



# Mergers and Acquisitions in the Luxury Goods Industry: Gains for the Acquiring Shareholders

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MASTER THESIS

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## **Preface and Acknowledgements**

This thesis is the result of an investigation into mergers and acquisitions in the luxury goods industry: gains for the acquiring shareholders.

I have chosen this subject because I would like to work in Corporate Finance in mergers and acquisitions after graduating in Business Economics and because fashion is my passion. I would like to thank my supervisor Mr. Lemmen for the wonderful way in which he has supported me. I greatly appreciated the fast feedback on my submitted work which kept me up to pace. This was all the more beneficial to me because I was doing an internship at the same time as writing my thesis and also had to prepare for my very last exam.

This thesis completes my Master Financial Economics at the Erasmus University Rotterdam and also my student days. A new phase arrives, a phase of a new intellectual challenge and change also on a personal level. Now I really want to stand on my own two feet, with the life experience as a student, a solid basis from home and especially the mental support of my parents, I am really looking forward to this new step in my life and I am fully committed to it! Thanks everyone who helped and supported me for who I am and where I am now.

*'I am a fashion person and fashion is not all about clothes, it's about all kinds of change.'*

*-Karl Lagerfeld-*

## **Abstract**

Three giants of the French and Swiss luxury industry are now taken as a reference to assess the impact that M&A operations can have in this area. This is one of the few pieces of research of the literature that investigates mergers and acquisitions (M&As) in the luxury goods industry. In particular, a 19-year timeframe has been analysed, starting in 2000. The research has utilized analytical tools such as event study and linear regression. With a total sample of 126 deals, the empirical results reveal that luxury goods industry acquisitions do not create any value for the acquiring shareholders with the performance of M&As around the announcement date. However, it is statistically proven that the creative director (who has become more important for companies especially since 2013) contributes to the firm growth and gives only a significantly positive value for the acquiring shareholders within 3 days after the merger and acquisition but not over 11 days.

**Keywords:** Luxury goods industry, mergers and acquisitions, creative director, announcement date

**JEL Classification:** G34, M21, M31, E21, G14

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# 1 Introduction

The luxury products industry has experienced a remarkable change in standard models during the three last decades. In fact, in the mid-1980s the conceptual term *luxury industry* was adopted by different companies and was closely related to two main factors: the self-conception of the business and its costumers' perception. Status, emotional advantage, exclusiveness and prestige were crucial for high-quality products sellers. Furthermore, in the first half of the 80s a number of luxury companies was formed and relocated. In the early 90s a harder competitive scenario arose in the industry segment. Consequently, market actors began progressively to consolidate their activities until 2000 when they reached the peak of business deals (Berry, 1994). In this context, transaction activity became fundamental and was ruled by four (hence especially two: LVMH and Kering) huge luxury conglomerates in Europe. Therefore, it is possible to speak of *merger mania*. Companies that rose up out of this phenomenon were characterized by a high products variety and a fortified market position. Big French luxury groups like LVMH and Kering are taking over all kinds of luxury brands. This thesis focuses on the three biggest conglomerates, which are presented below in Table 1 (Deloitte, 2019). Deloitte is a reputable accountancy firm; it operates in more than 150 countries and has around 244,000 employees. It publishes an annual report called 'Global Power of Luxury Goods'. The report examines and lists the 100 largest luxury goods companies globally.

**Table 1: Three luxury conglomerates**

Name of company	Country of origin	Sales* (millions)	Total revenue	Sales growth** (millions)	Net profit margin***	Return on assets***
LVMH Moët Hennessy- Louis Vuitton SE	France	\$27,995	\$48,057	17.2%	13.2%	8.2%
Compagnie Financière Richemont SA	Switzerland	\$12,819	\$12,819	15.7%	8.1%	8.8%
Kering SA	France	\$12,168	\$17,446	27.5%	12.1%	7.3%

\*sales of the luxury goods

\*\*sales growth rates are sales-weighted, currency-adjusted composites

\*\*\*net profit margin, return on assets and asset turnover ratio are sales-weighted composites

According to Deloitte (2019), the luxury goods industry revealed their strength through M&As during the last years, thanks to three main factors: the globalization of luxury, the value chain integration, and company consolidation.

Over the past few years, private equity companies have proved to be an advantageous support for the luxury goods sector. Currently, they are able to offer capital and skills to aid luxury goods societies to grow internationally. Just note their influence in world luxury trade. For example, recently an increasing number of wealthy and middle-class consumers in emerging markets have shown interest in Western luxury brands. Therefore, various companies of luxury goods have decided to increase their presence in Asia and the Middle East. Due to the great success of luxury brands, private equity actors have decided to invest in the acquisition of Western luxury goods companies, with two main objectives: to increase these brands profiles in emerging markets and to facilitate their growth. At the same time, European private equity companies are investing their funds in emerging Asian brands, particularly Chinese and Indian ones. Their goal is to help these local brands become global luxury brands.

The value chain is crucial for luxury companies. It involves controlling every aspect of their activities, from the design to the supply of raw materials, from production to marketing and distribution. The optimal management of the value chain guarantees high levels of quality and service, as an excellent protection for the luxury brand heritage. Therefore, luxury goods companies have focused their attention on the vertical integration of the value chain, fundamental in the M&As activities.

Firstly, luxury companies must ensure proper control of the main raw materials. This requires access to the major suppliers and their technical expertise. Examples are luxury handbags and footwear brands that have acquired majority shareholdings in tanning and leather processing companies. Still, the 'mine to market' concept is evident in recent mergers between mining companies and luxury jewellery manufacturers.

Secondly, control in the point of sale is fundamental (Rosenstein & Wyatt, 1997). Just think of the joint ventures between emerging brands in the luxury sector and local distributors. These partnerships aim to ensure the brand a certain level of control over retail transactions.

Finally, the efforts of luxury brands to mint themselves in electronic retail are also noteworthy, increasing the deal business between luxury brands and online retail specialists.

Consolidation, for example the merger and acquisition of many smaller companies into a few much larger ones, is for luxury goods firms the key to success and the secret to survive in a cruel competitive market, in which experience, resources and knowledge are fundamental. Large luxury assemblies have, above all, the advantages of providing additional capital and sharing assets such as production facilities, operating systems and real estate. This means that small luxury brands can grow and become global luxury brands; whilst large luxury

conglomerates can increase their empires by incorporating new successful brands. In this way, M&As activities have increased as never before in the company consolidation phenomenon.

Continuous growth can be very complicated. Luxury firms should remain perceived as exclusive, rare and prestigious. A possibly easier and less risky strategy could be the purchase of additional market shares or the acquisition of competitors with high growth potential (Forbes, 2017). And the consolidation strategy (Locarno, 2016) of the luxury industry is vital. Consequently, M&A motivated by this approach can be very beneficial to the acquirers. In fact, this can increase their market power in many ways and secure their supply in rare raw materials or the shopping experience delivered to end consumers (both important in the luxury industry).

This is the main objective of this thesis: to examine the impact on the value initiated by M&A announcements in the luxury goods industry.

The three main key characteristics of the luxury industries are illustrated below. First, luxury companies are extremely active in terms of M&A. Their consolidation phase began in the '90s with the emergence of larger groups as LVMH (Cavender & Kincaid, 2012) and Kering. Even if this process had some periods of stalemate, it is still ongoing and companies as LVMH, Kering and Richemont are relevant pieces of evidence. As an example, Coach acquired Kate Spade for \$2.4 billion in 2017. According to its CEO, Victor Luis, further strategic M&A will be adopted shortly (Chaffin & Gray 2019). Moreover, the Luxury Marketing Council's leader, Greg Furman, talked about the 'LVMH-izing American luxury' (Chaffin & Gray, 2019). Second, the luxury industry is unique. A controversial logic dominates its line of action. Dubois (1998) states that doing the exact opposite of what is called 'traditional' in other sectors leads the luxury industries to success. In this perspective, M&A interestingly affects this type of business. Third, it is interesting to deepen and analyse the effects of mergers and acquisitions on the market and the financial value in the luxury industry (Konigs & Schiereck, 2006) since the literature is rather poor in this field.

The purchasers' role is crucial in value creation, as Sudarsanam et al. (1996) show. In particular, there is a considerable benefit from taking joint and simultaneous action in various areas, such as the organisational and accounting aspects of a company, the operational aspects and those relating to finance. However, there are factors that can have a significant impact on the shareholders' value creation. In particular, the payment method and the ownership structure are the main issues discussed by Myers and Majluf (1984) in their pecking order theory. These

academics show the disadvantage of paying in equity. Therefore, preferring the cash compensation form can increase the gains and taking into account that larger shareholders, associated with the equity payment, generate less earnings. This is due to dilution of the profit for the acquirer's shareholders if the merger is paid with shares.

Finally, an additional method adopted by some authors considers the success evaluation of an M&A announcement on the stock markets in terms of resulting abnormal returns (Martynova & Renneboog, 2008). The objective of this study is to show the reaction of the acquiring shareholders to the announcement of the M&A, since they are the owners of the company, by using an event study method. To compare if their reactions are significantly different from each other regarding some days before and after the announcement. Thus, the research question is as follows:

*Does the announcement of an M&A in the luxury industry create any value for acquiring firms' shareholders?*

During the last few decades, the luxury industry has been experiencing a flourishing consolidation (Konigs & Schiereck, 2008), especially through mergers and acquisitions. This growth in M&As is illustrated by Wang & Moini (2012): between 1987 and 2012 M&A rocketed from \$97.3 billion to \$2,400 billion. M&A announcements have an impact on the luxury industry. The main aim of this thesis is to analyse this effect and, in particular, its influence in terms of value.

In order to discover the relationship between M&As in the luxury goods industry and shareholders' wealth creation, this paper analyses M&A transactions between 2000 and 2019. With a total sample of 126 deals, the empirical results reveal that luxury goods industry acquisitions do delete: not create any value for the acquiring shareholders with the performance of M&As around the announcement date.

An overview of this thesis will be discussed now. First of all, the literature review will allow rediscovery of the evolution that merger and acquisition operations have experienced in recent years and their importance in the luxury industry. This ongoing growth has been particularly accentuated within the three main giants of the luxury sector, thanks mainly to factors and figures that, over time, have assumed an increasingly important role. An example of this is the creative director. After this brief overview, the third chapter will focus on the technical part of data gathering and event study, based on statistics. The next section will present and comment

on the results obtained, focusing on the most important ones. Finally, conclusions will be drawn with particular attention to the limitations that have arisen.

## **2 Literature Review**

This chapter presents the theory and provides a literature review related to mergers and acquisitions in the luxury goods industry. The development of the hypotheses will be discussed within the literature review. Since this study focuses on the luxury industry, this literature review is meant for the purpose of gaining a better understanding of the impact of M&As in the luxury goods industry.

### **2.1 Mergers and acquisitions**

M&As has always been studied in the field of economics and finance. Research has been carried out on merger and acquisition events in connection with the capital markets reaction. It has been noted that this behaviour is influenced by various factors such as regional, industrial and objective differences. Despite this, however, the literature analysis has few relevant materials regarding the implications of M&A announcements on the capital market and on the wealth impact within the luxury industry.

Lane and Jacobson (1995) investigated responses to financial exchanges on expansion statements in the food trade. In particular, they provided evidence of the relationship between brand use and recognition, trademark mindset and financial market response. They discovered two possible market responses: a positive response to a higher valued and better known brand; less effect in cases of excessive customer awareness as opposed to brand attitude and vice versa.

Likewise, Hosken and Simpson (2001) acquired observational evidence about wealth impacts of supermarket mergers. These empirical studies led them to consider positively supermarket mergers. This conclusion was based on the stock market reactions and the effects of a potential growth in the price setting power. Supermarket mergers did not hurt customers as far as higher retail costs were concerned. It is interesting to note the applications of these experimental studies to the luxury retail sector.

Therefore, this section of thesis work will make assumptions about possible responses from the capital market. Establishing and defending a prestigious reputation is vital for a luxury company. This is the key to attracting and maintaining customers: to esteem the brand as exclusive, high and popular. It implies that, according to Lane and Jacobson's studies, M&A announcements will naturally have a positive impact on the market, if there is no significant difference between attitude and familiarity. Take the example of three luxury conglomerates, namely LVMH, Kering (formerly PPR) and Richemont. They have created a nearly

oligopolistic market structure in Europe. If these luxury retail oligopolists acted as non-luxury retailers and did not abuse their market power, there would be no reason to fear that the transactions involving them would be rejected because of an excessive price-fixing force.

In addition to the assessment of mergers and acquisitions impact in the luxury retail industry, studies have been conducted to provide a theoretical basis for M&A. For example, Halpern (1983) introduced two different theories regarding the global non-profitability of M&As and the correlation between capital market reactions and the intention of maximizing. Regarding the first theory, mergers and acquisitions are intended to increase sales and control. Therefore, transaction costs should offset the resulting gains. Still, financial motivations are the basis for the second theory. Just think of how the existing information asymmetries are powerful tools. For example, if the buyer has information about the financial undertaking, he maintains this exclusivity on the market actors (Eckbo et al., 1990). In addition, there exist synergy potentials. Also, an acquisition produces diversification effects that reduce expected bankruptcy costs. Ultimately, the corporate control scenario involves the pre-event under-performance of the reference target and is valid if the purchaser undertakes simple control measures such as management replacement after the transaction completion (Jensen, 1986). If the notions of signalling effects are added, the impact of new market information may also be considered. In fact, these will result in a positive impact on capital market operators who will have more data eligible to form the basis for their decisions (Staw & Ross, 1978; Blazenko, 1987).

## 2.2 Luxury goods

An important part of this thesis is luxury goods. The economic eccentricity of *luxury* consumer goods with regard to *ordinary* (that is to say non-luxury goods) consumer goods. Risk and return are key elements of equity value. These are the factors behind the theories of Ait-Sahalia, Parker and Yogo on luxury goods. They considered the variety in functionality and consequent demand curves of luxury goods and common consumer goods. According to these experts in financial affairs, there is an enormous disproportion between the demand for luxury goods and the consequent sensitivity to market shocks (Ait-Sahalia et al., 2004). This would result in an increased volatility of luxury corporate revenues. According to the WHO (2020), expectations are that the Corona crisis will continue for about two years. During these two years, the situation is unstable and unpredictable. As soon as the situation has normalized again to the situation before the Corona crisis, the advice formulated in this thesis will apply again. The same applies to luxury equities, when the shareholder value depends on the cash flows to be supplied. As a

result, luxury equity returns, and risk are inevitably related. Therefore, in order to reliably assess the effects on actual wealth, any excess return should be risk adjusted.

### **2.3 Mergers and acquisitions in the luxury industry**

Many studies (Konigs & Schiereck, 2006) have so far considered the impact of M&A on the involved firms' performances. Numerous academics have conducted event research to test these effects across many different industries (Konigs & Schiereck, 2006). For example, the literature review of Tuch & O'Sullivan (2007) concluded that the acquirers' abnormal returns are negative or statistically insignificant. However, given the lack of information and the wide variety of results in the luxury industry's literature, this thesis will show how the announcements of M&A have a positive impact on acquiring firms' shareholders' value.

First, according to Lane & Jacobson (1995), brand perception by customers is vital and the announcement of the relative extension in the retail market depends on it. Share prices will tend to respond more positively and inversely (Lane & Jacobson, 1995) at the increasing perception of the trademark's prestige. Therefore, Chevalier & Mazzalovo (2008) consider important for all luxury firms to have powerful and prestigious brands. By extending Lane & Jacobson's conclusions (1995) to the luxury industry, it is natural to assume the M&As' announcements financially positively impacting on the acquiring firms involved.

Second, another proof of the positive impact of M&A on the firm's value is demonstrated by Hosken & Simpson (2001). They show how mergers and acquisitions between supermarkets generate favourable returns on the stock market by not increasing the prices for end consumers. This is relevant for the luxury industry, highly active in the retail segment (35% in 2016 and expected to grow further).

Third, between 1993 and 2005 Konigs & Schiereck (2006) delivered an evaluation of M&As' financial performance in the luxury industry. Their conclusion was a positive effect on the acquirers' share prices. Therefore, this tendency should stay unchanged through 2000 and 2019 as well as using different features. Fourth, according to Chevalier & Mazzalovo (2008), luxury groups should keep very powerful brands because of their ability to generate profits.

Therefore, the acquisition of a strong trademark would be beneficial in the market. On these grounds, the market reacts positively to such strategies as long as regulators do not restrict them. Due to oligopolistic or monopolistic tendencies, which would make these conglomerates too powerful. (Das & Donnerfeld, 1989). For all these reasons, mergers and acquisitions'

announcements should create a positive value for the acquirers' shareholders. The formulation of the hypotheses advanced in this thesis is listed below.

***Hypothesis 1:** In the, up to, twenty days preceding and following its announcement, M&A has a positive impact on the value's creation for the acquirers' shareholders in the luxury goods industry.*

This hypothesis prevents any anticipation of M&A announcements on the event window up to 20 days. And ensures that no significant adjustments of the market occur after the announcement day on the lapse of time. Thereby, M&A should not impact the creation's value in the days preceding and following their announcement date.

## **2.4 The creative director**

Creative directors are popular these days because they allow brands to play on higher ground (Harvard Business Review, 2013). No longer are they simply promoting an image, they are making a difference. The role of the creative director has become crucial since 2013, evolving to include store strategy, social media, advertising campaigns, and global brand vision (Harvard Business Review, 2013). In fact, the standardization of products, their short life cycle, the mass production and online promoting, risk dropping luxury fashion into mere marketing. Standing out from the multitude means focusing on the brand name, product craftsmanship and excellent quality. It is up to the creative director to use all his professionalism and artistic talent to make the iconic symbols and brand products the more relevant than ever in the current market.

After several years of rapid turnover, brands are now looking for candidates with staying power. Currently, a creative director has three years to realize the goal the company has given. If this does not happen, another creative director will be appointed. In the past, a creative director was 'a lifetime job' (Winser, 2013).

The continuous and rapid evolution of the luxury industry requires considerable tools and knowledge from creative directors. There are various theories about this. For example, according to the Kapferer & Bastien model (2012), creative directors need to integrate several key aspects of luxury industry into the brand and product strategies. It is necessary to create a new future vision of the brand that keeps up with the modern market (New York Times, 2007). Yves St Laurent, Coco Chanel, Christian Dior, Hubert de Givenchy and Valentino Garavani began their careers in the Haute Couture context, they did not exactly know that their products

and brands would involve global multi-million-dollar businesses. However, industry evolution towards the selling of a real lifestyle required an extra gear.

A turning point in the concept of creative director took place with Yves Saint Laurent. In fact, when Christian Dior died in 1957, according to his wishes, Yves Saint Laurent became his successor and was named artistic director of the haute couture house at the age of 21. Since then, the role of creative director has become increasingly important within luxury companies to provide sustainability and growth, to increase the brand's heritage and to attract new customers (Winser, 2013).

Notably, in premium ateliers around the world, the appointment of a new creative director before launching a new product is so critical that it can make or break a business (Winser, 2013). In addition, designers aspiring to this role require super salaries and benefits that can include penthouse apartments, six-figure grooming allowances, college fees and first-class tickets to move between family and fashion house.

An example of this is one of fashion's most controversial and creative talents, John Galliano. He benefited from a remuneration of one million euros, combined with annual bonuses of up to 700,000 euros. Galliano has thus become the emblem of the difference between a designer and a creative director (Winser, 2013). A designer would never have the same calibre as a creative director. Understandably, when Galliano was selected, Dior felt his vision precious and he was a label icon for 14 years. Yet it is not known whether Raf Simons, Creative Director at Dior since last year, will be perceived to measure up to Galliano.

In conclusion, the task of the creative director is not limited to the design of a product and is potentially very risky. It requires a skilled, ambitious mind, in order to have an overall vision of the brand that includes marketing strategy, retail environments, format of presentation on the catwalk and lifestyle. The role of the creative director has become more complex, evolving to include store strategy, social media and advertising campaigns, and global brand vision (Mondalek, 2019). The very appointment of a new creative director can bring to the company a large number of new clients or can lead many of them to distance themselves from it. Due to the influence that this role has, many emerging designers consider the appointment of creative director as a steppingstone. This leads to the second hypothesis:

***Hypothesis 2a:** Since 2013, creative directors have been judged more by their performance and shareholders will respond more positively to announcement of M&A deals in the luxury goods industry*

The added value of this hypothesis is the fact that until 2013, the creative director was not really in the foreground within the luxury goods industry, especially through social media, the public as well as shareholders have more insights of the creative director and as a result of this the shareholders can react differently to M&A deals.

The ultimate purpose of an enterprise is to create economic value. This happens if it generates a utility surplus. In particular, the fact that the company strives to maximise its profit may be interpreted as the attempt to create economic value in particular for shareholders. To attract capital, the company must be able to pay a return at least equal to that which the provider of capital could achieve by using his own resources in comparable investment alternatives. Consequently, shareholders base future performance expectations on an analysis of the average returns achieved by the company in the past and assess the possibility of growth through new investments (Kaszniak & McNichols, 2002). For example, the company can aim to increase its profitability, to increase the operations it already undertakes or to adopt new and more profitable ones. However, it is important to favour net sales (Shepherd et al., 2009). Therefore, another possible way to measure the response of shareholders towards the creative director leads to the following hypothesis:

***Hypothesis 2b:** Since 2013, the growth of the three luxury goods conglomerates increases with the visibility of the creative director.*

### 3 Data and Methodology

This chapter presents the sample selection, construction and the methodology intended to use.

#### 3.1 Data selection

The analysis provided in this thesis relies on company-specific data, that includes the three biggest luxury goods conglomerates worldwide: LVMH, Kering and Richemont. The annual data used ranges from the period between 1997 and 2019. Therefore, several steps are taken to construct the final dataset. The data for the M&A deal is identified using the Zephyr database, and the selection criteria are as follows:

1. The announcement data of M&A activities occurred between 01-01-2000 and 29-11-2019.
2. Share price data is from 03-01-2001 till 31-12-2019
3. M&A deals must acquire at least 50% of the target shares after the deal has completed; acquirer will be the dominated owner of the target
4. The acquirer must be a conglomerate
5. The acquirer company's status must be publicly listed
6. The deal must be completed.

By implementing these selection criteria, an initial dataset is produced which consists of 126 M&A transactions. The CAR may vary depending on whether the target is public or private (Capron, 2007). In this dataset the split between public and private was: 91 deals were private targets and 35 were public. In the regression analysis there is a control variable for this split. Afterwards, the M&A transaction deals such as deal type, acquirer name and deal characteristics are extracted from Zephyr. Then, the share price data is obtained from Yahoo Finance. The share prices are daily adjusted closing prices, corrected for share splits and dividends.

Each dataset is merged using US SIC code and acquirer ISIN number. When merging the dataset, some of the deal-observations have been dropped due to constraints on other variables.

Ultimately, since the luxury industry is subject to various value determinants, and reactions to market effects vary from company to company, it is relevant to consider data on

the most appropriate main local market index. The choice of a main market index as a benchmark portfolio is dictated by the lack of sufficient external benchmarks and feasibility factors. The two market indices analysed are: CAC 40 (Kering and LVMH) and Swiss Market Index (Richemont). These market indices are obtained from Yahoo Finance and Thomson Reuters. The indices are adjusted for dividends, share splits and capital increases.

**Table 2: Deals per year per conglomerate**

Year	LVMH		Kering		Richemont		Total	
	Private	Public	Private	Public	Public	Private	Private	Public
2000	7	0	0	0	0	0	7	0
2001	3	1	0	0	0	0	4	1
2002	2	0	0	0	0	0	2	0
2003	4	0	0	0	0	0	5	0
2004	3	1	0	0	1	1	3	2
2005	0	1	0	2	0	0	0	3
2006	1	2	0	0	0	0	1	2
2007	1	4	0	1	0	4	5	5
2008	4	0	0	0	1	2	7	1
2009	1	0	0	0	0	1	2	0
2010	5	3	1	1	0	1	4	4
2011	7	3	2	3	0	1	7	6
2012	4	0	4	2	1	2	10	3
2013	9	0	4	1	0	0	13	1
2014	3	1	1	0	1	0	3	2
2015	3	0	0	0	0	0	3	0
2016	5	1	0	1	0	0	5	2
2017	2	0	0	0	1	1	3	1
2018	2	0	0	1	0	1	3	1
2019	3	1	0	0	0	2	4	1

Kering and Richemont started with mergers and acquisitions in 2004, while LVMH had already 7 private mergers and acquisitions in 2000. There is no evidence suggesting that from 2007 till 2011 the financial crisis had a visible effect on the number of mergers and acquisitions. However, it becomes clear that at the end of the economic crisis there is a considerable increase of the number of mergers and acquisitions per year. This suggests that there is a ‘shakeout sale’ of luxury goods companies, probably because due to the economic crisis these firms are in financial distress and can be acquired at a cheaper price (Day, 1997).

## 3.2 Methodology

Particular attention will regard abnormal returns reflected in the involved firms' share prices (Wang & Moini, 2012). They are important in the financial performance of mergers and acquisitions.

Abnormal returns according to the market model are determined by comparing the observed returns with the expected ones around the announcement day. They occur when the observed returns are significantly different than the expected returns. Profits are reflected in economic achievements. Notably, positive abnormal returns are synonymous with good financial performance since they increase the shareholders' value and vice versa (Wang & Moini, 2012).

Ultimately, cumulative average abnormal returns will be considered to evaluate M&A's financial effect in the personal luxury goods industry.

### 3.2.1 *Time and actor perspectives*

Eventually, this thesis focuses on the value (positive or negative) created by the acquiring firms for their shareholders. The acquired companies' M&A financial performance will not be studied in this dissertation.

### 3.2.2 *Benchmark model*

The benchmark model selection is a vital step in the event studies, and it involves both positive and negative aspects.

The model used in this thesis correlates to the company's share returns with those of the corresponding market index (Campbell et al., 1997). This means, inter alia, that the firm's share prices are closely connected with the market's cost. The identification of the expected returns (Campbell et al., 1997) is therefore facilitated.

## 3.3 Estimation window and computation of expected returns

Abnormal returns derive from the comparison between the observed returns with the expected ones.

The first step is the evaluation of the expected returns by using an OLS regression on the time interval called 'estimation window' (lapse of time that precedes the event window and defined 'normal'). The reason for this is that these data meet the requirements of a normal distribution, which is essential in the regression analysis applied to value the parameter in the

risk-adjusted market model. It should also be borne in mind that these returns have a greater symmetry and have more stable power moments than discrete returns.

### 3.3.1 Estimation window

Although the literature is in a short supply of information regarding the setting of the estimation window, it is possible to follow certain guidelines.

For instance, according to Campbell et al. (1997) and MacKinlay (1997), the estimation window should not overlap the event window so that the event studied does not affect the ‘variation’ of the estimation period (Campbell et al., 1997; MacKinlay, 1997).

A peculiarity of the estimation window is its different length across the literature. For example, Konigs & Schiereck (2006) set an estimation period of 250 days, preceding the event window, for their event study method testing the financial performance of M&A in the luxury sector between 1993 and 2005. Furthermore, for a similar study Del Giudice & Maggioni (2014) used an estimation window of 200 days before the event window. It is noteworthy that academics do not justify their choice in both cases.

The model used in this thesis is the one introduced by Campbell et al. (1997). According to their pattern the event study’s estimation window ‘could be set over the 120 days prior to the event’. However to keep the estimation window as ‘clean’ as possible, there will be a gap from -30 to -20, between the estimation window and the event window, to ensure that no reactions from shareholders end up in the estimation window. So, the estimation window will be (-150, -30).

### 3.3.2 Computation of expected returns

Expected returns are estimated by using an OLS regression model (MacKinlay, 1997):

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

Where:

- $\alpha_i$  is the first regression parameter specific to the security  $i$ ;
- $\beta_i$  is the second regression parameter expressing the sensitivity of the security  $i$  to the market index  $m$ ;

- $R_{mt}$  is the t-period observed return on the market index m;
- $\varepsilon_{it}$  is the zero mean disturbance term.

In the above equation,  $\alpha$  and  $\beta$  are the parameters of the OLS regression that correlate the company's stock returns with those of the corresponding market index (Campbell et al., 1997).

### 3.4 Event window and computation of abnormal returns

#### 3.4.1 Choice of the event window

Abnormal returns are estimated over the 'event window', i.e. the lapse of time around the announcement date (time 0) during which the M&A's financial performance is evaluated.

This thesis is based on an event period of 11 days that includes the event day itself (day 0) and 5 transaction days before and after the event date (11 in total). The choice of this lapse of time (-5; +5) was strategic to avoid any longer window to exclude more events due to the resulting overlapping of several event ranges (Konings & Schiereck, 2006). But such broad window could include more noise and confounding info, so also the window (-1,1) is tested in the robustness test (section 5.4).

#### 3.4.2 Computation of abnormal returns

According to MacKinlay (1997) the acquiring firm's abnormal returns are equal to the difference between the observed returns and the expected returns:

$$AR_{i,t} = R_{it} - E(R_{it})$$

In the equation below:

- $AR_{it}$  is the t-period abnormal return on the security i;
- $R_{it}$  is the t-period observed return on the security i;
- $E(R_{it})$  is the t-period expected return on the security i.

#### 3.4.3 Computation of cumulative abnormal returns

The CAR is the aggregation of the abnormal returns in the event window (MacKinlay, 1997). Then, the acquiring firms' CAR is calculated using the following formula:

$$CAR_{[x; y]} = \sum_{t=x}^y AR_{it}$$

Where x and y are the days between the event window. The CAR variable has been inspected for its distribution and its extreme values, so called ‘outliers’. Based on this inspection the CAR value is winsorized at 1.5% and 97% (Stevens, 1984).

### 3.5 Cumulative average abnormal returns

#### 3.5.1 Computation of average abnormal returns

The compute of the cumulative average abnormal returns first requires the calculation of the average abnormal returns across the n events analysed (Ribonnet & Coeurderoy, 2015):

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

Where:

- $AAR_t$  is the t-period average abnormal return;
- $AR_{it}$  is the t-period abnormal return on the security i.

#### 3.5.2 Computation of the cumulative average abnormal return

M&A’s impact evaluation on the financial performance of the acquiring companies is vital throughout the entire event window and across the whole sample. Therefore, the cumulative average abnormal returns should be calculated as the sum of the average abnormal returns (Ribonnet & Coeurderoy, 2015):

$$CAAR_{[x; y]} = \sum_{t=x}^y AAR_t$$

In the above formula:

- $CAAR[x; y]$  is the cumulative average abnormal return across the time interval [x; y];
- $AAR_t$  is the t-period average abnormal return.

Once the cumulative average abnormal return is computed, the following conclusions about M&As’ financial performance are deducted.

A positive CAAR means a positive value created by M&A for the firms' shareholders and vice versa (Wang & Moini, 2012). Moreover, the CAAR should not vary (Kirchhoff & Schiereck, 2011) when no event occurs (market efficiency assumption).

### **3.6 Parametric and nonparametric t-test**

First of all, the CARs statistical significance is proven and the entire sample undergoes one-sample t-test. A parametric t-test for normal distribution is adopted in order to check normally distributed returns' value and reliability.

Regarding t-tests, the authors Barber and Lyon assume that these investigations are suitable for an event frame of 41 days. But they point out that the consistency of t-tests is undermined by a more extended event window than can lead to improper results when the null assumption is not excluded with the appropriate incidence (Barber & Lyon, 1997). On the other side, authors as Dodd & Warner (1983), Mikkelson & Partch (1986) or Boehmer et al. (1991) are more critical with simple tests. To face the problem, they suggest a cross sectional standardization when there is suspicion of a cross sectional dependence between the examined cases. It is important to consider that such a dependency may occur due to the limited number of firms that the sample includes. Additionally, they propose a grouping of events, an adjusted test method and a standardisation of excess return. The latter is appropriate when the variance of excess returns increases during the event period (Boehmer et al., 1991).

It is important to apply, in the final analysis, the Generalized Rank Z test: a nonparametric statistical test that compares two paired groups, because a t-test is sensitive for three biases. The investigation essentially calculates the difference between each set of pairs and analyses these differences.

### **3.7 Linear regression**

This part will examine dependent and independent variables. A linear regression searches for connections and relations between the deal characteristics (e.g. public or private targets) and the financial characteristics of the conglomerate or whether this has an impact on the reactions of the shareholders of the conglomerates. This only looks at the acquisitions that surprise the shareholders, because the CAR only looks at the abnormal returns. Since this dataset is a

repeated meeting of the same companies, this repeated meeting takes place at irregular times, as a result of which there are many missing observations. As a result, the data set does not characterize itself as a panel data set. That is why the OLS regressive has been checked for the firm fixed effects by means of the inclusion of a firm dummy variable. This corrects for auto correlation and the heterogeneity of firm specific effects.

### *3.7.1 Dependent variables*

The literature review defines the dependent variable as the cumulative abnormal share return of acquiring companies around the announcement date of merger and acquisition as a substitute for M&A performance. Starting from this definition, this thesis will consider the acquisitions results as dependent variable, with the aim of verifying the acquiring enterprises' earnings.

At this regard, academics delivered several analyses. For example, Bruner (2002) measures the M&A profitability of a company by using the events examination. He also adopts the CAR as a direct means of estimating the value for shareholders. This is important since the share price is equal to the present value of the expected future cash flows.

Andrade et al. (2001) verify whether mergers create gains for the investors by analyzing the abnormal reaction of the stock market at the announcement date.

Noteworthy is the analysis carried out by MacKinlay (1997). He uses an event study method and he applies the market model to explain respectively the generation and the computation of abnormal share return. The CAR is calculated using an Event Study Tool.

Secondly, a key pillar of this research is to examine the effect of the creative director on the growth of the company that could eventually lead to wealth creation for the shareholders. The firm's growth opportunities are approximated by the sales. Firm growth is measured by the rate of net sales revenues of the firm in the same year as the M&A. It is a more frequently used and referenced measure of growth in academic studies (Shepherd et al., 2009).

### *3.7.2 Independent variables*

Deciding where to invest is crucial matter in the expanding business process of acquiring companies. They can, in fact, opt for domestic mergers and acquisitions, that is in their own country, or make investments in other countries (cross-border M&As).

Ben-amar et al. (2011) use target nationality as their variable to verify the value creation. For example, their studies show positive abnormal returns in cross-border M&A operations.

Based on Ben-amar et al.'s research, two dummy variables were defined: '1' if the target and the acquirer have different nationality, which is France for LMVH and Kering or which is Switzerland for Richemont; '0' any other way. The target nationality data comes from Zephyr's database.

The Return on Equity is a powerful tool for measuring the profitability of a company (Beccalli & Frantz, 2009) and in this thesis this measure has been inspected for its distribution and outliers. Using the Thomson One banker database, the ROE is calculated by dividing profit before interest, tax and depreciation (EBITDA) with shareholder's equity. It is important to underline that no correction has been applied. Finally, the ROE had been checked for linearity with the CAR variable and no linear relationship has been found.

### *3.7.3 Control variable*

Over the years, various theories have been developed about the benefits of investing in public or private companies. According to Draper & Paudyal (2006) shareholders' wealth gains are strictly dependent on target status, public or private firms. In particular, according to these academics investing in private companies means maximizing the shareholders' wealth. In addition, Fuller et al. (2002) consider that purchasers achieve better results by dealing with private companies rather than public companies. According to these studies, this thesis will introduce two dummy variables (note that the data are gathered from Zephyr): '1' if the target firms are private; '0' public.

A second control variable is defined by the acquirer's firm size. Firm size and acquisition announcement returns are strongly correlated. In particular, the studies delivered by Moeller et al. (2004) show that this relationship is negative, especially as the size of the company increases. For example, small target firms are able to generate higher M&As performance because they have a lower premium payment. By contrast, large corporations generally pay a higher premium. Therefore, abnormal returns created by big enterprises are lower. This data is accessible in Thomson One Banker Database. This variable has been inspected for its distribution and outliers. Because of this, to calculate the total assets there has been used a natural logarithm of the book value of total assets. Total assets have been checked on the linearity with the CAR variable, there is no evidence that there is no linear relation.

A third control variable is defined by leverage. According to Myers and Majluf (1984), in their pecking order theory, issuing shares will present the wrong signal to markets. Leverage is important during M&A activities, because the amount of leverage reduces the risk taking of the company (Admati et al., 2017). This can lead to less risky M&As. Leverage variable is defined by dividing the amount of debt with the amount of equity. This data is accessible in Thomson One Banker Database. This variable has been inspected for its distribution and outliers. Based on this inspection the leverage variable is natural logarithm transformed thereafter winsorized on 10.9% and 89.1%. Leverage has been checked on the linearity with the CAR variable, there is no evidence that there is no linear relation.

A fourth control variable is defined by making a difference between a hostile or friendly takeover. It is possible to distinguish the acquisition attitudes by three types: hostile, friendly and neutral takeovers. In particular, various studies show that the performance of the acquiring company's shareholders is deeply and differently influenced depending on whether attitudes are hostile or friendly. For example, Cartwright & Schoenberg (2006) explain that a hostile takeover creates a higher abnormal return on stock. Considering the above theory, this thesis adopts two dummy variables: '1' if the transaction is hostile and '0' any other way. Zephyr collects all the various means of the type of take over. This thesis attempts to include take over types as control variable. Nonetheless, there is no data available for hostile M&As in the deal editorial. Hence, a comparison cannot be made between hostile and friendly attitudes and thus everything has been classified as neutral and friendly takeover.

A fifth control variable is defined by the role of the creative director. According to Harvard Business Review (2013), this figure has become crucial since 2013 and it significantly influences the business strategy, the advertising campaigns and the firm's global vision. The creative director can even influence the success of M&As. Therefore, according to Business of Fashion (2016), simply changing the person playing this role can boost a fashion house. An example of this is Yves Saint Laurent: the appointment of the new creative director increased the sales revenue of the parent company Kering up to 27% (Business of Fashion, 2016). Considering this, the present thesis work will take up the dummy variables (note that the data are gathered from Zephyr): '1' if the M&A announcement date occurs after and in 2013; '0' if the M&A announcement date occurs before 2013.

**Table 3: Variable Description**

Variable Description	Variable	Measurement
Target Nationality	TargetNationality	'1' if the target and the acquirer have different nationality, which is France for LMVH and Kering or which is Switzerland for Richemont
Return on Equity	ROE	Earnings before interest, tax and depreciation (EBITDA) to total shareholder's equity
Status of Target Firms	TargetStatus	'1' if the target firms are private
Acquirer firm size	Ln(FirmSize)	Natural logarithm of total assets
Leverage	Ln(Leverage)	Natural logarithm of proportion of total amount of debt to total amount of equity
Creative Director	CreativeDirector	'1' if M&A announcement date occurs after and in 2013
Interaction term of ROE and Target Nationality	ROE*TargetNationality	Multiplication of ROE and Target Nationality

Since it is not known how fast or slow shareholders respond to an announcement, the event window (-5, +5) has been chosen, because this event window gives the best display of their responds, so that as little as possible irrelevant matters are included. Also based on the cross sectional t-test and the generalized rank z-test, because these values are the closest to significance (see Appendix B). This given result does not support the first hypothesis.

Verified the normal distribution for the CAR (see Appendix C), it is possible to test hypotheses 1 and 2a with the following regression model:

$$CAR (-5,+5) = \alpha + \beta_1 TargetNationality_i + \beta_2 ROE_i + \beta_3 TargetStatus_i + \beta_4 LnFirmSize_i + \beta_5 Leverage_i + \beta_6 CreativeDirector_i + \beta_7 ROE*TargetNationality_i + \varepsilon_i$$

In the regression analysis the error term will be inspected via the residual histogram, the predicted versus the residual plot and the VIF values.

To see if the creative director affects the growth since 2013, this thesis includes an additional model that put the natural logarithm of the sales as a dependent variable. Total assets have been removed; this creates too much correlation between independent and dependent variable. The regression may become unreliable as a result and the results may therefore be unreliable. This is also called multicollinearity. Verified the normal distribution for the sales (see Appendix C), the regression model to test hypothesis 2b is as follows:

$$\text{Ln (sales)} = \alpha + \beta_1 \text{TargetNationality}_i + \beta_2 \text{ROE}_i + \beta_3 \text{TargetStatus}_i + \beta_4 \text{Leverage}_i + \beta_5 \text{CreativeDirector}_i + \beta_6 \text{ROE} * \text{TargetNationality}_i + \varepsilon_i$$

## 4 Results

This chapter will analyse the empirical results obtained, starting from the various hypotheses. The structure will be organised as follows. Section 4.1: discussion of descriptive statistics. Section 4.2: analysis of the correlation between control variables and independent variables. Section 4.3: evaluation of regression results to demonstrate the validity of assumptions and section 4.4: re-assessment of assumptions using robustness tests.

### 4.1 Descriptive statistics

In table 4 is possible to note the descriptive statistics of the dependent, independent and control variables considered. In particular, statistical indices such as the number of observations, mean, median, standard deviation, minimum and maximum values of each variable were analysed.

The first dependent variable studied is the CAR. It can be noted that the average CAR of the acquiring companies assumes a positive value on the 11-day event window (-5, +5). The period considered runs from 2000 to 2019. This positive value is coherent with previous investigation (Konings & Schiereck, 2006). Furthermore, the median of CAR (-5, +5) has proved to be in line with the research conducted by Feito-Ruiz & Menéndez-Requejo (2011). The CAR value observed is, equal to 0,0005 and shows that on average the acquiring enterprises obtain positive returns in 11 days around the announcement period of the M&A operations. The cumulative AAR is shown in appendix A; figure 1, which is a graphical representation of the AAR in window (-20, +20). From this plot it can be deduced whether there is a significant effect, which shows that in window (-5, +5) the effect is the strongest.

The second dependent variable analysed is the natural logarithm of sales. This value is important in order to assess whether, from 2013, a greater visibility of the creative director allows a bigger growth of the three conglomerates of luxury goods. The coefficient of variation, which can be calculated by dividing the standard deviation by the mean, is relatively small. This could imply that the three big luxury conglomerates follow a similar M&A strategy.

This section continues with the analysis of independent variables. First, it should be noted that 60.3% of the total sample analysed is made up of cross-border mergers and acquisitions with their main objectives outside France for LVMH and Kering and outside Switzerland for Richemont.

Moreover, it is important to mention that the acquiring companies in the sample have a positive ROE, which varies between 0.095 and 0.579. The fact that the mean value is 0,290 implies a positive ROE for competitors. Considered also the interaction between ROE and

TargetNationality, a positive ROE is observed for 18.1% of the sample that is implicated in acquisitions outside France and Switzerland.

After the analysis of dependent and independent variables, it is important to investigate the control variables. They are related to the characteristics of the transaction, consisting of the status of the target companies, and the business characteristics of the acquirer, namely the size of the company, leverage and creative director. In this regard, interesting information is shown in table 4. Indeed, it appears that more than 72.2% of the target group for mergers and acquisitions is a private company. This is fully in accordance with the studies of Fuller et al. (2002) that explain how the best results are obtained by acquirers involved in private rather than public companies. Again, concerning the firm size, it is normalized by the natural logarithm of the total assets. The total of this last value varies from 22,241 to 24,897 with an average of 23,762. Thus, on an average, the acquiring companies have a positive value of the assets. As for the average leverage, transformed back into a linear number is about 40.5%.

Thus, in general acquiring companies use debt higher than the equity to finance their business transactions. Finally, a careful analysis shows that since 2013 the creative director affected around 33% of the observed M&As' activities.

#### Table 4: Descriptive Statistics of Independent and Control Variables

The main statistical data (shown in the table) as the number of observations, mean, median, standard deviation, minimum value and maximum value will now be presented for the measures are: (1) CAR (-5, +5): the Cumulative Abnormal Return or CAR of the acquiring firms after the 120-day estimation period is calculated using the market model according to MacKinlay (1997). (2) Ln(Sales): is the natural logarithm of the sales of the year for the merger and acquisition action. (3) TargetNationality: is a dummy variable that can assume value '1' if the target enterprise is situated outside of France or Switzerland and '0' otherwise. (4) ROE: is the EBITDA divided between the shareholders' equity of the acquiring companies. (5) TargetStatus: is a dummy variable of '1' if the target status is private and '0' otherwise. (6) Ln(FirmSize): this measure is equal to the natural logarithm of total assets. (7) Ln(leverage): this measure is the natural logarithm of total liabilities divided by total assets. (8) CreativeDirector: value equal to '1' if the announcement date of M&A occurs in 2013 and after this date. (9) ROE\*TargetNationality: is given by the multiplication of ROE and TargetNationality as interaction term.

Variables	Observations	Mean	Median	Standard Deviation	Minimum	Maximum
CAR (-5,+5)	126	0.007	0.000	0.043	-0.100	0.100
Ln(Sales)	122	23.179	23.057	0.640	21.532	24.462
TargetNationality	126	0.603	1.000	0.491	0.000	1.000
ROE	122	0.290	0.273	0.114	0.095	0.579
TargetStatus	126	0.722	1.000	0.450	0.000	1.000
Ln(FirmSize)	122	23.762	23.724	0.624	22.241	24.897
Ln(Leverage)	122	-0.903	-0.912	0.633	-2.000	0.200
CreativeDirector	126	0.333	0.000	0.473	0.000	1.000
ROE*TargetNationality	124	0.181	0.181	0.175	0.000	0.579

## 4.2 Correlation

The following section will illustrate the correlation between dependent and control variables. In particular, the correlation matrix in table 5 shows a star (\*) as a significant sign at 5% confidence level. It is important to specify that the correlation, despite a significant indication, lies between the values -1 and 1. Therefore, there is no problem of multicollinearity between the independent and control variables. Moreover, for most variables, the coefficient does not exceed 0.5. The only exception is the ROE\*TargetNationality variable which shows a relatively high correlation (TargetNationality with 0.847 percentage) given by the interaction between ROE and TargetNationality.

### Table 5: Pearson Correlation Matrix

In this table is possible to visualize the interaction between all dependent, independent and control variables in the regression models. It sets out Pearson's correlation coefficients. The measures and indices adopted are: (1) CAR (-5, +5): the Cumulative Abnormal Return or CAR of the acquiring firms after the 120-days estimation period is calculated using the market model according to Mackinlay (1997). (2) Ln(Sales): is the natural logarithm of the sales of the year for the merger and acquisition action. (3) TargetNationality: is a dummy variable that can assume value '1' if the target enterprise is situated outside of France or Switzerland and '0' otherwise. (4) ROE: is the EBITDA divided between the shareholders' equity of the acquiring companies. (5) TargetStatus: is a dummy variable of '1' if the target status is private and '0' otherwise. (6) Ln(FirmSize): this measure is equal to the natural logarithm of total assets. (7) Ln(leverage): this measure is the natural logarithm of total liabilities divided by total assets. (8) CreativeDirector: value equal to '1' if the announcement date of M&A occurs in 2013 and after this date. (9) ROE\*TargetNationality: is given by the multiplication of ROE and TargetNationality as interaction term. It should also be noted that: (\*) The single star in the coefficient indicates the significance at the level of 5%; (\*\*): the double star in the coefficient indicates the significance at the level of 1%. The values in parentheses are the standard errors.

Variables	CAR (-5,+5)	Ln(Sales)	TargetNationality	ROE	Target Status	Ln(FirmSize)	Ln(Leverage)	CreativeDirector	ROE*TargetNationality
CAR (-5,+5)	1								
Ln(Sales)	0.014	1							
TargetNationality	-0.058	0.015	1						
ROE	0.034	0.192*	0.142	1					
TargetStatus	0.006	0.058	0.454**	0.146	1				
Ln(FirmSize)	-0.012	0.968**	0.040	0.130	0.062	1			
Ln(Leverage)	0.086	0.026	0.202*	0.637**	0.009	0.032	1		
CreativeDirector	0.013	0.472**	0.034	-0.137	0.170	0.487**	-0.206*	1	
ROE*TargetNationality	-0.017	0.023	0.847**	0.554**	0.440**	0.008	0.461**	-0.058	1

### 4.3 Regression

The following section of this thesis aims to present the analysis that has been carried out on the primary regression. In particular, it will set out the results following from testing the assumptions made before. Two regression models have been formed. This allowed examining the creation of wealth for the acquirer shareholders. Noteworthy is table 6, which provides the results of multiple linear regressions.

Firstly, it is important to specify that the event window has 11 days. Its function as a dependent variable is important in order to observe the relationship between the figures of the creative director, the announcement of merger and acquisition and the creation of value for the acquiring shareholders, always during the period of time specified.

An additional dependent variable used is the Ln(Sales), fundamental in order to estimate the impact that the creative director exerts on the business increase.

Further considerations involve the TargetNationality coefficients that introduce two similar trends: in both models they are negative and insignificant. This points out that merger and acquisition operations outside France or Switzerland produce less results than the same

operations carried out at domestic level; moreover, M&As carried outside French or Swiss territory produce less sales than the same domestic M&As. This negative trend is fully in line with the results of Datta & Puia (1995) and Andrade et al. (2001) stating that foreign acquisitions will lead in the future to the destruction of the companies' value. Therefore, this confirms that the geographic area is particularly correlated to the good performance of mergers and acquisitions.

To see the different results between private and public target firms, this thesis demonstrates an additional control variable. When target status is included in the regressions, it does give diverse results among the models. In model 1 this is a positive value, which implies that if the target changes from public to private the average CAR increases by 0.2%. But the coefficient is not significant so no statistical conclusion can be based on this result. While in model 2 this is a negative value, which implies that if the target changes from public to private the average sales decreases by 0.13%. But the coefficient is not significant so no statistical conclusion can be based on this result. This analysis shows that the TargetStatus has no significant and determining effect on the CAR and Sales.

Furthermore, as regards ROE it was found that this coefficient is negative in model 1 and 2. According to Beccalli & Frantz (2009) M&A operations will have an important impact by weakening the ROE value.

Concerning the ROE\*TargetNationality term, this coefficient shows a negative value. This indicates the advantages of an acquirer with a better ROE that, focusing on domestic acquisitions, can generate a superior CAR. In model 1 and 2 the ROE\*TargetNationality is statistically insignificant. Therefore, the result does not illustrate the effect of this parameter on the share return during the 11 days (-5, +5) CAR and, in this case, no conclusions can be drawn. Finally, it is important to specify that, in any event, positive abnormal return does not always ensure a higher ROE (Ahsan, 2012) to the bidders.

Another important parameter to take into account is the firm size. In particular, this thesis section shows how business dimensions have a negative and statistically insignificant trend in model 1. Moreover, the delivered analysis indicates that the firm size doesn't affect the market's reaction to merger and acquisition activities (Dutta & Jog, 2009). As far as model 2 is concerned, the acquirer firm size has not been included due to the possible emergence of multicollinearity.

Again, M&A operations can be significantly influenced and aggravated by leverage (Pervan et al., 2015). Analysing this measure, in fact, there are negative and insignificant results using CAR (-5, +5). This is also due to the fact that, since the leverage does not control

managers, they do not always work in the interests of shareholders. This is in line with the agency theories, which says that there is a separation of ownership and control that managers will act on their own behalf and not in the interest of shareholders. (Hill & Jones, 1992).

It is also important to mention the variable creative director, which is an addition to the current literature. In particular, a value of 1% significance was found in model 2. As shown by Harvard Business Review (2013) and Business of Fashion (2016), from 2013 the role of creative director has become increasingly vital. This gives a positive value, even though there is no static evidence and this creates a higher value for the acquiring shareholders. Moreover, the results obtained show a significant statistical impact on sales. This variable corresponds to hypotheses 2a and 2b.

The coefficient of determination or the adjusted R-squared is now introduced. A close correlation between model 1 and 2 can be pointed out. The adjusted R-squared is, in fact, negative for model 1 showing a not sufficiently representative explanation of the model. On the other hand, model 2 has a positive coefficient of 30.2%. This leads to the conclusion that model 2 can be used to better interpret the data of model 1. Using the histogram of the residues and the scatter plot of the residues, relative to the predicted value, the error terms were checked for homoscedasticity bias and the normal distribution.

Finally, two additional fixed effects are presented. In particular, the year fixed effects are those between the crisis years from 2007 to 2011. For this reason, a dummy time is adopted. The dummy variables used, assume value '1' during the crisis years and '0' in all other years. Second, it is important to consider that the fixed effect for the company concerns the repeated measurement of the same firms and this grouping could lead to an optimistic standard error. Ultimately, the firm dummy variables can assume value '1' if it is Kering and '0' otherwise.

The Anova measures the discriminatory power of the analysis. If the Anova is not significant, the model as a whole is unreliable and therefore the R-square, the explanatory power, is not reliable. For model 1 the F-value is 0.317 and the p-value is 0.945 therefore the discriminatory power is too low so the R-square of 0.019 is unreliable. But, in model 2 the F-value is 9.737 and the p-value is 0.000 therefore the R-square of 0.337 is reliable and trustworthy.

**Table 6: Regression Result of M&A Performance over the period 2000 – 2019; CAR (-5, +5) and Ln(Sales)**

Table 6 shows the results for two regression models concerning the merger and acquisition performance in the period between 2000 and 2019. It is important to specify that in model 1 the dependent variable is 11 days CAR of the acquiring companies around the date of M&A announcement. The dependent variable used in model two, instead, is Ln(Sales) that allows to measure the business growth. The measures and indices adopted are: (1) CAR (-5, +5): the Cumulative Abnormal Return or CAR of the acquiring firms after the 120-days estimation period is calculated using the market model according to MacKinlay (1997). (2) Ln(Sales): the natural logarithm of the sales of the year for the merger and acquisition action. (3) TargetNationality: a dummy variable that can assume value '1' if the target enterprise is situated outside of France or Switzerland and '0' otherwise. (4) ROE: the EBITDA divided between the shareholders' equity of the acquiring companies. (5) TargetStatus: a dummy variable of '1' if the target status is private and '0' otherwise. (6) Ln(FirmSize): this measure is equal to the natural logarithm of total assets. (7) Ln(leverage): this measure is the natural logarithm of total liabilities divided by total assets. (8) CreativeDirector: value equal to '1' if the announcement date of M&A occurs in 2013 and after this date. (9) ROE\*TargetNationality: given by multiplying ROE by TargetNationality as interaction term. It should also be noted that: (\*) The single star in the coefficient indicates the significance at the level of 10%; (\*\*): the double star in the coefficient indicates the significance at the level of 5%; (\*\*\*): the triple star in the coefficient indicates the significance at the level of 1%. The values in parentheses are the standard errors.

	CAR (-5,+5)	Ln(Sales)
	1	2
Constant	-0.026 (0.023)	22.088*** (0.090)
TargetNationality	-0.004 (0.005)	-0.017 (0.036)
ROE	-0.002 (0.009)	-0.034 (0.061)
TargetStatus	0.002 (0.005)	-0.013 (0.036)
Ln(FirmSize)	-0.013 (0.010)	
Ln(Leverage)	-0.003 (0.009)	-0.193*** (0.058)
Creative Director	0.006 (0.007)	0.300*** (0.038)
ROE*TargetNationality	0.001 (0.050)	-0.043 (0.032)
Adjusted R-Square	-0.072	0.765
R Square	0.019	0.337
F Value	0.317	9.737***
Observations	122	122
Year Fixed Effect	Yes	Yes
2007	-0.011 (0.018)	-0.079 (0.122)
2008	0.007 (0.019)	0.268** (0.126)
2009	0.032 (0.033)	0.231 (0.230)
2010	0.002 (0.019)	0.257* (0.131)
2011	-0.002 (0.017)	0.305*** (0.113)
Firm Fixed Effect	Yes	Yes

#### 4.4 Robustness test

This section sets out the robustness tests performed to further check the abnormal return. More specifically, the main assumptions are tested using a sample of all three companies each based on their scale and business portfolio.

The analysis by Donzé (2017) was conducted starting from a quick overview of the total assets of the various luxury conglomerates, all different in terms of size. The data collected for the fiscal year 2015 were 57.6 billion euros for LVMH, compared with the 20.1 billion euros for Richemont and the 23.4 billion euros for Kering. It can be noticed that LVMH proved to be an undisputed leader in the luxury industry by reporting total assets twice or even three times higher than its direct competitors. The same can be stated for the workforce. In fact, in 2015 LVMH employed 57,601 persons, Richemont 28,324 and Kering 34,697.

A second basic element in this analysis is the portfolio of the various companies. In fact, each of the three conglomerates holds specific brands in various luxury sectors. LVMH certainly holds the most diversified portfolio. Its brands range from the fashion industry to champagne and spirits, from perfume and cosmetics to watches and jewelry as well as to selective distribution. Its direct competitor Richemont, however, is focused on watches and jewelry (83.8% of sales in fiscal year 2016). Moreover, it has few fashion brands and no activity in the field of drinks and cosmetics. Finally, Kering is specialized in luxury fashion, though with a few watch brands, while it is not involved with either drinks or cosmetics. The company also shows a strong division outside of luxury especially within the Sports & Lifestyle industry (including Puma, 32% of sales in 2015).

The data analyzed by Donzé (2017) above show that the three conglomerates adopted a different timing in the engagement of these groups in the luxury business thus explaining their various sizes and brand portfolios. For example, when LVMH was founded, in 1987, the consolidation of Louis Vuitton and Moët-Hennessy had already started about a decade before. Instead, the active strategy of merger and acquisition in the luxury sector was adopted by Richemont and Kering only later, starting in the mid-1990s and after 2000 respectively.

It is also important to list the changes related to the measures used in the robustness tests, aimed at reducing autocorrelation and checking whether there is a difference in response from the shareholders between the firms. First of all, it should be specified that the interaction term  $ROE * TargetNationality$  has been deleted due to multicollinearity. The same applies to the firm size in respect to the company dummies.

Due to the OLS regression methodology, omitted variable bias and endogeneity could not be excluded. But, in the residual plot there are no indications of a bias. Therefore, this study assumes that the omitted variable bias is limited.

Finally, CAR shows how, although these three conglomerates are used to undertake M&A operations (therefore shareholders should no longer be surprised by any M&A) each merger and acquisition is different and has a unique impact on the firm. In fact, CAR allows calculating the response to unexpected news, which is a disadvantage. But it is also a precise measure of how the shareholder is surprised by news of M&A. Due to this reason three models have been tested with only one company included each time. In model 1 Kering is included, in model 2 LVMH and in model 3 Richemont.

The robustness check shows significant changes especially in terms of coefficient. In this respect, Datta & Puia (1995) attest to the negative effect of international M&As. Table 7 shows their insignificance and negative impact on the CAR in each of the three reported cases.

An important index analysed is the ROE, whose positivity is neatly in contradiction with the theories of Beccalli & Frantz (2009). The table shows positive results only in the case of Kering. The luxury giants LVMH and Richemont indicate, instead, negative performances, in spite of a high ROE.

Positive outcomes are evidenced by the leverage effect, which shows a return on investment higher than the cost of corporate debt, resulting in higher profitability.

As for the control variables, there is a trend analogy with the regression of section 4.3, since the target status is positive in all three models.

Finally, the latest figure analysed is that of the increasingly important figure held by the creative director, which should generate greater profitability. If this is true for Kering and LVMH, it is not the same for Richemont. Despite the insignificance of the results, this phenomenon could be attributable to the sector of interest of the companies themselves, focused more on clothing in the case of LVMH and Kering and on watches and jewelry in the case of Richemont.

The Anova measures the discriminatory power of the analysis. If the Anova is not significant, the model as a whole is unreliable and therefore the R-square, the explanatory power is not reliable. For model 1, the F-value is 0.977 and the p-value is 0.495 therefore the discriminatory power is too low and the R-square 0.369 is unreliable. For model 2, the F-value is 0.476 and

the p-value is 0.899 therefore the discriminatory power is too low and the R-square 0.070 is unreliable. For model 3, the F-value is 1.312 and the p-value is 0.324 therefore the discriminatory power is too low and the R-square 0.522 is unreliable.

The creative director variable is based on a split before and after 2013. This implies that the creative director variable is a time oriented variable. If this study were to include all available time dummies, there would be multicollinearity between the creative director and time variables. In this thesis the creative director variable is one of the main variables, therefore including all time dummies is no option. But, to control for the crisis effect, the time variables during the crisis period from 2007 till 2011 are included. Therefore, the multicollinearity between the creative director and time variable is limited and both the creative director and controls for the crisis could be included in the analysis.

## Table 7: Robustness Test 1

Table 7 shows the results for three regression models concerning the merger and acquisition performance in the period between 2000 and 2019. It is important to specify that in all three models the dependent variable is 11 days CAR of the acquiring companies around the date of M&A announcement. Model 1 is focused on the company Kering, model 2 LVMH and model 3 Richemont. The measures and indices adopted are: (1) CAR (-5, +5): the Cumulative Abnormal Return or CAR of the acquiring firms after the 120-days estimation period is calculated using the market model according to Mackinlay (1997). (2) TargetNationality: a dummy variable that can assume value '1' if the target enterprise is situated outside of France or Switzerland and '0' otherwise. (3) ROE: the EBITDA divided between the shareholders' equity of the acquiring companies. (4) TargetStatus: a dummy variable of '1' if the target status is private and '0' otherwise. (5) Ln(leverage): this measure is the natural logarithm of total liabilities divided by total assets. (6) CreativeDirector: value equal to '1' if the announcement date of M&A occurs in 2013 and after this date. It should also be noted that: (\*) The single star in the coefficient indicates the significance at the level of 10%; (\*\*): the double star in the coefficient indicates the significance at the level of 5%; (\*\*\*): the triple star in the coefficient indicates the significance at the level of 1%. The values in parentheses are the standard errors.

	CAR (-5,+5)		
	1	2	3
Constant	0.030 (0.024)	0.008 (0.010)	0.006 (0.043)
TargetNationality	-0.008 (0.013)	-0.002 (0.007)	-0.033 (0.022)
ROE	0.032 (0.023)	-0.002 (0.013)	-0.026 (0.030)
TargetStatus	0.006 (0.009)	0.000 (0.007)	0.009 (0.020)
Ln(Leverage)	0.022 (0.036)	0.007 (0.015)	0.015 (0.021)
CreativeDirector	0.000 (0.011)	0.009 (0.009)	-0.030 (0.014)
Adjusted R-Square	-0.009	-0.077	0.124
R-Square	0.369	0.070	0.522
F Value	0.977	0.476	1.312
Observations	25	74	23
Year Fixed Effect	Yes	Yes	Yes
2007	-0.021 (0.054)	-0.020 0.024	-0.069 0.052
2008	0.082 (0.054)	0.014 0.026	-0.077 0.038
2009		-0.010 0.046	0.069 0.056
2010	0.011 (0.039)	0.008 (0.027)	-0.016 0.056
2011	0.030 (0.026)	-0.011 (0.024)	-0.038 0.055

The Anova measures the discriminatory power of the analysis. If the Anova is not significant, the model as a whole is unreliable and therefore the R-square, the explanatory power is not reliable. The F-value is 1,508 and the p-value is 0.120 therefore the discriminatory is too low and the R-square 0.056 is unreliable. This implies, that only 5.6% can explain the change of CAR.

In many studies, the event window (-1, +1) is used, in this thesis, looking at CAAR plot (-5, +5) was most close to significance with a generalized Z value of 1.730, compared to window (-1, +1) with a generalized Z value 1.418, therefore event window (-5, +5) was chosen because it had a higher value for the significance test. However, because the event window (1, + 1) is most commonly used in many studies such as that of Anrade et al. (2001) and Moeller and Schlingemann (2005), this event window has been added to the Robustness test.

The main differences, which are the only variables that are significant, between CAR (-5, +5) and CAR (-1, +1) will be pointed out below.

First, TargetNationality is negatively significant. This means that there is a 0.6% lower CAR for foreign acquisitions. So, outside of Switzerland and France.

Second, rreative director is significant, this means that in the event window (-1, +1) it matters whether the merge and or acquisition took place before or after 2013. This implies that CAR before 2013 is on average 0.9% lower than after 2013. This means that the influence of the creative director on the event window (-1, +1) is 0.9% on the CAR. This gives evidence for hypothesis 2a.

Lastly, Firm size is significant, but has an increased multicollinearity because the conglomerates differ significantly with respect to their size. There could be a significant overlap between the size of the company and the firm dummy.

## Table 8: Robustness Test 2

Table 8 shows the results for the regression model concerning the merger and acquisition performance in the period between 2000 and 2019. It is important to specify that the dependent variable is 3 days CAR of the acquiring companies around the date of M&A announcement. The measures and indices adopted are: (1) CAR (-1, +1): the Cumulative Abnormal Return or CAR of the acquiring firms after the 120-days estimation period is calculated using the market model according to MacKinlay (1997). (2) TargetNationality: a dummy variable that can assume value '1' if the target enterprise is situated outside of France or Switzerland and '0' otherwise. (3) ROE: the EBITDA divided between the shareholders' equity of the acquiring companies. (4) TargetStatus: a dummy variable of '1' if the target status is private and '0' otherwise. (5) Ln(FirmSize): this measure is equal to the natural logarithm of total assets. (6) Ln(leverage): this measure is the natural logarithm of total liabilities divided by total assets. (7) CreativeDirector: value equal to '1' if the announcement date of M&A occurs in 2013 and after this date. (8) ROE\*TargetNationality: given by multiplying ROE by TargetNationality as interaction term. It should also be noted that: (\*) The single star in the coefficient indicates the significance at the level of 10%; (\*\*): the double star in the coefficient indicates the significance at the level of 5%; (\*\*\*): the triple star in the coefficient indicates the significance at the level of 1%. The values in parentheses are the standard errors.

	CAR (-1,+1)
	4
Constant	-0.021 (0.012)
TargetNationality	-0.006** (0.003)
ROE	0.006 (0.005)
TargetStatus	0.002 (0.003)
Ln(FirmSize)	-0.014*** (0.005)
Ln(Leverage)	-0.007 (0.005)
CreativeDirector	0.009** (0.004)
ROE*TargetNationality	-0.003 (0.002)
Adjusted R-Square	0.056
R Square	0.165
F Value	1.508
Observations	122
Year Fixed Effect	Yes
2007	-0.005 (0.009)
2008	0.013 (0.010)
2009	0.035** (0.017)
2010	-0.002 (0.010)
2011	0.017 (0.009)
Firm Fixed Effect	Yes

## 5 Conclusion and Limitations

This thesis aims to be innovative from the point of view of the impact that merger and acquisition announcements can have on the value creation for the shareholders. In particular, the key concept that guided the whole thesis is focused on the perception of the acquiring shareholders during a merger and acquisition and how the creative director influences the post-merger integration in the short term. Several researchers in the past have focused their attention on the generic effects of M&A operations (Alexandridis et al., 2010). Others, such as Beccalli & Frantz (2009) have conducted more specific studies about the matter. Still, since mergers and acquisitions undertaken in the last few years by the three major luxury industry giants have become a global example (Deloitte, 2019), researchers have deepened the luxury in its true term (Ko et al., 2019; Hurt, 2007) and in reference to marketing (Vickers & Renand, 2003; Phau & Prendergast, 2000). Even more recently, academics such as Jacobs et al. (2016) have considered the impact that leading figures such as creative director can have in creating value for luxury companies.

Therefore, the innovation of this work consists in the idea of merging all the aspects mentioned above, in order to evaluate the impact of M&A operations in a complete and exhaustive way. For this purpose, a sample of 122 transactions over a period of 20 years since 2000 has been selected. The analytical approach used in the evaluation of data is a scientific-statistical one, based on an event study method. In addition, independent and control variables have been set up in order to verify their effect on abnormal stock return by means of multiple linear regressions. After that, focusing on the announcement date of a M&A, an 11-day event window (-5,+5) has been taken as reference. This allowed an estimate to be made of the abnormal return of the purchasing companies around the same pronouncement date. In detail, it was decided to assess a market model over a projected period of 120 days to predict abnormal returns. The following hypotheses have been examined:

**Hypothesis 1:** in the, up to, twenty days preceding and following its announcement, M&A has a positive impact on the value's creation for the acquirers' shareholders in the personal luxury goods industry.

The results obtained allow some conclusions on the various hypotheses. Above all, the first hypothesis is not acceptable. This is demonstrated by the fact that the acquisitions made in the luxury market, despite being advantageous, do not produce significant positive effects on the

CAR of the acquiring shareholders. In particular, this is verified around the date of a merger and acquisition announcement and in the following twenty days.

**Hypothesis 2a:** Since 2013, creative directors have been judged more by their performance and shareholders will respond more positively to announcement of M&A deals in the luxury goods industry.

Regarding the upcoming importance of the role as a creative director, this study reveals that the creative director was positively correlated with the acquiring shareholders' value. Although, it was not significant in CAR (-5, +5), in CAR (-1, +1) the variable CreativeDirector is positive significant. So, there is statistical evidence that acquiring shareholders react differently after 2013 when the creative director played a more important role than before 2013. Therefore, the second hypothesis is rejected with CAR (-5, +5) and accepted with CAR (-1, +1).

**Hypothesis 2b:** Since 2013, the growth of the three luxury goods conglomerates increases with the visibility of the creative director.

Interesting is the verified correlation between sales and creative director. In particular, it has been demonstrated that the accurate choice of directors has a statistical and significant influence on the company growth. The positive results obtained are fully in accord with Winser's (2013) statements and underline that the more the creative director becomes master of the brand's protocol, the more the company can benefit. An example of this is Olivier Rousteing, creative director of Balmain, who carries out many tasks embracing the entire brand's concept. The results obtained make the third hypothesis acceptable.

The samples selected over the period 2000 to 2019 allow drawing some conclusions. Firstly, it is demonstrated that the status of the company has no influence on two important elements: M&As announcements and value creation for acquiring shareholders. However, the same cannot be said for the variable creative director, whose role impacts greatly on the company growth and on the value creation itself. Moreover, the effects of merger and acquisition announcements in French and Swiss dominant luxury markets have been investigated.

The added value of this thesis is the use of the recent research data, attributable to the last ten - years. In a world economic context in continuous evolution and where globalization reigns,

focusing on current information and analysing it in the light of past trends, allows to obtain a precious knowledge on modern luxury markets and their future development. This will enable the companies concerned to take strategic further actions.

As regards the limitations found in this thesis, they begin already at the root of the hypotheses advanced. An event study, in fact, is based on M&A announcements made within a time frame search that is strongly affected by the influence of stock market trends and other factors. This is why it is proposed to use a substitute parameter, such as the acquisition premium, to measure the effects of mergers and acquisitions.

A further limitation is constituted from the same data that allow disposing of only a limited number of variables. One solution could be to replace the business dimension with its relative size or market capitalisation. In addition, the data problem imposes the verification of measures on the totality of sales and activities. Lastly, the detailed analysis of the influence of the creative director, especially beginning from 2013, does not offer precise results as when using the exact turnover date of the assignment for this role.

The improvements proposed for future research in the study of the impact that merger and acquisition announcements can have on the value creation for the shareholders are set out below. First, M&A operations should be optimised to include business governance procedures such as shareholders' security and ownership structure. In a constantly evolving and expanding luxury economic market, it is profitable to improve the merger and acquisition actions to be undertaken. As a sample of this, only in 2017 the luxury sector made €1.2 trillion, showing an increase of 5%. As attested by Bain & Company, in the same year the luxury goods for personal use amounted to €262 billion. Moreover, in 2019 LVMH increased its revenues by 13%, billing €42.6 billion. These record values lead to even more optimistic forecasts. From the data analysed emerges that in the next three years this market segment will increase of an ulterior 5% approximately, carrying to invoice €305 billion for luxury goods to personal use. But due to the conditions created by the Corona virus, these forecasts could be different, since Chinese customers constitute a large group in the luxury goods industry. And they need at least one year to recover. Although, according to Hodgson (2018) deals across Asia and USA are just a small percentage of all the deals that takes place. Therefore, there are interesting acquisitions proposals for all the corporate giants who intend to grow in the luxury market. Second, in the next research the event study could be complemented with an analysis of CAAR with accounting performance and an analysis of long-term AR.

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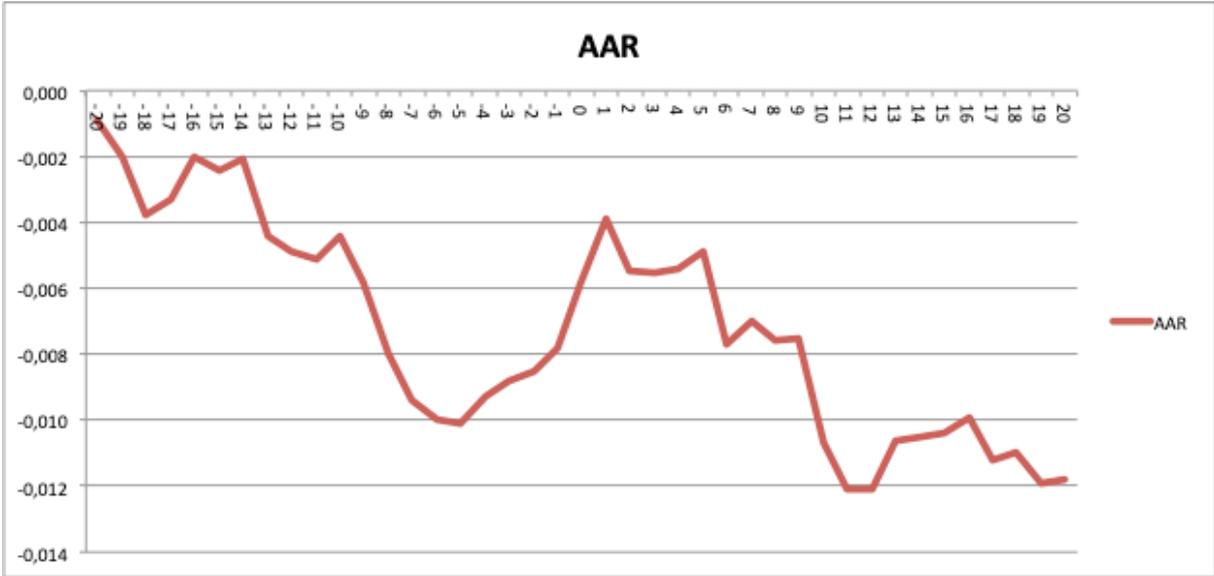
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## Appendix A: AAR significance test

Grouping Variable/N	AAR value	AAR cumulative	N	Csect T	Generalized Rank Z
AAR(-20)	-0,001	-0,001	126,000	-0,963	0,072
AAR(-19)	-0,001	-0,002	129,000	-1,231	-0,705
AAR(-18)	-0,002	-0,004	133,000	-1,717	-1,065
AAR(-17)	0,001	-0,003	133,000	0,430	0,000
AAR(-16)	0,001	-0,002	133,000	1,150	0,369
AAR(-15)	0,000	-0,002	133,000	-0,345	0,223
AAR(-14)	0,000	-0,002	133,000	0,265	0,169
AAR(-13)	-0,002	-0,004	133,000	-1,874	-1,365
AAR(-12)	-0,001	-0,005	133,000	-0,472	-0,221
AAR(-11)	0,000	-0,005	133,000	-0,190	1,045
AAR(-10)	0,001	-0,004	133,000	0,640	-0,390
AAR(-9)	-0,001	-0,006	133,000	-1,309	-1,261
AAR(-8)	-0,002	-0,008	133,000	-2,115	-1,621
AAR(-7)	-0,001	-0,009	133,000	-1,233	-1,627
AAR(-6)	-0,001	-0,010	133,000	-0,537	-0,978
AAR(-5)	0,000	-0,010	133,000	-0,078	0,303
AAR(-4)	0,001	-0,009	133,000	0,847	0,708
AAR(-3)	0,001	-0,009	133,000	0,430	0,685
AAR(-2)	0,000	-0,009	133,000	0,283	-0,164
AAR(-1)	0,001	-0,008	133,000	0,571	0,333
AAR(0)	0,002	-0,006	133,000	1,334	1,010
AAR(1)	0,002	-0,004	133,000	1,603	1,001
AAR(2)	-0,002	-0,006	133,000	-1,099	-1,393
AAR(3)	0,000	-0,006	133,000	-0,003	0,227
AAR(4)	0,000	-0,005	133,000	0,088	-0,700
AAR(5)	0,001	-0,005	133,000	0,408	0,017
AAR(6)	-0,003	-0,008	133,000	-2,295	-2,572
AAR(7)	0,001	-0,007	133,000	0,576	0,276
AAR(8)	-0,001	-0,008	133,000	-0,559	-0,206
AAR(9)	0,000	-0,008	133,000	0,096	-0,700
AAR(10)	-0,003	-0,011	133,000	-3,122	-2,098
AAR(11)	-0,001	-0,012	133,000	-1,602	-1,931
AAR(12)		-0,012	133,000	0,000	-0,079
AAR(13)	0,002	-0,011	133,000	1,418	0,844
AAR(14)	0,000	-0,011	133,000	0,079	-0,209
AAR(15)	0,000	-0,010	133,000	0,094	0,040
AAR(16)	0,001	-0,010	133,000	0,435	-0,474
AAR(17)	-0,001	-0,011	133,000	-1,351	-1,274
AAR(18)	0,000	-0,011	131,000	0,180	0,921
AAR(19)	-0,001	-0,012	125,000	-0,866	-0,521
AAR(20)	0,000	-0,012	121,000	0,091	2,433

Figure 1: CAAR

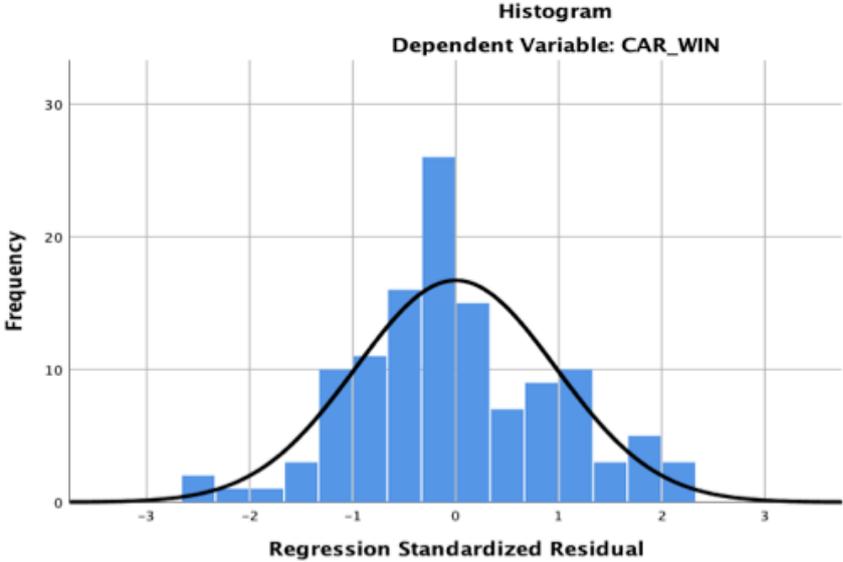


## Appendix B: CAAR significance test

CAAR Type	CAAR Value	Precision Weighted CAAR Value	Number of CARs considered	Csect T	Generalized Rank Z
(-20, 20)	-0.011	-0.010	118	-1.543	0.430
(-10, 10)	-0.005	-0.004	125	-0.972	-0.020
(-10, 1)	0.000	0.000	133	0.063	-0.055
(-10, 0)	-0.001	-0.001	133	-0.356	-0.659
(-5, 5)	0.006	0.005	130	1.449	1.730
(-2, 2)	0.003	0.003	133	1.119	0.484
(-1, 1)	0.004	0.004	133	1.762	1.418

# Appendix C: Normal Distribution

## 1. CAR (-5,+5)



## 2. Ln(Sales)

