Marmara Üniversitesi Öneri Dergisi • Cilt 16, Sayı 56, Temmuz 2021, ISSN 2147-5377, ss. 701-718
DO1: 10.14783/maruoneri.788480

ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

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

FİNANSAL RİSK YÖNETİMİ VE FİRMA PERFORMANSI: AVRUPA SINIR ÖTESİ BİRLEŞME VE SATINALMALARINDAN BULGULAR*

Ece KOZOL**
Jale ORAN***

Abstract

As a result of 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 employing financial derivatives, companies can manage these risks. It is required by International Financial Reporting Standards (IFRS) to reveal 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 among 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

* The author benefited from her master's thesis titled "Financial risk management and firm performance: Evidence from European cross-border mergers and acquisitions" at Institute of Social Science at Marmara University.

** İstanbul University, Department of Business Administration, ecekozol@istanbul.edu.tr, ORCID: 0000-0002-6428-7501

*** Marmara University, Department of Business Administration, jaleoran@marmara.edu.tr, ORCID: 0000-0001-8976-2893

Makale Gönderim Tarihi: 31.08.2020
Yayına Kabul Tarihi: 04.05.2021

(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. Event study, T-test and Mann-Whitney Test are used as research methods in this study. 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.

Keywords: Cross-border M&As; Financial Risk Management; Financial Derivatives

Öz

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 Raporlama 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 firma operasyonu olan sınır ötesi birleşme ve satın almaları 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. Bu çalışmada araştırma yöntemleri olarak olay çalışması, T-test ve Mann-Whitney Test kullanılmıştır. 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.

Anahtar Kelimeler: Sınır Ötesi Birleşme ve Satın almalar, Finansal Risk Yönetimi, Finansal Türev Araçlar

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 M&As (Arslan & Simsir, 2013).

A number of researchers expect cross-border M&As to outperform domestic M&As for both target and acquirer companies. The thought 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, Oosting & Renneboog, 2007). Conversely, in cross-border M&As, some problems might occur and lead to difficulties in handling the combined companies. 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).

M&As are performed by firms 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 & Simsir, 2013, p.2). 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. 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 & Simsir, 2013). 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, Han & Zeng, 2017). The different stages of the transaction of a standard M&A procedure and the related risks that Chen, Han & Zeng (2017) recommend are illustrated in Figure 1.

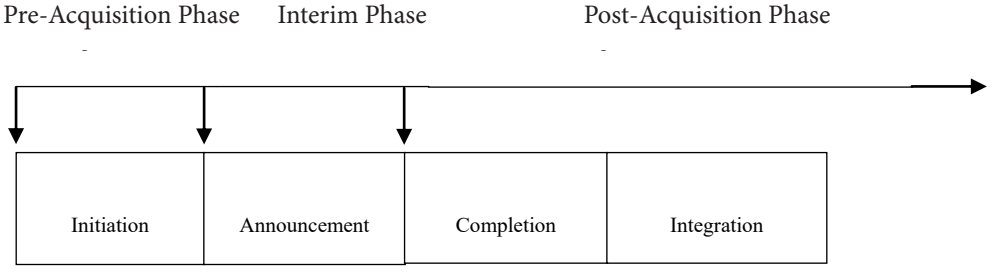

Figure 1. Financial Risks Through a Timeline of Cross-border M&A

Source: Ahern, K. R., & Sosyura, D., Who writes the news? Corporate press releases during merger negotiations. *Journal of Finance, 52*, 2014.

Chen, Han & Zeng (2017) divided the M&A process into 3 phases. 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 among the date of the announcement and 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 & Sosyura, 2014; Chen, Han & Zeng, 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. Finally, post-acquisition phase includes balance sheet risk, integration risk and cash flow risk.

An acquirer faces deal-related risk exposures throughout different phases. Throughout the interim phase, if the transaction is priced in the currency of the target country, the acquirer will be subjected to a foreign exchange (FX) risk (Chen, Han & Zeng, 2017). Although using 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 & Miller (1958) conclude that a company's value under perfectly competitive market circumstances is irrelevant to the financing strategy regarding hedging. However, Smith & Stulz (1985) claim that hedging policy might affect the firm's valuation through taxation, contracting costs or the effect of hedging over investment strategies.

Along with the varied results among firm value and hedging, empirical research that question the impact of hedging on firm operating activities have been unexpectedly missing. Recently, Chen, Han & Zeng (2017) studied acquirer performance in the U.S. and found a significant positive connection among hedging and acquirer performance for cross-border M&As. Following Chen, Han & Zeng (2017), we aim to examine the effect of hedging on firm performance through cross-border M&As in developed European countries. In addition, we aim to check the generalizability of Chen, Han & Zeng (2017) results for the U.S. data by analyzing different developed European countries.

Event study, T-test and Mann-Whitney Test are used as research methods in this study. We find that hedger acquirers have higher cumulative abnormal returns (CARs) than non-hedgers around deal announcements. In addition to the improvement of acquirer CARs, we find that hedging is connected with a longer time of completion of the deal. Our findings support the findings of Chen, Han & Zeng (2017).

2. Literature Review and Hypothesis Development

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

A quantity of empirical research to study the subject of returns to stockholders in M&As have been conducted. 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. Concerning the short term method, an assumption is made of the effectiveness of the stock market.

Conversely, several researchers conclude that although short-term studies "are relatively straight forward and trouble-free" (Tuch & 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 & 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. 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 & O'Sullivan, 2007).

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 & 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 of acquirers are frequently significantly negative.

For instance, Eun, Kolodny & Scheraga (1996) investigated the effect of cross-border M&As among the years of 1979 and 1990 on international acquirer companies of U.S. targets. 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.

2.2. Relationship Between Company Value and Financial Hedging

Risk management has no effect on firm value according to the traditional structure of Modigliani & 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 & Smith (1982), Stulz (1984) and Smith & Stulz (1985). Second, information asymmetry mitigation

was demonstrated by DeMarzo & Duffe (1995). Third, alleviation of agency costs was undertaken by Stulz (1984), Froot, Scharfstein & Stein (1993) and Leland (1998). Fourth, debt cost reductions were reported by Chen & King in 2014. Fifth, equity cost reductions were studied by Gay, Lin & Smith (2011). Lastly, effective tax payments mitigation was investigated by Graham & 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. 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, Han & Zeng, 2017).

Empirical evidence taking place on the relationship among firm value and financial hedging stays mixed notwithstanding the conceptual base. Allayannis, Lel & Miller (2012) used U.S. non-financial firms 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, Rogers & Simkins (2006) found a greater hedging premium using a sample of airline companies. To determine the relationship between hedging and volatility of cash flows, total risk, and systematic risk, Bartram, Brown & Conrad (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. Jin & Jorion (2006) pointed out that hedging does not have an impact on a sample including U.S. gas and oil manufacturer's market price. Allayannis & Ihrig (2001) suggest that U.S. firm's FX exposures are defined by their international operations and Pritamani, Shome & Singal (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. Chen & King (2014) showed that firms without hedging experience tend to have a higher bond yield spread than derivative users. Pérez-González & 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.

2.3. 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, Han & Zeng, 2017). Furfine & Rosen (2011), for instance, concluded that M&As raise the acquiring companies' overall risk of default. Bhagwat, Dam & Harford (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 & 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 & 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, Officer & Shen (2014) reported that for acquirers of sound corporate governance, wealth impact is more significant. 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.

2.4. 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. 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 risk risks of companies and are associated with other company features like those of leverage and size (Chen, Han & Zeng, 2017).

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

DeMarzo & Duffe (1995) showed that financial hedging gives shareholders a positive signal of the 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 & 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. The FX risk exposure of the potential operating cash flows of an acquirer would also rise following the acquisition of the foreign target.

The advantages related to acquirer announcement returns from financial hedging can be listed as follows. Firstly, as Bartram, Brown & Conrad (2011) state, financial hedging can significantly lower a firm's overall risk. 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. At the deal announcement, the assumption of the merged company's expected future reduction in risk will make a positive share market reaction.

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

3. Research Methodology and Empirical Results

3.1. 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:

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

Where:

$AR_{i,t}$: abnormal return at time *t* for share *i*

$r_{i,t}$: actual return at time *t* for share *i*

$E(r_{i,t})$: 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:

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

Where:

$r_{i,t}$: share return *i* at the time *t*

$r_{m,t}$: the return of the market based on an index of the acquirer country at time *t*

$\varepsilon_{i,t}$: the error term

$\alpha_i$and β_i : market model's parameters

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

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

The market index return will be:

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

As shown below, the abnormal return is calculated as the difference among the actual and expected returns for the event period (T1, T2) for each stock *i* at time *t:*

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

To calculate the effect of M&A announcements throughout the event window, the abnormal returns should be summed up. For every stock throughout the event window which begin at T_1T_1 and finish at T_2, the CAR (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, the cumulative average abnormal return (CAAR) is determined as below:

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

3.2. Selection of the Sample and Descriptive Statistics

This study covers data that comes from various sources. The data was prepared by adapting the procedure used by (Chen, Han & Zeng, 2017). First, cross-border M&A deals from the file of M&A 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 are Austria, Denmark, Belgium, Finland, Germany, France, 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 withdrawn, completed 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, Han & Zeng (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 & Weston (2001) and Bartram, Brown & Conrad (2011) by following Chen, Han & Zeng (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) acquirer firms of the utilities industry are also excluded for the reason that utility firms are highly regulated.

Table 1. Variable Definitions

Variable	Definition	Source
Deal Outcomes		
car	CARs throughout the event window of [-5, +5] days around the M&A announcement by utilizing the market model.	Calculated using the price data obtained from Yahoo Finance/Investing.com
compl_time	Number of days among effective date and deal announcement date	Thomson Reuters
Deal Characteristics		
hostile	1, if the deals are hostile and 0 otherwise.	Thomson Reuters
tender	1 for tender offers and 0 otherwise.	Thomson Reuters
cash	1 for deals done fully using cash and 0 otherwise.	Thomson Reuters
equity	1 for deals done fully or partially by share and 0 otherwise.	Thomson Reuters
industry1	1 if the acquirer firm and target firms share the same SIC code and 0 otherwise.	Thomson Reuters
toehold	1 if the acquirer firm already has some percent of the target firm shares and 0 otherwise.	Thomson Reuters
transaction_value	Transaction value.	Thomson Reuters
Firm Characteristics		
nonpublic	1 if the target firm is not a public firm and 0 otherwise.	Thomson Reuters
leverage	Acquirer firm's ratio of book value of debt to total assets.	Thomson Reuters
tobinq	Acquirer firm's Tobin's.	Thomson Reuters
assets	Acquirer firm's book value of total assets.	Thomson Reuters
lnsize	Acquirer firm's market value's natural log.	Thomson Reuters
cash_assets	Acquirer firm's cash that is divided by its assets's book value.	Thomson Reuters
Financial Hedging Variables		
fcd_user	A binary variable with the possible values of 0-1 and implies if the acquirer company hedges FX risk.	Annual Reports
ird_user	A binary variable with the possible values of 0-1 and implies if the acquirer company hedges IR risk.	Annual Reports
cmd_user	A binary variable with the possible values of 0-1 which indicates if a company hedges the risk of commodity prices.	Annual Reports
g_user	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.	Annual Reports

3.3. Descriptive Statistics

Figure 2 demonstrates the dispersion by announcement year of the cross-border M&A dataset throughout the study period 2007–2019. ln line with Harford (2005) and Chen, Han & Zeng (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 2008 financial crisis. 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.

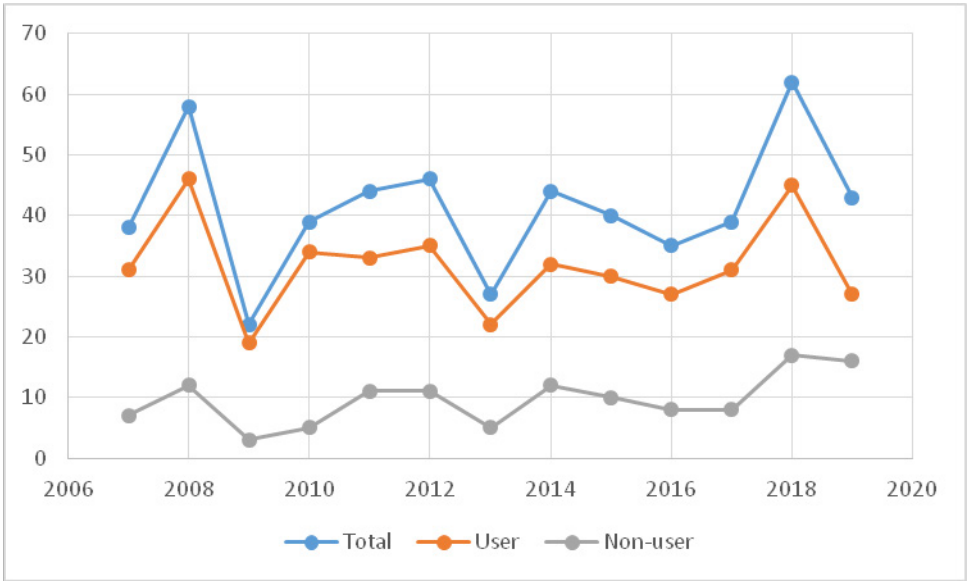

Figure 2. Distribution of M&A Deals by Year

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.. The sample contains 537 cross-border M&As among 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. The sample contains 537 cross-border M&As among 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	9.37
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

Panel C.

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

3.4. Empirical Results

The market model is estimated utilizing daily return data throughout the [-300, – 91] period preceding the announcement of the deal following Chen, Han & Zeng (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 indicate that acquirers involved in foreign exchange risk hedging provide announcement CARs that are higher than acquirers who do not. 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 Han & Zeng (2017). In addition, it is found that all deal completion time on acquirer firm's financial 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.

Table 3. Univariate Analysis: T-test

	g_user		***fcd_user***		***ird_user***		***cmd_user***	
Variable	**Value**	**Diff.**	**Value**	**Diff.**	**Value**	**Diff.**	**Value**	**Diff.**
car	0.0000	***	0.0000	***	0.0000	***	0.0122	**
Deal characteristics								
cash	0.0112	**	0.0008	***	0.0309	**	0.3878	
equity	0.0037	***	0.0274	**	0.0256	**	0.2040	
nonpublic	0.6503		0.2467		0.9174		0.0625	*
toehold	0.3125		0.1648		0.1247		0.1277	
hostile	0.6801		0.8491		0.7130		0.0833	*
tender	0.7182		0.1789		0.7639		0.4398	
industry1	0.8322		0.9351		0.9198		0.3472	
compl_time	0.0000	***	0.0000	***	0.0013	***	0.2287	
Acquirer characteristics								
lnsize	0.0000	***	0.0000	***	0.0002	***	0.0000	***
tobinq	0.6339		0.8879		0.0599	*	0.5398	
leverage	0.2162		0.4023		0.0949	*	0.2243	
cash_assets	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 17, 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.

Table 4. Univariate Analysis: Mann-Whitney Test

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

4. Conclusion

In this study, we empirically analyze the financial hedging effect on the performance of cross-border M&A deals by utilyzing 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 higher abnormal returns when compared with non-users throughout a window of [–5, +5]. In addition to the improvement of acquirer CARs, we find that financial hedging is related 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.

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, Han & Zeng (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.

REFERENCES

Ahern, K. R., & Sosyura, D. (2014). Who writes the news? Corporate press releases during merger negotiations. *Journal of Finance*, *69*, 241-291.

Allayannis, G., & Ihrig, J. (2001). Exposure and markups. *Review of Financial Studies*, *14*, 805-835.

Allayannis, G., & Ofek, E. (2001). Exchange rate exposure, hedging, and the use of foreign currency derivatives. *Journal of International Money and Finance*, *20,* 273-296.

Allayannis, G., & Weston, J. P. (2001). The Use of Foreign Currency Derivatives and Firm Market Value. *The Review of Financial Studies*, *14*(1), 243-276.

Allayannis, G., Lel, U., & Miller, D. (2012). The use of foreign currency derivatives, corporate governance, and firm value around. *Journal of International Economics*, *87*, 65-79.

Arslan, H. B., & Simsir, S. A. (2013). Measuring takeover premiums in cross-border M&As: Insights from Turkey. *Emerging Markets Finance and Trade, Forthcoming.* Retrieved from http://ssrn.com/abstract=2290079

Bartram, S., Brown, G., & Conrad, J. (2011). The Effects of Derivatives on Firm Risk and Value. Journal of Financial and Quantitative Analysis, *46*(4), 967-999.

Bhagwat, V., & Dam, R. (2014). Asymmetric interim risk and deal terms in corporate mergers and acquisitions. *Working Paper*. University of Oregon and University of Colorado at Boulder.

Bhagwat, V., Dam, R., & Harford, J. (2016). The real effects of uncertainty on merger activity. *Review of Financial Studies*, *29*(11), 3000-3034.

Campello, M., Lin, C., Ma, Y., & Zou, H. (2011). The Real and Financial Implications of Corporate Hedging. *The Journal of Finance, 66*(5), 1615-1647.

Carter, D., Rogers, D., & Simkins, B. (2006). Hedging and Value in the U.S. Airline Industry. *Journal of Applied Corporate Finance*, *18*(4), 21-33.

Chen J., & King T. H. D. (2014). Corporate hedging and the cost of debt. *Journal of Corporate Finance, 29*, 221-245.

Chen, Z., Han, B., & Zeng, Y. (2017). Financial hedging and firm performance: evidence from cross-border mergers and acquisitions. *European Financial Management, 23*, 415-458.

Demarzo, P., & Duffie, D. (1995). Corporate Incentives for Hedging and Hedge Accounting. *The Review of Financial Studies, 8*(3), 743-771.

Eun, C., Kolodny, R., & Scheraga, C. (1996). Cross-Border Acquisitions and Shareholder Wealth: Tests of the Synergy and Internalization Hypotheses. *Journal of Banking and Finance, 20*(9), 1559-1582.

Froot, K., Scharfstein, D., & Stein, J. (1993). Risk Management: Coordinating Corporate Investment and Financing Policies. *The Journal of Finance, 48*(5), 1629-1658.

Furfine, C. H., & Rosen, R. J. (2011). Mergers increase default risk. *Journal of Corporate Finance, 17*, 832-849.

Gay, G. D., Lin, C.-M., & Smith, S. D. (2011). Corporate derivatives use and the cost of equity. *Journal of Banking and Finance, 35,* 1491-1506.

Graham, J., & Rogers, D. (2002). Do firms hedge in response to tax incentives? *The Journal of Finance, 57*(2), 815-839.

Harford, J. (2005). What drives merger waves? *Journal of Financial Economics, 77,* 529-560.

Jin, Y., & Jorion, P. (2006). Firm Value and Hedging: Evidence from U.S. Oil and Gas Producers. *The Journal of Finance, 61*(2), 893-919.

Leland, H. (1998). Agency Costs, Risk Management, and Capital Structure. *The Journal of Finance, 53*(4), 1213-1243.

Lin, C., Officer, M. S., & Shen, B. (2014). Currency appreciation shocks and shareholder wealth creation in cross-border mergers and acquisitions. *Working Paper.* University of Hong Kong, Loyola Marymount University and Chinese University of Hong Kong.

Martynova, M., Oosting, S., & Renneboog, L. (2007). The long-term operating performance of European Acquisitions. Gregoriou, G., & Renneboog, L. (Eds.). *International Mergers and Acquisitions Activity since 1990: Quantitative Analysis and Recent Research*. (pp.1-40). Massachusetts: Elsevier.

Mayers, D., & Smith, C. W. (1982). On the corporate demand for insurance. *Journal of Business, 55,* 281-296.

Modigliani, F., & Miller, M. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review, 48*(3), 261-297.

Moeller, S. B., & Schlingemann, F. P. (2005). Global diversification and bidder gains: A comparison between cross-border and domestic acquisitions. *Journal of Banking & Finance, 29,* 533-564.

Pérez-González, F., & Yun, H. (2013). Risk management and firm value: Evidence from weather derivatives. *Journal of Finance, 68*, 2143-2176.

Pritamani, M. D., Shome, D. K. & Singal, V. (2004). Foreign exchange exposure of exporting and importing firms. *Journal of Banking and Finance, 28,* 1697-1710.

Smith, C., & Stulz, R. (1985). The Determinants of Firms' Hedging Policies. *The Journal of Financial and Quantitative Analysis, 20*(4), 391-405.

Stulz, R. M. (1984). Optimal hedging policies. *Journal of Financial and Quantitative Analysis*, *19*, 127-140.

Sudarsanam, S. (2010). *Creating Value from Mergers and Acquisitions: The Challenges* (Second Edition). Harlow: Prentice Hall.

Sudarsanam, S., & Mahate, A. A. (2006). Are friendly acquisitions too bad for shareholders and managers? Long-term value creation and top management turnover in hostile and friendly acquirers. *British Journal of Management, 17 (Special Issue),* 7-30.

Tuch, C., & O'Sullivan, N. (2007). The impact of acquisitions on firm performance: A review of the evidence. *International Journal of Management Reviews, 9,* 141-170.

Tufano, P. (1996). Who Manages Risk? An Empirical Examination of Risk Management Practices in the Gold Mining Industry. *The Journal of Finance*, *51*(4), 1097-1137.