984; Sicherman & Pettway, 1992). Firm size is not found to relate significantly to the market reaction. One unanticipated finding of this study was produced regarding firm diversification. Both the direct comparison of firms with a high and low diversification and the multivariate analysis relate the share of non-beer sales negatively to the market reaction. Thus, the market seems to reward firms that are more invested in their core brewing operations. One possible explanation could be that these firms are naturally more likely to reinvest in their concentrated core industry. This finding is supportive of prior literature's consensus that returns in concentrated industries are above-average, and thus that firms operating in these industries are also more likely to divest and refocus on their attractive, concentrated core industry (Markides, 1992b, 1995; Powell & Yawson, 2005).

4.6.1 Theoretical and practical implications

Collectively, the results of this study contribute to extant research on divestitures and the brewing industry in several ways.

First, the study adds to the large body of literature on the market reaction to divestitures (cf. Brauer & Schimmer, 2010; Lee & Madhavan, 2010; Vidal & Mitchell, 2018). Specifically, it contributes evidence on the market reaction to divestitures and its determinants in a consolidating industry. While no direct effect of industry consolidation over time is identified, the negative relation of market share constitutes a new insight and adds to prior literature. With

regard to relatedness and geographic scope, the results advance the findings of Depecik et al. (2014) in specifically considering regional brand licenses of otherwise international or global brands and relating them positively to the market reaction. Further, it confirms the results of Brauer and Schimmer (2010) on the market reception of program vs. non-program divestitures. The unanticipated, adverse effect of diversification into non-beer sales advances the understanding of the relationship between product diversification and the market reaction to divestitures. Finally, the study provides cross-country evidence from an industry not yet regarded in divestiture research. While more recent divestiture research has also relied on global or cross-country samples (e.g., Bergh et al., 2019; Feldman et al., 2016; Vidal & Mitchell, 2018), the studies where an industry-specific focus has been chosen have not specifically highlighted the context or specifics of that industry (e.g., Brauer & Schimmer, 2010; Depecik et al., 2014; Vidal & Mitchell, 2018).

Second, the study adds to the research on the brewing industry. It considers the thus far disregarded sell-side of acquisitions in the brewing industry. Previous research has only studied the acquirer's perspective of transactions in the brewing industry (e.g., Ebneth & Theuvsen, 2007; Mehta & Schiereck, 2012). Further, the study provides a detailed and current review of the consolidation in the global brewing industry. Thus, it continues other research on the brewing industry that has provided similar overviews in the past (Adams, 2006; Ebneth & Theuvsen, 2007; Howard, 2014; Madsen et al., 2012).

For managers in the brewing industry, this study provides insights into how the capital markets perceive divestitures in their consolidated industry. The results show that the market reacts more critically to divestitures by market leaders and more diversified firms. This implies that market leaders and more diversified firms are well-advised to provide a detailed reasoning of their divestiture motive, their reinvestment strategy, and the strategic implications for their brewing business to avoid prejudgement. While divesting from the core is often rightly argued to entail negative implications for performance, the positive effect of divesting regional brand licenses shows that the capital markets effectively differentiate based on the geographic scope of core operations. The positive effect of divestitures undertaken as part of a divestiture program stresses the importance of divesting in a structured and strategically consistent manner.

4.6.2 Limitations and future research

Finally, the study is subject to several important limitations that need to be considered when interpreting its results.

First, the study was deliberately set in the global brewing industry, and its results should be interpreted in light of this consolidating industry. Further, the study considered the competitive position of the brewing groups based on their global market share. While I acknowledge differences on a national level as described by prior literature (Adams, 2006), I also acknowledge that the globalized players have assumed competitive positions in more fragmented markets, and thus lifted competition to a global level. Future research could test the generalizability of results through studies in other concentrated industries, or controlling for industry concentration in a cross-industry setting.

Second, the sample size was naturally limited due to the focus on one specific industry, the concentrated nature of that industry, and the minimum size threshold for deal value. Future research could overcome sample size issues by testing the market reaction and its determinants in multiple concentrated industries.

Third, the study analyzed the short-term market reaction to divestiture announcements to capture the immediate effect such a move has on investors and to avoid the exclusion of more recent divestitures. While event studies are the most common setting in divestiture research and allow for a broad comparison across studies, prior literature has also argued that such a setting does not fully appreciate divestitures' effects over time (Haynes et al., 2002) nor their complexity (Brauer, 2006; Kolev, 2016). Research has also highlighted that capital markets may find it difficult to accurately assess divestitures due to limited availability of data (Bergh et al., 2019). Further research could test the performance effect of divestitures in a consolidating industry based on the accounting performance of a firm.

4.6.3 Conclusion

This study sets out to answer the question to which extent capital markets value divestitures in an industry where players usually seek efficiency gains and growth through mergers and acquisitions. As such, it provides evidence from divestitures in the consolidating brewing industry and contributes to both extant research on divestitures and research on the brewing industry.

The results demonstrate that while capital markets generally value divestitures in a concentrated industry, investors consider divestitures of market leaders or more diversified firms, on average detrimental to future firm value. For firms that already hold a competitive position in a concentrated industry, investors seem to see little additional value creation potential through divestitures. For diversified firms, uncertainty, whether funds will be reinvested in the attractive

concentrated core business, may be a cause of the markets' adverse reaction. Further, the results show that even within core operations, the sale of more distant assets, such as brand licenses for specific countries or regions, is perceived positively. Finally, the study stresses the upside of divesting in a structured and strategically consistent manner through a concerted divestiture program.

4.7 Appendix

***Appendix 4-1*:** Means, standard deviations and correlations of divestiture announcements and divestiture intent announcements (N=61)

	Mean	**Std. Dev.**	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**	**13.**	**14.**	**15.**	**16.**	**17.**	**18.**	**19.**
1. $CAR_{-1, 1}$	0.01	0.03	1.00																		
2. $CAR_{Winsorized\ -1, 1}$	0.01	0.03	0.96*	1.00																	
3. Industry - 2009-2018	0.43	0.50	0.03	0.07	1.00																
4. Industry - MS Top 5	0.38	0.49	-0.08	-0.07	0.29*	1.00															
5. Industry - Antitrust	0.10	0.30	0.05	0.07	0.05	0.20	1.00														
6. Relatedn. - Beer/Brewing	0.33	0.47	0.21	0.18	0.17	0.25	0.24	1.00													
7. Relatedn. - Beer-related	0.33	0.47	-0.08	-0.06	-0.25	-0.04	0.00	-0.49*	1.00												
8. Relatedn. - Unrelated	0.34	0.48	-0.13	-0.13	0.07	-0.21	-0.24	-0.51*	-0.51*	1.00											
9. Geo. - Global brand	0.05	0.22	0.01	0.01	0.26*	0.29*	0.43*	0.33*	-0.16	-0.16	1.00										
10. Geo. - Brand license	0.15	0.36	0.39*	0.34*	-0.08	-0.13	0.02	0.60*	-0.29*	-0.30*	-0.09	1.00									
11. Geo. - Other/ Local	0.80	0.40	-0.35*	-0.31*	-0.07	-0.04	-0.25	-0.71*	0.35*	0.36*	-0.46*	-0.84*	1.00								
12. Structure - Program	0.33	0.47	0.08	0.12	-0.04	-0.04	0.36*	0.03	0.18	-0.21	0.33*	0.00	-0.18	1.00							
13. Transact - Rel. deal size	0.06	0.10	0.39*	0.35*	-0.06	-0.35*	-0.11	-0.02	0.12	-0.10	-0.06	0.11	-0.07	-0.10	1.00						
14. Transact - Price	5.69	1.27	0.39*	0.38*	0.13	0.13	0.30*	0.23	0.08	-0.30*	0.47*	0.30*	-0.52*	0.35*	0.35*	1.00					
15. Transact - Consideration	0.07	0.25	0.42*	0.33*	-0.09	-0.07	-0.09	0.24	-0.04	-0.19	-0.06	0.26*	-0.20	-0.19	0.20	-0.01	1.00				
16. Firm - Current ratio	0.92	0.39	0.12	0.14	-0.18	-0.42*	-0.21	0.10	-0.41*	0.31*	-0.21	0.28*	-0.14	0.04	0.02	-0.09	0.14	1.00			
17. Firm - Size	16.34	1.37	-0.01	-0.01	0.41*	0.64*	0.15	0.18	-0.06	-0.12	0.33*	0.02	-0.20	0.11	-0.45*	0.39*	-0.29	-0.34*	1.00		
18. Firm - Leverage	0.33	0.12	-0.26*	-0.26*	0.13	0.13	-0.06	0.07	0.07	-0.14	0.12	0.08	-0.13	0.35*	-0.05	0.13	-0.20	-0.14	0.14	1.00	
19. Firm - Diversification	0.30	0.19	-0.27*	-0.25*	-0.33*	-0.68*	-0.12	-0.30*	0.06	0.23	-0.20	0.01	0.10	0.13	0.13	-0.07	-0.24	0.38*	-0.40*	0.06	1.00

* $p < 0.05$

***Appendix 4-2*:** Means, standard deviations and correlations of divestiture announcements and divestiture price announcements (N=63)

	Mean	**Std. Dev.**	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**	**13.**	**14.**	**15.**	**16.**	**17.**	**18.**	**19.**
1. $CAR_{-1, 1}$	0.01	0.03	1.00																		
2. $CAR_{Winsorized\ -1, 1}$	0.01	0.03	0.97*	1.00																	
3. Industry - 2009-2018	0.38	0.49	0.15	0.20	1.00																
4. Industry - MS Top 5	0.38	0.49	-0.08	-0.07	0.26*	1.00															
5. Industry - Antitrust	0.11	0.32	0.04	0.06	-0.07	0.14	1.00														
6. Relatedn. - Beer/Brewing	0.33	0.48	0.18	0.13	0.14	0.21	0.29*	1.00													
7. Relatedn. - Beer-related	0.32	0.47	-0.09	-0.08	-0.18	-0.04	-0.02	-0.48*	1.00												
8. Relatedn. - Unrelated	0.35	0.48	-0.09	-0.06	0.04	-0.16	-0.26*	-0.52*	-0.50*	1.00											
9. Geo. - Global brand	0.03	0.18	0.10	0.12	0.23	0.23	0.22	0.26*	-0.12	-0.13	1.00										
10. Geo. - Brand license	0.17	0.38	0.19	0.15	-0.10	-0.10	0.24	0.65*	-0.31*	-0.34*	-0.08	1.00									
11. Geo. - Other/ Local	0.79	0.41	-0.23	-0.19	0.00	0.00	-0.32*	-0.72*	0.35*	0.37*	-0.36*	-0.90*	1.00								
12. Structure - Program	0.33	0.48	0.10	0.17	-0.07	-0.07	0.18	-0.07	0.17	-0.09	0.26*	-0.06	-0.06	1.00							
13. Transact - Rel. deal size	0.06	0.10	0.02	-0.07	-0.11	-0.35*	-0.06	0.01	0.14	-0.15	-0.05	0.14	-0.11	-0.08	1.00						
14. Transact - Price	5.61	1.20	0.15	0.11	0.02	0.12	0.28*	0.26*	0.13	-0.38*	0.36*	0.41*	-0.54	0.27*	0.34*	1.00					
15. Transact - Consideration	0.06	0.25	0.51*	0.40*	-0.07	-0.07	-0.09	0.23	-0.04	-0.19	-0.05	0.22	-0.19	-0.18	0.20	0.00	1.00				
16. Firm - Current ratio	0.91	0.40	0.25*	0.26*	-0.15	-0.33*	-0.21	0.14	-0.41*	0.27*	-0.18	0.21	-0.12	0.06	-0.07	-0.17	0.22	1.00			
17. Firm - Size	16.23	1.36	0.02	0.04	0.36*	0.61*	0.06	0.16	0.01	-0.17	0.25*	0.04	-0.15	0.06	-0.44*	0.39*	-0.26*	-0.32*	1.00		
18. Firm - Leverage	0.34	0.13	-0.33*	-0.28*	0.13	0.06	-0.08	0.00	0.08	-0.07	0.09	0.04	-0.08	0.31*	-0.04	0.05	-0.23	-0.26*	0.03	1.00	
19. Firm - Diversification	0.30	0.20	-0.31*	-0.31*	-0.27*	-0.65*	0.00	-0.21	0.05	0.16	-0.12	0.05	0.01	0.10	0.10	-0.07	-0.24	0.20	-0.35*	0.17	1.00

* $p < 0.05$

Appendix 4-3: *AAR and CAAR of divestiture announcements of divestitures driven by antitrust pressure*

	Divesting firm	Year	Divested unit	Confound. event	AR (-1)	AR (0)	AR (+1)	CAR (-1, +1)
Brewing groups	AB InBev	2016	Plzensky Prazdroj operations & brands (Pilsner Urquell)	No	-0.42	-0.57	0.51	-0.48
	Anheuser-Busch InBev	2013	Cia Cervecera de Coahuila, Corona & Modelo US perpetual licenses	No	0.43	5.52	0.31	6.26
	Anheuser-Busch InBev	2012	Crown Imports	Acquisition	0.51	1.74	1.64	3.89
	Ambev	2000	Bavaria Brazil operations & brand	No	0.36	-0.26	0.12	0.22
	SABMiller	2015	Various European brands (Peroni, Grolsch, Meantime)	No	-0.63	2.18	0.38	1.93
	SABMiller	2015	US operations & licenses (MillerCoors)	Acquisition	0.54	1.38	1.31	3.23
	Scottish & Newcastle	2000	Pubs	No	-0.82	-1.85	5.76	3.09
	Scottish & Newcastle	2000	Leased pubs	No	2.33	-3.23	1.58	0.67
	Whitbread PLC	1999	Whitbread beer company, brands & licenses (Boddingtons)	Acquisition	-0.33	3.11	3.84	6.63
AAR/ CAAR (excl. confounding events)					**0.21**	**0.30**	**1.44**	**1.95**
Non-brewing	Fraser & Neave	2014	Myanmar brewery, brands & licenses	No	-0.46	-0.42	-4.96	-5.85

Note: The table shows AR, CAR, AAR, CAAR in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement.

Appendix 4-4: *AAR and CAAR of divestiture announcements of global beer brands and brand licenses*

	Divesting firm	Year	Type	Divested brands/ licenses	Confound. event	AR (-1)	AR (0)	AR (+1)	CAR (-1, +1)
Brewing groups	AB InBev	2016	Global brand	Pilsner Urquell	No	-0.42	-0.57	0.51	-0.48
	Anheuser-Busch InBev	2013	License	Corona & Modelo US perpetual licenses	No	0.43	5.52	0.31	6.26
	Anheuser-Busch InBev	2009	Global brand	Staropramen	No	1.87	-0.20	1.48	3.15
	Anheuser-Busch InBev	2009	Global brand	Cass	Results	1.36	0.10	-1.05	0.41
	Ambev	2002	License	AmBev AR, BO, PY and UY	No	1.30	0.04	4.28	5.62
	Bass PLC	2000	License	Bass, Worthington Carling & Grolsch UK	No	4.45	1.29	-1.73	4.01
	Foster's Group	2006	License	Foster's VN and IN	No	-0.62	0.34	1.01	0.74
	Foster's Group	2006	License	Foster's Europe	No	1.38	2.55	0.28	4.20
	Heineken	2018	License	Heineken CN	Share purchase	0.31	2.03	-0.35	2.00
	Heineken	2013	License	Hartwall, Heineken DK, FI, and baltics	No	2.18	0.86	0.44	3.47
	Kirin	2017	License	Kirin BR	No	0.43	0.91	-1.59	-0.24
	Lion Nathan	2004	License	Lion Nathan CN, Kirin CN	No	0.84	-0.56	0.15	0.43
	MolsonCoors	2007	License	MolsonCoors US	No	2.42	9.97	1.03	13.42
	SABMiller	2015	Global brand	Peroni, Grolsch, Meantime	No	-0.63	2.18	0.38	1.93
	SABMiller	2015	License	SABMiller US	Acquisition	0.54	1.38	1.31	3.23
	SABMiller	2011	License	SABMiller RU & UA	Trading statem.	0.40	0.21	0.16	0.77
	Scottish & Newcastle	2007	Global brand	Kronenbourg	Trading statem.	-0.23	-2.75	1.43	-1.54
	Whitbread	1999	License	Whitbread beer (e.g., Boddingtons), Stella Artois & Heineken UK	Acquisition	-0.33	3.11	3.84	6.63
AAR/ CAAR (excl. confounding events)						**1.14**	**1.86**	**0.55**	**3.54**
Non-brewing groups	Coca Cola Amati	2011	License	SABMiller AU	No	0.65	-0.46	0.67	0.85
	Danone	2000	Global brand	Kronenbourg, Alken Maes	Results	-1.96	0.57	0.08	-1.31
	Fomento Economico Mexicano	2009	Global brand	Sol, Dos Equis	No	-3.42	-1.28	31.52	26.82
	Nomura	1999	Global brand	Pilsner Urquell	No	-0.95	1.72	0.63	1.40
	Philip Morris	2002	Global brand	Miller	No	-0.31	-0.96	-0.79	-2.06
AAR/ CAAR (excl. confounding events)						**-1.56**	**-0.17**	**10.45**	**8.72**

Note: The table shows AR, CAR, AAR, CAAR in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement.

Appendix 4-5: *AAR and CAAR of divestiture price announcements with an equity consideration*

	Divesting firm	Year	Divested brands	Equity	Confound. event	AR (-1)	AR (0)	AR (+1)	CAR (-1, +1)
Brewing groups	Ambev	2002	AmBev operations & licenses in AR, BO, PY and UY	Acquirer stock	No	1.30	0.04	4.28	5.62
	MolsonCoors	2007	MolsonCoors US operations & licenses	Joint venture stock	No	2.42	9.97	1.03	13.42
	SABMiller	2011	SABMiller operations & licenses in RU & UA	Acquirer stock	Trading Statement	0.40	0.21	0.16	0.77
	SABMiller	2002	Hotel & Gaming Assets	Joint venture stock	No	1.68	-0.13	-0.40	1.16
	XinJiang Hops	2015	Xinjiang Wusu Beer	Asset swap (divestor stock)	No	-0.59	-0.49	10.26	9.18
AAR/ CAAR (excl. confounding events)						**1.20**	**2.35**	**3.80**	**7.34**
Non-brewing groups	Danone	2000	Brewing operations & brands (Kronenbourg, Alken Maes)	Acquirer stock	Results	-1.96	0.57	0.08	-1.31
	Diageo	2015	Desnoes & Geddes operations & brands (Red Stripe)	Asset swap (other stock)	No	0.08	-1.56	1.27	-0.20
	Fomento Economico Mexicano	2010	Brewing operations & brands (Sol, Dos Equis)	Acquirer stock	No	-7.33	-13.95	13.55	-7.73
	Philip Morris	2002	Brewing operations & brands (Miller)	Acquirer stock	No	1.77	1.04	1.07	3.88
AAR/ CAAR (excl. confounding events)						**-1.82**	**-4.82**	**5.30**	**-1.35**

Note: The table shows AR, CAR, AAR, CAAR in % based on a MM. The estimation was based on a one-year window (255 days) prior to 30 days before the announcement.

5 GENERAL CONCLUSION

While divestitures and especially its performance effects have been thoroughly examined in prior research, the theoretical background and the empirical evidence of this dissertation emphasize the value of further research on divestitures. It shows that wide avenues for future research exist. This dissertation picks up on extant literature, marches along these avenues, and makes contributions regarding the **structure**, **motives**, and **performance** effects of divestitures.

Divestiture **structure** is considered in all three studies, and thus in three different research settings. The findings emphasize the importance of considering divestiture programs in divestiture research. The results provide meaningful insights to both researchers and practitioners to understand when firms announce a divestiture program, how they relate to firm performance, and how the market reacts to the announcements associated with a program. First, in contrast to stand-alone divestitures, divestiture programs seem to be the means of choice to restore market trust and signal commitment in the context of uncertainty. Second, evidence suggests that there is a limitation to the benefits of divestiture programs. Specifically, learning in the context of divestiture programs seems to be outweighed by the negative performance associated with years of restructuring. Third, the capital markets receive divestiture programs positively, both the announcement of a program and of the divestitures that constitute a program. Investors reward firms that overcome information asymmetries through the disclosure of program specifics.

The dissertation considers the **motive** of divestiture in versatile ways. The results invite to further research and allow for three primary conclusions. First, the role of motive, in terms of strategically driven divestitures, does not explain post-divestiture firm performance. Second, there is no single dominant motive for divestiture programs. Programs are close to equally distributed across a refocusing, financial, or streamlining rationale. Third, the market reaction to divestiture programs does not differ significantly by rationale. However, the degree to which market reaction is affected by the disclosure of program specifics is dependent on the underlying program rationale.

All three studies in this dissertation ultimately measure divestitures' **performance** effects and their determinants. The results of which are, in part, already addressed above with regard to structure and motive. The studies consider both the short-term market reaction and post-divestiture firm performance. Overall, it can be concluded that capital markets perceive divestitures and divestiture programs as value-creating. However, the results also show that this

does not necessarily translate into actual post-divestiture firm performance. The results with regard to experience effects, divestiture programs, and the findings in the context of the consolidating brewing industry stress the importance of considering contingencies when analyzing the performance effects of divestitures.

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DECLARATION OF HONOR

I declare upon my word of honor that the dissertation submitted herewith is my own work. All sources and aids used have been listed. All references or quotations in any form and their use have been clearly identified. The dissertation has not been submitted for examination purposes to any institution before.

Ich erkläre hiermit ehrenwörtlich, dass ich die vorliegende Arbeit selbstständig angefertigt habe. Sämtliche aus fremden Quellen direkt und indirekt übernommene Gedanken sind als solche kenntlich gemacht. Die Dissertation wurde bisher keiner anderen Prüfungsbehörde vorgelegt und noch nicht veröffentlicht.

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Ludwig Sebastian Erl

March 27, 2020