

T.C.
MARMARA ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
İŞLETME (İNGİLİZCE) ANABİLİM DALI
MUHASEBE FİNANSMAN (İNGİLİZCE) BİLİM DALI

**FINANCIAL RISK MANAGEMENT AND FIRM
PERFORMANCE: EVIDENCE FROM EUROPEAN
CROSS-BORDER MERGERS AND ACQUISITIONS**

Yüksek Lisans Tezi

ECE KOZOL

İstanbul, 2020

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Danışman: PROF. DR. JALE ORAN

İstanbul, 2020

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My warmest thanks to my mom and friends for all their love and motivation during this process. I would like to dedicate this thesis to my mom with all my love and gratitude.

İstanbul, 2020

Ece Kozol



GENEL BİLGİLER

Adı ve Soyadı	: Ece Kozol
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ÖZET

FINANSAL RİSK YÖNETİMİ VE FİRMA PERFORMANSI: AVRUPA SINIR ÖTESİ BİRLEŞME VE SATIN ALMALARINDAN BULGULAR

Finansal piyasalarda oynaklığın artması nedeniyle, özellikle dünyadaki büyük şirketler arasında finansal türev araçların (forward, futures, option, and swap) kullanımı yaygınlaşmıştır. Piyasa riski üç kategoriye ayrılabilir: döviz kuru riski, faiz oranı riski ve emtia fiyat riski. Şirketler, finansal türev araçları kullanarak bu riskleri yönetebilirler. Uluslararası Finansal Rapor Standartları (UFRS), şirketlerin finansal araçlarıyla ilgili detaylı bilgileri finansal raporlarında açıklamasını zorunlu kılmaktadır. Finansal türev araçlara ilişkin finansal raporlardaki ilgili detaylar, türev araç kullanımının firma değeri üzerindeki etkisi üzerine ampirik araştırma yapılmasını mümkün kılmaktadır. Riskten korunma ve firma değeri arasındaki ilişki üzerindeki farklı bulguların yanı sıra, riskten korunmanın firma faaliyetleri üzerindeki etkisini sorgulayan ampirik araştırmalar beklenmedik bir şekilde eksiktir. Bu çalışmada, bir firmanın finansal riskini değiştiren önemli bir operasyon olan sınır ötesi birleşme ve satın almaları Avrupa ülkeleri için incelemeyi hedeflemekteyiz. Riskten korunmanın, Avrupa'daki sınır ötesi birleşme ve satın alma yoluyla firma performansı üzerindeki etkisini inceleyerek, risk yönetiminin firma performansını etkileyip etkilemediği ve ne şekilde etkilediğini bulmayı amaçlıyoruz. 2007-2019 yılları arasında 14 farklı gelişmiş Avrupa ülkesindeki şirketler tarafından yürütülen 537 sınır ötesi birleşme ve satın alma verisi ile, finansal riskten korunma programlarına sahip olan firmaların, bu tür programları kullanmayanlara kıyasla daha yüksek kümülatif anormal getirilere sahip olduğuna dair kanıtlar buluyoruz. Ayrıca, sonuçlarımız, türev araç kullanıcılarının, kullanmayanlara oranla anlaşma tamamlama sürelerinin daha uzun sürdüğünü göstermektedir. Genel olarak, bu çalışma kurumsal finansal riskten korunma ve şirket performansı arasındaki bağlantıya ilişkin Avrupa bölgesine ilişkin bulgular sunmaktadır. Avrupa'ya ilişkin bulgularımız daha önce ABD'de yapılan çalışmayı destekler niteliktedir.

GENERAL KNOWLEDGE

Name and Surname : Ece Kozol
Field : Business Administration
Program : Accounting and Finance
Supervisor : Professor Jale Oran
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ABSTRACT

FINANCIAL RISK MANAGEMENT AND FIRM PERFORMANCE: EVIDENCE FROM EUROPEAN CROSS-BORDER MERGERS AND ACQUISITIONS

Due to the increasing volatility in financial markets, the use of financial derivative instruments (forward, futures, option, and swap) has become widespread particularly between large firms around the world. Market risk can be grouped into three categories: exchange rate risk, interest rate risk and commodity price risk. By using financial derivatives, companies can manage these risks. It is required by International Financial Reporting Standards (IFRS) to disclose their financial positions on financial instruments in their financial reports. The related details in financial reports regarding financial derivatives make it possible to do empirical research on the impact of derivative use on firm value. Along with the mixed results on the relationship between hedging and firm value, empirical research that question the impact of hedging on firm operating activities have been unexpectedly missing. In this study, we aim to examine a significant type of firm operations, cross-border mergers and acquisitions, which is well known for changing a firm's financial risk exposure. By studying the effect of hedging on firm performance through cross-border M&As, we aim to find out whether and in what way risk management affects firm performance. With a sample of 537 cross-border mergers and acquisitions (M&As) conducted by 14 different developed European companies between 2007 and 2019, we find evidence that acquirers with financial hedging programs have higher cumulative abnormal returns (CARs) than those without such programs around deal announcements. Additionally, our results show that derivatives users experience longer deal completion times than non-users. Overall, this study provides findings for the European region on the connection between corporate financial hedging and firm performance. Our findings regarding Europe support the previous study in the USA.

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ABBREVIATIONS

AR	Abnormal Return
BIS	Bank of International Settlements
CAAR	Cumulative Average Abnormal Return
CAPM	Capital Asset Pricing Model
CAR	Cumulative Abnormal Return
CD	Commodity Derivatives
CFTC	Commodity Futures Trading Commission
FCD	Foreign Currency Derivatives
FX	Foreign Exchange
IFRS	International Financial Reporting Standards
IR	Interest Rate
IRD	Interest Rate Derivatives
ISDA	International Swaps Derivatives Association
M&As	Merges and Acquisitions
OLS	Ordinary Least Squares
OTC	Over-the-counter
SFAS	Statement of Financial Accounting Standards
U.S.	United States
UK	United Kingdom
USD	United States Dollar

1. INTRODUCTION

National as well as global firms concentrate on numerous restructuring activities to survive the effect of growing competition. It is very important for firms to keep their continuity in good condition and to know how to survive a competitive environment that are distinguishing and complicated. Along with these competitive environments, one of the most important activities with the biggest influence is the growth in operations. The concept of growth is analyzed in two parts financially. One of them is the activity of the company to grow by using the resources it creates or outsourced. Another type of growth is external growth by acquiring or merging with another company. Although the primary preference of the companies is internal growth, under today's competitive conditions, internal growth is inadequate for companies that have reached a certain size. External growth strategies are realized in two ways as mergers and acquisitions (M&As) (Arslan and Simsir, 2014). In such a competitive globalized world, mergers and acquisitions, in the case of being domestic or cross-border, are of high importance to firms to survive. The successes and failures of such deals are of great importance and have major consequences both for the firms themselves and for the other stakeholders within them (Sudarsanam, 2010).

A number of researchers expect cross-border M&As to outperform domestic M&As for both acquirer and target companies (Martynova et al., 2007). The reason for this could be that companies enlarge their businesses to new marketplaces in cross-border M&As and adopt the research and development abilities of the target companies that give them a significant benefit over other companies and allow them to take advantage from the flaws in the global capital market (Martynova et al., 2007).

Conversely, in cross-border M&As, some problems might occur and lead to difficulties in handling the combined companies. These comprise dissimilarities among the acquirer and target firm's cultures and regulations, which might cause a failure to accomplish the anticipated synergies of the merger and lead cross-border M&As to underperform domestic M&As (Martynova et al., 2007).

Generally, studies that analyzed the domestic M&As for the short term horizon showed that stakeholders of the target companies realize significant gains while stakeholders of acquirer companies realize only modest or insignificant gains. Though, the majority of the long term studies showed that acquirer companies usually suffer from some serious wealth losses (Sudarsanam, 2010). Research that analyzed cross-border M&As through the short term have reported mixed results with some showing positive returns, a few concluding losses in wealth, while the remainder showed insignificant returns (Martynova et al., 2007).

Mergers and acquisitions are carried out by companies operating in both developed and emerging countries with the intention of reducing unit costs by increasing economies of scale, increasing revenues by increasing product price determination, benefiting from the synergies arising from mergers, diversification of business lines and geographical markets or making poorly managed target companies more efficient and generating financial returns. (Arslan and Simsir, 2014, p.2). As getting to be mindful of the significance of the merging which allows firms with expanded development and power, a large number of studies have been held on mergers and acquisitions.

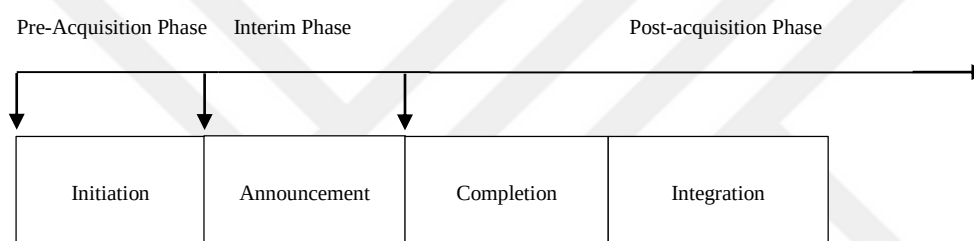
In the finance literature, an important reason for mergers and acquisitions is stated as inefficient management of target company's assets by managers or partners and the creation of value by eliminating such inefficiencies after acquisition (Manne, 1965; Fama, 1980; Fama and Jensen, 1983; Jensen 1986; 1988). Therefore, it is foreseen by these studies that the target companies perform poorly before the merger or acquisition and high performance after the agreement. (Arslan and Simsir, 2014).

Cross-border M&A activities have been on the increase in the world over the previous twenty years as a consequence of deregulation and the globalization of production and capital markets. Thomson Reuters states that global cross-border M&As achieved a top of USD 1.8 trillion in 2007, comprising 44.8 percent of the total M&A capacity. Afterward the global financial crisis, the value of global cross-border M&As reached the lowest in 2009 and later increasingly regained to USD 1.3 trillion in 2014, comprising 36.9 percent of the total M&A capacity.

Cross-border M&As involve extra risk components as a result of changes in culture, natural features, capital market growth, accounting instructions, and rules among the acquirer and the target firms contrasted to domestic M&As. More prominently, taking over by a foreign acquirer firm considerably changes the target firm's financial risk exposure (Chen et al., 2017).

The different stages of the transaction of a standard cross-border M&A timeline and the related financial risks that Chen et al. (2017) recommend are illustrated in Figure 1.

Figure 1: Financial Risks Through a Timeline of Cross-border M&A



Source: Ahern, K. R., and Sosyura, D., Who writes the news? Corporate press releases during merger negotiations, *Journal of Finance*, 2014

Chen et al. (2017) divided the cross-border M&A timeline into 3 phases. These are pre-acquisition phase, interim phase and post-acquisition phase. The phase of pre-acquisition is described as the dates among the start of the transaction and the announcement. Acquirers and targets negotiate in private with one another throughout this phase. Next, the phase of interim is described as the phase between the date of the announcement and the date of completion of the transaction. Lastly, the post-acquisition phase is described as the phase after the completion of the transaction, that could be also split into the integration phase and the post-integration phase (Ahern and Sosyura, 2014; Chen et al., 2017).

Pre-acquisition phase includes the evaluation of the financial risk of the target firms. Interim phase covers the risk of the transaction which refers to the risk in the target firm's price denominated in the acquirer firm's currency and the external funding costs might adjust with both the foreign exchange (FX) rate and the interest rate (IR) among the start and completion of the transaction. Finally, post-acquisition phase includes

integration risk, balance sheet risk and cash flow risk. Integration risk applies to the acquirer's uncertainty over the integration phase when planning the merged entity's recent financial risk management programs. Balance sheet risk applies to the uncertainty of the acquired assets and liabilities which are denominated in the acquirer firm's currency as a result of the FX rate movement. Cash flow risk applies to the risk regarding the value of upcoming years operating cash flows denominated in the acquirer firm's currency because of the FX rate change (Chen et al., 2017).

An acquirer faces deal-related risk exposures throughout different phases in a cross-border M&A. Both the acquirer and the target face fluctuation in value due to exchange rate fluctuations throughout the pre-acquisition phase, which may affect the attractiveness of the target to the acquirer. Throughout the interim phase, if the transaction is priced in the currency of the target country, the acquirer will be exposed to a new foreign exchange (FX) risk. Furthermore, if such an acquisition involves external funding, the acquirer may be exposed to interest rate (IR) risk that directly impacts the cost of financing the agreement. Throughout the post-acquisition phase, as a consequence of acquiring the foreign target and growing foreign activities, an acquirer faces higher FX exposures (Chen et al., 2017).

Financial derivatives have been extensively used in the function of risk management tools by firms across the world. Another research is from the International Swaps Derivatives Association (ISDA) survey in 2009 which states that 94 percent of the world's 500 biggest firms use derivatives to manage their activities as well as financial risks, while 88 percent of the firms use derivatives to manage foreign currency risk. As stated by the data announced by the Bank for International Settlements (BIS), the notional value of outstanding IRDs and FCDs held by international non-financial purchasers was separately USD 15.7 trillion and USD 9.1 trillion in the last part of June 2014 (Chen et al., 2017).

Chen et al. (2017) state that in spite of the popularity of financial derivatives between companies and the theoretic base in the encouragement of corporate financial hedging (for instance, Mayers and Smith, 1982; Stulz, 1984; Smith and Stulz, 1985; Froot et al., 1993; DeMarzo and Duffie, 1995; Leland, 1998;), empirical results on the

relationship between corporate financial hedging and firm value are yet mixed. For instance, Allayannis et al. (2001) show that the use of FCDs is positively related to firm value in a large sample of U.S. non-financial companies with foreign currency risk exposures. Carter et al. (2006) state a significantly positive hedging premium between a sample of U.S. airline companies that involve in jet fuel hedging. On the other hand, Guay and Kothari (2003) find that the cash flows created by hedging are moderate and cannot comprise a major increase in firm value. In their study, Jin and Jorion (2006) use a sample of oil and gas manufacturers and observe no significant effect of financial hedging on firm value (Chen et al., 2017).

Although the use of financial derivatives for hedging is very popular in practice, value relevance of derivative use is not clear in empirical studies in the literature. For instance, Modigliani and Miller (1958) conclude that a firm's value under perfectly competitive market circumstances is irrelevant to the financing strategy regarding hedging. However, Hoyt and Liebenberg (2011) showed that the U.S. insurance companies have a positive relationship among firm value and ERM applications. Similarly, Smith and Stulz (1985) claim that hedging policy may have an effect on the company's valuation through taxation, contracting costs or the effect of hedging over investment strategies.

Along with the mixed results on the relationship among hedging and firm value, empirical research that question the impact of hedging on firm operating activities have been unexpectedly missing.

Recently Chen et al. (2017) studied acquirer performance in the U.S. market and found a significant positive relationship between hedging and acquirer performance for cross-border M&As. Similar to Chen et al. (2017), Qiao et al. (2019) examined the case of IPO market performance and found that corporate hedging increases firm value.

Following Chen et al. (2017), we aim to examine the effect of hedging on firm performance through cross-border M&As in developed European countries.

Chen et al. (2017) suggest four main reasons and advantages to study the effect of hedging on deal performance through cross-border M&As. These are

a) using only cross-border M&As data directly eliminates other firms without foreign exchange risk and increases the robustness of empirical tests.

b) the sample makes it possible to adopt the standard M&A event study approach that reduces the reverse causality concern which states that companies with improved performance are likely to hedge instead of hedging directing to better deal results.

c) the event study approach makes it possible to study the effect of hedging on firm performance measured by the stock market response and firm operating performance, which propose a substitute to Tobin's Q which is a firm value measure used by many risk management researches and

d) by studying the impact of financial risk management on a particular kind of firm operation which is cross-border mergers and acquisitions in developed European countries, the results of this study may shed light on the channels of a relationship between financial hedging and firm value.

In addition to these four motives of our study stated above, we aim to check the generalizability of Chen et al. (2017) results for the U.S. data by analyzing different developed European countries.

Event study, T-test, Mann-Whitney Test and Ordinary least squares (OLS) regression are used as research methods in this study.

We find that acquirers with financial hedging programs have higher cumulative abnormal returns (CARs) than those without such programs around deal announcements. In addition to the improvement of acquirer CARs, we find that financial hedging is associated with a longer time of completion of the deal. Our findings are in line with Chen et al. (2017).

This study is structured as 6 chapters. Chapter 1 "Introduction" presents an overall introduction and an overview of the study. This section involves definitions,

objectives, aims, contributions and an outline of the study. Chapter 2 “Mergers and Acquisitions (M&As)” provides several theories and motives of mergers and acquisitions at large.

Chapter 3 “Financial Derivative Instruments” provides the meaning of financial derivatives, their characteristics and the relationship between company value, M&As and financial hedging.

Chapter 4 “Literature Review and Hypothesis Development” constructs our research questions by depending on the preceding research in relation to the cross-border M&As and financial hedging.

Chapter 5 “Research Methodology and Empirical Results” presents descriptive statistics of our sample, research methodology, empirical results and discussion of the findings.

Lastly, Chapter 6 “Conclusion” summarizes the main results and conclusions of the preceding chapters. This chapter discusses the limitations of the study, its implications in addition to making suggestions for upcoming research.

2. MERGERS AND ACQUISITIONS (M&As)

This section explains the basic terms used in mergers and acquisitions literature and practice. Recent developments in mergers and acquisitions transactions are also presented and discussed in this section.

2.1. Definitions

In terminology, the terms “merger”, “acquisition”, and “takeover” are commonly employed interchangeably (Singh, 1971). Though, there are well-defined differences between them and clarifying them from the outset would be useful for further understanding.

Generally, what is meant to be described with the concept of “merger” is that two or more companies lose their legal assets and come together under a single company. The concept of “consolidation” is mentioned if the company gathered under its roof is a new company that did not exist before and was established as a result of the merger. The concept of “acquisition” is mentioned if one of the companies that come together continues to exist, and other companies lose their legal assets and fall under this company. Another concept frequently used in the field of finance is “takeover”. While this term, which can be defined as a company taking over another company, is sometimes used negatively (the company changing hands without the consent of the seized company), it is sometimes used in a way that matches the concept of “acquisition”. In other words, a merger can be stated as one or more companies coming together under the roof of a new company established by losing their legal assets and acquisition can be stated as within one or more companies, a company maintains its legal existence and the other companies unite within the existing company by ending their legal existences.

The term “merger” represents the situation of the target company’s assets under the control of the legal entity of the acquirer company and the termination of the target company’s legal entity while “acquisition” represents the situation where the acquirer buys minority or majority shares from the target company (Arslan and Simsir, 2014). Brockington (1986) claims that a merger is “*the amalgamation of two or more businesses which were separate*”. That is to say, the deal will be called a merger if the acquirer

acquires the whole target. Just one firm continues after the finalized merger, the other no longer exists. Two companies combine their assets and procedures in a merger, and share the resources to create a recent legitimate entity and accomplish shared goals. Often, stockholders of the two firms stay as common owners for the newly established entity. Whereas in an acquisition, the acquiring company buys the target company's shareholdings or assets, which are transferred to the acquiring company to control these assets and activities, while the target company's stockholders terminate the possession of the company and the acquired company becomes the acquirer's affiliate or subsidiary (UNCTAD, 2000; Sudarsanam, 2003). In other words, if only a part of the target firm's interest is acquired by the acquirer, it is considered an acquisition (Danbolt, 1996).

Usually, M&As can be operationally categorized into three categories which include horizontal mergers, vertical mergers, and conglomerate mergers. Horizontal M&As are formed when two companies in identical business lines that compete in identical markets and sectors incorporate (Gaughan, 2007; UNCTAD, 2000). Vertical M&As arise when companies in dissimilar areas of the supply chain merge by extending backward to the raw material provider or extending forward toward the ultimate customers (Gaughan, 2007; UNCTAD, 2000). Conglomerate M&As arise when the merging companies operate with irrelevant operations in dissimilar sectors and dissimilar lines of business. (Gaughan, 2007; UNCTAD, 2000).

With the companies' aim of consolidating their sources to accomplish synergies and frequently higher market power, the significance of horizontal M&As has increased somewhat over the years. Companies usually focus on reducing their transaction costs in vertical M&As as well as taking advantage of the economies of scale. In conglomerate M&As, companies engage in diversifying their risk and extending economies of scale (UNCTAD, 2000).

An acquisition can either be friendly or hostile, based on the state of mind of the target firm. A friendly acquisition occurs when the board of the target company agrees to commit to the M&A transaction. On the other hand, hostile acquisitions occur despite the refusal of the board of the target firm (UNCTAD, 2000).

Furthermore, M&As can be domestic or cross-border transactions. Domestic M&As include an acquirer and a target company that operate in the same country of origin, while cross-border M&As are deals in which the acquirer and target company are located in various countries around the world (UNCTAD, 2000).

2.2. Underlying Motives and Driving Forces Behind M&As

Throughout the years, theoretical analyzes and research offered many explanations for the M&A approach through a general review of different motivations for mergers and acquisitions. Consequently, there was a wide range of possible explanations proposed as a reason why a firm chooses M&A by way of growth. The most commonly cited motivation is usually to create synergy. Though, there are still a number of other explanations like market power, diversification, tax motives and improved management (De Pamphilis, 2008).

Trautwein (1990) claimed that the motivations of M&As have not earned sufficient theoretical attempts from investigators more than the outcomes of the merger. Nonetheless, many researchers believe that not just one but there are a number of various motives causing mergers to happen (Ravenscraft and Scherer, 1987; Trautwein, 1990; Hopkins, 1999; DePamphilis, 2008). For that reason, grouping these motives into different categories was helpful (Mukherjee et al., 2004). For instance, Trautwein (1990) categorizes the theories of merger motives in seven classes that are the theory of monopoly, efficiency, valuation, raider, process, disturbance, and empire-building. The majority of those theories, however, have not had sufficient empirical evidence to support them. Berkovitch and Narayanan (1993) and Seth et al. (2000, 2002) suggest three main motives for M&As that are synergy achievement, managerialism, and the hubris hypothesis. Mueller and Yurtoglu (2007) split them into five categories which are market for corporate control, synergy, hubris, managerial discretion, and overvaluation. Mukherjee et al. (2004) similarly listed a number of motives that also include management incentives, tax considerations, and diversification.

Therefore, various theories explain why there are mergers and acquisitions. The most common ones are the efficiency theory or the synergy hypothesis, the hubris hypothesis, and the agency hypothesis or managerialism, following each of which is examined in depth including the empirical results on them.

2.2.1. The Synergy Hypothesis

The synergy hypothesis implies that when there is a value-increasing case, the motive for the M&As occurs, which indicates that the value of the company following the merger is higher than the values of the individual companies functioning independently (Bradley et al., 1988; Seth et al., 2000). This suggests that a common explanation for M&As would be to improve the effectiveness of the merging companies. Accordingly, acquirer and target companies' managers only decide to participate in the combination if it leads to a maximization of stakeholders' wealth for both the acquirer and target companies (Berkovitch and Narayanan, 1993; Goergen and Renneboog, 2004).

The value sources of synergy can generally be divided into three types. These are operational synergy, managerial synergy, and financial synergy. The operational synergy may result from economies of scale or the enhanced monopoly power. Operational synergies will, therefore, be possible and will give rise to benefits for both companies' stakeholders if the merging companies operate in the same business. If the firms do not share the same sector but are linked horizontally or vertically then their monopoly power would increase (Sudarsanam et al., 1996). Conversely, for conglomerate mergers when the companies come from different sectors, the value formation would be the result of non-operational synergy resources like those of managerial or financial sources (Sudarsanam et al., 1996).

Empirical research show that the operational synergy from economies of scale is a significant determinant of shareholder wealth (DeLong, 2003). Economies of scale are achieved by dispersing the fixed costs throughout the enlarged output (Sudarsanam, 2003). Nevertheless, economies of scale could be reached by employing a current group of abilities or assets that have already been used in the development of similar products and services to manufacture a particular product or service (Sudarsanam,

2003). This is most commonly observed if combining a number of product lines within one company costs lower than developing them in separate companies.

Furthermore, another synergy source is market power economies that are attained by companies' ability to manage prices because of their larger size. It is accomplished with the monopoly power referring to the capability of companies to compel consumers to pay very high prices, or by a monopsony power referring to the capability of the companies to compel dealers to accept to pay very low prices (Sharma and Ho, 2002).

Managerial synergy may occur if the executive team of the acquirer has stronger managerial capability than is required in their company for the existing activities. Therefore, they might attempt to take control of a target firm with less qualified management to use their excess managerial sources and increase the target's performance that is not as effective because of their inadequate management. Thus the managerial excess of the acquirer will be united with the non-managerial operational resources of the target to build synergy through the merger with both acquirer and target stakeholders achieving wealth gains (Sudarsanam et al., 1996).

Additionally, some acquisitions provide scope to financial synergy. This type of synergy arises if the merger or acquisition leads to a reduced cost of capital either for the acquirer company or the recently established company. It may be caused by some potential resources. Firstly, the tax advantage, which arises from the remaining debt capacity in either of the acquirer or target companies, as the newly created company would result in a much-increased debt capacity. Secondly, financial economies of scale from reduced deals and costs of securities as well as "the complementary nature of the growth opportunities and financial resources of the merging companies and the coinsurance of debt of the two companies" (Sudarsanam et al., 1996, p. 675).

Several of the empirical research supported the synergy hypothesis. In their study of a sample of U.S. companies, Berkovitch and Narayanan (1993) show that the synergy is the most significant motive for the acquisitions backed by the positive overall gains.

Goergen and Renneboog (2004) studied an intra-European dataset involving Ireland, the UK, Austria, Germany, France, Switzerland, Belgium, Scandinavia, Luxembourg, The Netherlands, Central Europe, and Southern Europe acquirer and target firms. They investigate whether synergy, management hubris or agency problem is the most common motive for acquisitions. They observed a significant positive relationship among target and acquirer firm gains as well as among target stockholders and overall gains indicating that synergies are the key reasons for offers since target and acquirer firms share the wealth profits.

Thus, even though the reasons might vary from one acquisition to another, there is a common measurement of achievement for acquisitions, which is gains in efficiency by synergies and increased value of the merged companies (Mukherjee et al., 2004).

2.2.2. The Hubris Hypothesis

The hubris hypothesis suggests that transactions are the consequence of the failures of executives in assessing target companies and that the benefit in synergy is negligible (Roll, 1986). As a result, if executives make mistakes to overestimate the synergies of the transaction, the acquisition could happen and therefore, the target firm may be overpaid.

The hubris hypothesis is sometimes called the “winners curse”. The explanation for this stems from the fact that occasionally a rise in the competitive environment could make it harder to predict the real value of the offer in the auctions since there is a presence of many acquirers with a variety of multiple offers to the target firm. Thus, the highest bid might be much greater than the target firm’s expected value. The winner is defined as “cursed” in this case and might regret spending far more than the firm’s actual worth (DePamphilis, 2008).

Though, because the synergy is believed to be null, the higher the target profit, the greater the loss to the acquirer company will be, and the overall profit would be null. In this situation, thus, we can assume that there can be a negative correlation among the gain of the target and the acquirer, while there is no correlation among the target firm and overall gain (Berkovitch and Narayanan, 1993; Goergen et al., 2004).

Berkovitch and Narayanan (1993) discovered proof of the hubris hypothesis in a sub-sample of U.S. acquisitions. Firth (1980), similarly obtained proof of the hubris hypothesis which was demonstrated by positive outcomes for target companies when analyzing a study of UK companies.

2.2.3. The Agency Hypothesis

The agency hypothesis indicates that acquisitions are driven through the self-interest of the acquirer firms' management (Goergen and Renneboog, 2004). Thus, this points to the question that the executives employed as agents for the owners (shareholders) might have some contradictory concerns. The reason for this is that some executives are concerned in the behavior that offer them additional power and respect like those of size, diversification, and growth (Hopkins, 1999), while the owners (shareholders) are more probably to be concerned in the rise in stock prices and also in their company's performance. Hence, contrary to the hubris hypothesis, here the acquirers firm's managers would deliberately overpay in acquisitions to increase their particular wealth and company development instead of the wealth of the company stakeholders (Seth et al., 2000). Several executives might have the reason to do that if their wages and bonuses depend not on their success but the size of their companies.

There is a negative correlation among the target and acquirer firms' value compared to the preceding hypotheses, and similarly a negative correlation among the target firm's and overall value (Goergen and Renneboog, 2004). Employing a sub-sample of U.S. acquisitions between 1963-1988, Berkovitch and Narayanan (1993) discovered proof for the managerialism hypothesis that was expressed throughout the negative correlation among target and overall gains.

2.3. Cross-border Mergers and Acquisitions Motives

Cross-border M&A dynamics include many parallels to domestic M&As (Shimizu et al., 2004). Nonetheless, owing to their global existence, as cross-border M&As have some unique features and costs and benefits, there might be a few potential systemic variations in the various motives for domestic and cross-border M&As (Harris and Ravenscraft, 1991; Seth et al., 2000). We must also not overlook the fact that cross-border M&As include several unique challenges created by the various cultural, economic, and organizational systems within the different parts of the world (House et al., 2002; Shimizu et al., 2004). Consequently, cross-border M&As should not be viewed as an extension of domestic M&As as they are more nuanced because of the different variations among the acquirer and target firms (Sudarsanam, 2003). Therefore, executives should recognize these variations in the differences in accounting standards, culture, and finance in domestic and cross-border M&As (Sudarsanam, 1995).

In general terms, for both domestic and cross-border M&As, the synergy hypothesis, the hubris hypothesis, and the agency hypothesis could be potential motives. For instance, the synergy is applied in cross-border M&As as well. Eun et al. (1996) employed a sample of foreign acquirers purchasing U.S. companies from 1979 to 1990 to investigate the synergy hypothesis. In general, their findings indicate that cross-border M&As are activities that create synergy. Furthermore, Kiymaz and Mukherjee (2000) demonstrate that diversification of countries leads to synergistic advantages. It has also been found by Seth et al. (2000) who analyzed a study of U.S. companies' foreign transactions that the synergy hypothesis is the key reason for such acquisitions. Consequently, efficiency gains by synergy are probably the clearest explanation for both domestic and cross-border M&As (UNCTAD, 2000).

The hubris hypothesis might be applicable for cross-border M&As and not merely for domestic M&As as well. This is based on the idea that in cross-border transactions among a foreign acquirer and a domestic target, the information asymmetry is averagely higher than in domestic transactions among a domestic acquirer and a target (Seth et al., 2000). Thus, the absence of information in this condition will increase the

likelihood of the executives of the acquirers to overestimate the targets when they are inadvertently trusting their assessment to be accurate.

Furthermore, agency theory has been proposed as a motive for domestic M&As. Nevertheless, the agency theory might also be appropriate for the cross-border M&As if foreign company executives are eager to gain higher authority and power within their organization or decrease their risk of intellectual capital by diversification (Amihud and Lev, 1981; Seth et al., 2000).

There are many other suggestions provided for the reason why businesses decide to engage in cross-border M&As.

Hitt et al. (2001) identified five motives: diversification, overcoming barriers for entry, growing market power, speed of market entry and overcoming the cost of developing new products. Sudarsanam (1995) mentioned other reasons for cross-border M&As, for instance, accomplishing economies of scale, market expansion through external growth, access to inputs including raw materials, technology or labor, protective ways of minimizing earnings volatility through diversification of goods and markets and leveraging unique benefits such as production, managerial skills, branding, layout, and prestige.

A driver for cross-border M&As could be the macroeconomic condition differences between the two countries. These may include the growth rate, the reduced costs and many other changes in other countries that are accessible. Thus, it might seem reasonable to assume that countries with slower growth will more frequently be home to acquirers while countries with faster growth being more frequently home to target firms (Hopkins, 1999).

An additional motive for cross-border M&As is to use it by way of a method of entering new countries globally through the acquisition of other firms in new markets. Doing so will allow the company to maintain and develop its position in the market through acquiring a new company and therefore having a more competitive benefit and expertise instead of just starting up a new firm.

Compared with other entry methods like those of licensing, exporting, joint ventures, franchising, or completely owned subsidiaries, M&As present a high level of control, a high resource commitment requirement and are quick to execute (Hopkins, 1999). Consequently, M&As are frequently regarded as the quickest way for companies to achieve the preferred objectives, specifically when they are viewed from a global point of view because cross-border M&As are considered the quickest way to reach global markets as they reduce the amount of time required to access new countries by acquiring an existing company (UNCTAD, 2000).

2.4. Cross-border Mergers and Acquisitions Theories

In this international environment and the growth of business globalization, several opportunities have arisen for the companies and more pressure is placed on them to participate in cross-border M&As (Hitt et al., 1998). Dunning (1993) created an eclectic paradigm commonly understood as the OLI Paradigm, as a venture to establish an overarching framework that includes multiple ways of explaining why companies are investing outside their countries of origin and the reasons behind that.

The OLI Paradigm defines the decision-making procedure for foreign direct investment (FDI) that leads to cross-border M&As and splits the procedure in three choices that are the ownership, the location, and the internalization decisions.

2.4.1. The Ownership Decision

The ownership decision notes that in its national market, the company should have some competitive benefits in a type which can be manipulated and exported to foreign subsidiaries. These should be company-specific and not simply duplicated by other companies in order to enable the company to create value by the decision to make international production. In addition, these ownership benefits are usually expensive to develop in the country of origin, while if moved to new regions, they have low costs (UNCTAD, 2000).

2.4.2. The Location Decision

Under the location decision, the company should decide whether or not it catches the attention of a foreign market which is preferable to the market in the company's native country and better suits the utilization of its properties. In that case, the company must be able to take advantage of the foreign market characteristics which will enable it to utilize and take advantage of its competitive benefits in that market.

2.4.3. The Internalization Decision

The internalization decision states that the company should determine whether or not it will be able to continue its leading position through the foreign takeover.

Based on the preceding theories, there are many risks and advantages followed by cross-border M&As that can impact their performance compared to domestic M&As. Thus, there have been various theories and motives why acquirer firms involved in cross-border M&As are anticipated to either underperform or outperform their domestic competitors.

Finkelstein and Larsson (1999), who outline a theory of better employee resistance in cross-border acquisitions, mentioned one of the obstacles which is supposed to impact the result of the deals and make foreign transactions underperform domestic ones. Their explanation for the underperformance is that the workers respond in a negative way to the change. Thus, since both the style of management and the change of career choices or compensation systems are more different among firms from dissimilar countries than in firms operating in the same country, it is expected that foreign acquirers would underperform their domestic competitors.

Additional explanation of why underperformance in foreign transactions is anticipated compared with domestic transactions derives from the information asymmetry problem. This asymmetry and absence of information around cross-border transactions can lead the targets to be overvalued by foreign acquirers and more likely to be overbid. Consequently, foreign acquirers can suffer significant challenges in incorporating the target than domestic acquirers after the merger (Gioia and Thomsen,

2004), which could lead to underperformance. In addition, cross-border transactions might be followed by some obstacles including the higher competition level and the increased costs that can reverse the acquirer's profits (Moeller and Schlingemann, 2005). Furthermore, agency problem and hubris in cross-border transactions might be higher and cultural differences can be much higher than in domestic transactions, that may result in lower acquirer gains (Denis et al., 2002).

On the contrary, several other investigators mention a few explanations about why they expect foreign acquirers to outperform their domestic competitors. For instance, Moeller and Schlingemann (2005) found that international asset acquisitions provided bidder companies with incentives distinct from those emerging from domestic acquisitions, like those of technology developments, risk management, and often sounder government regulations. Moreover, cross-border M&As provide firms with the ability to reach new markets. This would give an increase in the economies of scale for the merged firm; as merged manufacturing and increasing sales will allow them to cut costs per unit. Cross-border transactions are therefore anticipated to be superior in manufacturing companies which have volume by way of a key to success (Morck and Yeung, 2003).

In addition, Bertrand and Zitoun (2005) addressed a theory that foreign acquisitions enable acquirers to pass their technical and administrative skills to the target's country of origin, that will lead to better performance of the target. As a result, this assumes that international acquisitions would outperform domestic acquisitions.

For cross-border transactions, the rationalization gains can also be greater than in domestic transactions. This stems from the various marginal cost of production that could take place among the acquirer and target companies operating in different countries. This will then offer the acquirer the chance to take advantage of this cost difference and transfer the output to lowest-cost countries (Bertrand and Zitouna, 2005).

Figure 2: Global Deals by Volume and Value

Deal yearly value (Announced date)	Number of deals	Aggregate deal value (mil USD)
2019	98,181	4,589,597
2018	111,182	5,519,863
2017	109,429	4,802,600
2016	114,877	4,925,669
2015	119,287	6,036,628
2014	103,695	4,817,549
2013	93,267	3,707,383

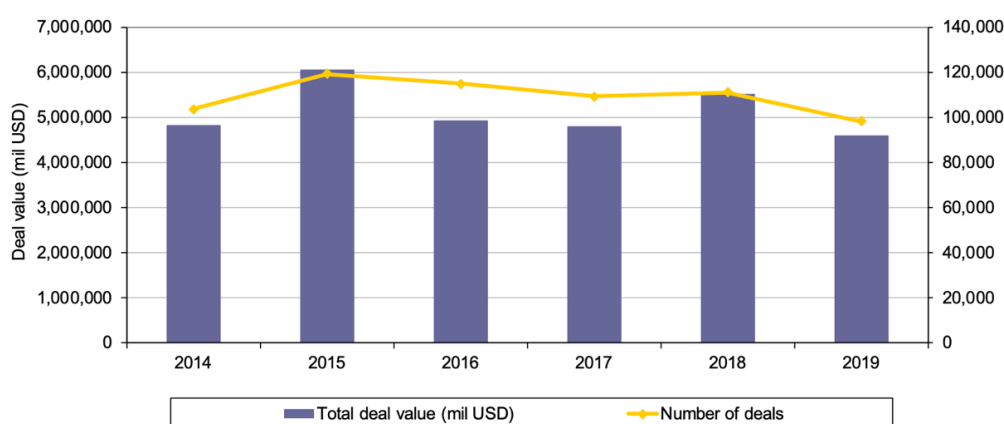
Source: Zephyr, Global M&A Review H1 2019, Zephyr, Bureau van Dijk, 2019

According to the Bureau Van Dijk's Global M&A Review 2019, volume, as well as the value of global M&As declined throughout 2019 when compared with the prior year. Contrasted with the USD 5,519,863 million invested by 111,182 deals in 2018, a total of 98,181 transactions with a total value of USD 4,589,597 million reported during the 12-month period.

The outcome is the lowest for all years in respect of both volume and value ever since 2013 when 93,267 transactions were signed off and valued a total of USD 3,707,383 million. It is also worth bearing in mind that in the sense of the last several years, 2019 is only unsatisfactory since it is the sixth greatest year recorded by volume and the seventh greatest in terms of value.

The decline in volume and value year-on-year arises despite the announcement of several significant transactions over the 1 year under review; every one of the top 20 reached the USD 10,000 million level, while the highest of them was worth more than USD 70,000 million.

Figure 3: Global Deals by Volume and Value Chart



Source: Zephyr, Global M&A Review H1 2019, Zephyr, Bureau van Dijk, 2019

Figure 4: European Deals by Volume and Value

Deal yearly value (Announced date)	Number of deals	Aggregate deal value (mil USD)
2019	25,698	1,104,614
2018	32,605	1,607,568
2017	28,567	1,320,781
2016	29,452	1,166,625
2015	27,678	1,431,329
2014	23,104	1,143,380
2013	23,627	952,066

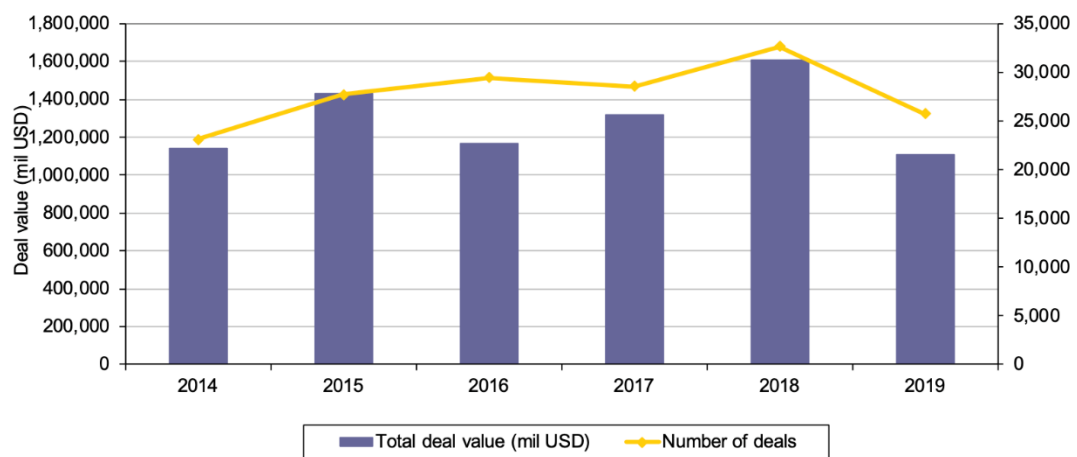
Source: Zephyr, Global M&A Review H1 2019, Zephyr, Bureau van Dijk, 2019

In 2019, the volume and value of Europe-based firms' M&As decreased as 25,698 transactions were announced with the worth of USD 1,104,614 million. This is in proportion to the total decrease in the 12 months of examination reported worldwide. Volume declined 21 percent from 32,605 transactions in 2018, whereas value declined 32 percent year-on-year from USD 1,607,568 million.

European M&A volume represented 26 percent of the overall global volume in 2019 (98,181 transactions), whereas regional value accounted for 24 percent of the worldwide total (USD 4,589,597 million).

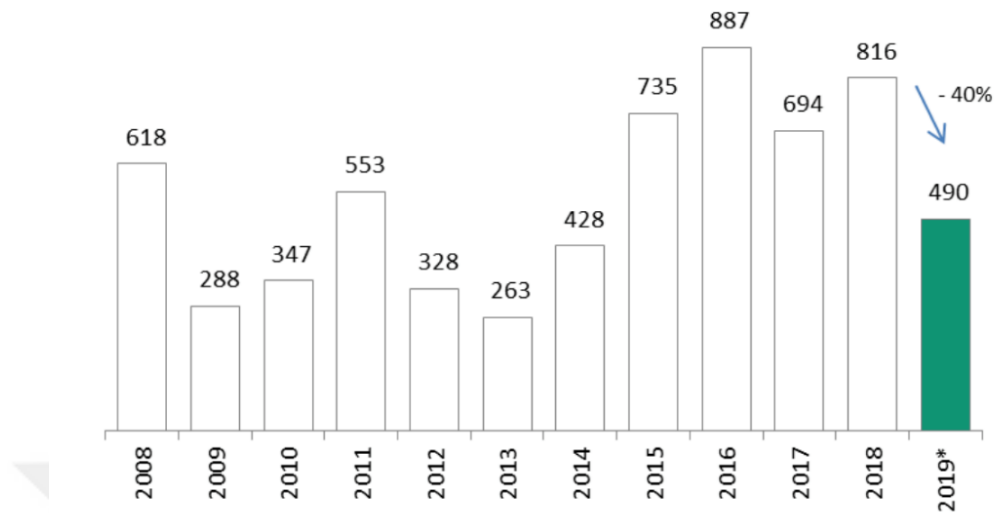
Despite the sharp decline, four of the highest 20 European M&A transactions were worth more than USD 10,000 million in terms of value and jointly represented 11 percent of the region's overall value.

Figure 5: European Deals by Volume and Value Chart



Source: Zephyr, Global M&A Review H1 2019, Zephyr, Bureau van Dijk, 2019

Figure 6: Value of Cross-border M&As, 2008–2019 (Billions of USD)



Source: UNCTAD, World Investment Report 2000: Cross-Border Mergers and Acquisitions and Development, UNCTAD, New York and Geneva, 2000.

According to the UNCTAD cross-border M&A database, in 2019, cross-border M&As declined by 40 percent to USD 490 billion which is the lowest level since 2014. Decelerated by sluggish growth in the Eurozone and Brexit, European M&As revenue cut in half to USD 190 billion. Transactions targeting U.S. firms stayed significant – comprising 31 percent of overall M&As. The decline in worldwide cross-border sales of M&As was deepest for the service industry (minus 56 percent to USD 207 billion), accompanied by the manufacturing industry (minus 19 percent to USD 249 billion) and primary industry (minus 14 percent to USD 34 billion). Specifically, revenues of assets on financial and insurance operations as well as chemicals declined sharply. A smaller number of megadeals also driven the fall in the M&A values. There were over USD 5 billion in 30 megadeals in 2019, compared with 39 megadeals in 2018.

3. FINANCIAL DERIVATIVE INSTRUMENTS

The main point of this study is one of the financial instruments that is most spoken about by researchers and policymakers: derivatives. The main characteristic of financial derivatives is that their values are based on one or more underlying assets. Interest rate, foreign exchange and commodity price derivatives are the most common kinds of financial derivatives. Such derivative instruments are intended to protect financial market investors against adverse fluctuations in the prices of the underlying assets. Since the deregulation of interest rate control and the acceptance of a floating exchange-rate structure in many countries, interest rate and foreign exchange rate movements have become much volatile. CFOs or FRMs in many firms have been utilizing financial derivatives as efficient hedging tools against the growing uncertainty of financial risks.

Financial derivatives have been broadly used in the globe, and have made a significant contribution to the financial markets' innovation and growth throughout the past decades. Bearing in mind the trading amount and worldwide scale of derivatives markets, financial derivatives have become more complex and intertwined. The Bank for International Settlements (BIS) states that the nominal amount of outstanding derivative contracts for the worldwide over-the-counter (OTC) derivatives towards the end of June 2015 is USD 553 trillion and towards the end of December 2014 is USD 630 trillion (Bank For International Settlements, 2014, 2015).

Such numbers imply that derivatives are among the key pillars of the world financial system. Furthermore, capital liberalization and globalization that have accelerated exponentially throughout the last couple of decades have allowed companies to participate more and more in global operations, numerous companies are not uni-national domestic companies anymore however, they are multinational companies. Companies are gradually being subjected to financial and market risks through becoming global. Therefore, risk management goes hand in hand with globalization and one of the approaches implemented by the company is the use of financial derivatives. The International Swaps and Derivatives Association (ISDA) survey presents that more

than 94 percent of the top 500 firms in the world are currently using financial derivatives in order to hedge their different risks (ISDA, 2009).

Nevertheless, the hedging justifications were not well maintained. According to the irrelevance proposition of Modigliani and Miller (1958), hedging operations in an efficient market must not have any effect on company value.

Theoretically, several research have presented that hedging may increase company value through decreasing costs resulting from a few market flaws like those of taxation, agency problem, managerial incentive, financial distress and bankruptcy, economies of scale, and information asymmetry. However, several empirical research such as Graham and Rogers (2002), Charumathi and Kota (2012) find no evidence to support those proposals. Bartram, Brown, and Fehle (2009) further imply that traditional theories possess very slight power to clarify the company's decision to use derivatives.

Yung-Ming Shiu (2010) categorizes research on the use of derivatives into 2 classifications. The first one is to define the factors that influence the derivative use decisions. A further research strand is to investigate the impact of the use of derivatives on exposure to risks and firm valuation. In actual fact, there is still mixed existing empirical evidence on this field. Several research discover a positive association among derivative usage and firm value (For instance; Allayannis and Weston, 2001; Clark and Judge, 2009; Campello, Lin, and Zou, 2011; Chen and King, 2014), and a negative relationship among risk exposure and derivative use (For instance; Nguyen and Faff, 2010; Zhou and Wang, 2013). Nevertheless, a few researchers discover opposite or no evidence (For instance; Fauver and Naranjo, 2010; Clark and Mefteh, 2011). The inducement for the use of financial derivatives and the impact of the use of derivatives on firm value is therefore still an unanswered question.

3.1. Meaning of Financial Derivatives and Their Characteristics

The meanings of derivatives are various. Hull (2012, p.1) describes derivatives by way of financial instruments whose values depend on the value of further, more simple, underlying variables, or derived after them. As stated by the Statement of Financial Accounting Standards (SFAS) No.133; Accounting for Derivative Instruments and Hedging Activities, derivatives are contracts including the following distinct features: 1) they hold one or more underlying assets; 2) they possess one or more nominal quantities; 3) their price varies through straight response to the underlying assets to its holder; 4) they do not require initial net investment; 5) net or their equivalent could be quickly settled (Smith, Gastineau, and Todd, 2001).

An underlying instrument is not an asset or a liability that shows up on the balance sheet by itself; it is a market-related feature of the asset or liability that increases the changes in value (Smith, Gastineau, and Todd, 2001). In particular, Gupta (2006) asserts that underlying assets or instruments may be shares, equity, bonds, stocks, treasury bills, debentures, interest rates, foreign currencies, commodity prices or various market indices, like those of consumer price index, stock market index, and so on. Therefore, derivatives do not have inherent values, instead, their values are based on the volatility of the prices underlying them.

A notional amount is the number of units of currency, shares, commodity units or any other units defined by the contract. In the context of Stulz (2003), the notional amount is a quantity of the underlying asset or instrument employed to assign the derivative payoff. Since derivatives do not need the writer to obtain or invest the notional amount when the contract is entered into, the contract might not require an initial investment in relation to several other instruments which are responsive to fluctuations of the same features in the market.

Over the last several decades, a considerable number of financial derivatives have been used widely around the world. Though, in the sense of this study, we concentrate on the kinds most commonly used to manage market risks through non-

financial companies in various countries: foreign currency, interest rate, and commodity derivatives.

3.1.1. Forward Contracts

Forward contracts are the simplest form of futures. A forward agreement imposes an obligation to buy/ sell a certain asset at a certain date at a certain price. In the forward market, the purchase and delivery agreement for goods or a financial asset is made between the buyer and the seller, without a third party. With the contract, both the future price, the quantity to be delivered and the quality characteristics of the goods are determined between the parties. In case of failure to comply with the terms of the agreement, there is no guarantee of a third party or an institution. For forward transactions, credit risk which is the risk of not complying with the agreement is for both sides of the agreement.

Another feature of forward contracts is that the value in the contract only appears in the term and no payment is made at the beginning and duration of the contract. Future prices of forward contracts are determined by factors such as the present value of the contractual asset, the cost of moving it to a future period and the return on holding it.

Forward contracts predominantly are written on exchange rates and interest rates; it is used in future commitments to minimize the risks caused by possible exchange rate risk and interest rate changes and to have sufficient information about future price fluctuations in the market.

If the price formed at the maturity of the forward contract is higher than the price of the contract, the contract owner makes a profit; if the price is low, the contract owner will lose, since the transaction will be made at the higher contract price. In this context, if the advantages and disadvantages provided by the forward contracts to the parties are considered; forward contracts primarily serve investors who want to minimize their risks for these purposes. In these contracts, the party on the seller sides guarantees to sell the product or service they want to sell at a later date but protects the seller from the price risk of the price fluctuations which is considered as one of the most important risks.

In addition to the advantages listed above, forward contracts also have some disadvantages. First of all, making a forward contract means taking on a risk for the contract makers due to the nature of these contracts. Namely; since forward contracts do not include a separate guarantee mechanism and are trust-weighted transactions, they can face many losses if the counterparty does not fulfill its commitment or if they do not comply with the contract. This is true in cases such as bankruptcy or death of one of the parties.

Financial derivative instruments such as futures, swaps and options have been developed to overcome these disadvantages of forward contracts.

3.1.2. Futures Contracts

Futures contracts are developed in order to overcome the lack of trust that may arise in forward contracts which are organized forward markets. A third institution is the futures exchange between the buyer and seller.

Futures is a legal contract for delivering or receiving a standard quantity and quality asset at a predetermined price in the future. The entity on which the futures contract is based or written can be either a physical commodity or a financial product or an indicator.

Unlike forward contracts, futures contracts have features such as standardization, clearing house mediation, margin and daily settlement, and contract termination with or without delivery.

In this context, if the advantages and disadvantages provided by the future contracts to the parties are considered; undoubtedly, one of the most important contributions of future contracts to the parties and the economy is on “*risk minimization*”. By making future contracts, the parties eliminate the risks of losses that may arise from price fluctuations in the markets. Future markets allow the parties in the market to make plans on the future for both producers and the financial sector, as they reduce uncertainties over the future, and minimizes the costs of stocking, insurance and financing incurred if these markets are not available.

If the negative features of future contracts are considered; standardization of future markets prevents the parties from arranging contracts on the qualities and quantities they want. In addition, the standard maturity can prevent those who enter the market for risk minimization from fulfilling these objectives completely. The cost of getting rid of the risk of loss could be to give up the possibility of making a profit.

3.1.3. Option Contracts

Option contracts are derivative instruments whose value varies depending on the value of another asset.

Options give the right to buy or sell a certain amount of good, financial product, capital market instrument or economic indicator at a certain price (strike price), up to a certain maturity (or in a certain term). They are the contracts that give right but do not require to buy the option to the party who buys the option in exchange for a certain premium but require the seller of the option to sell it if requested by the beneficiary.

There are two types of options: Call and Put Options. The investor, who buys a call option, has the right to buy a certain amount of goods, financial products, capital market instruments or economic indicators at a certain price in return for a premium paid to the investor who sells the option, until a certain term or term. The investor selling the call option, on the other hand, is obliged to sell a certain amount of goods, financial products, capital market instruments or economic indicators at a certain price upon the request of the investor, who has the option to buy, until a certain maturity. An investor who has a put option has the right to sell a certain amount of the goods, financial product, capital market instrument or economic indicator that underpins the option at a certain price in exchange for a premium paid to the investor selling the option. The investor who sells a put option is obliged to purchase a certain amount of goods, financial product, capital market instrument or economic indicator at a certain price upon the request of the investor who has the option to sell the financial indicator, capital market instrument or economic indicator.

3.1.4. Swap Contracts

Swap, which literally means exchange, is a technique developed to minimize the risks arising from fluctuations in exchange rates and interest rates. The swap contract can be defined as the contract that stipulates the mutual exchange of the two parties' repayment obligations to third parties, in the framework of pre-determined rules.

In swap contracts, the main purpose is to mutually benefit from the different financial capabilities of both parties to benefit from both parties entering the transaction in order to reduce the cost and risk of a particular financial transaction. In summary, swap markets are used for purposes such as protection from exchange rate and interest rate risks, providing low-cost financing, implementing short-term asset-liability strategies, generating service income and speculating.

3.2. Disclosure Requirements for Financial Derivatives

International Financial Reporting Standards (IFRSs) relevant to financial instruments and disclosure with risk management practices and the use of derivatives are listed below.

International Financial Reporting Standard 7 – Financial Instruments: Disclosures (IFRS 7) involves companies to present disclosures in their financial statements that allow users of financial statements to assess the financial instruments significance, the nature and extent of the risks associated with financial instruments used throughout the reporting period and how the company controls the financial instrument risks. There are two key disclosure categories provided by IFRS 7. First, knowledge of the significance of the financial instruments. In other words, disclosure of the significance of financial instruments to the financial status and results of a company. Second, knowledge of the nature and extent of the risks associated with the financial instruments (IASB, 2013, IFRS 7).

IFRS 7 involves companies to disclose qualitative as well as quantitative information about the nature and extent of the three risks associated with financial instruments which are credit risk, liquidity risk and market risk (IASB, 2013, IFRS 7).

Credit risk refers to the risk of failing to pay for the obligation of one party to a financial instrument causing a loss for the other party (IASB, 2013, IFRS 7).

Liquidity risk refers to the risk that a company may be unable to meet its financial liabilities (IASB, 2013, IFRS 7).

Market risk refers to the risk that a financial instrument's cash flows or fair value may fluctuate owing to market price changes. Market risk includes currency risk, interest rate risk and other price risks (IASB, 2013, IFRS 7).

International Financial Reporting Standard 9 – Financial Instruments (IFRS 9) includes the relevant accounting principles for classification, impairment, recognition, derecognition, measurement and general hedge accounting of financial instruments involving derivatives (IASB, 2013, IFRS 9).

The derivative instruments are described as follows (IASB, 2013, IFRS 9): “*a financial instrument or other contract with all three of the following characteristics (a) Its value changes in response to the change in a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index, or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract. (b) It requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors. (c) It is settled at a future date.*”

All derivatives within the extent of IFRS 9 are measured at fair value. Value adjustments are reflected in profit or loss except for the company has opted to use hedge accounting by assigning the derivatives as hedge instruments in a qualified hedge relation. The two types of hedging relationships in IFRS 9 are fair value and cash flow hedge (IASB, 2013, IFRS 9).

Fair value hedge: an exposure hedge to changes in the fair value of a recognized asset or liability or an unrecognized company obligation, or an element of such item,

which is attributable to a specific risk and may have an impact on profit or loss (IASB, 2013, IFRS 9).

Cash flow hedge: an exposure hedge to cash flow volatility due to a specific risk related with all or some aspect of a recognized asset or liability or a highly possible expected transaction that could have an impact on profit or loss (IASB, 2013, IFRS 9).

3.3. Risk Management, Derivative Usage and Speculation

Smith et al. (2001) describe risk management as the procedure of evaluating and adjusting numerous trade-offs that a company faces among risk and benefit. Such trade-offs may be assessed on the basis of whether they are being undertaken for hedging, speculation or arbitration purposes. Concentrating on risk management instruments, Hillier, Grinblatt and Titman (2012, p.684) describe risk management as a procedure that “entails assessing and managing, through the use of financial derivatives, insurance, and other activities, the corporation’s exposure to various sources of risk”. Bekaert and Hodrick (2011, p.590) also describe risk management as “the use of derivatives to take positions on financial markets that offset the underlying sources of risk that arise in a company’s normal course of business”. Therefore, the majority of the existing literature considers “hedging”, “risk management”, and “derivatives use” by means of synonyms.

Moreover, hedging originates in many various forms. Smith and Stulz (1985, p.392) utilize a fairly common description of hedging, in which the value of the company is maintained irrespective of any change in policy. They state that “*a firm can hedge by trading in a particular futures, forwards, or option market...*” and “*hedging reduces or eliminates the dependence of firm value on changes in state variable*”. They also recommend that companies may hedge via their operational strategies; for example, mergers may create alike effects to that of hedging through financial derivatives. As stated by Smith et al. (2001, p.3), risk reduction activities are commonly accepted as hedging, and the wider use of such term “hedging” relates to options, forward, futures, and swap contracts.

Each of these clarifications above supports the discussion of Lievenbruck and Schmid (2014) that hedging is continually understood by way of the usage of

derivative contracts meant to remove or decrease risk positions of open markets. Therefore, the words “*derivative use*” and “*hedging*” are interchangeably used. Conversely, Guay and Kothari (2003) stress the significance of adopting a multifaceted method to hedging since their research shows proof that several U.S. non-financial companies’ use of derivatives is very small in relation to their risk exposures. They highlight that the use of derivatives to “*fine-tune*” the total risk management of companies which is likely to include another form of hedging. Thus, they argue that using derivatives is a noisy proxy for the risk management practices of companies. However, the previous to current empirical research on hedging have been accepting derivatives as a measurement for hedging practices.

The majority of the prior research used surveys to examine the determining factors of corporate hedging (For instance, Nance, Smith, and Smithson, 1993; Dolde, 1993; Berkman, Bradbury, and Magan, 1997; Hakkarainen, Kasanen, and Puttonen, 1997). Throughout the past years, companies in numerous countries have been required to reveal information regarding their hedging methods and contracts in their annual reports. Therefore, empirical research have been collecting data from the annual reports of companies on derivatives use. Empirical research can use quantitative data about the use of derivatives as a measurement of “*hedging extent*” or in other words, how much companies are hedging. Several empirical research including Berkman and Bradbury (1996), Spano (2007) utilize the fair value of derivatives. However, the majority of the investigators utilize the notional values of derivatives by way of a proxy for the extent of hedging (For example, Nguyen and Faff, 2002; Guay and Kothari, 2003; Campello et al., 2011; Lel, 2012).

3.3.1. Risk Management

Prior to reviewing the literature on the use of derivatives concerning corporate risk management practices, since various academic areas of studies recognize risk management in a different manner, understanding risk management in a wider sense is crucial. Companies’ major types of risks can be categorized into several groups, including the risks of environmental, general, industry, organizational, and financial (Fatemi and Glaum, 2000). They also imply that the general risk can emerge from the usual

environment that the companies function, for example, governmental or legal problems. Every sector carries its very individual risks. Owing to the cyclic character of their sector, primary manufacturing companies are inherently risky. The operational risk stems from daily business operations and it is considered to emerge within the organization. The risks arising from changes in foreign exchange rates, interest rates, commodity prices, and credit risks may be recognized as financial risks (Smith and Stulz, 1985; Fatemi and Glaum, 2000).

Risk management is also critically important for optimal portfolio management. Miller (1992) proposes that risk management is in relation with minimizing firm performance volatility and exposure to opposing occasions and deficits. In the light of the definitions above, financial risk management could be defined as managing commodity prices, the volatility of exchange rate and interest rate, and credit risk. The world has changed quickly throughout the last several years since transactions could be passed from one part of the globe to the other at a click of a mouse button. With the growing global business practices, companies experience a tremendous amount of risks in various ways especially connected to financial and economic subjects including volatile exchange rates and interest rates and commodity prices. Therefore, companies must define means which can be utilized for risk management. A few of these approaches might cover organizational hedging strategies like those of product line diversification, corporate conglomeration, use of earnings management strategies and diversification of geography (Crouhy, Galai and Roberts, 2000). In addition, derivatives hedging is one technique that companies may use to decrease their volatility in financial performance, particularly by handling their exposure to market risk. As Choi and Meek (2008) mention, exposure to market risk could be described as the exposure that can result from the unforeseeable volatility of macroeconomic risk factors, such as exchange rate, interest rate, commodity prices, and equity. For example, if the currency in a given country declines dramatically, the price of foreign materials might increase and the probability of the expected costs of financial distress may increase. An alike effect from rising interest rates or commodity prices can be anticipated on the company's financial performance. By having their risks passed to the other groups, companies can decrease or remove them through utilizing derivatives. Additional literature proposes that financial risk

management could give rise to firm value and reduce the company's financial distress cost risks (Dhanani, 2000; Bodnar et al., 1995; and Smith and Stulz, 1985).

In addition, current empirical literature concentrates on investigating internal as well as external factors affecting risk management (Mian, 1996; Jalilvand, 1999; Haushalter, 2000; Bartram, 2002; Guay and Kothari, 2003; Judge, 2006; Schiozer and Saito, 2009).

3.3.1.1. Interest Rate Risk

There are many ways that interest rate changes may affect firm performance. Directly, an increase in the interest rate would have a negative impact on the company's debt portfolio, whereas indirectly, a rise in the interest rates would adversely affect firm performance since consumers' income will decline and lead to a lower turnover. Additionally, distributors must pass the extra costs accrued from the interest rate increase, which adds a new issue to the performance of a company.

On the contrary, a decline in interest rates would have an impact on interest income. Phillips (1995) claims that interest rate risk is among the most significant of the entire financial risks faced by organizations. Faulkender (2005, p.936) also claimed that *"firms face interest rate risk from two sources: the interest rate sensitivity of their assets and the sensitivity of their debt"*. This implies that if companies believe that volatile cash flows are expensive, the purpose of risk management would be to offset the latest exposure of their debt interest to cash flows. Moreover, Faulkender (2005) and Singh (2009) implied that greater and well-rated companies are more probable to borrow at fixed-rate and their preference of switching from fixed-rate to floating-rate debt is based on their market perspective, whereas minor, unrated companies often have floating-rate debt and swap to fixed-rate to minimize the associated interest-rate exposure. Bartram (2002) investigated the effect of interest rate risk on various sectors and found that sectors like those of industrial machinery, construction, agriculture, and forestry are especially subjected to long-term interest rate changes. He also found that nearly all of the non-financial companies had greater long-term interest rate exposures when compared to short-term interest rates.

There are many methods that the companies may utilize to control the risk emerging from the volatility of interest rates. A number of these include using derivative contracts, for example, interest rate forward, futures, options, and swaps. In addition, many researchers have developed several studies about using interest rate derivatives to mitigate interest rate risk. Bartram et al. (2011) observed that 33 percent of the companies used interest rate derivatives in a sample of non-financial companies from 47 countries and interest rate swaps were the most common of all the contracts. Nguyen and Faff (2003) analyzed the “*adoption (decision to use)*” and “*intensity (extent of use)*” of interest rate derivatives by utilizing a sample from Australia. They found that the reasons for the use of interest rate derivatives are mainly consistent with the hedging theories, in particular the theory of financial distress cost (“*to secure internal capital for future investment opportunities*”).

3.3.1.2. Exchange Rate Risk

Companies are subjected to exchange rate risk when their business activities include foreign currencies. Shapiro et al. (1985) described exchange rate risk as the variability in the value of a company as a result of unforeseen changes in the exchange rate. They categorized foreign exchange risk within two wide-ranging areas of exposure which include economic and accounting exposures. Accounting exposure could be described through transforming the company’s international activities to its local currency by means of the corresponding foreign currencies. Exchange rate risk economic exposure is affected with companies’ total value that relies on the present value of their expected future cash flows. If there is any change in the foreign exchange rates, it will result in changes to firms’ future cash flows and eventually their firm value. In addition to the definitions of the foreign exchange risk above, some researchers have defined the management of exchange rate risk differently (Rodriguez, 1981; Collier and Davies, 1985; Belk et al., 1990; Chiu and Foerster, 1997; Rahardjo and Dowling, 1998).

The volatility of foreign exchange rates has become the main problem for the companies included in international trading as the Bretton Woods system collapses in the 1970s. Nevertheless, constant advances have allowed companies to resolve this pressure and actually, foreign exchange rate risk is among the world’s most

extensively hedged corporate risks (Yip and Nguyen; 2012). Research examining the efficiency of the use of financial derivatives with the purpose of managing foreign exchange risk have concluded some mixed findings. Though, most of the research stated a positive association among the extent of the exposure to exchange rate risk and the use of derivatives.

Copeland and Joshi (1996) concluded that a number of many other factors, for example, goods and parts demands, raw material availability, regulating frameworks, labor and capital costs, and efficiency, all adjust likewise to foreign exchange rates. Thus, currency risk is only a small contribution to the overall risk. Hence, they stated that there is no significant association among exposure to foreign currency exchange and derivatives usage in actual fact. Hentschel and Kothari (2001) also found similar evidence. Nonetheless, they agreed that companies were not required to report the extent of their derivative positions within U.S. accounting standards throughout their study period. Therefore, their findings were not based on the notional values of derivatives and the rawness of the information did not enable them to assess whether the companies were decreasing or taking risks with derivatives. The empirical findings reported by Bali et al. (2007) further supported the non-existence of a positive relationship among foreign exchange risk and the use of derivatives for their study. The reasons behind their findings are stated as geographical variety, internal contracts and eventually managing production. Though, in line with Hentschel and Kothari (2001) and Copeland and Joshi (1996), their study did not include the notional values of derivatives for the period from 1995 to 2001 of 410 non-financial companies in the U.S.

Nevertheless, a positive relationship among the use of derivatives and the exchange rate exposure was reported by several research. Nguyen and Faff (2003) and Hagelin and Pramborg (2004) obtained a significant decrease in exposure to foreign exchange from the use of currency derivatives in financial hedging. In addition, Chiang and Lin (2005) supported these findings and noted that an efficient hedging strategy is using foreign exchange derivatives.

Anderson, Makar and Huffman (2004) particularly examined if unsuccessful derivatives hedging of foreign currency derivatives experience has helped to clarify the

potential use of derivatives. Utilizing the use of derivatives data for 94 non-financial U.S. multinational companies, they found that unsuccessful hedgers in the past could be anticipated to accordingly alter their upcoming foreign currency derivatives use. This indicates the unwillingness of executives to report unsuccessful hedges in their financial statements.

Throughout the years 2006-2009, Yip and Nguyen (2012) investigated the correlation among the use of derivatives and exposure to exchange rates between Australian resource companies. Their findings imply that although more companies are exposed to volatile exchange rate risks because of the financial crisis, there is no adequate evidence that using foreign exchange derivatives is more efficient in mitigating exchange rate risk throughout the crisis as compared to the period before the crisis. They emphasized, however, that this phenomenon might be unique to the industry and using derivatives to decrease the risk of exchange rates might be well correlated with the industry.

The literature review mentioned above demonstrates that mixed results have been provided by hedging the exchange rate risk with derivatives. Therefore, this research not only brings the empirical literature up to date but also offers empirical evidence specifically connected to the management of exchange rate risk between European companies.

3.3.1.3. Commodity Price Risk

Commodity price risk refers to fluctuating future cash flows of financial projects or instruments. Such fluctuation is the consequence of alterations in market prices. For example, demand changes, production levels, purchases from central banks and investor sentiment. A wide range of various financial derivatives instruments could be utilized to reduce commodity price risk: “*forward, futures, swaps, options*” (Bartram, 2000).

Bartram (2000) found that throughout the years 1986-1998, 11 percent of non-financial companies utilized commodity price derivatives. Over 50 percent of the companies within their sample utilized one or more futures, swap or forward contracts to hedge their risk exposure. In addition, Bartram (2000) showed that 14.6 percent of the

companies sold all of their manufacture at spot, with 16.8 percent of the companies hedge more than 40 percent of their manufacture.

Carter et al. (2006) and Jin and Jorion (2006) study the connection among commodity price risk hedging with respect to firm value creation. Jin and Jorion (2006) included gas and oil manufacturers among the years 1998-2001 and utilized Tobin's Q as the firm value proxy. They found that commodity price risk hedging reduced volatility. On the other hand, they found no evidence supporting an increased firm value. Their findings suggested that there is a *"critical difference between the nature of the commodity risk exposure of oil and gas producers and the foreign currency risk exposure of large US multinationals"* (Jin and Jorion, 2006). Given that gas and oil prices are obvious, they conclude that the hedging of commodity price risk did not offer any benefit to companies because it is possible for investors to directly hedge their risk exposure. Jin and Jorion (2007) centered their study on the gold mining industry the subsequent year and conclude parallel results. The study is based on data from mining firms among the years 1991-1998 and they found no significant correlation among the hedging of commodity price risk and the firm value.

Oppositely, Carter et al. (2006) defined that the airline firms' fuel hedging is positively linked to the firm value. Although fuel could be classified as an operational risk, instead of an output commodity, fuel is an input commodity in the airline industry as opposed to the gas and oil businesses. Carter et al. (2006) contained 23 airline companies, including 251 yearly observations among the years 1992-2003. They utilized Tobin's Q as a firm value proxy parallel to Jin and Jorion (2006). They found that *"high fuel prices coincide with low cash flows"* and that investment in the industry is connected with the cost of fuel. Therefore, there was an increase in the firm value through commodity hedging by decreasing the validity of input costs and reducing the cost of underinvestment throughout the high fuel cost periods. Moreover, their results implied a greater jet fuel hedging premium, which was associated positively to firm value.

3.3.2. Derivatives Use and Speculation

In common with hedging, speculation is one of the key types of activities that investors in the derivative markets take by. Smith et al. (2001, p.6) explain speculation by way of an effort to raise expected gain, although it raises the level of uncertainty concerning the achievement of that result. The Commodity Futures Trading Commission (CFTC) (2006) defines speculation to be an act of not to hedge but to trade with the aim to make profits by efficient price movement expectations.

Speculation and hedging are viewed as the opposite sides of a coin for risk management from this overall understanding. Though, speculation and hedging are more probable to be the endpoints of a risk management spectrum in their purest forms. On one side of the spectrum, we may consider hedging by way of a condition in which hedgers take positions with the expectation of minimizing all the exposures in a market position completely. On the other side, the pure speculators take derivative positions that subject them to the market risk which they would have not hold otherwise (Kolb and Overdahl, 2010). Thus, the question if the researchers of derivatives use studies have been measuring speculation or hedging is a very important issue. Sometimes it is not very straightforward to separate speculation from hedging when the motives of speculation and hedging are associated.

To assess whether companies are using derivatives for speculation or hedging, studies conclude remarkable proof that companies are using derivatives with the purpose of hedging. Bodnar and Gebhardt (1999) and Bodnar et al. (2008) found that companies in dissimilar countries utilize derivatives such as forwards, futures, options, and swaps with the purpose of hedging by using surveys. Bartram et al. (2011) substituted surveys with empirical analysis and found that 90 percent of the Fortune 500 firms use derivatives to manage their risks rather than speculation. Allayannis, Lel, and Miller (2012) supported that finding when they showed that well-managed companies in 39 countries are more probably using derivatives with the purpose of hedging instead of speculation in their study covering the years 1990-1999.

Judge (2006) proposes that an even better method for assessing whether companies are hedging or speculating is to measure the risk exposure of a company and afterward examine the effect of derivatives use on this risk exposure. Noteworthy research on risk exposure and using derivatives (For example, Allayannis and Ofek, 2001; Nguyen and Faff, 2003; Bartram and Bodnar, 2007 and Treanor et al., 2014) have shown that there is a negative relationship among them, indicating that companies are using derivatives for hedging instead of speculation in the market.

In brief, while companies may use derivatives for hedging or speculation purposes, both findings from empirical analyzes and surveys suggest that the majority of the companies use derivatives with the purpose of hedging. Moreover, while slight differences exist in the precise definitions of “*hedging*”, “*risk management*”, and “*derivative use*” we use these words interchangeably in this study. Additionally, we assume that all 537 companies utilize financial derivatives with the purpose of hedging since companies from financial and utilities industries were eliminated at the beginning of the data collection process of this study.

4. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

4.1. Review of the Cross-border M&A Empirical Studies

A quantity of empirical research on the subject of returns to stockholders in M&As have been conducted. Such studies were either carried out for the short or the long term. The timeframe under investigation in the short-term research covers days or several months surrounding the announcement of the M&A transaction, while in the long-term research the investigators lengthen their review duration to cover a few years surrounding the announcement date.

Both of the event study periods have their individual advantages and disadvantages. Concerning the short-term method, an assumption is made of the effectiveness of the stock market. This implies that the stock market's reaction to the acquisition announcement provides a dependable measure of the expected value of the acquisitions. Hence, if the capital market is information-efficient, it will require only a short time to acknowledge the anticipated costs and benefits of the transaction and reflect them through stock price reactions at the time of the transaction (Sudarsanam, 2003). Therefore, a short event window would be sufficient to represent most of the valuation impacts of the announcement of the merger in this situation. For instance, Moeller and Zhu (2016) examined the short-term impacts of cross-border M&As transactions between publicly listed Chinese and British firms throughout 2012 to 2016. Their findings show Chinese acquirers had achieved significant positive ARs.

Conversely, several researchers conclude that although short-term studies “are relatively straight forward and trouble-free” (Tuch and O’Sullivan, 2007, p.148), the announcement yields in this occasion might be inclined to reflect the expectations of the investors and therefore tend to be biased (Tuch and O’Sullivan, 2007). Thus, those researchers recommend that the time period of the event window needs to be extended to a few years in order to cover the full effect of the announcement of the merger. They trust the assumption that markets need a longer period of time to evaluate their decision and assess the value consequences of the transaction and its development, as well as the reaction of the rivals. Although, while the long event window possesses its own benefits,

it still causes other, greater problems. This would comprise the chances for the acquirer companies to encounter changes in operational, financial or strategic events in the lengthier event windows, that might affect the acquisition's value, as it is complicated to eliminate the acquisition effect out of those triggered by other changes. In addition, long event windows decrease the examination outcomes' reliability (Tuch and O'Sullivan, 2007). For instance, Sylvani and Yunita (2017) examined market responses towards M&As for the Asia-Pacific telecommunication companies. For the 2011-2014 period, their sample contained 17 deals. Event window [-10, 10] of 21 days was used for abnormal returns (AR) with an estimation period of 100 days. Nonetheless, their results indicated that there is no significant effect on ARs.

Generally, when the returns are calculated for the short time periods or windows surrounding the acquisition announcement date, the majority of the prior research has shown significant positive profits for target company stockholders since the premium is paid for their stocks. Though, the results for the acquirer companies were split among those reporting negative abnormal returns as well as others reporting nil or somewhat positive abnormal returns (Sudarsanam and Mahate, 2006). In contrast, research carried out throughout long time periods after the acquisitions have presented mixed outcomes based on the type of approach utilized but generally, returns to shareholders of acquirers are frequently significantly negative (Mueller and Yurtoglu, 2007).

Sudarsanam (2003) reviewed a number of the prior cross-border M&A research which studied the effects of stockholders' wealth, particularly those that focused on the short-term following the acquisition announcement date. The findings of these research have been mixed since some present positive returns and the rest report losses of wealth based on the acquirer's country. His analysis generally presents that in most situations, cross-border transactions in the U.S. and Europe do not produce wealth gains for acquirer stockholders.

For instance, one of the research he stated is the one carried out by Eun et al. (1996) who investigated the effect of cross-border M&As among the years of 1979 and 1990 on international acquirer companies of U.S. targets. The acquirer companies were

from Australia, France, Canada, Germany, Hong Kong, Japan, the Netherlands, Switzerland, Sweden, the UK, and others. The findings indicate that averagely, U.S. target international acquirer stakeholders had wealth gains which differed throughout acquirer countries. For instance, Canadian acquirers experienced average increases in their wealth while Japanese stakeholders had major increases in wealth. On the other hand, UK acquirers' shareholders had significant losses in their wealth. Consequently, the outcomes of the examination of cross-border transactions generally rely on the acquirer's country in addition to the periods of the research and the duration of the reviewed event windows.

Since cross-border M&As are different in culture, natural features, capital market growth, accounting instructions, and rules among the acquirer and the target firms contrasted to domestic M&As, they involve extra risk components. More prominently, taking over by a foreign acquirer firm considerably changes the target firm's financial risk exposure (Chen et al., 2017).

Preceding empirical research for the acquirer and target firms located in different countries were performed for both the short and long term periods. The findings of these empirical research might vary from one country to the other; thus, the findings of acquirers from the U.S., Europe, and other countries are presented separately for the cross-border M&A research.

4.1.1. U.S. Cross-border M&A Acquirers

Doukas and Travlos (1988) studied the effect of cross-border M&As on U.S. acquirer companies' share prices. They discovered that the stockholders of the U.S. acquirer companies have significant positive abnormal returns when these companies enlarge into new sectors and regional markets. While the stockholders have insignificant negative abnormal returns when the U.S. acquirer companies previously have businesses in the country of the target companies. Additionally, Doukas (1995) found that a sample of 463 U.S. acquirer firms that occurred among the years 1975 and 1989 generated minor positive abnormal returns in his analysis of U.S. foreign transactions. Nonetheless, for U.S. acquirer firms that acquired targets from

Canada throughout a year after the announcement date of the acquisition, Eckbo and Thorburn (2000) observed insignificant negative cumulative abnormal returns (CARs) of -3.7 percent. Seth et al. (2002) examined 100 acquisitions of U.S. companies by different firms for the period of 1981 to 1990. They did not find any significant shareholder wealth effect.

Gleason et al. (2005) analyzed 97 acquisitions by 47 U.S. and 50 non-U.S. banks during 1981-1998. They conclude positive shareholder wealth effects of 0.61 percent and 0.48 percent in the 3-day and 2-day windows around the deal announcement. Wooster (2006) studied 383 acquisitions by U.S. companies in transition economies from 1989 to 1999. The findings indicated that there was no significant wealth effect in the $[1, +1]$ window for the entire study period but a significant positive wealth effect was observed for the period of 1989-1992.

4.1.2. European Cross-border M&A Acquirers

The number of research that analyzed European companies' foreign acquisitions has been comparatively limited (Lowinski et al., 2004).

Goergen and Renneboog (2004) examined the short-term returns for sizable European domestic and cross-border M&As between the years 1993-2000. Their review of 178 M&As with transaction values of over USD 100 million had both European acquirer and target firms. They calculated the short-term wealth impacts for the companies utilizing the market model and implemented six various beta measures utilizing multiple event windows that are $[-1, 0]$, $[-2, +2]$, $[-40, 0]$ as well as $[-60, +60]$ in days. Overall, the researchers found significant positive abnormal returns for the target companies ranging from 9.01 percent to 23.10 percent throughout the different event windows. They also found significant positive abnormal returns for acquirer companies which were 0.70 percent and 1.18 percent throughout the event windows of $[-1, 0]$ and $[2, +2]$, contrasted with insignificant returns throughout the other event windows.

This is in line with the findings observed by Campa and Hernando (2004) who analyzed the effect of M&A announcement on the stockholders' returns with a sample of companies from Europe. Their study covered European target and acquirer firms during

the period from 1998 to 2000. They utilized the the capital asset pricing model (CAPM) method to evaluate seven various event windows pre, post and around the date of announcement that are [-90, -1], [-60, -1], [-30, -1], [-1, +30], [-30, +30], [-1, +1], [-30, +1]. They observed that target company stockholders earned on average a significant CARs of 9 percent in a one-month event window throughout the date of the announcement. Oppositely, on average they showed insignificant CARs for the stockholders of the acquirer company. Nonetheless, the sample duration in the analysis of Campa and Hernando (2004) is only from 1998 to 2000, which could cause the findings to be sufficiently unrepresentative. In their study of Dutch companies, Corhay and Rad (2000) have also found no evidence of significant cross-border M&As announcement effects.

In Germany, similar findings for cross-border transactions were derived from the short-term window (Lowinski et al., 2004). From a long-term window, negative share price response to German acquirers was observed in the very first months following the announcement date of the transaction, while significant positive CARs occurred after 24 months of the announcement date of the transaction (Lowinski et al., 2004).

Gregory & McCorriston (2005) examined 333 acquisitions by UK companies for the period of 1984 to 1995. They did not find any significant shareholder wealth effects associated with the announcement of acquisitions.

4.1.3. Cross-border M&As in Other Countries

Ben-Amar and Andre (2006) analyzed 327 transactions for the period from 1998 to 2002 carried out by Canadian companies. The major reason for their analysis was to examine the connection among the acquirer company performance and structure of ownership. Utilizing the market model, they discovered that the average CARs following the announcement [-1, + 1] were 1.06 percent significant and positive, therefore Canadian M&As generated value for the acquirer company's stockholders over the short term period. Moreover, they discovered that cash transactions, private target transactions, and cross-border transactions ended with a positive effect on

the abnormal returns (AR). Generally, their findings indicated that the markets observe Canadian M&As as a creating value transaction on average.

Mueller & Yurtoglu (2007) examined acquirer firms from Belgium, Canada, Finland, New Zealand and Switzerland for the period of 1981-2002. They concluded that shareholder wealth decreased by -5.3 percent, -9.3 percent and -18.2 percent for the [10, +250], [-10, +500] and [-10, +750] windows respectively.

4.2. Relationship Between Company Value and Financial Hedging

Risk management does not have an effect on company value according to the traditional structure of Modigliani and Miller (1958). Because of market imperfections in reality, however, risk management becomes important. Many corporate financial hedging motives have already been identified in the preceding literature. First, decreases in financial distress costs formed the central focus of studies by Mayers and Smith (1982), Stulz (1984) and Smith and Stulz (1985). Second, information asymmetry mitigation was demonstrated by DeMarzo and Duffe (1995). Third, alleviation of agency costs related to underinvestment and risk shifting was undertaken by Stulz (1984), Froot et al. (1993) and Leland (1998). Fourth, debt cost reductions were reported by Chen and King in 2014. Fifth, equity cost reductions were studied by Gay et al. in 2011. Lastly, effective tax payments mitigation was investigated by Graham and Rogers (2002).

The results of surveys similarly show that researchers widely confirm the opinion that corporate financial hedging usually allows companies to handle their risks more effectively and improves stockholder value. International Swaps and Derivatives Association (ISDA) performed a survey in 2009 to professors of finance at the top fifty universities around the world to seek their views on corporate financial hedging in addition to the effect of derivatives on the worldwide financial system. A final count of eighty-four teachers working at forty-two institutions presented answers. Once asked for percentage the claim “*Managing financial risk more effectively is a way for companies to build shareholder value*”, 44 percent of the participants strongly agreed, 47 percent of the participants agreed, 7 percent of the participants somewhat agreed, and merely 2 percent of the participants somewhat disagreed. Once asked if “*derivatives help*

companies manage financial risk more efficiently”, 49 percent of the participants strongly agreed, 43 percent of the participants agreed, 8 percent of the participants somewhat agreed and none of the participants disagreed (Chen et al., 2017).

Empirical evidence taking place on the relationship among firm value and financial hedging stays mixed notwithstanding the conceptual base. Geczy et al. (1997) investigated a sample of non-financial U.S. companies and concluded that hedging decreases the volatility of cash flows of companies. Similarly, Allayannis et al. (2001) used a sample of non-financial U.S. companies and described a hedging premium (higher company value) of approximately 5 percent of company value. In a study which set out to determine the hedging premium, Carter et al. (2006) recorded a greater hedging premium of 10 percent using a sample of airline companies. To determine the relationship between hedging and volatility of cash flows, total risk, and systematic risk, Bartram et al. (2011) used global data and found convincing proof that the volatility of cash flows, total risk, and systematic risk of hedging companies are significantly lower.

Other researchers, however, who have looked at the relationship between company value and financial hedging, have not found a significant relationship. For instance, Tufano (1996) researched a data set of gold mining firms’ hedging policy but found no significant relationship between company value and financial risk management. Guay and Kothari (2003) argue that positions in corporate derivatives are usually overly small to take into account the hedging premium found by Allayannis et al. (2001). Jin and Jorion (2006) pointed out that financial hedging does not have a significant impact on a sample including U.S. gas and oil manufacturer’s market price. In the same vein with Tufano (1996), Brown et al. (2006) selected a sample of gold mining companies in the U.S. and observed that financial hedging does not result in better stock or operational performance. Self-selection bias could be one possible clarification for these conflicting research results (Chen et al., 2017). Allayannis and Ihrig (2001) suggest that U.S. firm’s FX exposures are defined by their international operations and Pritamani et al. (2004) concluded that corporations with variable risk exposure levels gain various value-enhancing hedging advantages.

A new section of literature examines the possible ways by which the financial hedging helps firms. Campello et al. (2011) reported that users of derivatives in their loan agreements obtain more favorable conditions of funding than non-users. Graham and Rogers (2002) found that hedging tends to improve debt ability, resulting in a 1.1 percent improvement in firm value on average. Chen and King (2014) showed that firms without hedging experience tend to have a higher bond yield spread than derivative users. Gay et al. (2011) showed that companies that do not use derivatives have a higher cost of equity compared to users. Pérez-González and Yun (2013) employed weather derivatives innovation by way of an untreated analysis to a sample covering utility companies having weather risk and discovered that incorporating derivative instruments results in greater leverage, further investment, and eventually greater company value. In view of all that been mentioned so far, one may be supposed that financial hedging helps tends to improve company value.

4.3. Relationship Between M&As and Financial Hedging

M&As not only have a tremendous effect on upcoming operations and development of an acquirer, but they can also alter its risk profile significantly (Chen et al., 2017). Furfine and Rosen (2011), for instance, concluded that M&As raise the acquiring companies' overall risk of default. Duchin and Schmidt (2013) found that acquisitions finalized throughout U.S. merger waves have greater volatility and information asymmetry than acquisitions that happened outside the merger waves, resulting in weaker deal performance. Bhagwat et al. (2016) claim that at what time stock market uncertainty rises, M&A transactions fall for the reason that the increased interim phase uncertainty causes acquisitions to be less appealing to possible targets as well as acquirers. Bhagwat and Dam (2014) offer proof that targets tolerate lower risk than acquirers during the interim phase.

In recent research, cross-border M&As have attracted greater attention since acquirers face significant shifts in the FX risk in these transactions. Moeller and Schlingemann (2005) pointed out that the FX exposures of acquirers are increased by cross-border M&As. Besides, they concluded that acquirers taking part in national transactions have better inventory and operational efficiency than

acquirers in cross-border transactions. Lin et al. (2014) analyze one thousand cross-border M&A deals to research how companies react to exchange rate fluctuations when undertaking investment choices. They found that acquirers in countries with better currency appreciation tend to have greater abnormal returns on announcements. Additionally, they reported that for acquirers of sound corporate governance, such wealth impact is more significant. Bartram et al. (2013) reviewed a selection of U.S. companies that acquire foreign target firms and found that such acquisitions decrease the currency risk of acquirer firms when they have a previous existence in the target countries. Lin et al. (2009) suggested that, since users of derivatives have less information asymmetry compared to non-users, they have a tendency to have improved stock performance in cross-border M&A deals than non-users.

Notwithstanding the wide spectrum of uncertainty in the market and M&A studies, academic research remains limited as to whether acquirer firms are using derivatives to control their risk related to M&A transactions and how effective they are in this attempt if they ever do. This study aims to shed light on this area.

4.4. Hypothesis and Empirical Predictions

Prior empirical research has no consensus on whether financial hedging adds value to the companies. Current literature has reported that financial hedging rises long-term efficiency and Tobin's Q of the firms, whereas decreasing the costs of external debt financing, idiosyncratic risk, and overall risk (For example, Guay, 1999; Allayannis and Weston, 2001; Lin et al., 2009; Campello et al., 2011; Bartram et al., 2011). Nevertheless, two questions are remaining over these results. First of all, the reverse causality argument which states that companies with better results prefer to use derivatives with the purpose of hedging is hard to dismiss. Second, financial hedging choices are decided through the ex-ante risks of companies and are associated with other company features like those of leverage and size (Chen et al., 2017).

To alleviate these concerns, we examine the cross-border M&As of European companies and utilize various results in transactions among users and non-users of financial derivatives. Since a target's assets and liabilities are denominated in the

target firm's domestic currency and the acquirer firm should add new foreign investments upon completion of the transaction, a company involved in a cross-border M&A transaction is obviously subject to foreign exchange risk. The market response to the cross-border M&A transactions is not either a company feature or a variable of company preference (Chen et al., 2017).

As presented in Figure 1, Financial Risks Through a Timeline of Cross-border M&A, a typical M&A transaction timeline is described over three different periods. Throughout the pre-acquisition phase, companies with existent risk management strategies have greater capability and reduced costs for evaluating the financial risks connected with possible cross-border M&As. The knowledge in financial hedging allows acquirer firms to make better choices when they choose their foreign target firms. Financial hedging throughout the interim phase decreases the transaction risk that involves both FX and IR risks when external financing is required. Following the completion of the transaction, an acquirer firm with a hedging background in the integration procedure of the merged company could devise more efficient risk management programs. The FX risk of an acquirer company's balance sheet will rise throughout the post-acquisition phase since the acquired assets and liabilities are priced in the currency of the target country. FX risk related with the future cash flows might shift for an acquirer as well. In some cases, a foreign target firm acquisition rises the acquirer firm's exposure to the currency of the target country. In another situation, acquirer firms might buy a foreign target firm by way of an operational/economic hedging against their existent FX risk. Thus, the foreign currency cash flow risk of the acquirers on the target's country will be decreased following the cross-border M&As. Users of derivatives could better manage these above mentioned possible cash flow foreign exchange risk and balance sheet risk than non-users (Chen et al., 2017). Last but not least, the usage of derivatives gives a positive signal to shareholders about the financial risk management capabilities of acquirers and alleviates the problem of information asymmetry among the acquirer firm and investors outside (DeMarzo and Duffie, 1995). Because of these reasons above, it is expected in this study that derivatives user acquirer companies engaged in hedging to have higher CARs than non-users around cross-border M&A announcements.

In this study, different deal outcomes in cross-border M&As among users of derivative instruments and non-users are evaluated following the procedure of Chen et al. (2017). Two hypotheses are created and tested using a standard M&A event study approach.

Hypothesis 1: Acquirer cumulative abnormal returns (CARs) are higher for users of financial derivatives than for non-users in cross-border M&A announcements.

Financial hedging in the timeline of a cross-border M&A deal is advantageous to an acquirer. An acquirer with established risk management programs has better capacity and reduced costs in assessing the risks related to the possible transaction throughout the pre-acquisition phase. DeMarzo and Duffe (1995) showed that financial hedging gives shareholders a positive signal of the financial risk management experience of an acquirer at the announcement of the transaction and minimizes the problem of information asymmetry among business executives and outside shareholders. Throughout the interim phase, financial hedging, irrespective of the method of payment, decreases the FX risk exposures related to the transaction payments of the acquirer. Campello et al. (2011) and Chen and King (2014) stated that when an acquirer requires external funding, IRDs can help manage the exposure to IR risk. Therefore, financial hedging is strongly linked to reduced external financial costs. An acquirer with hedging expertise can develop more successful risk management plans in the integration procedure for the merged company after completion of the transaction. Since the acquired company's assets and liabilities are priced in foreign currencies, the balance sheet FX risk of the acquirer will increase throughout the post-acquisition period. The FX risk exposure of the potential operating cash flows of an acquirer would also rise following the acquisition of the foreign target. An acquirer using derivatives will also manage the balance sheet and operating cash flow FX risks more effectively than an acquirer who does not, resulting in a better market reaction at the announcement of the transaction (Chen et al., 2017).

The advantages related to acquirer announcement returns from financial hedging can be listed as follows. Firstly, as Bartram et al. (2011) state, financial hedging can significantly lower a firm's overall and systematic risk. Acquiring a foreign target significantly changes the financial risk profile of a firm and FCDs and IRDs minimize the

financial risk associated with the transaction. Secondly, hedging knowledge can help an acquirer assess the financial risk related to the M&A transaction that might also help a better target to be chosen by acquirers. An acquirer with hedging ability may also be in a stronger position to demand better terms for the transaction. Thirdly, financial hedging gives a positive signal to external shareholders about the foreign operations expertise and management capacity of a company that can allow them to more accurately evaluate the quality of transactions and to decrease information asymmetry. Fourthly, financial hedging lowers the cost of deal transactions. Campello et al. (2011) and Chen and King (2014) found that companies with financial hedging have reduced external financing costs. Lastly, due to the comparative stability of a company's hedging strategy, it is predicted that if an acquirer hedges its financial risk exposure before the deal announcement, it will continue to manage its financial risk exposure following the completion of the transaction. At the deal announcement, the assumption of the merged company's expected future reduction in risk will make a positive share market reaction. It is also agreed that, in a few situations, because of an acquirer's current FX exposure to risk, an acquirer may buy a foreign target as an operational hedge. This could decrease the financial hedging gains and lessen the positive impact of hedging on the returns of the acquirer (Chen et al., 2017).

Hypothesis 2: Users of financial derivatives take more time to complete cross-border M&A deals than non-users.

Offenberg and Pirinsky (2015) suggest that a trade-off among the benefits and costs of waiting is the consequence of the completion of the M&A deal. Utilizing FCDs and IRDs throughout the interim phase could decrease the financial risk exposure of an acquirer which leads to a lower cost of waiting. Derivatives users could, therefore, have the funds to take longer than non-users to evaluate the details of the deal and negotiate more favorable terms of the transaction. That is to say, an acquirer having financial hedging programs will have less pressure to hurry through the transaction due to the decreased FX risk and IR risk in the interim phase and can take longer to assess the terms of the deal. In addition, existing hedging programs reflect an acquirer's conservative risk

approach, which tends to take longer to closely evaluate the specifics of the transaction and the potential risk of the deal (Chen et al., 2017).



5. RESEARCH METHODOLOGY AND EMPIRICAL RESULTS

The tests performed in statistics are divided into two groups as parametric and nonparametric tests. Firstly, there are some assumptions in the parametric tests such as the normal distribution of variables, the variances are homogeneous and in some cases, the number of observations is 30 and above. After testing these assumptions, if the assumptions occur, tests such as the t-test can be carried out. T-test is a parametric test used to test the significance of the difference between the averages obtained from two independent samples. Secondly, nonparametric tests can be used when the assumptions for parametric tests are not valid. Nonparametric tests are carried out with ranks (sorted series) rather than the original series.

Ordinary least squares (OLS) regression of acquirer cumulative abnormal returns (CARs) on financial hedging variables will be used to test the two hypotheses mentioned in section 4.4. Hypothesis and Empirical Predictions. The OLS regressions are according to a dataset of 537 deals completed among 2007 and 2019 by European companies. Acquirer CAR is the dependent variable throughout the 11-day event window of $[-5, +5]$, in which the announcement day is day 0. The benchmark throughout the estimation window of $[-300, -91]$ is estimated by the market model. For all regressions, country fixed effects, industry fixed effects, and year fixed effects are controlled.

5.1. Event Study Methodology

The event study method is widely utilized to evaluate the effect of initial offer announcements on stockholder returns for a sample of M&A transactions. Abnormal return (AR) is measured on a stock/share by means of the difference among the expected return and the actual return (Peterson, 1989). Since the effect of the announcement could be instantly detected, the effect of the event will be reflected in the return of the share during a short period of time around the announcement date (MacKinlay, 1997).

Carrying out an event study involves assessing the concern of the event for an initial step. In the context of this study, the concern is to calculate the effect on stock returns of acquirer firms of the deal announcements. The following step is to create a data sample which will be addressed in detail in Section 5.2.1. The third stage is to

evaluate the period of time for the baseline estimation and the event window for abnormal return calculations. To perceive the market response surrounding the actual event, the estimation window should be before the event window. The last step is measuring the abnormal return (AR) and then the cumulative abnormal return (CAR) and evaluating the statistical significance. Following Chen et al. (2017), the market model is adopted in this study for calculating the abnormal returns.

5.1.1. Event Determination and Estimation Windows

Stock returns that are considered when there is no event occurrence or if there is full public information available are called “*normal*” or “*expected*” returns (Pablo and Javidan, 2009; Jeng, 2015). To determine the effect of an M&A on stockholder wealth, the expected returns of a provided stock should be measured for the interest period (Armitage, 2006). Meaning that expected returns should be calculated throughout a particular period prior to the date of the announcement of the transaction. This period is named as “*estimation window*” or “*estimation period*”.

The following stage is to specify the period in which the stock price response is analyzed in a consequence of the M&A announcement. This period is named as “*event window*” (Kliger and Gurevich, 2014). Since the literature has no consensus on using a standardized event window, a window of eleven trading days [-5, +5] has been used in this research, which was also used by Chen et al. (2017). The traditional opinion is that short event windows could prevent confounding bias that is probable to occur in the longer event windows, so the traditional opinion is that, especially in multi-country event studies, shorter event windows may generate improved empirical outcomes (Binder, 1998; MacKinlay, 1997; Park, 2004).

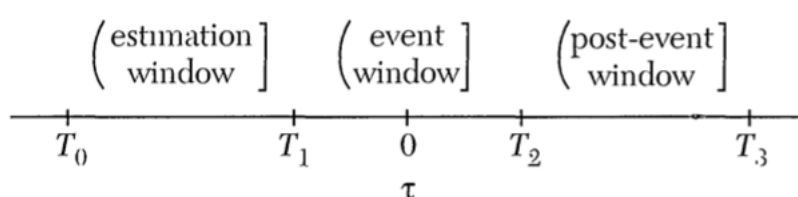
However, the estimation period must be predetermined and these estimation periods can be different for various kinds of models utilized. By following Chen et al. (2017), the estimation window is determined as [-300, -91] in this study, which implies that the model’s parameters could be estimated utilizing daily prices over 91 days before the event. In general, the event period is not included in the estimation period to avoid the

event from affecting the parameter estimates' usual performance in the model (MacKinlay, 1997).

There are several opposing opinions about the estimation period length (Pettengill and Clark, 2001). In their analysis, Aktas et al. (2001) utilized 90 daily share prices for a period preceding their original announcement date (ranging from -180 to -91 days concerning the date of announcement). Keown and Pinkerton (1981) utilized a period of 100 days of trading, Ma et al. (2009) utilized 125 trading days preceding the event date until six days before the event, and Liargovas and Repousis (2011) utilized a trading period of 100 days. Chang (1998) utilized 200 trading days (since day -210 until -11) as an estimation window. Martynova and Renneboog (2009) utilized 240 trading days, beginning 300 trading days before the announcement of the transaction. Since there was no problem with the availability of stock price data collection between the years 2006-2018 (one year prior to the announcement year), the estimation window is determined as [-300, -91] in this study.

The estimation window and the event window are shown following in Figure 7. The event date is shown as τ , the estimation period extends from T_0 to T_1-1 , and the event period extends from T_1 to T_2 .

Figure 7: Estimation Window and Event Window



Source: MacKinlay, A. C., Event studies in economics and finance, Journal of Economic Literature, 1997

5.1.2. Abnormal Return Calculations and Cumulative Abnormal Returns (CARs)

An abnormal return (AR) related with an acquisition announcement is calculated by way of the difference among the actual and expected returns throughout the event

window (MacKinlay, 1997). Therefore, the abnormal return is determined as follows at time t for share i :

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

Where:

- $AR_{i,t}$ is the abnormal return at time t for share i
- $r_{i,t}$ is the actual return at time t for share i
- $E(r_{i,t})$ is the expected return at time t for share i

The expected return is calculated using the market model estimation utilizing ordinary least squares (OLS) defining the following relationship among the return on a share and the return on the market:

$$E(r_{i,t}) = \alpha + \beta r_{m,t} + \varepsilon_{i,t} \quad t = -300, \dots, -91.$$

Where:

- $r_{i,t}$ is share return i at the time t
- $r_{m,t}$ is the return of the market based on an index of the acquirer country at time t
- $\varepsilon_{i,t}$ is the error term
- α_i and β_i are market model's parameters

The actual return at time t of the share i is calculated as follows:

$$r_{i,t} = \ln\left(\frac{P_t}{P_{t-1}}\right)$$

The market index return will be:

$$r_{m,t} = \ln\left(\frac{MP_t}{MP_{t-1}}\right)$$

Yahoo Finance and Investing.com have been utilized to collect the daily market stock price data for both the acquirer and the market index.

As illustrated below, the abnormal return is calculated as the difference among the actual and expected returns for the event period (T_1, T_2) for each stock i at time t :

$$AR = r_{i,t} - \alpha - \beta r_{m,t} \quad t = -5, \dots, +5$$

To calculate the effect of M&A announcements throughout the event window, the abnormal returns for the event window should be summed up. For every stock throughout the event window which begin at T_1 and finish at T_2 , the cumulative abnormal return (T_1, T_2) is determined as:

$$\widehat{CAR}(T_1, T_2) = \sum_{t=T_1}^{T_2} \widehat{AR}_{i,t}$$

Next, the average abnormal return for every date t is determined as follows for a sample size N (total amount of the announcements):

$$\overline{AR}_t = \frac{1}{N} \sum_{i=1}^N \widehat{AR}_{i,t}$$

Lastly, for the event window, the cumulative average abnormal return (CAAR) (i.e. the total effect of the announcement) is determined as below:

$$\overline{CAAR}(T_1, T_2) = \sum_{t=T_1}^{T_2} \overline{AR}_t$$

5.2. Selection of the Sample and Descriptive Statistics

In this section, the process of selecting the sample and the characteristics of the sample are discussed.

5.2.1. Basic Sample Selection

This study covers data that comes from various sources. The data was prepared by adapting the procedure used by Chen et al. (2017). First, a list of cross-border M&A deals from the file of Mergers and Acquisitions database of Thomson Reuters is picked with the criteria that follow:

1. To begin, entire cross-border M&A transactions that were announced among the dates 01/01/2007 and 21/10/2019 are selected. The reason why the data starts in 2007 is connected to the effective date of International Financial Reporting Standards 7-Financial Instruments: Disclosures (IFRS 7). It requests firms to reveal data on the nature and purpose of the risks associated with the use of financial instruments in order to identify a company's derivative use from its financial statements.

2. The acquirer is required to be one of the 14 publicly traded developed European countries which include Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Poland, Spain, Sweden and Switzerland (FTSE Russell as at 30 August 2019).

3. The target is required to be a company that does not use the same currency as the acquirer.

4. The status of the deal is required to be completed, withdrawn or pending.

5. All deals that are marked as *“a minority stake purchase”*, *“acquisitions of remaining interest”*, *“privatizations”*, *“repurchases”*, *“exchange offers”*, *“self-tenders”*, *“recapitalizations”*, or *“spinoffs”* are then eliminated following the typical filters employed in the literature.

6. The minimum transaction value of USD 1 million is further required.

7. The minimum market value of the acquirer of USD 20 million is required.

8. Following Chen et al. (2017), the percentage of the target firm's shares owned by the acquirer firm is limited at a minimum of 50 percent following the deal.

9. Deals were synthesized using the same method that was detailed by Allayannis and Weston (2001) and Bartram et al. (2011) by following Chen et al. (2017). This method includes a) transactions including the acquirers presented in the financial industry are eliminated. The explanation is because financial companies are market makers with various motives in terms of using financial derivatives than non-

financial companies and b) acquirers from the utilities industry are also excluded for the reason that utility firms are highly regulated.

This study includes 4 different phases to collect the data. These are 1) deal characteristics data, 2) financial hedging data, 3) firm characteristics data and 4) stock price data. It was not possible to collect all 4 data for all 731 firms. Due to this limitation, there were 537 firms left.

With these restrictions, this process generated a final result of a sample of 537 cross-border M&A transactions in total.

5.2.2. Variables for Financial Hedging

For every one of the 537 cross-border M&A deals, the financial derivatives usage data of the acquirers is hand-collected from their financial statements provided in the financial year before the deal announcement. All of the financial statements are retrieved from the acquirer firm's official website.

With the purpose of locating financial derivatives data, the following keywords in acquirer financial statements are searched: *“derivative”, “derivative(s) instrument(s)”, “hedge”, “financial instrument”, “swap”, “futures”, “forward contract”, “forward exchange”, “option contract”, “financial risk”, “risk management”, “foreign currency”, “currency exchange”, “notional”, “fair value”, “commodity”, and “commodities”*.

Several studies in the preceding financial hedging literature have used the above-mentioned keywords, for instance, Allayannis and Ofek (2001), Allayannis and Weston (2001), Graham and Rogers (2002), Bartram et al. (2011), Campello et al. (2011), and Chen et al. (2017). Financial hedging operations are mostly found in *“Quantitative and Qualitative Disclosures about Market Risk”* or *“Notes to Consolidated Financial Statements”*. Whenever one of the mentioned keywords is detected, the financial hedging variables were hand-coded after understanding the surrounding text.

The usage of foreign currency derivatives (FCDs), interest rate derivatives (IRDs), and commodity derivatives (CDs) formed the central focus of this study.

Following Allayannis and Ofek (2001), Allayannis and Weston (2001), Purnanandam (2008), Campello et al. (2011), and Chen et al. (2017) the financial hedging variables were created: 1) *fcd_user* is a binary variable with the possible values of 0-1 and implies if the acquirer company hedges FX risk; 2) *ird_user* is a binary variable with the possible values of 0-1 and implies if the acquirer company hedges IR risk; 3) *cmd_user* is a binary variable with the possible values of 0-1 which indicates if a company hedges the risk of commodity prices; 4) *g_user* is a variable with the possible values of 0-1 which implies if the acquirer company is involved in financial hedging by any means and is equivalent to 1 when the acquirer hedges one of the FX, IR or CD risks, and 0 when the company do not hedge either FX, IR or CD risks; 5) *fcd_extent* is FX derivative's total notional value normalized by acquirer's total assets; 6) *ird_extent* is IR derivative's total notional value normalized by acquirer's total assets; 7) *cmd_extent* is CD derivative's total notional value normalized by acquirer's total assets; 8) *g_extent* is both FX, IR, CD derivatives' total notional value which is normalized by total assets of the acquirer; 9) *hedging_scope* is a categorical variable with the possible values of 0-1-2-3 which implies if a company hedges FX, IR and/or CD. It is equal to 3 when a company hedges FX, IR and CD risks together, 2 when a company hedges 2 of the FX, IR or CD risks together, 1 when a company hedges either one of FX, IR or CD risks and lastly 0 when a company hedges neither of these three risks. The detailed description of names, codes, data sources, and definitions of these variables are shown in Table 1 below.

Table 1: Variable Definitions

Variable	Definition	Source
Deal Outcomes		
<i>car</i>	CARs throughout the event window of [-5, +5] days around the M&A announcement by utilizing the market model.	Yahoo Finance/Investing.com
<i>compl_time</i>	Number of days among effective date and deal announcement date	Thomson Reuters
Deal Characteristics		
<i>hostile</i>	1, if the deals are hostile and 0 otherwise.	Thomson Reuters
<i>tender</i>	1 for tender offers and 0 otherwise.	Thomson Reuters
<i>cash</i>	1 for deals done fully using cash and 0 otherwise.	Thomson Reuters
<i>equity</i>	1 for deals done fully or partially by share and 0 otherwise.	Thomson Reuters
<i>industry1</i>	1 if the acquirer and target firms share the same two-digit SIC code and 0 otherwise.	Thomson Reuters
<i>toehold</i>	1 if the acquirer firm already has some percent of the target firm shares and 0 otherwise.	Thomson Reuters
<i>transaction_value</i>	Transaction value.	Thomson Reuters
Firm Characteristics		
<i>nonpublic</i>	1 if the target firm is not a public firm and 0 otherwise.	Thomson Reuters
<i>leverage</i>	Acquirer firm's ratio of book value of debt to book value of total assets.	Thomson Reuters
<i>tobinq</i>	Acquirer firm's Tobin's.	Thomson Reuters
<i>assets</i>	Acquirer firm's book value of total assets.	Thomson Reuters
<i>lnsize</i>	Acquirer firm's market value's natural log.	Thomson Reuters
<i>cash_assets</i>	Acquirer firm's cash that is normalized by its assets's book value.	Thomson Reuters

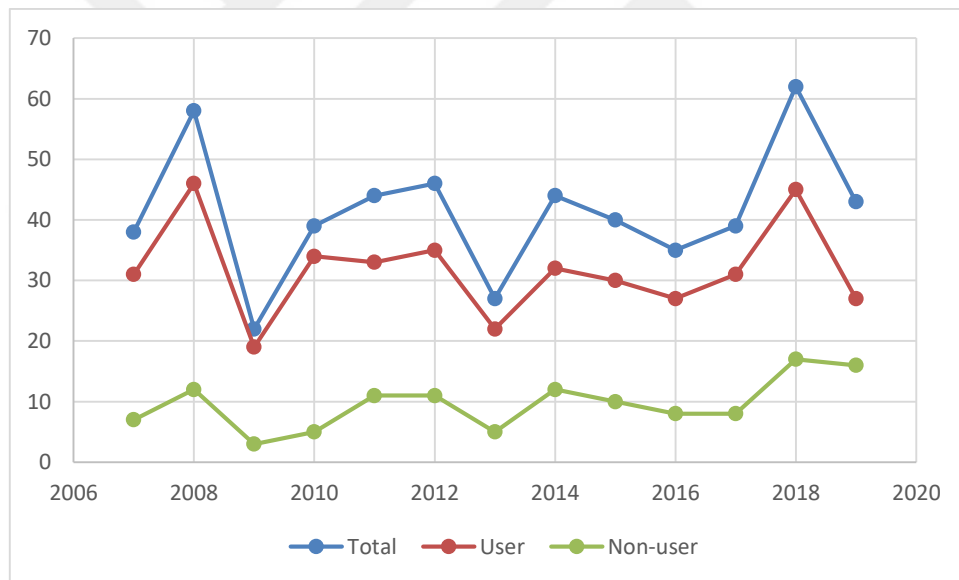
Table 1: Variable Definitions (Continued)

Variable	Definition	Source
Acquirer Financial Hedging Characteristics		
<i>fcd_user</i>	1 for acquirer using FX derivatives and 0 otherwise.	Annual Reports
<i>ird_user</i>	1 for acquirer using IR derivatives and 0 otherwise.	Annual Reports
<i>cmd_user</i>	1 for acquirer using CMD derivatives and 0 otherwise.	Annual Reports
<i>g_user</i>	1 if the acquirer using either FX derivatives, IR derivatives, or CMD derivatives and 0 otherwise.	Annual Reports
<i>fcd_extent</i>	FX derivatives' notional value held by the acquirer firm that is normalized by the total assets of acquirer firm.	Annual Reports
<i>ird_extent</i>	IR derivatives' notional value held by the acquirer firm that is normalized by the total assets of acquirer firm.	Annual Reports
<i>cmd_extent</i>	CMD derivatives' notional value held by the acquirer firm that is normalized by the total assets of acquirer firm.	Annual Reports
<i>g_extent</i>	Notional value held by the acquirer firm that is normalized by the total assets of acquirer firm.	Annual Reports
<i>hedging_scope</i>	3 for acquirer firm using all the kinds of derivatives contracts; 2 for acquirer firm using two kinds of derivatives contracts; 1 for acquirer using only 1 kind of derivatives contracts; 0 for acquirer who does not utilize any kind of derivatives.	Annual Reports

5.2.3. Descriptive Statistics

Figure 8 demonstrates the dispersion by announcement year of the cross-border M&A dataset throughout the study period 2007–2019. In line with Harford (2005) and Chen et al. (2017), we observe in the sample an M&A wave pattern, which could be driven mainly by macroeconomic changes. The overall number of transactions declines following the global financial crisis around 2008. There is a decline in transaction numbers in 2019, for the reason that the dataset does not include all deals that have been recently initiated but not yet completed. The number of transactions conducted by users and non-users of derivatives show a time series pattern very close to the overall number of transactions.

Figure 8: Distribution of M&A Deals by Year



The above figure shows the yearly amount of cross-border M&A transactions conducted among the years 2007 and 2019 by 537 firms. Also, the yearly amount of cross-border M&A deals that derivatives users and non-users conducted are plotted by utilizing two solid lines.

Table 2: Descriptive Statistics

Panel A. Distribution of Cross-border M&As by Target Country. This panel presents the numbers of cross-border M&A deals by target nation. The final sample includes 537 cross-border M&As between 2007 and 2019. Acquirer companies are from 14 different countries and the targets are from 62 different countries.

Nation	Freq.	Pct.	Nation	Freq.	Pct.	Nation	Freq.	Pct.	Nation	Freq.	Pct.
United States	165	30.73	Switzerland	14	2.61	France	6	1.12	Taiwan	4	0.75
United Kingdom	57	10.62	Denmark	11	2.05	Czech Rep	6	1.12	Cyprus	4	0.75
Canada	24	4.47	India	11	2.05	Poland	6	1.12	Hungary	3	0.56
Sweden	22	4.10	Finland	10	1.87	Chile	5	0.94	Colombia	3	0.56
Germany	20	3.73	Turkey	9	1.68	Mexico	5	0.94	Romania	3	0.56
Norway	18	3.36	Netherlands	9	1.68	South Korea	5	0.94	Egypt	2	0.38
China	17	3.17	Russian Fed	7	1.31	Singapore	4	0.75	Hong Kong	2	0.38
Australia	15	2.80	Israel	7	1.31	Italy	4	0.75	Others	34	6.46
Brazil	14	2.61	South Africa	7	1.31	Bulgaria	4	0.75	Total	537	100

Panel B. Distribution of Cross-border M&As by Acquirer Industry. This panel presents the numbers of cross-border M&A deals by the acquirer industry. The sample includes 537 cross-border M&As between 2007 and 2019. Acquirer companies are from 14 different countries and the targets are from 62 different countries. All 537 deal acquirers are assigned into Fama–French 10 industries based on acquirer SIC codes. Financial and public utilities industries are not included in our sample.

Fama-French 10 industries	Frequency	Percent
Manufacturing — Machinery, Trucks, Planes, Chemicals, Off Furn, Paper, Com Printing	121	22.53
Healthcare, Medical Equipment, Drugs	104	19.37
Other — Mines, Constr., BldMt, Trans, Hotels, Bus Serv, Entertainment	85	15.83
Business Equipment — Computers Software, and Electronic Equipment	84	15.64
Consumer Nondurables — Food, Tobacco, Textiles, Apparel, Leather, Toys	51	9.50
Telephone and Television Transmission	28	5.21
Oil, Gas, and Coal Extraction and Products	24	4.47
Wholesale, Retail, and Some Services (Laundries, Repair Shops)	20	3.72
Consumer Durables — Cars, TVs, Furniture, Household Appliances	20	3.72
Total	537	100

Table 2: Descriptive Statistics (Continued)

Panel C. Summary Statistics of Hand-coded Hedging Variables. This panel presents the 537 cross-border M&A acquirers' hedging information which we collect from their annual reports. The sample period is between 2007 and 2019. Acquirer companies are from 14 different countries and the targets are from 62 different countries. All the variables are constructed in the fiscal year before the deal announcement.

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>fcd_user</i>	537	0.719	0.450	0	1
<i>ird_user</i>	537	0.564	0.496	0	1
<i>cmd_user</i>	537	0.197	0.398	0	1
<i>g_user</i>	537	0.767	0.423	0	1
<i>fcd_extent</i>	305	0.115	0.154	0.0001	1.3295
<i>ird_extent</i>	253	0.084	0.093	0	0.5193
<i>cmd_extent</i>	54	0.010	0.025	0	0.162
<i>g_extent</i>	537	0.106	0.163	0	1.3295
<i>hedging_scope</i>	537	1.149	0.029	0	3

Panel D. Summary Statistics of the Key-dependent Variables. This panel presents the summary statistics of the key-dependent variables. The sample includes 537 cross-border M&A deals between 2007 and 2019. Acquirer companies are from 14 different countries and the targets are from 62 different countries. Summary statistics are presented for the full sample, the financial derivatives users sample, and the non-users sample. Financial derivatives users are defined by *g_user*.

Variable	Full Sample			Derivatives User			Non-user		
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
<i>car</i>	537	.015527	.0610765	412	.0336211	.0493596	125	-.0441112	.0581042
<i>compl_time</i>	537	99.66108	95.65148	412	108.5024	97.90227	125	70.52	81.62874

Table 2: Descriptive Statistics (Continued)

Panel E. Summary Statistics of Control Variables. This panel presents summary statistics for 537 cross-border M&A deals in our sample. The sample period is between 2007 and 2019. Acquirer companies are from 14 different countries and the targets are from 62 different countries. Summary statistics are presented for the full sample, the financial derivatives (*g_user*) users sample, and the non-users sample. The last column reports the significance levels of the *t*-test on the difference between the two sub-groups. Significance at the 0.01, 0.05 and 0.10 levels is indicated by ***, ** and * respectively.

Variable	Full Sample			Derivatives User			Non-user		
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
Deal characteristics									
<i>cash</i>	537	0.41527	0.493228	412	0.4441748	0.4974779	125	0.32	0.4683533
<i>equity</i>	537	0.1061453	0.3083106	412	0.0849515	0.2791484	125	0.176	0.3823526
<i>nonpublic</i>	537	0.6648045	0.4724989	412	0.6699029	0.4708195	125	0.648	0.4795159
<i>toehold</i>	537	0.0893855	0.2855654	412	0.0825243	0.2754963	125	0.112	0.3166355
<i>hostile</i>	537	0.0055866	0.0746039	412	0.0048544	0.0695885	125	0.008	0.0894427
<i>tender</i>	537	0.1359404	0.3430448	412	0.1383495	0.3456862	125	0.128	0.3354342
<i>industry1</i>	537	0.5921788	0.4918878	412	0.5946602	0.4915546	125	0.584	0.494877
<i>comp_time</i>	537	87.63687	129.3929	412	90.82282	117.9505	125	77.136	161.5965
Acquirer characteristics									
<i>lnsize</i>	537	9.106258	2.353726	412	9.377708	2.350695	125	8.211561	2.140141
<i>tobinq</i>	537	2.199254	7.055298	412	2.152278	8.000102	125	2.354086	1.732107
<i>leverage</i>	537	0.2695704	1.170262	412	0.2889277	1.33306	125	0.2057688	0.1562878
<i>cash_assets</i>	537	0.1008691	0.1847103	412	0.0800544	0.0804302	125	0.1694744	0.3461957

Table 2 Panel A shows the distribution of the cross-border M&A dataset through the nation of the target. The dataset covers 537 cross-border M&A deals from an overall number of 14 different acquirers and 62 different target nations. The top three nations of the target are United States (165), United Kingdom (57), and Canada (24). On the other hand, the top three acquirer nations are Sweden (89), France (80), and Switzerland (64). There are a total number of 4 nations of the target with more than 20 deals announced, and a total number of 12 nations with more than 10 deals announced. For the acquirers, there are a total number of 9 different nations with more than 20 deals announced, and a total number of 13 different nations with more than 10 deals announced.

Table 2 Panel B describes the distribution of cross-border M&A deals through the Fama-French 10 industry classification of acquirers, with the exception of the utilities and finance industries (Fama and French, 1997). Manufacturing; Healthcare; and Other are the top three industry groups formed a line by the number of M&A transactions, together comprising 57.7 percent of the dataset observations. Oil, Gas, and Coal Extraction and Products; Wholesale, Retail, and Some Services (Laundries, Repair Shops); and Consumer Durables are the three industries with the lowest number of observations which comprise 11.9 percent of the research deals. Panels A and B of Table 2 illustrate that the dataset contains target companies from a wide spectrum of nations and acquirer companies are distributed through different industries, suggesting that the dataset is reasonably representative and diverse.

Table 2 Panel C shows a summary of the hedging variables statistics. Within the number of 537 M&A deals, 71.9 percent of acquirer firms hold FCDs, 56.4 percent hold IRDs, 19.7 percent hold CDs, and 76.7 percent of the acquirer firms use as a minimum one of these three categories of derivatives in the year prior to the deal announcement. The percentage of users of derivatives in our study is greater than that stated by Campello et al. (2011) with 27.3 percent FCDs and 35.6 percent IRDs, Bartram et al. (2011) with 37.8 percent FCDs and 40.4 percent IRDs and Chen et al. (2017) with 63.2 percent FCDs and 43.2 percent IRDs. Moreover, Allayannis and Weston (2001) state that the amount of public companies that use derivatives to mitigate financial risks rises with time. The dataset period of our study is 2007-2019, which is afterward the

dataset periods of Bartram et al. (2011) with 2000–2001, Campello et al. (2011) with 1996–2002 and Chen et al. (2017) with 200–2014. Additionally, preceding financial hedging research have demonstrated a positive relationship among derivatives use and firm size. Similar to Chen et al. (2017), the sample companies in our study are larger than the ones in prior research. Since we concentrate on firms with the minimum market value of USD 20 million which are capable of performing cross-border M&A deals, whereas Campello et al. (2011) and Bartram et al. (2011) did not have such dataset constraints.

Since 2007, the effective date of IFRS 7, it is requested for public companies to reveal data on the nature and purpose of the risks associated with the use of financial instruments. In our study, 348 in 412 acquirer firms with financial hedging programs report the notional values of the derivatives contracts. The overall notional value of FCDs, IRDs, and CDs comprises for 10.6 percent of the acquirer firms' overall assets.

Table 2 Panel D provides a summary of the main dependent interest variables statistics which are acquirer announcement returns (car) and the number of days among the announcement of M&A and the completion of the deal (compl_time). Summary statistics are reported respectively for the full, derivatives users, and derivatives non-users for the dataset. Averagely, users of financial derivatives have higher announcement returns and longer completion time of the deal than derivatives non-users. The difference among derivatives user and non-user dataset in the acquirer announcement returns (car) is statistically significant.

Table 2 Panel E shows a summary of the characteristics of both the deal and the acquirer statistics. The number of observations, the mean, and standard deviation for the full, users of derivatives, and non-users of derivatives of each variable dataset are reported respectively. Altogether, there are 537 completed and 0 withdrawn M&A deals. For deal characteristics, deals conducted by the users of derivatives show a higher transaction value. Moreover, deals conducted by the users of derivatives are less probable to include equity as a method of payment. Another remarkable finding is that derivatives users take longer to complete a deal than derivatives non-users. Regarding the acquirer characteristics, financial derivative users are more probable to have a greater firm size and greater leverage. On the other hand, lesser cash holdings are found for derivatives

users. There's no statistically significant difference found among derivatives user and non-user categories in Tobin's Q. This finding does not contrast with the results in the prior financial hedging literature since our study does not cross-sectionally compare Tobin's Q (Chen et al, 2017).

5.3. Empirical Results

5.3.1. Univariate Analysis

5.3.1.1. Univariate Analysis: T-test

Table 3: Univariate Analysis: T-test

	<i>g_user</i>		<i>fcd_user</i>		<i>ird_user</i>		<i>cmd_user</i>	
Variable	Value	Diff.	Value	Diff.	Value	Diff.	Value	Diff.
<i>car</i>	0.0000	***	0.0000	***	0.0000	***	0.0122	**
Deal characteristics								
<i>cash</i>	0.0112	**	0.0008	***	0.0309	**	0.3878	
<i>equity</i>	0.0037	***	0.0274	**	0.0256	**	0.2040	
<i>nonpublic</i>	0.6503		0.2467		0.9174		0.0625	*
<i>toehold</i>	0.3125		0.1648		0.1247		0.1277	
<i>hostile</i>	0.6801		0.8491		0.7130		0.0833	*
<i>tender</i>	0.7182		0.1789		0.7639		0.4398	
<i>industry1</i>	0.8322		0.9351		0.9198		0.3472	
<i>compl_time</i>	0.0000	***	0.0000	***	0.0013	***	0.2287	
Acquirer characteristics								
<i>lnsize</i>	0.0000	***	0.0000	***	0.0002	***	0.0000	***
<i>tobinq</i>	0.6339		0.8879		0.0599	*	0.5398	
<i>leverage</i>	0.2162		0.4023		0.0949	*	0.2243	
<i>cash_assets</i>	0.0000	***	0.0046	***	0.0004	***	0.0100	**

The T-test values are shown in Table 3. Significance at the levels of 0.01, 0.05 and 0.10 is respectively stated by ***, ** and *. As seen in Table 3, *car* coefficient is statistically significant at the 0.01 level. It is also reported that *equity* and *compl_time* coefficients are statistically significant at the 0.01 and *cash* coefficient is statistically significant at the 0.05 level. On the other hand, *non-public*, *toehold*, *hostile*, *tender* and *industry1* coefficients of deal characteristics are not statistically significant. For the acquirer characteristics, *lnsize* and *cash_assets* coefficients are statistically significant at the 0.01 level and *tobinq* and *leverage* coefficients are not statistically significant.

5.3.1.2. Univariate Analysis: Mann-Whitney Test

Table 4: Univariate Analysis: Mann-Whitney Test

	<i>g_user</i>		<i>fcd_user</i>		<i>ird_user</i>		<i>cmd_user</i>	
Variable	Value	Diff.	Value	Diff.	Value	Diff.	Value	Diff.
<i>car</i>	0.0000	***	0.0000	***	0.0000	***	0.0302	**
Deal characteristics								
<i>cash</i>	0.0137	**	0.0011	**	0.0317	**	0.3815	
<i>equity</i>	0.0038	***	0.0131	**	0.0212	**	0.2529	
<i>nonpublic</i>	0.6499		0.2541		0.9172		0.0520	**
<i>toehold</i>	0.3121		0.1302		0.1341		0.1871	
<i>hostile</i>	0.6797		0.8405		0.7200		0.3895	
<i>tender</i>	0.7676		0.2053		0.7627		0.7676	
<i>industry1</i>	0.8319		0.9348		0.9197		0.3513	
<i>compl_time</i>	0.0000	***	0.0000	***	0.0000	***	0.1249	
Acquirer characteristics								
<i>lnsize</i>	0.0000	***	0.0000	***	0.0036	***	0.0000	***
<i>tobinq</i>	0.0000	***	0.0002	***	0.0000	***	0.0000	***
<i>leverage</i>	0.1540		0.9549		0.0000	***	0.1540	
<i>cash_assets</i>	0.0174	**	0.0985	*	0.0025	***	0.0025	***

The Mann-Whitney test values are shown in Table 4. Significance at the levels of 0.01, 0.05 and 0.10 is respectively stated by ***, ** and *. Table 4 reports that *car* coefficient is statistically significant at the 0.01 level which is in line with the T-test results. It is also shown that *equity* and *compl_time* coefficients are statistically significant at the 0.01 and *cash* coefficient is statistically significant at the 0.05 level which is again in line with the T-test results. However, *non-public*, *toehold*, *hostile*, *tender* and *industry1* coefficients of deal characteristics are not statistically significant. For the acquirer characteristics, *lnsize* and *tobinq* coefficients are statistically significant at the 0.01, *cash_assets* coefficient is statistically significant at the 0.05 level whereas *leverage* coefficient is not statistically significant. Overall, the Mann-Whitney test results support the T-test results.

5.3.1.3. Univariate Analysis: Pearson's Correlation Coefficients

Table 5: Univariate Analysis: Pearson's Correlation Coefficients

	<i>g_user</i>	<i>g_extent</i>	<i>hedging_scope</i>	<i>cash</i>	<i>equity</i>	<i>non-public</i>	<i>toehold</i>	<i>hostile</i>	<i>tender</i>	<i>lnsize</i>	<i>tobinq</i>	<i>leverage</i>	<i>cash/asssets</i>
<i>g_user</i>	1.0000												
<i>g_extent</i>	0.3747	1.0000											
<i>hedging_scope</i>	0.7919	0.3756	1.0000										
<i>cash</i>	0.1065	0.0641	0.1186	1.0000									
<i>equity</i>	-0.1249	-0.1050	-0.1192	-0.2904	1.0000								
<i>non-public</i>	0.0196	-0.0692	-0.0493	-0.4503	-0.0499	1.0000							
<i>toehold</i>	-0.0437	0.0182	-0.0189	0.0274	-0.0444	-0.1094	1.0000						
<i>hostile</i>	-0.0178	-0.0417	-0.0106	0.0889	-0.0258	-0.1056	0.1517	1.0000					
<i>tender</i>	0.0128	-0.0170	0.0320	0.2832	0.0397	-0.5241	0.0662	0.1161	1.0000				
<i>lnsize</i>	0.2096	0.0140	0.2686	0.1349	-0.1506	-0.1554	0.0069	0.0366	0.0787	1.0000			
<i>tobinq</i>	-0.0121	-0.0336	-0.0256	-0.0516	-0.0138	0.0426	-0.0114	-0.0029	-0.0192	0.0735	1.0000		
<i>leverage</i>	0.0301	0.1225	0.0303	-0.0497	-0.0133	0.0454	-0.0034	-0.0072	-0.0217	-0.0313	-0.014	1.0000	
<i>cash_asssets</i>	-0.2048	-0.0680	-0.1871	-0.0525	0.1845	0.0126	0.0084	0.0073	-0.0256	-0.2333	0.0981	-0.0398	1.0000
<i>car</i>	0.5383	0.2943	0.4037	0.1042	-0.0355	-0.0117	0.0139	0.0057	0.0374	-0.0219	-0.0355	0.0279	-0.0628
<i>car</i>													
<i>car</i>	1.0000												

5.3.2. Multivariate Analysis

We examine acquirer CARs estimated through a market model to analyze the impact of financial hedging on European cross-border M&A deal performance. The market model is estimated utilizing daily return data throughout the [-300, -91] period preceding the announcement of the deal following Chen et al. (2017). Acquirer CARs are measured throughout a window of [-5, -5], in which the date of announcement of a deal is day 0.

The findings of ordinary least squares (OLS) regressions including robust standard errors for the 537 M&A deals completed are reported in Table 6. Acquirer CARs are the dependent variables in all fifteen regressions. The independent variables are the financial hedging proxy variables: the user of FCD indicator (*fcd_user*), the user of IRD indicator (*ird_user*), the user of CD indicator (*cmd_user*), the user of derivatives indicator (*g_user*), FCD's notional value normalized by acquirer's total assets (*fcd_extent*), IRD's notional value normalized by acquirer's total assets (*ird_extent*), CD's notional value normalized by acquirer's total assets (*cmd_extent*), the indicator for the hedging scope (*hedging_scope*) and financial derivatives' notional value normalized by total assets of acquirers (*g_extent*). Country fixed effects, industry fixed effects and year fixed effects in all regressions are controlled.

Table 6 shows the OLS regression findings of acquirer cumulative abnormal returns on financial hedging variables. The OLS regressions are according to a dataset of 537 deals being carried among 2007 and 2019 by European companies. Acquirer CAR is the dependent variable throughout the 11-day event window of [-5, -5], in which the announcement day is day 0. The benchmark throughout the estimation window of [-300, -91] is estimated by the market model. For all regressions, country fixed effects, industry fixed effects, and year fixed effects are controlled. The t-test values are shown in parentheses. Significance at the levels of 0.01, 0.05 and 0.10 is respectively stated by ***, ** and *.

Hypothesis 1: Acquirer cumulative abnormal returns (CARs) are higher for users of financial derivatives than for non-users in cross-border M&A announcements.

To test our first hypothesis we define CAR as the dependent variable in our models.



Table 6: Acquirer CARs Estimated by the Market Model and Financial Hedging

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>fcd_user</i>	.0658*** (0.000)	.0654*** (0.000)	.0696*** (0.000)												
<i>ird_user</i>				.0273*** (0.000)	.0259*** (0.000)	.0262*** (0.000)									
<i>cmd_user</i>							.0046 (0.456)	.0056 (0.379)	.0037 (0.585)						
<i>g_user</i>										.0708*** (0.000)	.0706*** (0.000)	.0748*** (0.000)			
<i>hedging_scope</i>													.0206*** (0.000)	.0203*** (0.000)	.0225*** (0.000)
<i>cash</i>		.0113** (0.032)	.0116** (0.029)		.0155*** (0.008)	.0158*** (0.000)		.0185*** (0.002)	.0183*** (0.002)		.0113** (0.030)	.0115** (0.028)		.0147*** (0.009)	.0151*** (0.008)
<i>equity</i>		.0099 (0.267)	.0058 (0.516)		.0082 (0.432)	.0089 (0.415)		.0052 (0.633)	.0092 (0.420)		.0137 (0.129)	.0095 (0.290)		.0117 (0.234)	.0092 (0.365)
<i>nonpublic</i>		.0100 (0.058)	.0066 (0.246)		.0098* (0.094)	.0093 (0.132)		.0114** (0.058)	.0128** (0.042)		.0061 (0.239)	.0027 (0.621)		.0112** (0.042)	.0082 (0.161)
<i>toehold</i>		.0119 (0.102)	.0121 (0.100)		.0023 (0.754)	.0027 (0.717)		.0037 (0.639)	.0043 (0.581)		.0097 (0.156)	.0096 (0.165)		.0075 (0.320)	.0077 (0.308)
<i>hostile</i>		.0202 (0.458)	.0188 (0.522)		.0154 (0.625)	.0160 (0.613)		.0203 (0.568)	.0217 (0.515)		.0203 (0.437)	.0186 (0.499)		.0218 (0.444)	.0211 (0.479)
<i>tender</i>		.0048 (0.500)	.0035 (0.628)		.0085 (0.295)	.0080 (0.322)		.0084 (0.326)	.0084 (0.326)		.0046 (0.513)	.0035 (0.622)		.0074 (0.333)	.0062 (0.421)
<i>lnsize</i>			-.0034** (0.026)			-.0008 (0.620)			.0009 (0.565)			-.0031** (0.045)			-.0033** (0.041)
<i>tobinq</i>			.0000 (0.716)			.0001 (0.235)			.0000 (0.730)			.0002 (0.939)			.0000 (0.424)
<i>leverage</i>			-.0008 (0.235)			-.0012* (0.082)			-.0007 (0.288)			-.0008 (0.189)			-.0007 (0.298)
<i>cash_assets</i>			-.002 (0.922)			-.0129 (0.607)			-.0212 (0.437)			.0033 (0.873)			-.0083 (0.724)
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	537	537	537	537	537	537	537	537	537	537	537	537	537	537	537

Table 7: Acquirer CARs Estimated by the Market Model and Financial Hedging Extent

	1	2	3	4	5	6	7	8	9	10	11	12
<i>fcd_extent</i>	.0470**	.0701**	.0136**									
	(0.023)	(0.034)	(0.047)									
<i>ird_extent</i>				.0334**	.0482**	.0748*						
				(0.029)	(0.037)	(0.055)						
<i>cmd_extent</i>							.0568	.0648	.0512			
							(0.416)	(0.172)	(0.311)			
<i>g_extent</i>										.0371***	.0409***	.0407***
										(0.000)	(0.000)	(0.000)
<i>cash</i>		.0173***	.0241***		.0142**	.0289**		.0067	.0193*		.0164***	.0164***
		(0.007)	(0.006)		(0.040)	(0.017)		(0.854)	(0.054)		(0.005)	(0.005)
<i>equity</i>		.0249**	.0254		.0296**	.0510		.0424	.0212		.0078	.0108
		(0.031)	(0.202)		(0.042)	(0.132)		(0.476)	(0.764)		(0.449)	(0.316)
<i>nonpublic</i>		.0135**	.0054		.0034	.0453		.0052	.0041		.0128**	.0136**
		(0.042)	(0.709)		(0.638)	(0.872)		(0.858)	(0.984)		(0.030)	(0.026)
<i>toehold</i>		.0015	.0041		.0008	.0122		.0542	.0464		.0036	.0044
		(0.856)	(0.520)		(0.906)	(0.479)		(0.964)	(0.679)		(0.626)	(0.558)
<i>hostile</i>		.0632	.0564		.0568	.0876		0	0		.0242	.0258
		(0.104)	(0.100)		(0.105)	(0.146)					(0.507)	(0.461)
<i>tender</i>		.0093	.0042		.0085	.0710		.0213	.0329		.0107	.0105
		(0.246)	(0.502)		(0.336)	(0.455)		(0.626)	(0.441)		(0.192)	(0.200)
<i>lnsize</i>			-.0039			-.0416			-.0215			.0002
			(0.100)			(0.171)			(0.255)			(0.853)
<i>tobinq</i>			.0754			.0089			.0173			.0001
			(0.742)			(0.127)			(0.242)			(0.478)
<i>leverage</i>			-.0104			-.0203			-.1745			-.0016**
			(0.845)			(0.410)			(0.219)			(0.049)
<i>cash_assets</i>			-.0214			-.0592			-.0170			-.0196
			(0.450)			(0.255)			(0.218)			(0.459)
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	537	537	537	537	537	537	537	537	537	537	537	537

The independent variables *fcd_user*, *ird_user*, *cmd_user*, *g_user* and *hedging_scope* are reported in Table 6. Columns 1 to 3 report the results of *fcd_user*, columns 4 to 6 report the results of *ird_user*, columns 7 to 9 report the results of *cmd_user*, columns 10 to 12 report the results of *g_user* and column 13 to 15 report the results of *hedging_scope*. Deal characteristics are included in the naïve model in columns 2,5,8,11 and 14. Then firm characteristics are added in columns 3,6,9,12 and 15. For all regressions, country fixed effects, industry fixed effects, and year fixed effects are controlled. The t-test values are shown in parentheses. Significance at the levels of 0.01, 0.05 and 0.10 is respectively stated by ***, ** and *.

In columns 1 to 3, *fcd_user* coefficient is positive and statistically significant at the 0.01 level. These findings indicate that acquirers involved in foreign exchange risk hedging provide announcement CARs that are higher than acquirers who do not. Following Chen et al. (2017), it can be also stated that acquirer's CARs improvement is economically important as well. For instance, in the regression model defined in column (1), it is estimated that foreign currency derivatives users have an average of 6.58 percent improved CARs than non-hedgers.

Then, *g_user* hedging variable which is a wider hedging indicator that takes into consideration both FCDs, IRDs, and CDs usage is reported in columns 10 to 12. of Table 6. The *g_user* coefficient is positive and statistically significant at the 0.01 level. When the hedging variable *hedging_scope* in columns 13 to 15 are replaced with *g_user*, the hedging impact is still statistically significant at the 0.01 level.

In Table 7, hedging variables *fcd_extent*, *ird_extent*, *cmd_extent* and *g_extent* are reported. When the hedging variables *g_extent* in column 10 to 12 is replaced with *g_user*, the hedging impact is still statistically significant at the 0.01 level. Overall, our findings indicate that users of derivatives have higher CARs than non-hedgers which is consistent with our Hypothesis 1. This is similar to the findings of Chen et al. (2017). Additionally, we observe that acquirers who hedge more kinds of risk which are stated by *hedging_scope* and acquirers that have higher contract values of derivatives which are stated by *g_extent* have higher CARs as well.

5.3.3. Financial Hedging and Deal Completion Time

Financial hedging impact on the completion time of the deal which is another cross-border M&A deal outcome is analyzed in this section.

Hypothesis 2: Users of financial derivatives take more time to complete cross-border M&A deals than non-users.

To test our second hypothesis, we define completion time as the dependent variable in our models. Deal completion time on acquirer firm's financial hedging variables regression results are reported in Table 8 and Table 9. The sample includes 537 cross-border M&As completed by 14 different acquirer firms between 2007 and 2019. Following the definition of Chen et al. (2017), *compl_time* which is defined as the number of days among the date of the deal announcement and the effective date of the acquisition is the dependent variable. For all regressions, country fixed effects, industry fixed effects, and year fixed effects are controlled. The t-test values are shown in parentheses. Significance at the levels of 0.01, 0.05 and 0.10 is respectively stated by ***, ** and *.

Table 8: Deal Completion Time and Acquirer Hedging

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>fcd_user</i>	36.09*** (0.000)	39.24*** (0.000)	32.29*** (0.001)												
<i>ird_user</i>				22.49** (0.016)	25.00*** (0.008)	17.28* (0.079)									
<i>cmd_user</i>							6.37 (0.628)	9.89 (0.450)	.51 (0.969)						
<i>g_user</i>										35.96*** (0.000)	40.59*** (0.000)	33.3*** (0.001)			
<i>hedging_scope</i>													13.97*** (0.004)	15.89*** (0.001)	11.99** (0.017)
<i>cash</i>		1.13 (0.919)	.00 (1.000)		2.67 (0.813)	1.50 (0.893)		5.61 (0.625)	3.05 (0.786)		1.30 (0.906)	.08 (0.994)		2.53 (0.821)	1.44 (0.897)
<i>equity</i>		41.96*** (0.003)	49.95*** (0.001)		42.24*** (0.004)	51.32*** (0.001)		39.84*** (0.009)	51.47*** (0.002)		43.99*** (0.002)	51.65*** (0.001)		44.36*** (0.002)	51.51*** (0.001)
<i>nonpublic</i>		-.50 (0.969)	5.42 (0.669)		-1.03 (0.936)	6.04 (0.640)		0.81 (0.949)	8.28 (0.511)		-2.70 (0.834)	3.82 (0.765)		0.271 (0.983)	5.84 (0.650)
<i>toehold</i>		11.47 (0.442)	12.01 (0.423)		5.38 (0.724)	7.38 (0.630)		7.15 (0.627)	8.27 (0.577)		9.93 (0.511)	10.72 (0.480)		9.58 (0.523)	10.25 (0.496)
<i>hostile</i>		95.76*** (0.001)	99.26*** (0.000)		91.61** (0.001)	96.99*** (0.000)		97.37*** (0.005)	100.36*** (0.000)		95.74*** (0.001)	99.23*** (0.000)		97.23*** (0.000)	100.34*** (0.000)
<i>tender</i>		-5.73 (0.644)	-4.13 (0.736)		-3.50 (0.776)	-2.10 (0.863)		-3.47 (0.778)	-1.84 (0.879)		-5.75 (0.643)	-4.03 (0.742)		-4.31 (0.728)	-3.01 (0.807)
<i>lnsize</i>			4.76** (0.050)			5.62** (0.024)			6.91*** (0.004)			5.02** (0.039)			4.54* (0.065)
<i>tobinq</i>			-.51 (0.018)**			-.43* (0.064)			-.50** (0.044)			-.53** (0.016)			-.49** (0.025)
<i>leverage</i>			-4.01 (0.009)***			-4.31*** (0.003)			-4.01** (0.011)			-4.02*** (0.008)			-3.97*** (0.008)
<i>cash_assets</i>			-18.19 (0.243)			-21.55 (0.185)			-27.04 (0.117)			-16.07 (0.297)			-20.17 (0.204)
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	537	537	537	537	537	537	537	537	537	537	537	537	537	537	537

Table 9: Deal Completion Time and Acquirer Hedging Extent

	1	2	3	4	5	6	7	8	9	10	11	12
<i>fcd_extent</i>	29.98**	31.57**	26.53**									
	(0.047)	(0.032)	(0.045)									
<i>ird_extent</i>				22.39**	25.37*	21.56*						
				(0.048)	(0.083)	(0.059)						
<i>cmd_extent</i>							4.26	5.81	4.91			
							(0.674)	(0.811)	(0.895)			
<i>g_extent</i>										77.84**	87.73***	77.33**
										(0.011)	(0.004)	(0.012)
<i>cash</i>		1.93	1.69		14.47	11.04		25.15	23.17		1.67	1.69
		(0.953)	(0.821)		(0.388)	(0.588)		(0.931)	(0.743)		(0.744)	(0.879)
<i>equity</i>		54.06***	52.78***		58.16*	50.28*		34.71	38.92*		51.57***	52.78***
		(0.004)	(0.004)		(0.057)	(0.056)		(0.311)	(0.053)		(0.005)	(0.001)
<i>nonpublic</i>		3.42	5.74		1.72	1.22		5.97	4.75		8.61	8.93
		(0.838)	(0.742)		(0.693)	(0.990)		(0.279)	(0.311)		(0.900)	(0.478)
<i>toehold</i>		14.34	14.21		7.75	8.46		50.10	46.54		6.61	8.55
		(0.340)	(0.363)		(0.625)	(0.642)		(0.513)	(0.500)		(0.656)	(0.570)
<i>hostile</i>		97.58***	98.36***		159.07***	104.34***		0	0		99.60***	104.00***
		(0.000)	(0.000)		(0.000)	(0.000)					(0.005)	(0.000)
<i>tender</i>		-20.28	-21.01		-15.11	-14.48		-20.14	-26.13		-1.52	-1.20
		(0.224)	(0.311)		(0.448)	(0.373)		(0.515)	(0.475)		(0.901)	(0.986)
<i>lnsize</i>			3.99**			4.84**			7.54*			6.25*
			(0.040)			(0.020)			(0.087)			(0.010)
<i>tobinq</i>			-5.55*			-6.52*			-14.93*			-4.47**
			(0.052)			(0.084)			(0.087)			(0.048)
<i>leverage</i>			-7.05***			-7.31**			-10.76*			-4.63***
			(0.006)			(0.034)			(0.066)			(0.002)
<i>cash_assets</i>			-12.33			-66.6			-25.61			-25.76
			(0.213)			(0.340)			(0.469)			(0.126)
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	537	537	537	537	537	537	537	537	537	537	537	537

The univariate analysis in Table 2 Panel D demonstrates that users of financial derivatives take an average of 109 days to complete a deal, whereas non-users take an average of 71 days to do the same. Table 8 and Table 9 show the outcomes of the multivariate analysis on how the hedging behavior of an acquirer impacts its completion time for the deal. Several transactions have a one day completion time in the cross-border M&A data. *Compl_time* that is described as the number of days among the date of the deal announcement and the effective date of the acquisition is the dependent variable.

In Table 8 columns 2,5,8,11 and 14, deal characteristics are controlled for *fcd_user*, *ird_user*, *cmd_user*, *g_user* and *hedging_scope* respectively. Then, in columns 3,6,9,12 and 15, firm characteristics are added. In Table 8, it is found that all hedging variables coefficients are positive and statistically significant except for *cmd_user*. This result is coherent with Hypothesis 2, which states that users of derivatives take longer than non-users to complete cross-border M&A transactions. Particularly, after we control for firm and deal characteristics in column 12, an acquirer having hedging experience takes 33 days longer to close a cross-border M&A deal than an acquirer with no such experience. These findings are in line with Golubov et al. (2012) and Chen et al. (2017). Furthermore, tender offers in cross-border M&As have a negative impact on the completion time. Chen et al. (2017) found that in cross-border M&As, tender offers are not widespread. Just about 13 percent of the M&A deals in our data include tender offers.

In Table 9 columns 2,5,8 and 11, deal characteristics are controlled for *fcd_extent*, *ird_extent*, *cmd_extent* and *g_extent* respectively. Then, in columns 3,6,9 and 12, firm characteristics are added for *fcd_extent*, *ird_extent*, *cmd_extent* and *g_extent* respectively. In Table 9, it is found that *g_extent* hedging variable coefficient is positive and statistically significant. Particularly, after we control for firm and deal characteristics in column 12, an acquirer having hedging experience takes 77 days longer to close a cross-border M&A deal than an acquirer with no such experience. Tender offers in cross-border M&As still have a negative impact on the completion time when *g_user* coefficient is replaced with *g_extent*.

6. CONCLUSION

In this study, we empirically analyze the financial hedging effect on the performance of cross-border M&A deals by using hand-collected data from reported derivatives information of companies from 14 European countries that acquire targets between 2007 and 2019.

Acquirers in our sample encounter a rise in foreign exchange risk together with interest rate risk when a deal requires external financing. Through the use of an event study research method, we show that users of derivatives experience an improvement in cumulative abnormal returns than derivatives non-users. The increase in the acquirer announcement returns is significant economically as well as statistically. Foreign currency derivatives users report an average of 6.58 percent higher abnormal returns when compared with non-users throughout a window of $[-5, +5]$ surrounding the announcement of the deal. In addition to the improvement of acquirer CARs, we find that financial hedging is associated with a longer time of completion of the deal.

We overcome two major difficulties in empirical research on corporate financial hedging. By using an event study approach, the possibility of our findings to be exposed to the potential reverse causality problem which states that companies with better performances might prefer to use derivatives to hedge their financial risks is mitigated. Our findings show the causal impact of financial hedging on firm value since acquirer cumulative abnormal returns indicating the market response to cross-border M&A deals are not either a firm choice variable or a firm characteristic. Also, since the financial hedging data is collected preceding the deal announcement date, the acquirer firm's financial hedging activities' chronological sequence and CARs inherently eliminate the reverse causality problem. Moreover, the selection bias problem that companies without ex-ante risk exposures prefer not to hedge is reduced in our research, since all companies engaged in cross-border M&A deals have foreign currency risk exposures even though some of these companies do not have these risk exposures ex-ante.

Parallel to prior M&A research, we only collect and analyze deals that are completed public. Chen et al. (2007) state that takeovers that are made public are merely

the tip of an iceberg of the entire takeovers and a number of deals may not be made public because of the lack of ability of the acquirer to handle risks related to the deal, which further highlights the significance of financial hedging in cross-border M&A deals. Overall, our results show a positive connection between financial hedging and the improvement of firm value.

Since deal-specific financial hedging information is not required from European firms to disclose, we pursue the pattern of the empirical hedging research and obtain information about general hedging at the firm level. Chen et al. (2017) suggested that improving the quality of the disclosure of financial derivatives could enable financial analysts, investors, and scholars to assess the risk management capabilities of a company in a better way and therefore help them make more informed decisions and research. If improvements to the financial reporting requirements result in more comprehensive corporate financial hedging data accessible in the future, it would be possible to not only research more closely the correlation among financial hedging and cross-border M&A deals at full length but also analyze the effect of hedging on other forms of operations of firms.

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APPENDIX

SUMMARY STATISTICS FOR ACQUIRER FIRMS

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	9	0.1111111	0.3333333	0	1
<i>equity</i>	9	0.1111111	0.3333333	0	1
<i>nonpublic</i>	9	0.7777778	0.4409586	0	1
<i>toehold</i>	9	0.3333333	0.5	0	1
<i>hostile</i>	9	0	0	0	0
<i>tender</i>	9	0	0	0	0
<i>industry1</i>	9	0.2222222	0.4409586	0	1
<i>compl_time</i>	9	50.11111	56.56731	0	146
<i>lnsize</i>	9	7.0526	1.373644	5.1961	9.124
<i>tobinq</i>	9	1.460722	0.5049034	0.7963	2.2816
<i>leverage</i>	9	0.3452444	0.3352541	0.1395	1.1787
<i>cash_assets</i>	9	0.1257778	0.0871022	0.0315	0.2651

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	14	0.5	0.5188745	0	1
<i>equity</i>	14	0.1428571	0.3631365	0	1
<i>nonpublic</i>	14	0.5714286	0.5135526	0	1
<i>toehold</i>	14	0	0	0	0
<i>hostile</i>	14	0	0	0	0
<i>tender</i>	14	0.1428571	0.3631365	0	1
<i>industry1</i>	14	0.7142857	0.4688072	0	1
<i>compl_time</i>	14	117.5	114.6364	0	450
<i>lnsize</i>	14	7.427636	1.624849	4.7219	10.9337
<i>tobinq</i>	14	1.461971	0.5785202	0.8304	2.6259
<i>leverage</i>	14	2.146814	7.186482	0.0253	27.1124
<i>cash_assets</i>	14	0.0564286	0.0628848	0.0001	0.2353

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	13	0.0769231	0.2773501	0	1
<i>equity</i>	13	0.0769231	0.2773501	0	1
<i>nonpublic</i>	13	0.6923077	0.4803845	0	1
<i>toehold</i>	13	0.0769231	0.2773501	0	1
<i>hostile</i>	13	0	0	0	0
<i>tender</i>	13	0.1538462	0.3755338	0	1
<i>industry1</i>	13	0.6153846	0.5063697	0	1
<i>compl_time</i>	13	66.69231	74.28928	0	224
<i>lnsize</i>	13	11.10158	2.616166	7.0765	15.6249
<i>tobinq</i>	13	5.126062	3.768073	1.8672	12.9547
<i>leverage</i>	13	0.1753769	0.1539934	0	0.4221
<i>cash_assets</i>	13	0.0765846	0.1196873	0.0007	0.401

SUMMARY STATISTICS FOR ACQUIRER FIRMS

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>cash</i>	28	0.5	0.5091751	0	1
<i>equity</i>	28	0.0714286	0.2622653	0	1
<i>nonpublic</i>	28	0.75	0.4409586	0	1
<i>toehold</i>	28	0.0714286	0.2622653	0	1
<i>hostile</i>	28	0	0	0	0
<i>tender</i>	28	0.1071429	0.3149704	0	1
<i>industry1</i>	28	0.5357143	0.5078745	0	1
<i>compl_time</i>	28	82.89286	94.60261	0	383
<i>lnsize</i>	28	7.216425	1.765038	4.2947	11.4676
<i>tobinq</i>	28	1.601625	0.7415714	0.8802	3.1489
<i>leverage</i>	28	0.1786964	0.1542994	0.0004	0.5476
<i>cash_assets</i>	28	0.0834071	0.0853522	0	0.3775

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	80	0.45	0.5006325	0	1
<i>equity</i>	80	0.125	0.3328055	0	1
<i>nonpublic</i>	80	0.5125	0.5029973	0	1
<i>toehold</i>	80	0.1125	0.3179742	0	1
<i>hostile</i>	80	0.0125	0.1118034	0	1
<i>tender</i>	80	0.1625	0.3712364	0	1
<i>industry1</i>	80	0.7125	0.4554522	0	1
<i>compl_time</i>	80	141.075	233.6565	0	1709
<i>lnsize</i>	80	9.2392	1.486851	4.9931	12.2392
<i>tobinq</i>	80	1.736149	0.8270989	1.0067	6.6173
<i>leverage</i>	80	0.2026638	0.1280973	0.0003	0.5512
<i>cash_assets</i>	80	0.0822938	0.0911101	0	0.5694

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	63	0.4761905	0.5034444	0	1
<i>equity</i>	63	0.0793651	0.2724789	0	1
<i>nonpublic</i>	63	0.6031746	0.4931689	0	1
<i>toehold</i>	63	0.1111111	0.316794	0	1
<i>hostile</i>	63	0	0	0	0
<i>tender</i>	63	0.1746032	0.3826766	0	1
<i>industry1</i>	63	0.5396825	0.5024263	0	1
<i>compl_time</i>	63	102.3651	134.4408	0	750
<i>lnsize</i>	63	8.313725	1.947742	2.9786	11.622
<i>tobinq</i>	63	2.079184	1.222045	0.5824	7.5368
<i>leverage</i>	63	0.1985397	0.139593	0	0.5249
<i>cash_assets</i>	63	0.1424825	0.1600839	0.0001	0.9421

SUMMARY STATISTICS FOR ACQUIRER FIRMS

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	56	0.3571429	0.4834938	0	1
<i>equity</i>	56	0.0892857	0.2877364	0	1
<i>nonpublic</i>	56	0.6428571	0.4834938	0	1
<i>toehold</i>	56	0.0178571	0.1336306	0	1
<i>hostile</i>	56	0	0	0	0
<i>tender</i>	56	0.1071429	0.3120939	0	1
<i>industry1</i>	56	0.6071429	0.4928054	0	1
<i>compl_time</i>	56	73.23214	112.0946	0	724
<i>lnsize</i>	56	7.52795	2.085885	3.8961	11.7444
<i>tobinq</i>	56	1.556723	0.7263714	0.1247	4.394
<i>leverage</i>	56	0.2197	0.1211921	0	0.6722
<i>cash_assets</i>	56	0.1643429	0.4645948	0	3.4398

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	26	0.5	0.509902	0	1
<i>equity</i>	26	0.0769231	0.2717465	0	1
<i>nonpublic</i>	26	0.7307692	0.4523443	0	1
<i>toehold</i>	26	0.0769231	0.2717465	0	1
<i>hostile</i>	26	0	0	0	0
<i>tender</i>	26	0.0769231	0.2717465	0	1
<i>industry1</i>	26	0.5769231	0.5038315	0	1
<i>compl_time</i>	26	66.38462	67.88937	0	212
<i>lnsize</i>	26	7.515331	1.71507	2.5779	11.4252
<i>tobinq</i>	26	1.561458	0.7431167	0.5234	4.2437
<i>leverage</i>	26	0.2885769	0.1970876	0.0118	0.781
<i>cash_assets</i>	26	0.1425115	0.2134579	0	0.8975

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	34	0.4705882	0.5066404	0	1
<i>equity</i>	34	0.1176471	0.327035	0	1
<i>nonpublic</i>	34	0.6176471	0.4932702	0	1
<i>toehold</i>	34	0.0588235	0.2388326	0	1
<i>hostile</i>	34	0	0	0	0
<i>tender</i>	34	0.1764706	0.386953	0	1
<i>industry1</i>	34	0.5882353	0.4995542	0	1
<i>compl_time</i>	34	66.35294	76.67716	0	313
<i>lnsize</i>	34	9.171191	1.661082	5.6952	12.4519
<i>tobinq</i>	34	1.928947	1.34083	1.0062	6.9081
<i>leverage</i>	34	0.2364735	0.1352557	0.0255	0.6165
<i>cash_assets</i>	34	0.0978471	0.0843488	0.01	0.3614

SUMMARY STATISTICS FOR ACQUIRER FIRMS

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	30	0.3666667	0.4901325	0	1
<i>equity</i>	30	0.2666667	0.4497764	0	1
<i>nonpublic</i>	30	0.7666667	0.4301831	0	1
<i>toehold</i>	30	0.2333333	0.4301831	0	1
<i>hostile</i>	30	0.0333333	0.1825742	0	1
<i>tender</i>	30	0.1666667	0.379049	0	1
<i>industry1</i>	30	0.7	0.4660916	0	1
<i>compl_time</i>	30	80.8	79.85521	0	281
<i>lnsize</i>	30	9.779013	2.314204	6.3982	14.5765
<i>tobinq</i>	30	1.544763	0.5522861	0.4973	2.6964
<i>leverage</i>	30	0.20534	0.1441787	0.0104	0.4889
<i>cash_assets</i>	30	0.10285	0.1441956	0.0012	0.6656

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	11	0.3636364	0.504525	0	1
<i>equity</i>	11	0	0	0	0
<i>nonpublic</i>	11	0.9090909	0.3015113	0	1
<i>toehold</i>	11	0	0	0	0
<i>hostile</i>	11	0	0	0	0
<i>tender</i>	11	0	0	0	0
<i>industry1</i>	11	0.4545455	0.522233	0	1
<i>compl_time</i>	11	112.1818	113.6889	0	285
<i>lnsize</i>	11	8.707918	1.715967	5.72	11.6836
<i>tobinq</i>	11	2.158545	1.890826	1.0041	7.5144
<i>leverage</i>	11	0.1538	0.1378874	0.0003	0.4567
<i>cash_assets</i>	11	0.0665364	0.0540265	0.0032	0.1455

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	20	0.4	0.5026247	0	1
<i>equity</i>	20	0.05	0.2236068	0	1
<i>nonpublic</i>	20	0.85	0.3663475	0	1
<i>toehold</i>	20	0.15	0.3663475	0	1
<i>hostile</i>	20	0	0	0	0
<i>tender</i>	20	0.05	0.2236068	0	1
<i>industry1</i>	20	0.5	0.5129892	0	1
<i>compl_time</i>	20	81	130.5938	0	537
<i>lnsize</i>	20	7.84759	1.468857	5.8437	11.5582
<i>tobinq</i>	20	1.478395	0.5813172	0.8957	2.9158
<i>leverage</i>	20	0.334715	0.1757566	0.0201	0.7064
<i>cash_assets</i>	20	0.07448	0.0664401	0	0.2361

SUMMARY STATISTICS FOR ACQUIRER FIRMS

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	89	0.3483146	0.4791357	0	1
<i>equity</i>	89	0.1235955	0.3309842	0	1
<i>nonpublic</i>	89	0.7640449	0.4269999	0	1
<i>toehold</i>	89	0.0449438	0.2083546	0	1
<i>hostile</i>	89	0	0	0	0
<i>tender</i>	89	0.1123596	0.3175976	0	1
<i>industry1</i>	89	0.5393258	0.5012752	0	1
<i>compl_time</i>	89	60.8427	67.63503	0	302
<i>lnsize</i>	89	11.59813	1.887948	6.0356	15.3366
<i>tobinq</i>	89	1.759252	0.9160335	0.6232	7.3753
<i>leverage</i>	89	0.2337517	0.1578276	0	0.7705
<i>cash_assets</i>	89	0.0653539	0.078934	0	0.432

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>cash</i>	64	0.484375	0.5037065	0	1
<i>equity</i>	64	0.078125	0.2704897	0	1
<i>nonpublic</i>	64	0.609375	0.4917474	0	1
<i>toehold</i>	64	0.109375	0.3145764	0	1
<i>hostile</i>	64	0.015625	0.125	0	1
<i>tender</i>	64	0.1875	0.3933979	0	1
<i>industry1</i>	64	0.609375	0.4917474	0	1
<i>compl_time</i>	64	82.28125	98.23271	0	511
<i>lnsize</i>	64	9.471755	2.242575	4.9422	12.4248
<i>tobinq</i>	64	4.944275	20.08097	0.619	162.6136
<i>leverage</i>	64	0.1936828	0.1225636	0	0.4926
<i>cash_assets</i>	64	0.0936719	0.0847234	0.0006	0.3666