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Fintech M&As and value creation: evidence from US bidders' returns

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Abstract

This paper investigates the relationship between Fintech M&A activity and bidding shareholders' value creation. With this aim in mind, a sample of 54 M&A deals having as acquirer a US listed company and as target a Fintech firm is analyzed. The research project applies the event study methodology to assess the acquiring investors' stock market response around the date of a M&A announcement involving a Fintech seller. In addition, a multivariate regression analysis has been performed to test whether there are some contingent elements influencing the outcome of a Fintech M&A deal. First, the study provides evidence that bidders are subject to negative and significant abnormal returns in the 21-days event window around a M&A activity. This negative effect is favoured by some deal and firm-specific characteristics such as a larger size of the acquirer, a full acquisition and a target involved in the digital payments sector. On the other hand, factors like the Industry relatedness, explained by the belonging of the acquirer to the financial services industry or specifically to the Fintech sector, and the tax regime of the acquirer results to be beneficial for the outcome of the deal.

Executive Summary

The financial services industry has recently faced a period of dramatic developments due to a rapid increase in digitalization. This new digital landscape has favoured the advent in market of Fintech companies, firms that use innovative solutions to provide financial services, with the introduction of new technologies and products such as blockchain, cryptocurrencies, crowdfunding, peer-to-peer lending etc. Therefore, financial institutions has started looking at these novel companies not only as a threat, but also as an opportunity to strengthen their businesses and incorporate innovation. Thus, the number of Fintech M&As has increased sharply year by year from 2014 to the present across the different regions, as the interest on acquiring their technological know-how has enhanced among investors.

The purpose of this study is to assess whether deals involving a Fintech company as target are able to create value for the bidding company's shareholders. To achieve this, the event study methodology has been applied to a sample of 54 M&A transactions executed by US publicly traded acquirers and having as targets companies strictly belonging to the Fintech industry. Furthermore, multivariate regressions have been performed in order to investigate the contingent elements potentially responsible for the financial performance of the bidder.

Overall, the results appear to be fairly aligned with evidences from precedent literature. By studying the acquirer's CARs on a 21-days event window around the date of the announcement, and the related overall CAARs for the sample, it is possible to conclude that returns for the bidding companies are significant and negative. The multivariate regression analysis depicts how, in accordance with the *Size effect hypothesis*, transactions that have as acquirers larger firms imply a worse shareholders' stock market response. This may be explained by the lower growth potential intrinsic in bigger companies or by the hubris hypothesis. In the same way, full acquisitions tend to influence negatively the bidders' returns. In fact, 100% deals could bring possible integration issues due to the disruptive nature of Fintech firms. On the other hand, partial acquisitions are better seen by investors as this could be a way to get the new technologies in a less harsh manner. In addition, acquiring shareholders' returns are lowered by the target being

involved in the digital payments vertical, since the market could be skeptical that, due to the similarity with the solutions already offered by banks, a digital payment acquisition could lead to cannibalization.

Conversely, the effective tax rate of the bidder is one of the factors that could enhance the value created through Fintech M&As since acquirers might be able to lower their taxes due to the extraordinary tax incentives guaranteed in many countries to Fintech start-ups. To conclude, the present study endorses the *Industry relatedness hypothesis* that states that deals involving firms belonging to similar sectors tend to be more beneficial for the acquirer due to the potential synergies that could arise. This argument is verified in both cases of an acquirer involved in general in the financial services sector and specifically in the Fintech industry.

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TABLE OF CONTENTS

List of Tables

List of Figures

List of Abbreviations

AR – Abnormal return

CAAR – Cumulative Average Abnormal Return

CAPM – Capital Asset Pricing Model

CAR – Cumulative Abnormal Return

EMEA – Europe, Middle East and Africa

ER – Expected Return

EU – European Union

HAC – Heteroskedastic and autocorrelation consistent

lnTA – Logarithm of Total Assets

M&A – Mergers and Acquisitions

MB – Market to Book

OLS – Ordinary Least Squares

US – United States

1. INTRODUCTION

To accomplish their strategic objectives, companies often employ mergers and acquisitions. M&As are one of the typical tools of the market for corporate control, happening when one legal entity results from the combination of two legal entities' assets and liabilities. Clearly, they are a major area of study in corporate finance, as a large part of the present literature has attempted to investigate the determinants and the effects of such transactions.

In the mergers and acquisitions context, there is typically a buyer, the acquirer or bidder, and a seller, also called the target. The two main mechanisms that allow a change in ownership of a public corporation are the acquisition by another company or group of individuals or the merger of the two firms. In both situations, the acquirer purchases the stock or the existing assets of the seller either for cash or shares of equivalent value through a mechanism called takeover.

Generally speaking, there are several advantages connected to M&As. Common reasons to conduct a merger is to achieve inorganic growth, surging the market share through the inheritance of clients from company being acquired or the drive to purchase firms beyond the company's business line, achieving diversification. M&As could also be explained by the management's sentiment that the financial conditions are favorable to perform a transaction, such as during a merger wave, or when they believe an inadequately managed company is mispriced. Further, determinants like managerial hubris, exploitation of foreign capital or tax considerations might be other motives behind M&A activity. To conclude, the motive most often mentioned in literature is synergies realization. Synergies are achieved when the value generated by the combination of the two entities is higher than the values of two stand-alone companies involved in the M&A activity.

Nevertheless, due to the unique nature of the companies involved, the reasons for M&As are very different from one deal to another. Hence, most researches related to mergers have focused their analyses on the impact rather than motives behind the acquisitions. Regarding this, the majority of the literature analyzes the effect that the transaction has on the acquirer and target short-term performance through an event case study, by looking at the bidder's Cumulative Abnormal Returns (CARs) around the date of the M&A

announcement. In addition, they usually investigate which factors enhance or lower this effect on shareholders' wealth through a multivariate regression analysis.

Therefore, the aim of this paper is to assess whether the engagement in M&A activity creates value for the acquirer's shareholders. In particular, the current thesis follows the aforementioned empirical methodology by focusing specifically on Fintech mergers as the Financial Technology industry is nowadays one of the hot trends in the market. Thenceforth, the research investigates the drivers of the wealth generated for investors through the M&A announcement by performing a multivariate regression model.

After the financial crisis, the financial services industry has experienced dramatic technology-driven developments. Due to the information-intensive nature of the financial services industry, the influence of technological innovation on the sector has been a constant of last decade. Nevertheless, this novel digital landscape opened to new players the possibility of entering the market.

The peculiarity of the recent Fintech revolution, that distinguishes it from past developments of the banking sector, is given by a faster than ever pace at which new technologies are tested and implemented. In addition, it is indeed significant that most of changes are happening from outside the financial services industry, since new-born start-ups and well established tech companies are trying to disrupt the incumbents. Their approach involves the introduction of new products and technologies, increasing significantly the competition in the market. As of February 2021, the number of financial technology start-ups in the Americas, the region where the phenomenon is more diffused, is 10,605, whilst in the EMEA and the Asia Pacific region there are respectively 9,311and 6,129 Fintech firms.[1] Further, the advent of these new actors has also be favored by increased lack of trust by customers towards financial institutions subsequent to the recent financial crisis. In addition, a rising confidence in innovation and digitalization led to a shift from a centralized authority to an increase in participation in the creation of business ideas and opportunities, bringing to disintermediation of financial services industry and the active participation of individuals into finance through new financing products such as the blockchain, cryptocurrencies, crowdfunding, peer-to-peer lending.

[1] Data Source: Statista

Hence, based on their reactiveness to the new environment and their ability to adjust their business models and strategies accordingly, financial services could consider Fintech companies either as a competitive threat or as an opportunity. Considering the appeal of the novel business models, in the recent years traditional banks and other well-established financial institutions have increasingly expressed interest in acquiring Fintech companies. In fact, since 2015, the year Fintech entered the mainstream, the new companies started to be seen not just as a disruptors for existing financial institutions, but also as a trigger for large banks to embark their own innovation.

Therefore, Fintech M&A increased substantially year by year across different geographies, giving rise to mega deals. The peak was reached in 2019 with total deal value of Fintech-focused M&As reaching $135.7bn across 2,293 deals, with 46.2% of transactions involving the Americas[2]. Further, in 2020, financial services industry was shaped by an additional sudden acceleration in digital adoption, forced by the Covid-19 pandemic. Hence, in few months firms of every shape and size were strained to make developments to their technology and business models in a way that usually would have taken years.

Thus, considering the aforementioned disruptive influence of Fintech on financial services, and the willingness to focus the attention on the consequences of M&A announcements and their drivers, one of the two main research questions of this thesis is whether M&A deals involving Fintech companies as targets demonstrate to create value for the acquirer shareholders. The event study methodology is utilized to assess the latter, by analyzing the Cumulative Abnormal Returns for the bidders' shareholder around the announcement of a transaction involving a Financial Technology company in the side of the seller firm. On the other hand, the other crucial research question focuses on the potential determinants that could enhance or worsen these abnormal returns. Specifically, the purpose of the thesis is to assess whether there are some deal characteristics, as well as firm-specific features of the acquiring and targets companies, that enhance the effect of a M&A with a Fintech company, by contributing to generate more or less value for the bidder' shareholders.

[2] Data Source: CB Insights

To answer these questions, an empirical analysis is conducted following the previous studies from Dranev *et al.* (2019) and Cappa *et al.* (2020), which are among the first having analyzed the drivers of the impact of Fintech M&As on the acquirer. The present thesis differentiates from them by focusing entirely on short term returns, but simultaneously expands the scope of research by using a more recent sample of deals and by introducing new determinants.

Indeed, the tested features comprise the *Size* of the acquirer (measured by the total assets and the Market to Book ratio), to verify whether a smaller bidder will experience higher abnormal returns such as in precedent studies; the deal size; the acquirer's effective tax rate, as it should decrease due to Fintech incentives. In addition, some dummies are introduced to test if more value is created through partial or full acquisition and which targets' Fintech subsectors lead to a more intense stock price reaction. Additionally, the *Industry relatedness hypothesis*, also found in precedent literature such as Beitel *et al*. (2004) and Cybo-Ottone *et al.* (2000) is tested in order to verify whether the abnormal returns are higher for industry-related acquirers*,* through the coefficients *Industry*, *Bank* and Fintech.

This thesis is organized as follow. In the Second Section, there will be a careful overview of the existing literature regarding value creation through M&A activity and its determinants, with a focus on deals involving financial services industry and Fintech companies. Then, the Third Section will describe the methodology employed, providing a first sight of the multivariate regressions model utilized, besides a description of the variables included in the model. The event study approach employs Cumulative Average Abnormal Returns with respect to the MSCI US index as a market benchmark in order to assess the value created for the acquiring firm. The CARs are then the dependent variable tested in the cross-sectional regression to investigate which features influence them.

Then, the Fourth section will carefully illustrate the data collection, presenting the summary statistics of the sample. More precisely, a sample of 54 M&A deals performed by US acquirers between 2014 and 2020 has been analyzed by using the event study methodology and the multivariate regression analysis. Transactions have been selected by choosing as target companies only firms strictly belonging to the Fintech sector in its different verticals (Digital Payments, Personal Finance, Fundraising). The Fifth Section

will report and discuss the results of the empirical analysis executed. Finally, in the Sixth Section, there will be a summary of the main results obtained and their implications, as well as suggestions for potential future developments of the research.

2. LITERATURE REVIEW

The subsequent section depicts the theoretical framework of the impact of Fintech mergers and acquisitions on the acquirer and the contingencies that make acquisitions beneficials for the bidder company. In order to clearly structure the frame of reference of this dissertation, this chapter begins with giving some background about M&As and the motives behind deal activity, to then present empirical evidence regarding M&A value creation measured by CARs and its determinants studied through multivariate regression analysis in a wide context. In the end, it focuses more specifically on the effects of the M&A activity involving financial services and particularly on the two studies on Fintech firms that are the roots of this dissertation. Thus, this review, by presenting researches following both the event study and cross-sectional regression analysis methodology, provides the basis that eventually builds up the logical reasoning of the tested hypothesis.

2.1. Definition of M&A

Mergers and acquisitions occur when two legal entities combine together to give rise to one sole legal entity.
In fact, the name 'M&A' describes the two main mechanisms allowing for a change in ownership of a public company:

- the acquisition by another firm or group of individuals
- the merger of the two companies

The target's shares or assets are purchased by the bidder either for cash or through the issuance of new shares in each of the circumstances.
Based on the possible relation between buyer and seller and the method of payment, there are different kinds of transactions. A horizontal merger occurs when the target and the acquirer are in the same industry, while when the target is supplier or client of the buyer, the merger is vertical. In addition, there is a conglomerate merger when the two industries in which the companies operate are unrelated. Nevertheless, conglomerate mergers, while popular in the 1960s, are nowadays not appreciated by shareholders given the difficulties in creating value through the combination of two dissimilar businesses.

Further, there are different kind of transactions depending on whether the bidder offers the target shareholders stock or cash as payment for target shares. When the target receives stock, the deal is usually called a stock swap, since the target shareholders are swapping their old stock for new stock in either the acquirer or the newly created merged firm. The consideration paid can be truly multifaceted, including debt instruments, options, and mixes of any of these with cash and/or stock (Berk and De Marzo, 2014).

2.2. M&A waves

The M&A market is also characterized by peaks of deals flow followed by years of few transactions. This phenomenon is called merger waves.

M&A activity follows the economic cycle, being greater during periods of economic expansion, correlating with bull markets (Harford, 2005). In fact, according to the neoclassical theory based on Gort's studies (1969), merger waves are usually a response to economic shocks like a technological innovation, developments in the regulation framework or the advent of substitute products (Harford 2005).

To the contrary, the behavioral hypothesis, based on the observation of positive correlation between stock valuation and M&As, suggests that mergers flows happen as reaction to companies being mispriced in the market. In fact, in these situations, management is inducted to exploit the overvaluation of their companies' stocks in order to purchase the shares of firms that are either undervalued or less overvalued in the market (Shleifer and Vishny 2003; Rhodes-Khopf and Viswanathan 2004).
Mergers have clustered in six multiyear waves occurring since the end of the 19th century, characterized by different specific features (DePamphilis, 2017):

1. *The First Wave (1897-1904): Horizontal Consolidation*
   This period has been characterized by the creation of large monopolies through mergers between competitors in the mines, oil, telephone, railroad and infrastructures industries, in particular in the United States, giving birth to giants such as General Electric, Eastman Kodak and DuPont. M&A activity was pushed by a drive for

efficiency and technological developments. The first wave was stopped by the institution of antitrust laws and the 1904 stock market crash.

2. *The Second Wave (1916-1929): Increasing Concentration*
   The second merger wave reinforced the industry concentration started with the first wave, focusing on vertical integration such as in General Motors and IBM cases. The wave was stopped by the financial crisis of 1929, the subsequent Great Depression and the passage of the Clayton act to regulate monopolistic practices.

3. *The Third Wave (1965-1969) : The Conglomerate Era*
   Driven by the economic boom, the conglomerate wave was characterized by a sharp increase in conglomerate mergers, as changes in anti-trust rules limited vertical and horizontal M&A activity. Since in most of the cases synergies were not achieved, this conglomeration trend shrank rapidly.

4. *The Fourth Wave (1981-1989): The Retrenchment era*
   During the 1980s, many major conglomerates generated during the previous wave were divested. Bad results of conglomerate mergers led to the fourth wave, peculiar for the tendency of hostile takeovers In addition, during the first half of the ‘80s there was rise in cross-border M&As in Europe in sight of the common market and very active U.S. multinationals at a global level. In the second half there have been many leveraged buyouts, often financed with junk bonds. The financial crash caused by the high number of these bonds and the loan bank crisis caused the end of this wave.

5. *The fifth wave (1992-1999): The Age of Strategic Megamerger*
   The wave consisted in the longest economic expansion and stock market boom in US history, favored by the technology revolution, deregulation, lowering of trade barriers, globalization and the consequent tendency toward privatization. There was a record of both number of deals and transaction values with skyrocketing offer prices, involving companies such as Exxon and Mobil, AOL and Time Warner, Chrysler and Daimler. This M&A wave ended due to Internet bubble and the following recession that hit the United States in 2001, weakening global growth.

6. *The Sixth Wave (2003-2008): The Rebirth of Leverage*

   This period was characterized by sharp increase in highly leveraged buyouts. Deals were mainly financed using syndicated debt, that is debt acquired by underwriters in order to resale it to investors. Lenders are incentivized to rise the lending volumes in order to gain fee income through the acceptance of riskier loans. After loans are sold to other parties, the original lenders are prone to lower the monitoring. This system, jointly with extremely low interest rates derived by exceedingly accommodative monetary policies, caused disproportionate lending and favored the overpayment of target companies in M&A deals. The wave came to an end due to the global credit crisis in 2007 and the following crisis.

2.3. M&A motives

One of the most significant features in M&As' related research undoubtedly involves the reasons that lead companies to perform a transaction. Several academics have employed remarkable efforts in elaborating motives for mergers, since the intention behind the decision to acquire another company determines how the process is conducted, the post integration phase and therefore the successful implementation of the transaction.

A takeover could be motivated by different objectives. Of these, the most often mentioned in literature motivation for mergers is synergies realization. (Ferreira et al., 2014). Synergies are achieved when the value generated by the combination of the two entities is higher than the values of two stand-alone companies involved in the M&A activity. The typical perspectives from which synergies are considered are financial and operational (Hitt et al., 2009).

Operating synergies include usually economies of scale and economies of scope. The former involves a reduction in the average cost per unit, through an increase in the volume of the production, whereas the latter means savings in terms of total costs due to the production of a wider assortment of products. Further, through the merger of two firms, it is possible to lower redundancies in terms of departments and processes, enhancing profit margins. In addition, another operating synergy is related to the transfer of technical knowledge and resources, relevant factors for shareholders value creation (DePamphilis,

2017). In fact, entity through mergers the two firms could share their know-how, professional skills and knowledge of the management and the employees (Haspeslagh and Jemison, 1991). On the other hand, financial synergies permit to exploit the financial leverage, to lower cost of capital, achieve tax benefits or to enhance cash flow stability, reducing bankruptcy probability (Higgins and Schall, 1975).

Further, a common reason to conduct a merger is to achieve inorganic growth, surging the market share through the inheritance of clients from company being acquired. In industries that suffer from saturation, this aspect is particularly relevant. Another typical motivation is the drive to purchase firms beyond the company's business line, achieving diversification. M&As could also be explained by the management's sentiment that the financial conditions are favorable to perform a transaction, such as during a merger wave, or when they believe an inadequately managed company is mispriced (Franks et al., 1996). To conclude, determinants like managerial hubris, exploitation of foreign capital or tax considerations might be other causes of M&A activity (DePamphilis, 2017).

2.3.1. Motives for M&As in the financial services industry

Since banking is a particular sector, it is relevant to shade light on the specific determinants that lead to mergers in the industry (Hankir et al. 2011; Caiazza et al., 2012). Actually, the reasons why transactions occur in the financial services industry are several. However, the rationale behind involve increased performance and efficiency (Campa et al., 2006, Cybo-Ottone et al., 2000), usually achieved through restructuring leading to a better revenue-costs management (Berger, 2000).

Moreover, a typical reason for mergers involving financial services is linked to the desire of dimensional growth through market share expansion (Hankir et al., 2011). Another traditional trait of the industry is to exploit M&A activity to save distressed financial institutions, as usually regulators solicitate healthy and efficient banks to rescue more suffering operators to preserve the market financial stability (Beltratti et al., 2013).
Further, as aforementioned for companies in general, M&A activity could also be brought by opportunistic motivations of managers, as a defensive tactic or to be line with a merger wave (Cappa et al. 2020).

2.3.2. Motives for Fintech M&As

Empirical evidence highlights how acquiring technology might give rise to significant synergies. In fact, in accordance with Al-Sharkas, Hassan & Lawrence (2008), most of efficiency gained through mergers and acquisitions in the banking industry is the result of the possibility to exploit technologies. Indeed, the authors' results show how the achievement of improvements in technology was the main reason behind the superior productivity growth realized by merged financial institutions compared to non-merged ones. Therefore, from the empirical analysis it is possible to identify an economic rationale for mergers in financial services, which might push further the traditional banking institutions towards the seek of innovation through acquisitions (Al-Sharkas et al., 2008). Thus, considering the potential for synergy realization, it might be a reasonable solution for financial institutions to acquire FinTech firms in order to innovate and increase their efficiency.

Furthermore, according to Ma and Liu (2017), bidders acquire Fintech companies to enhance their technological know-how either to expand into new industries or to update their existing technologies. Indeed, rather than using massive resources to invest into research and development, a large acquirer might choose to embody the know-how of a smaller and more innovative target company.

Moreover, the importance of technological integration through M&A activity in the financial services industry has been analyzed by Burke and Kovela (2017). The authors suggest that the post-M&A synergy realization is crucially determined by a successful technological integration. In particular, issues in achieving an effective IT integration may prevent the value creation that could have been generated by an otherwise satisfactory transaction. Thus, in the event that technological capabilities are not integrated properly in order to generate appropriate synergies, this could give rise to a post- merger crisis, providing a route to acquisition aftershocks (Burke *et al.,* 2017).
The aforementioned hubris hypothesis might also be feasible for Fintech mergers. In certain contexts, managers underestimate the necessary resources to realize technological integration and the related synergies. Further, in the case of the acquisition of early stage high-tech start-ups, premiums might be disproportionate considering the absence of

historical figures and the substantial uncertainties related to future developments of the company (Festel *et al*., 2013)

Nevertheless, due to the unique nature of the companies involved, the reasons for M&As are very different from one deal to another. Hence, most researches related to mergers have focused on the analysis of the effects rather than determinants.

2.4. Shareholders' value creation through M&A activity

In order to assess the effect of a transaction, one of the most extensively researched matter has been the verification of whether the deal creates value for the companies involved and their shareholders.

Regarding this, most of authors analyze the impact that the merger has on the acquirer and target short-term performance through an event case study. The event study methodology relies on the idea of abnormal returns, measured as the difference between raw stock return and the required return given by a model such as the CAPM or a market index around the date of the M&A announcement.

In literature, when authors want to assess the shareholder wealth generated as a response to a M&A announcement there is generally a focus on the target companies. Indeed, there is harmony that deals usually create value for the target firms, as both in United Kingdom and United States markets and in continental Europe target shareholders can benefit from large abnormal returns (Bauguess et *al*., 2009, Goergen *et al*., 2004). It could happen that these abnormal returns are even perceived before the day of the announcement as result of bids anticipations originated by rumors, leaks of information or insider trading activity. That is why often studies consider different event windows around the date of announcement (Beltratti and Palladino, 2013).

Nevertheless, the effect is not that clear around bidder performance as it is for target companies. In fact, existing literature is not uniform as most studies illustrate abnormal returns close to zero, but some give slightly positive results (Moeller *et al*., 2005; Schwert, 2000), whereas other empirical evidences show negative returns (Andrade *et al*. 2001). However, this empirical study will focus on the acquirer's returns as the majority of

Financial Technology firms, that represent the targets in this specifical analysis, are not publicly traded.

2.4.1. Results of the multivariate regression analysis: which factors determine the CARs?

Most of the authors do not limit their research to the investigation of whether value is created through a M&A transaction, but it appears indeed more interesting to focus the attention on the contingencies that may influence those returns, that might be studied performing a multivariate regression analysis having CARs as the dependent variable and other factors related to the firm or the deal as regressors.

In fact, there are some features generally linked to positive returns such as having a private company as target (Fuller *et al*., 2002; Golubov *et al*., 2012). In accordance with Faccio, McCornell and Stolin's study on European mergers, bidders' returns for deals involving a public target have returns slightly negative and close to zero, whilst when the seller is private returns are modestly positive (Faccio *et al.,* 2016).

In addition, the returns for the targets are usually higher in hostile takeovers, while friendly takeovers provide better performance for bidders (Franks *et al.,* 1996). Moreover, one of the crucial determinants of the bidder performance is the method of payment chosen for the transaction. According to Moeller *et al.* (2004) and Andrade *et al.* (2001), the returns are higher for all-cash deals compared with equity acquisitions. Reason is that usually equity purchases signal that managers believe the target's stocks are overvalued, causing downwards price adjustment in the market.

Another main feature in determining the returns, also crucial for the analysis at the center of this dissertation, is the strategy underlying the acquisition. In fact, transactions in which acquirers and sellers operate within the same industry are observed to give rise to higher returns for the bidders with respect to diversification strategies, in line with the *Industry relatedness hypothesis* (Hoberg *et al.,* 2010).

Further, in precedent researches usually there is evidence of a *Size effect*, under which returns are lower for bigger bidders (Schwert, 2000; Faccio *et al*., 2016). In particular, in

Faccio *et al.* (2016), the coefficient related to the market capitalization, representing the *Size* factor, results to be negative and significant, as smaller firms are able to generate more wealth after M&A announcements to their higher growth potential. The same hypothesis is tested in the present paper.

To conclude, another determinant of the CARs that is widely tested in literature refers to the impact of domestic versus cross-border deals on the stock market. Whilst target firms usually experience larger abnormal returns in cross-border deals than in domestic ones (Conn *et al.*, 2005), the opposite happens for acquiring shareholders. Reason behind are market anticipations of potential regulatory and cultural dissimilarities between the two firms that could cause issues in the integration phase (Schoenberg *et al*., 1999).

2.5. CARs and multivariate regression analysis' results related to M&A activity in the financial services industry

Since the aim of this study is to investigate the impact on the acquiring firms and particularly on the financial institutions -through the *Industry relatedness hypothesis*- of Fintech M&A activity and its determinants, the attention will now focus on the evidences from previous literature involving the financial services industry, to then concentrate specifically on Fintech deals.

	Year of publication	Authors	Sample period	Sample size	Acquirer's Cumulative Abnormal Returns	Geographical area	Determinants tested in the Multivariate Regression Analysis
financial services	2000	Cybo-Ottone et al.	1987-1998	54	2.19%	Europe	Scope; Domestic vs cross-border; Size; Legal
	2001	De Long	1988-1995	280	-1.68%	United States	Scope; Debt rating; domestics vs cross-border; Efficiency; Market size; Cash vs Stock
	2004	Beitel et al.	1985-2000	98	0.24%	Europe	Domestic vs cross-border; Relative asset size; Diversification; Efficiency; EPS; Market to Book; Cash vs Stock
	2013	Beltratti et al.	2007-2010	139	0.99%	Europe	Cash vs stock; friendly vs hostile; domestic vs cross-border; Size; Efficiency
FinTech	2019	Dranev et al.	2010-2017	178	1.25%	United States, Canada, Europe, China, India	Market to Book value; Total Assets; Tax,; DealSize; R&D; Fintech sectors; cross-border vs domestic; finance acquirer
	2020	Cappa et al.	2016-2020	28	-0.02%	United States, Europe	Full vs partial acquisition; Payment vs other fintech sectors

Table 1 - Review of previous literature on financial services and Fintech M&As.[3]

[3] Source: Personal elaboration

As the period before the crisis (1990-2007) has been characterized by an unprecedented level of consolidation among financial institutions, several studies investigated the acquirers abnormal returns following merger announcements in the industry. *Table 1* depicts how the results of empirical analyses on the value created for the acquiring bank following a merger are discordant and the contingent factors considered in each research. Based on Cybo-Ottone and Murgia (2000)'s event study analysis on the European banking industry M&A activity, covering 54 M&A deals happened between 1998 and 1997, of which 18 cross-products transactions involving expansions in insurance or investment banking, abnormal returns are calculated using both Datastream general market index and Datastream Banking sector index and recurring to (-1, +1), (-2, +2), (-5, +5), (-10, +10), (-20, +20) event windows. Regarding the drivers of the returns, studied through multivariate regressions, in contrast with the precedent literature focusing on the United States markets, positive CARs are experienced with announcements of domestic horizontal deals among banks and in cases of banks product diversification into insurance. On the other hand, mergers with securities companies and cross-border activities did not provide positive gains for shareholders. The different conclusions of the study, that focuses on European mergers, with respect to previous ones conducted in the United States banking market, are motivated by considering the dissimilar structure and regulatory framework of the EU financial industry.

De Long (2001), through the study of 280 US domestic mergers happened between 1988 and 1995 involving public traded firms of which at least one was a bank, investigates recurring again to a cross-sectional regression which deal-specific characteristics of bank mergers could enhance shareholder wealth and which could not, classifying them based on activity and geographic similarity (focus) or dissimilarity (diversification). The average result, considering both groups, was a negative abnormal return of -1.68% for the bidder. Nevertheless, shareholder value was enhanced by both activity and geography similarities between companies. In fact, the market does not appear to react positively to mergers that lead to a diversification of either the activities or the region where the firm operates, as it would create diseconomies of scope.

Further, examining 98 large mergers of European acquiring banks from 1985 to 2000, Beitel *et al*. (2004) assesses preconditions for value creation in financial services' deals, in order to analyze the drivers of M&A success related to the industry, exploiting multivariate regression analyses and considering the following three determinants: the product/activity focus, the geographic focus and the relative asset size of the target. Results of the event study report close to zero returns for the bidder and confirm that the success of the buyers depend mostly on the target's choice. In line with the previous findings, there is a predilection of stock markets for focused deals rather than the seek for diversification. For the acquirer, however, the relative size of the target does not seem a significant determinant of value creation although deals with smaller targets seem to be more effective drivers. Nevertheless, bidders result to be more successful when they acquire qualitatively better managed sellers /with higher Market to Book ratio), that simultaneously are able to guarantee both synergies and profit efficiency perspectives. The conclusion of the study is that the shareholders' reaction to European M&A deals announcement involving banks as acquirers might be partially predicted, providing a useful tool to the financial institutions management that would like to lead the banks to further grow.

As the financial crisis has influenced the banking environment worldwide, Beltratti and Palladino (2013) report in their empirical analysis the results of the study of a sample of 139 deals involving the European banking sector between 2007 and 2010, to investigate the acquirer's stock price response to both the announcement and the completion of transactions happened straight after the global banking collapse. The study utilizes both a short 3 days event window (-1, +1), in order to assess the direct impact of the news, and a longer period (-1, +10) to understand which features are responsible for the abnormal returns. Regarding the contingent factors causing the returns, analysed through a multivariate regression, in spite of results of the majority of existing studies, a cash acquisition is observed to generate negative abnormal returns, with an even more marked effect for large deals (1.6% lower). This is due to the fact that, especially during a crisis, to consume the bidder's liquidity, shortening its distance to default, is perceived by the market as risky. In addition, in line with the abovementioned hypothesis in Section 2.1.1., bigger firms tend to experience lower returns, therefore a *Size* effect is perceived. To conclude, in accordance with the aforementioned previous literature, both friendly

takeovers and domestic deals provide positive abnormal returns for the acquirer. In addition, the market response appear to be higher for more efficient banks, such as less leveraged and higher profitable financial institutions.

2.6. Shareholders' value creation through Fintech M&A activity

2.6.1. Dranev *et al.*'s study on Fintech M&A

Although the existing literature has widely examined the two areas of study of M&A and Fintech on a stand-alone basis, since the Fintech sector is currently in an early phase, there are still few empirical analyses on the M&A activity involving financial technology firms.

In particular, the recent research conducted by Dranev *et al.* (2019) on the drivers of acquiring firms' stock price reaction to Fintech M&A activity finds its roots on previous studies related to mergers involving high-tech firms. Previous evidences discovered by Koehers and Kohers (2000) suggest how mergers generate positive abnormal returns in the short-term for the acquiring companies due to the technological advantages provided.

Given this assumption, the market response to the company's aim to enhance its technology development is consequently positive. Therefore, Dranev *et al.* 's purpose is to investigate whether a Fintech M&A announcement could encourage investors to purchase bidders' shares in the short-term by performing an event study and thus analysing the CARS. In addition, the scope of Dranev's work is to explore the specific factors leading to value creation in Fintech mergers through a multivariate regression analysis. The selected sample is composed of 178 deals over the period 2010-2018 across different geographies, having as acquirers public firms and as targets Fintech companies operating both in the finance and IT sectors according to Zephyr classification. The sample includes firms from both developed countries such as United States, Canada and Europe and emerging countries like China and India.

2.6.1.1. Dranev *et al.*'s CARs analysis

Through an event study methodology conducted on several event windows to gauge the sensitivity of the obtained results, the authors calculate CARs adopting market model, market adjusted model and mean adjusted returns methodology. In addition, the study analyses long-term effect of the acquisition by observing Buy-and-Hold Abnormal Returns over a 250 days event window.

The empirical results find significant positive average abnormal returns after Fintech M&A activity in the short-term, consistently with previous studies on mergers involving tech firms, confirming that investors perceive financial technology mergers as value-creative in a short-term frame. In particular, realized CARs are respectively 1.25%, 0.87%, 0.84% and 1.02% for (-10, +10), (-3, +3), (-1, +1) and (0, +1) days event windows. Nevertheless, in a longer frame of 250 days deals do not appear to create value for acquirers' shareholders. This poor performance in the long run is motivated by author referring to the hubris hypothesis, that states that management is prompt to pay a high purchase price for a company overestimating the integration efforts needed after the transaction.

2.6.1.2. Dranev *et al.*'s multivariate regression analysis: determinants of the returns

Further, in order to investigate the contingencies leading to the abnormal returns, the model specifies several control variables to include in the regression based on previous empirical studies. Thus, the employed regression model, that represents the main reference for the regression performed in this paper, results to be:

$$CAR_i = \beta_0 + \beta_1 MB_i + \beta_2 lnTA_i + \beta_3 Tax_i + \beta_4 DealSize + \beta_5 RD_i + \beta_6\, Industry_i + \sum^4 B_j Dummy_j + \varepsilon_i$$

MB is the target's ratio of market capitalization to book value, *lnTA* is the natural logarithm of acquiring company's total assets, tax is the effective tax rate of the bidder, *DealSize* is the ratio of the deal value to the market capitalization of the acquirer, *RD* the acquiring company's expenses for R&D, industry dummy that shows value of 1 if the seller belongs to the finance sector and 0 otherwise, and to conclude specific dummy variables to divide targets into four different categories: "money transfers and trade

credit", "brokers and dealers' services", "accounting, research and advisory services" and "consumer credit" sub-sectors, respectively.

Features such the cross-border nature of the deal, whether the acquirer was from a developed country or not have been tested in order to explain the response of investors to the deals announcements, considering a (0, +1) event windows as it results to be the more significant timeframe. Both domestic and cross-border Fintech M&As with a bidder from a developed county generates higher stock returns of 1.08% compared with companies from emerging countries. This is due to both the fact that an advanced environment might support the implementation of the target's technology and as signal that expansions strategy is positively perceived by investors. Evidences suggest how one of the crucial motives behind Fintech mergers is the possibility to get access to advanced technologies as the returns are higher for companies not involved in the Fintech sector. This is supported by the fact that acquisitions result to be more beneficial, with CARs of 1.19%, for buyers with no prior experience in Fintech M&A.

In addition, shareholders' reaction results to be more positive when the acquirer invests heavily on Research and Developments, indicating their tendency for successful post-deal tech integration due to capability of implementation of new technologies and therefore more growth potential. The impact of the factor related to the *Effective tax rate*, included as a proxy for the regulation of the Fintech sector, appears to be significant at 10% level. This positive effect can indicate that shareholders think that bidders of financial technology firms will decrease the amount of taxes they will pay, as different countries are introducing incentives to invest in Fintech. Further, in line with the previous studies on the *Size* effect mentioned in Section 2.1.1 and 2.2, since the impact of the *lnTA* variable is negative and significant at 10% level, a smaller bidding company will have higher stock market reaction after a Fintech M&A announcement.

In conclusion, the study illustrates how stock market performance is better for bidders operating in the financial sector (+0.018) at 10% significance level, confirming the higher level of integration due the realization of synergies between banks and Fintech companies (Dranev *et al.*, 2019).

2.6.2. Cappa *et al.*'s study on Fintech M&A

Further, Cappa *et al.* (2020)'s empirical analysis enlightens the contingencies that could make an acquisition successful for the acquiring bank in terms of stock market reaction to the deal announcement, exploiting a (0, +2) three-day event window. Using CB Insight database, the authors construct a sample identifying Fintech companies acquired by banks between 2016 and 2020 in United States and Europe.

Cumulative abnormal returns are calculated comparing the actual experienced returns of the bidder with the returns of the MSCI index. The study is then developed through a multiple regression analysis to assess the performance of the bidder in different conditions.

2.6.2.1. Cappa *et al.*'s multivariate regression analysis: determinants of the returns

Two dummy variables, representing one of the main features tested also in the present paper, are inserted to distinguish between the effect of Partial and Full acquisitions and another binary variable help differing between deals where the target is a Fintech company in the payment sector or not:

$$CAR_i = \alpha_0 + \beta_1 Dummy\_Full_i + \beta_2 Dummy\_Payment_i + \varepsilon_i$$

Albeit negative effects of -0.016 have been observed for full M&As of Fintech companies at 10% significance level, partial investments show better results. Indeed, partial acquisitions might be a way to exploit the benefits of Fintech firms without facing the issues related to integrating diverse business models, giving the market a signal of commitment towards innovation. Full M&As imply instead a quicker and more disruptive integration, that could find acquiring banks unprepared, implying negative expectations on future profits and a negative stock price response. In addition, partial acquisitions of companies involved in Personal Finance or Fundraising activities seem more value creating, illustrating positive abnormal returns, if compared with partial deals in the Payment sector, whose result is effect on CARs of -0.018 at 5% significance level.

Along with the aforementioned motives for Fintech acquisitions, focusing on enhancing the bidders' technological developments, these previous evidences give rise to the main question of this dissertation: whether or not a Fintech acquisition may create value for the acquirer and which are the specific factors responsible for this shareholder's wealth enhancement. Thus, the present empirical study will expand previous literature by including some M&A deal- and firm-specific determinants to assess more precisely the boundary conditions that make Fintech deals beneficial for the bidders.

3. FINTECH INDUSTRY OVERVIEW

3.1. What is Fintech

The term ‘Fintech’ stands for ‘financial technology’ and derives from the union of the words Finance and Technology. The expression was with high probability first mentioned at the beginning of the 90s by the chairman of Citigroup Joh Reed, as one of the project of the company back at the time was called ‘Fintech’ (Puschmann, 2017).

Since that moment, Fintech has indicated the offering of financial services by using innovative and technological solutions.

To be more specific, Financial Stability Board (FSB) defines Fintech as “technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services”(Cowan *et al.*, 2021).

Given the manifold of recently new entrants with different features in the financial services industry after the financial crisis, Zetzsche et al. (2017) made an initial classification based on two different sets:

- The Fintech (Financial Technologies) companies, born with the exclusive purpose to provide financial services exploiting advanced technology solutions leveraging digitalized business models;

- The TechFin firms, formerly operating in the technology industry that successively expanded their businesses in financial technology services.

Therefore, the new financial technology landscape is not only characterized by emerging and growing start-ups, but correspondingly by global giants of the Technology industry such as Amazon, Apple, Facebook, Google and Alibaba.

The main driver of the Fintech revolution have been the development of the IT sector through big data, internet of things and cloud management that helped the banking industry simplifying their processes and introducing new products and services, leading

to a disruption in the business models of the sector by giving birth to alternative models with respect to the ones of financial institutions and insurance companies (Puschmann, 2017). In addition, recently the digitalization of the forms of interaction has led to a reorganization of the activities provided by the financial services industry into the online channels, resizing the physical branches. Despite the fact that since the financial crisis the regulation in the financial sector has increased massively, many regions have loosen the requirements for Fintech start-ups to guarantee their existence in the market.

According to the Financial Stability Board framework (2020), Fintech activities could be catalogued, based on the services offered, into:

- Payments, clearing and settlement
- Deposits, lending and capital-raising
- -Insurance
- Investment management
- Market support

Thus, the services offered space among Crowdfunding, InsurTech, Blockchain, Cryptocurrencies Payment Services, Instant Payment Services, Personal Finance / Wealth Management and Capital Market Tech.

For the scope of the analysis, this paper divides and analyses the Fintech verticals into three main categories:

1. Digital payments
2. Personal Finance (Wealth management and Insurtech)
3. Fundraising

3.1.1. Digital payments vertical

Fintech companies are recognized as belonging to the the digital payment sector when their business model consist in offering new payment methods or money exchange systems, like e-wallets, in-app purchases, money transfer, contactless payment and P2P payments (Cappa *et al.*, 2020). The payment sector is without any doubt one of the most impacted by the improvements in technology. With the sharp increase in the use of smartphones and the other mobile digital tools, digital and mobile payments are becoming widespread as well. Digital wallets or electronic wallets (e-wallets) are one of the most used platforms connected to allow people to make payments by adopting new technologies. In fact, they consent to pay or transfer money to other accounts by only logging-in, without the communication of the data related to the persons that is using the wallet, guaranteeing quicker transactions and simultaneously cutting the fees that are usually connected to payments.

Another tool used as a transaction system are cryptocurrencies, a kind of currency offered solely in their digital configuration. By using cryptocurrencies is possible to make payments instantaneously and exchange money with people based all over the world in possess of the gear necessary to receive cryptocurrencies.

3.1.2. Personal finance vertical

The personal finance category is composed of business that deals mostly with the wealth management, Insurtech and Analytics industries.

The aim of Fintech companies involved in Wealth Management operations, also called WealthTech, is to develop asset management and investment services by exploiting the new technologies in order to provide solutions directly and more efficiently (Cappa *et al*., 2020).

On the other hand, InsurTech companies operate through the development of innovative products with the aim to enhance the present insurance services. Through technology, the insurance industry has been able to guarantee solutions that gives customers higher

transparency reducing the information asymmetries between the parties involved by exploiting big data. In some ways, it could be said that digitalization is shaping the risk management procedures by transforming the way in which risk is assessed and by personalizing the solution methods.

3.1.3. Fundraising vertical

The main systems introduced by Fintech firms to allow people or companies to raise money in order to reach their objectives are crowd funding and peer-to-peer lending.

Crowd funding refers to the use of financial platforms to support the specific projects of individuals or companies through the mobilization of resources. Typically, this micro-financing method is used by investors that help start-ups with the expectations that they will become profitable in a longer time horizon.

Peer-to-peer (P2P), also known as Social Lending, offers people or firms the opportunity to borrow money through an online platform able to match lenders with borrowers. The aim of peer-to-peer companies is to allow to access to financial services in a less expensive way if compared with traditional financial institutions. Peer-to-peer could be seen as a personal loan contract established between individuals with the intermediation of a cheaper third party. One of the advantages related to this alternative method of financing is therefore the lowering of intermediation costs as the rates result to be more favourable than the ones proposed by traditional banks. In this way, the lender obtains a higher interest rate if compared with the one that could be offered by traditional methods such as loans or bonds, but at the same time the borrower has the chance to benefit from considerably lower credit rates.

3.2. Global Fintech trends

Today Fintech phenomenon has long-drawn-out its original purpose, covering the entire range of financial services. The financial technology market has in fact faced an impressive growth in both market size and investments.

Due to COVID-19 pandemic, in 2020 there has been a rapid acceleration in the digital adoption through each feature of life. This gave financial institutions the chance to spread across areas usually not-involved with the industry.

One of the area that has experienced the major growth in the last year is digital banking. In fact, with the spread of the virus across the various regions, it was either forbidden or people preferred the avoidance of commercial banks branches as they were perceived as unsafe. The banking ecosystem has been therefore obliged to reorganize itself by relying more on virtual experiences. This favoured the encumbrance of platforms to manage the finances from the laptops or smartphones. The main goal as providers of digital practices is to recreate the interactions that would usually occur during an in-branch experience at the bank, but making it possible to complete the operations from any place of the world (Pearce et al., 2021).

While the availability of financial services among people located worldwide increased, the security of both providers of services and users increase due to the cyber-risk. This led financial institutions and the other platforms to the adoption of stricter measures and controls to prevent cyberattacks. Banks are currently introducing biometric security procedures in order to simultaneously safeguard consumers' data and guarantee authentication (Khan *et al.*, 2021).

Between 2020 and 2021 there was also an increase in algorithm-driven services, with the purpose to provide users tailor-made investing solutions in line with their objectives and their risk appetite. As above-mentioned in Section 3.1.2., Fintech start-ups are setting in the personal finance space by giving support to people in taking care of their investments.

In finance, the role of regulation and compliance is to ensure that every procedure is realized in a proper manner and in the respect of the existing rules. Regulatory compliance is one of the activities performed in the financial industry that without any doubt is among the more time and resources consuming. Following the financial crisis in 2008, there has been a drastic increase in information requirements by regulator. In this context, RegTech companies allow to save costs and simplify processes and at the same time communicate more detailed information to authorities (Fernandez Espinosa, 2018). RegTech is therefore a new brand of Fintech involved in the organization of the regulatory procedures

with the support of technology, as the term 'RegTech' derives from the words 'regulation' and 'technology'. Given the relevance of regulation on financial services industry, the sector has wide margins for growth. Thus, RegTech firms operate in the field of monitoring, reporting, risk management and compliance by providing technological solutions through Artificial Intelligence, big data, machine learning and clouds, in order to limit the mistakes caused by human perception (Cowan *et al.,* 2021).

3.3. Fintech regulation

One of the main challenge related to the introduction of Fintech is how to collocate them into the actual regulatory framework. It is known that traditionally the financial services industry is one of the of most regulated given their principal role in guaranteeing the stability of the financial markets. However, the regulation of the Fintech sector is currently only at its beginning and it differs geographically among the various regions. There is nowadays an open debate regarding the treatment regulators should assure to this new kind of companies. The main goals of regulators is to achieve the right balance between the promotion of start-ups and innovative systems and the safeguard of the integrity of the economy.

Usually, every activity performed by financial institutions is subject to prudential requirements. After the spread of Fintech companies, no particular amendments have been made to the current regulation. The only rules introduced concern the promotion of amplified competition and the imposition of looser requirements.

Nevertheless, when non-banks provide financial services it is commonly required a license varying based on the function executed. For example, this is the case of the Big Tech companies and Fintech firms in European Union and in the United States, as they need to be licensed as payment services providers. Together with these license come specific regulator obligation concerning the areas of customer protection, anti-money laundering and financial terrorism. However, so far requirements do not involve compulsory levels of owned capital or liquidity.

In addition, concerning competition, Fintech companies have only to comply with the traditional antitrust regulatory framework regarding cartels, M&A activity and the prevention of abuse of market dominance (Restoy, 2021).

3.4. Fintech M&A trends

Since 2015, the year when Fintech has begun to be popular on financial news, the new players in the financial services industry started to be seen not just as a threat and a disruptive factor for existing banks, but also as a driver for large financial institution to enhance their own innovation. Therefore, Fintech M&A increased substantially year by year across different geographies, as shown in *Figure 1*, giving rise to mega deals.

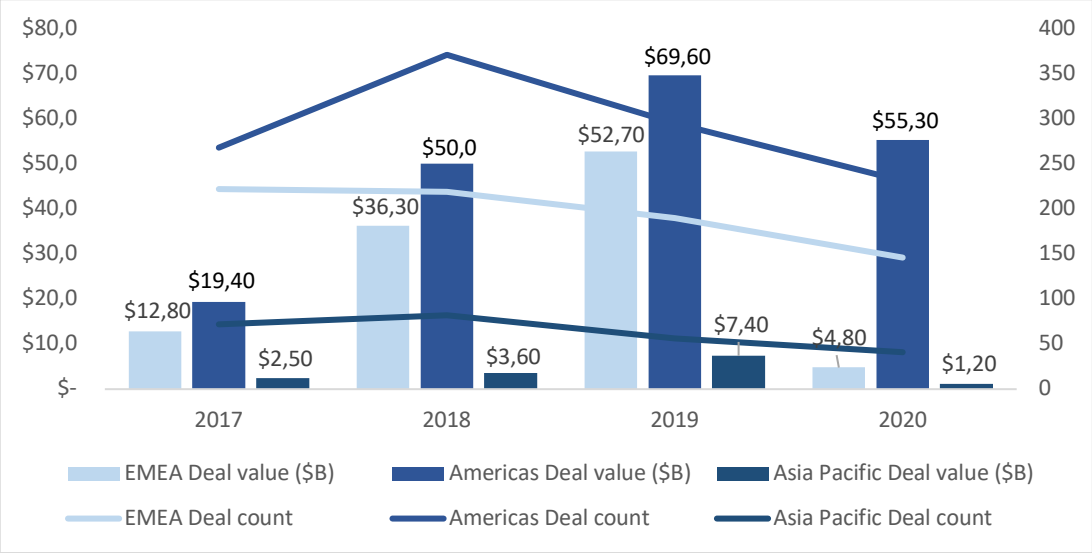

Figure 1 - M&A activity in Fintech in the EMEA, Americas and Asia Pacific over 2017-2020 period. Source of data: KPMG

The peak was reached in 2019 with total deal value of fintech-focused M&As reaching $139.7bn (Pollari et al., 2020). *Figure 2* and *Table 2* permit to observe respectively the deal value and volume for each half year from the rise of Fintech phenomenon in 2014 to 2020 and the top 10 Fintech M&A deals ranked by the value of the transactions.

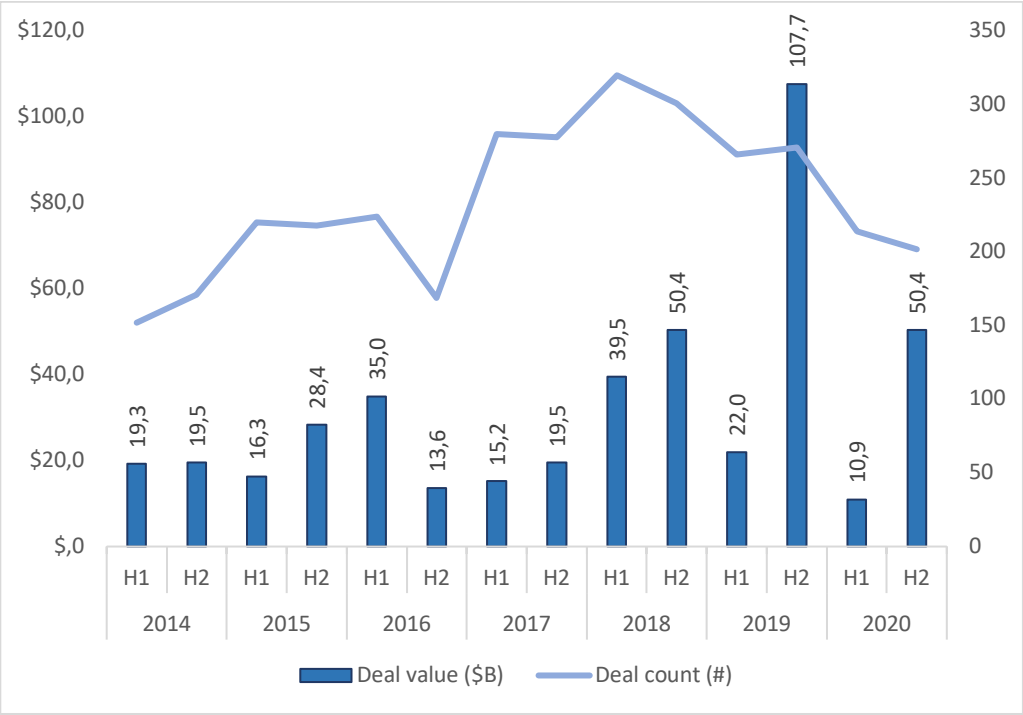

Figure 2 - Global Fintech M&A activity over 2014-2020 period. Source of data: KPMG

	Bidder	Target	Announcement date	Deal value[4]	Subsector	Countries	
						Bidder	Target
1	Fidelity National Information Services	Worldpay	31st July 2019	42.5	Payments	US	UK
2	Fiserv	First Data	29th July 2019	22	Payments	US	US
3	Charles Schwab	Ameritrade	10th November 2020	22	Investment Management	US	US
4	Vantiv	Worldpay	9th August 2017	12.9	Payments	US	UK
5	Intuit	Credit Karma	24nd February 2020	7.1	Lending	US	US
6	PayPal	Honey Science	20st November 2019	4	Payments	US	US
7	Prudential Financial	Assurance IQ	5th September 2019	3.5	InsurTech	US	US
8	First Horizon	IberiaBank	4th November 2019	2.54	Banking	US	US
9	NEC	Avaloq	5th October 2020	2.38	Banking	Japan	Switzerland
10	PayPal	iZettle	17th May 2018	2.2	Payments	US	Sweden

Table 2 - Ten largest Fintech M&A deals over 2017-2020 period. Source of data: KPMG

Further, in 2020, financial services industry was shaped by an additional sudden acceleration in digital adoption, forced by the Covid-19 pandemic. Hence, in few months firms of every shape and size were strained to make developments to their technology and business models in a way that usually would have taken years. There was a sharp increase in the demand for digital solutions, due to rapid shift in customers behaviors, including the need for e-payments mechanisms, contactless banking services, the use of e-commerce platforms and digital customer services (Courbe, 2020).

[4] Deal values are expressed in USD billion.

Amidst the pandemic, increasing M&A activity in the United States drove the rebound from the reduction in deals occurred in the first half of 2020. Given the highly increased demand for alternative payment systems, payments sector led Fintech investments in 2020. In addition, as the pandemic stressed the necessity for financial services to perform structural changes, making risk management procedures more efficient and proactive, there was a sharp increase in RegTech and cybersecurity- focused transactions, since all companies worldwide were challenged to furnish their employees controlled access to systems very swiftly. The recover experienced during the second half of 2020 has continued in the first sixth months of 2021 with strong activities involving venture capital and Private Equity. A plethora of Fintech verticals such as wealth management, RegTech, cryptocurrencies, cybersecurity has been involved in an increase in the deal size. In addition, the market, especially in the United States, has seen a rising focus on SPAC acquisitions, involving SoFi, Payoneer and Clover Health among the others (Pollari *et al*., 2021). In addition, the value of cross-border transactions increased sharply more than doubling from $10.3bn of deal value experienced during the whole 2020 to $27.7 bn just in H1'21. During the last semester, the London Stock Exchange Group purchased data analytics firm Refinitiv for $14.8 bn, whereas Nasdaq was involved in the acquisition of the Canadian company specialized in cloudbased fraud detection Verafin for $2.7bn.

4. METHODOLOGY

This section provides an explanation of the methodology used to conduct the empirical analysis. The analysis follows what has been previously done in Dranev *et al*. (2019), applied to a more recent time period and with the introduction of a coefficient to distinguish between full and partial acquisitions as done by Cappa *et al.* (2020). Despite that, the research is more generally based on two widely known approaches: the event study methodology and the multivariate regression analysis. Therefore, the analysis starts with the calculation of the Cumulative Abnormal Returns, that is the first step necessary to obtain the dependent variable needed to perform the multivariate regression.

4.1. Event Study

To assess the shareholders' reaction to firm-specific events such as merger announcements, one of the most used methodologies is the event study analysis. The firsts to adopt this approach have been Ball and Brown (1968) and Fama *et al*. (1969). After that moment, there have been huge advances in the methodology, but the core elements can be found in these early papers.

The announcement of a transaction provides the market with new information to the market therefore, if the Efficient Market Hypothesis holds, shareholders' expectations related to this new information should be instantaneously and entirely reflected in stock prices. Thus, the value created by an M&A deal is captured by the abnormal return in a short event window around the announcement date. The rationale behind the adoption of CARs instead of other firm's performance measures such as ROE, Enterprise Value etc. is that abnormal returns are proxies of expectation of shareholders on future profits of the company under the assumption of stock market efficiency (Cappa *et al*., 2020).
In case the acquisition creates value, following the announcement there will be positive returns, whereas negative returns are signals of value-destroying acquisitions. In order to avoid biases due to potential information leakages, it is best practice in literature to include the time period immediately previous to the M&A announcement, while the

insertion of the trading days straightway subsequent to the announcement takes count of possible delays in the market response.

The stock price reaction to the M&A is measured by computing the shareholders' abnormal returns surrounding the announcement day. using a 41 trading days event window that is 20 days before and 20 days after the announcement of acquisition. The selected window is long enough to avoid the effect of further economic features and to incorporate the response of inefficient markets. In addition, the results were obtained using the subsequent event windows: (−10, +10), (−3, +3), (−1, +1), (0, +1).

Abnormal returns ($AR_{i,t}$) are defined as the difference between the actual experienced arithmetic return and the expected return ($ER_{i,t}$), that is the predicted return that would have been achieved in case there was the takeover bid would have been announced and is based on the relation between acquirer's stock price and a benchmark index previous to the merger. Expected returns are calculated using the OLS market model as in Dranev *et al.* (2019) and Cappa *et al.* (2020) with Beta calculated with respect to the market index according to the Capital Asset Pricing Model. In the present study, the benchmark used is the MSCI index, following the methodology used by Cappa *et al.* The abnormal returns are computed daily as follows:

$$AR_{i,}=R_i - \beta_i R_m$$

In order to estimate the systematic risk β_i, an event window from -250 days to -30 days related to the first event date t_0 has been used following Cappa *et al*. (2020) and Dranev *et al.* (2019). The advantage of the selected approach is that it permits to disregard the profitability associated with the market dynamics, and simultaneously to shrink the variance of abnormal returns (Dranev *et al.,* 2019).

Once the Abnormal Returns are calculated, Cumulative Abnormal Returns, that represent the excess returns generated by the M&A announcement, are measured for the different event windows by aggregating through time the ARs for each security as: $CAR = \sum AR_i$

4.2. Regression Model

A multivariate regression analysis is performed in order to investigate more deeply the contingencies that give rise to the returns following a Fintech M&A announcement. As previously done in all the researches mentioned in the Literature review outlined in Section 2, estimated CARs are employed as the dependent variable, while several deal-specific characteristics and firm-specific features of the bidders and the targets are employed as explanatory variables. Appendix A provides a more detailed definition of all the variables included in the model.

Thus, following *Dranev et al.* (2019)'s study, and introducing a variable to distinguish between the effect of full and partial investments as done by Cappa *et al.* (2020), the model includes the sets of variables whose impact on stock returns around the announcement date is tested:

$$CAR_i = \beta_0 + \beta_1 MB_i + \beta_2 lnTA_i + \beta_3 Tax_i + \beta_4 DealSize + \beta_5 Full_i + \beta_6 Industry_i + \beta_7 Payment_i + \varepsilon_i$$

The multivariate regression analysis has been conducted over two of the different event windows used to compute the CARs, as done in the aforementioned precedent empirical researches: (−20, 20), (−10, 10).

The variables *MB* and *lnTA*, as above-mentioned in Section 2.1.1. and Section 2.2. for other empirical researches, allow to assess the *Size effect hypothesis*, under which larger bidding companies usually experience lower returns. The expected result of the *Tax* determinant is instead positive, as it is forecasted, according to Dranev *et al.* (2019), that the acquisition of Fintech companies will lead to tax reductions as there are fiscal incentives for financial technology firms. Further, the impact of the *Full* dummy variable is predicted to be negative since, according to Cappa *et al.* (2020), a partial M&A would lead to more benefits for the acquiring firms due to its less disruptive nature, therefore it will be more appreciated by investors. The dummy *Payment*, present in both Dranev *et al.* (2019) and Cappa *et al.* (2020), is also introduced to test whether the mergers involving specifically the Fintech Payment sector imply a negative stock price response. Thus, for the purpose of the analysis, the Fintech targets in the sample are divided in the Payment, Personal Finance & Analytics and Fundraising categories.

In addition, as in Dranev *et al.* (2019), CARs are tested within different subsets to assess specific hypothesis on the drivers of the value creation:

1. the impact on acquirers specifically belonging to the banking industry
2. the impact on bidders strictly belonging or not to the Fintech industry.

These two other dummies, *Bank* and *Fintech*, in fact, together with the dummy *Industry*, allow to test the *Industry relatedness hypothesis* that predicts that deals generate more value when they involve companies in the same sector as it is a method to deploy more synergies.

Following the same approach of the inherent previous literature, the coefficients are estimated using Ordinary Least Squares (OLS) adopting heteroskedastic and autocorrelation consistent (HAC) standard errors. This approach is compulsory as the White (1980) heteroskedasticity test rejects strongly (at even the 1% level) the null hypothesis of homoskedasticity. After computing the coefficients, a two-tailed test for significance is realized for the individual variables to assess their statistical significance. For each model, a standard F-test for overall significance is also performed.

5. DATA

5.1. M&A sample selection

The sample of deals used for the empirical analysis was built through the exploitation of the CB Insight database, by identifying Fintech companies that were target of M&A deals between 2014 and 2020.

Further, the resulting sample has been screened and reduced due to some compulsory requirements to conduct the analysis. Indeed, the selection involves exclusively publicly traded acquiring companies listed in the United States since it is necessary to have data related to share prices in order to perform the event study methodology. 54 M&A transactions involving a US-based listed bidder and a Fintech target company were selected through the CB Insight database. Additionally, in order to be included in the sample, share prices must be available in Thomson DataStream database. Diverse event periods have been taken into account in order to collect the information necessary to perform the event study analysis as markets in certain countries might react more leisurely than others due to the surrounding circumstances and deal values must be disclosed and of at least 1 million USD. Deals involving more than one acquirer have been excluded from the dataset due to lax information on the amount of shares acquired by each firm. Appendix B provides more details on the deals involved in the analysis.

5.2. Variables construction

Following the aforementioned methodology, the bidder's short-term performance has been measured by observing the acquiring companies' abnormal returns. The stock price history for each acquirer in the sample has been collected from Thomson DataStream database, as well as the historical prices for the MSCI USA Index, used as a benchmark to compute the CARs. Indeed, the MSCI USA Index allows to provide large and mid cap segments representation, covering circa 85% of the free float-adjusted market cap in the United States by including 627 firms.

Thenceforth, the variables to include as independent regressors in the model have been constructed by collecting through the Bloomberg database the elements needed. For instance, the variable *MB* has been computed as a ratio of the the acquirer's capitalization as of the announcement date to the Equity Book Value as of the last Balance Sheet available before the announcement. Correspondingly, the other two variables related to the Financial Statements, *lnTA* and *Tax*, have been constructed by looking respectively at the Total Assets as of last Balance sheet date and at Profits before taxes and Net tax expense as of last Income Statement before announcing the acquisition. Lastly, the variable *DealSize*, deal values have been captured from the Zephyr database.

5.3. Summary statistics

The volume and the value of the transactions included in the sample are reported in *Figure 3*. Both measures result to be not evenly distributed over the selected period (2014-2020). Nevertheless, the trend appears to be approximately in line with the one of the total Fintech M&A activity in the Americas in the same period, shown in *Figure 4* (Pollari, 2021).

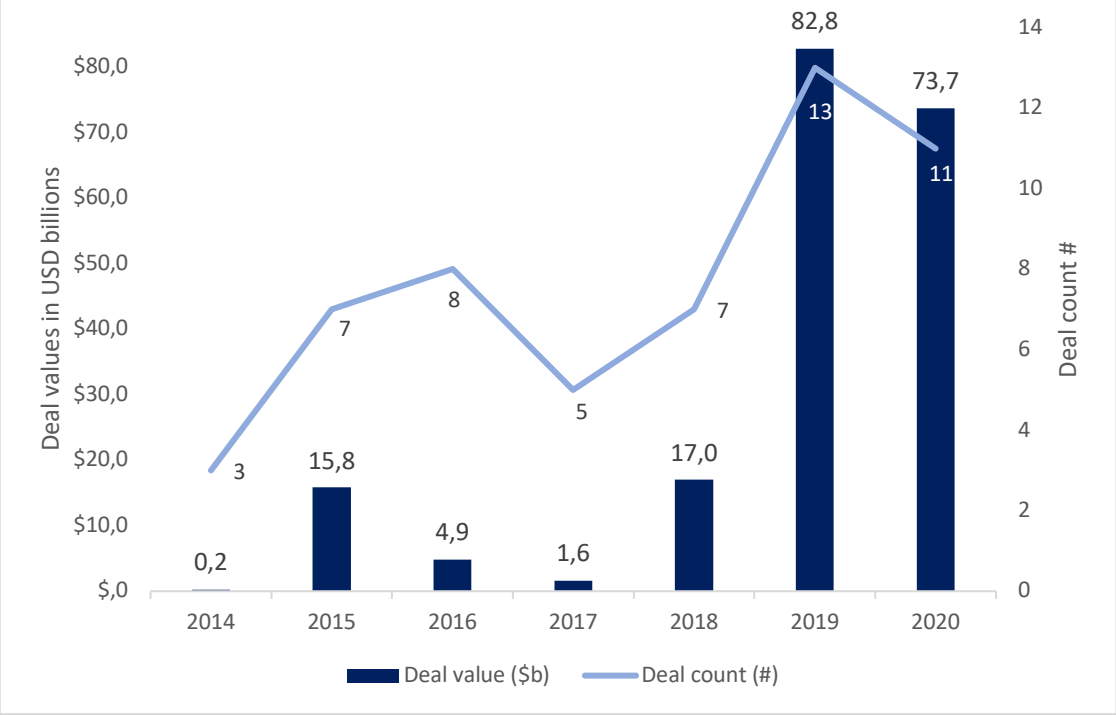

Figure 3 - Sample Fintech M&A activity over 2014-2020 period.

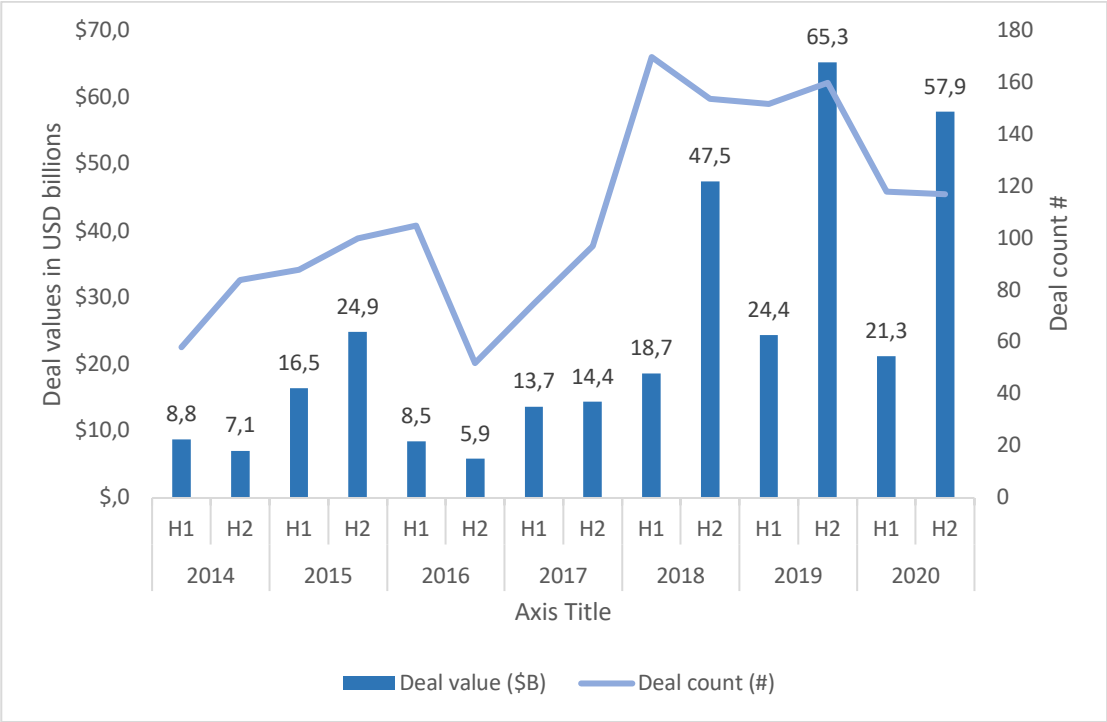

Figure 4 - Fintech M&A activity in the Americas over 2014-2020 period. Source of data: KPMG

Moreover, the sample includes 54 M&A deals, for a total deal value of $249.4bn, resulting in an average transaction value of $4.6bn. However, as reported in *Table 3*, the value is not evenly distributed across the deals as the first 10 deals - whose cumulated value is $190.3bn - account for 76% of the total value. To confirm the latter, the median transaction considering the whole sample is instead $940.8m, considerably lower than the average deal value.

	Bidder	Target	Announcement date	Deal value[5]	Subsector	Countries	
						Bidder	Target
1	Fidelity National Information Services	Worldpay	18th March 2019	43.7	Payment	US	US
2	Fiserv	First Data	16h January 2019	39.9	Payment	US	US
3	S&P Global	IHS Markit	30th November 2020	38.5	Analytics	US	UK
4	Global Payments	Total System Services	28h May 2019	21.8	Payment	US	US
5	Intercontinental Exchange	Ellie Mae	6thAugust 2020	10.9	Fundraising	US	US
6	Fidelity Natonal Information Services	SunGard Data Systems	12th August 2015	9.6	Payment	US	US
7	Intercontinental Exchange	Interactive Data	26th October 2015	7.9	Personal Finance	US	US
8	Intuit	Credit Karma	18th February 2020	6.3	Payment	US	US
9	Carlyle	Sedgwick	12th September 2018	6.8	Personal Finance	US	US
10	Visa	Plaid	6th January 2020	4.9	Payment	US	US

Table 3 - Ten largest Fintech M&A deals in US over 2014-2020 period

It is evident how the majority of the largest deals are domestic (74%), involving the US-based firms as targets, since the North America is the market where the Fintech phenomenon has developed mostly and the region where many Fintech firms have their location. Further, three out of the fourth largest transactions are announced during 2019, the year when effectively, as aforementioned, the Fintech M&A activity reached its peak in terms both of values and volumes.

Appendix C illustrates in detail the deal and firm specific characteristics of the sample, distributed by time periods. As also represented in *Figure 5*, the fraction of cross-border transactions is significant (26%). In addition, *Figure 6* depicts the geographical distribution of the deals. It is obvious that the majority of the deals involve developed

[5] Deal values are expressed in USD billion.

countries, as 96% of the transactions in the sample are located in North America or Europe.

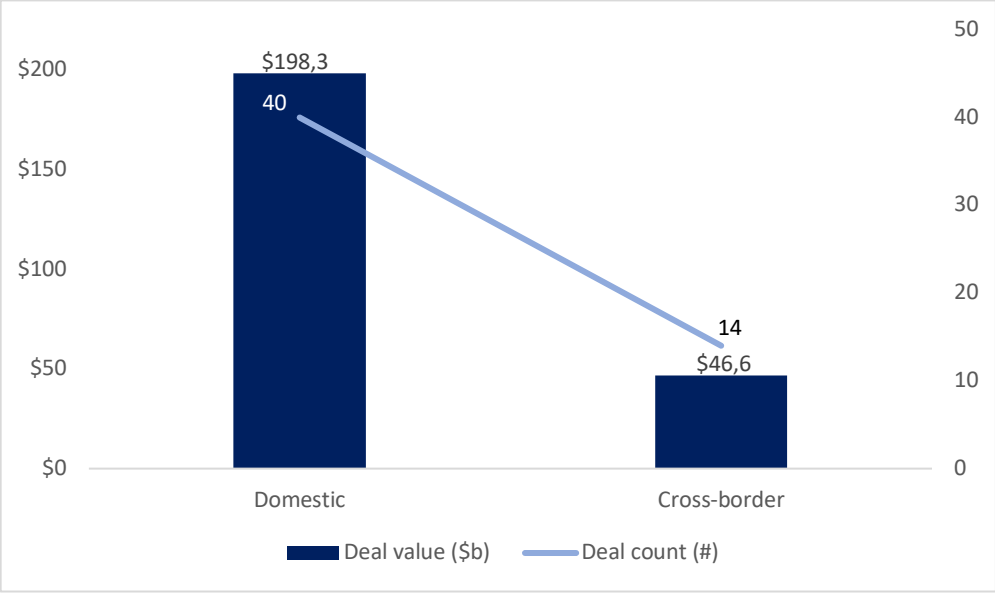

Figure 5 - Sample Fintech M&A activity per nature of the deal.

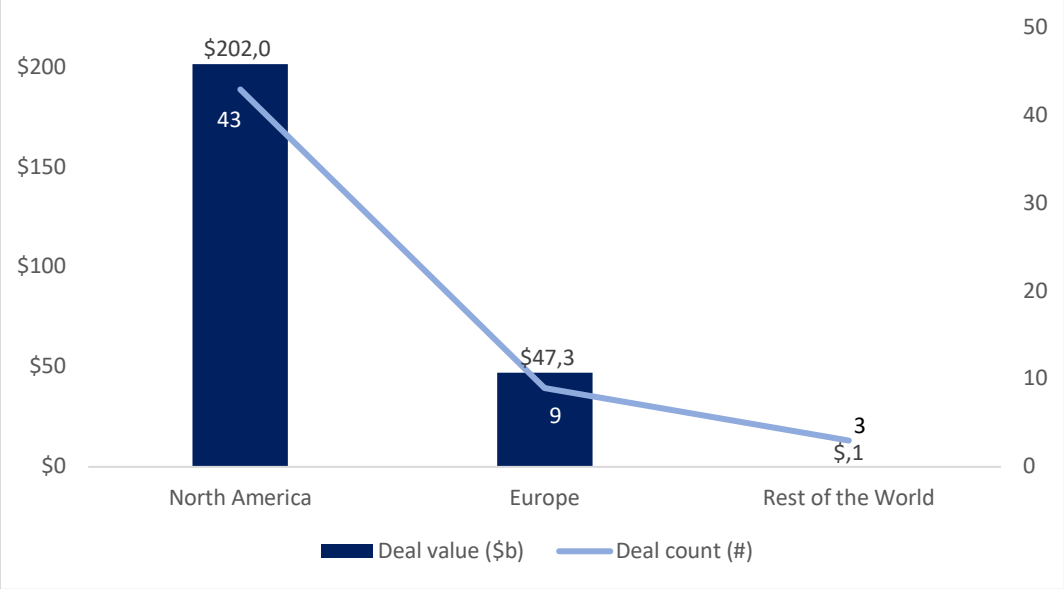

Figure 6 - Sample Fintech M&A activity per geographical region.

Further, 87% of the deals in the sample refer to Full acquisitions, and the 96% of transactions involve a Bidder operating in the Financial Services industry, in line with the Industry relatedness hypothesis, under which firms are most likely to perform M&As in

their same sector as it is perceived to allow for more value creation. In particular, 24% of the acquirers are banks, showing the aforementioned banks' interest in enhancing their technology the acquisition of Fintech company. Regarding the target companies, the fractions that operate in the Payment industry (e.g. e-wallets, in-app purchases, money transfer, contactless payment and P2P payments) is the 41%, whereas 48% of the sellers are involved in Personal Finance & Analytics (e.g. wealth Management and Insurtech) and 9% in Fundraising activities (e.g. crowdfunding, blockchain and peer-to-peer lending).

6. RESULTS

This section provides an analysis of the bidder's returns in the period in which a Fintech M&A was announced. More precisely, it investigates the impact of acquiring a Fintech company on shareholders' value creation and assesses if there are certain factors that are responsible for this change in the investors' wealth. Therefore, the first part of the empirical analysis has the aim to evaluate the cumulative abnormal returns generated by a M&A announcement. To additionally test this hypothesis, the widely used in literature approach of the event study methodology through the analysis of CARs have been used, performing a univariate test. The second part is proposed to investigate the potential drivers of the value creation through Fintech mergers, building upon the contributions of Dranev *et al.* (2019) and Cappa *et al.* (2020).

6.1. Analysis of CARS and univariate test

As abovementioned in Section 3.2, one of the hypotheses tested in this empirical study focuses on the impact that a Fintech M&A announcement has on the acquirer's stock price. In this respect, CARs were calculated for the bidders companies in the sample. A estimation window was used to measure the correlation between the yield of the security and the one of the market, which was previously described corresponding to the MSCI US index. This estimation period was set to start 250 days and end 30 days before the occurrence of the event. For each of the 54 observations in the sample the parameters related to the intercept and slope of the regression were found, α_i and β_i respectively.

$$R_{i,t} = \alpha_i + \beta_i \cdot R_{m,t} + \varepsilon_{i,t} \text{ for } i = 1,2,\ldots, 54$$

Once the parameters are obtained, expected values are measured through the development of the following equation for each bidding company in the sample chosen:

$$R_{i,t} = \hat{\alpha}_i + \hat{\beta}_i \cdot R_{m,t}$$

Thenceforth, abnormal returns are calculated as the difference between expected and actual values. After computing the CARs for each firm by summing up the abnormal returns in the selected event windows, a two-tailed test at a 5% significance level is

performed to assess whether a Fintech M&A announcement has a significant impact on the returns of stocks of the acquiring company.

The performed analysis suggests that that, in the case of the 41 days (-20; +20) and 21 days (-10;+10) event windows the cumulative abnormal returns are significantly different than zero. Specifically, as it is clear from Panel 1 of *Table 2*, the bidders in the sample have obtained significant CARs in 79.6% and 85.2% of the deals considering respectively the 41 days and 21 days periods. On the other hand, the shorter intervals do not result to guarantee significant returns for the acquirer.

Panel 1							Panel 2			
Interval	**Hypothesis**	**t-statistic**	**Number of acquirers**			**Percentage**	**Acquirer's CAARs**	**Coefficient**	**Standard Error**	**t-statistic**
(-20; +20)	H_0 refused	$t > t_{0.025}$	43	Positive	28	79.6%	CAAR (-20; +20)	0.0096	0.12	0.60
				negative	15					
	H_0 accepted	$t < t_{0.025}$	11			20.4%				
(-10;+10)	H_0 refused	$t > t_{0.025}$	46	Positive	11	85.2%	CAAR (-10;+10)	-0.178***	0.39	-3.36
				negative	35					
	H_0 accepted	$t < t_{0.025}$	8			14.8%				
(-3;+3)	H_0 refused	$t > t_{0.025}$	20	Positive	13	37.0%	CAAR (-3; +3)	0.0152	0.06	1.92
				negative	7					
	H_0 accepted	$t < t_{0.025}$	34			63.0%				
(-1;+1)	H_0 refused	$t > t_{0.025}$	15	Positive	9	27.8%	CAAR (-1; +1)	0.0064	0.05	0.91
				negative	6					
	H_0 accepted	$t < t_{0.025}$	39			72.2%				
(0; +1)	H_0 refused	$t > t_{0.025}$	11	Positive	6	20.4%	CAAR (0; +1)	0.005	0.05	0.08
				negative	5					
	H_0 accepted	$t < t_{0.025}$	43			79.6%				

*The superscripts *, ** and *** denote significance at the 10%, 5% and 1% level, respectively*

Table 4 - Panel 1 – t-statistics related to the CARs analysis. Panel 2 – Results of the univariate test.[6]

Panel 2 of *Table 4* depicts the cumulative average abnormal returns for the shareholders of the bidder's company, obtained by calculating the average of the CARs for the five event windows involved in the analysis. The CAARs are positive in all the time intervals with the exclusion of the 21 days one (-10; +10). However, the latter is the only time

[6] Source: Personal elaboration

window that results to be significant at 1% significance level, in line with the fact that the same period was the one with the largest number of significance CARs taken individually (85.2%), the majority of which were negative (35 out of 46 significant CARs). *Figure 7* allows a better understanding of the data reported in the table by illustrating graphically the average abnormal returns over the 21 days event windows around the announcement date. It is evident how the first reaction after the announcement of a M&A deal involving a financial technology company appears to be only slightly negative, to then become sharply more negative on the seventh day after the news related to the deal. This is in line with previous literature that shows how negative results are obtained after a technology deals considering a longer period of time (Dranev *et al.*, 2019). In addition, this significant negative result is in line with the one obtained by De Long (2001) in its analysis involving banks acquisition, implying negative cumulative average abnormal returns of -1.68%, and with the one by Cappa et *al.* (2020), -0.02%.

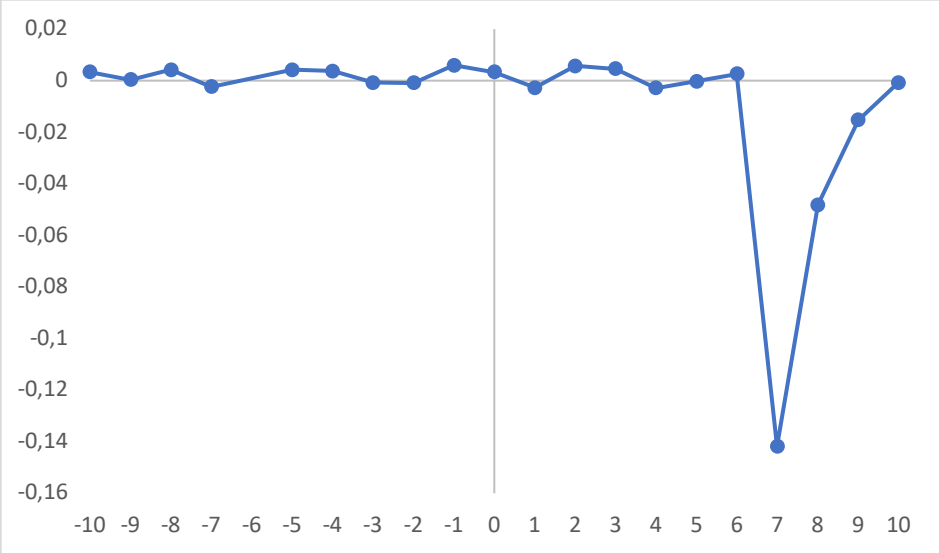

Figure 7 - Average abnormal returns on 21 days event window.[7]

[7] Source: Personal elaboration

6.2. Multivariate regression analysis

The results obtained for models (1), (2), (3), (4), (5) and (6) are shown in the *Table 5* below. The multivariate regressions are aimed to assess the impact of several deal-specific and firm-specific features on the bidders' returns. In the case of the cross-sectional regressions (1), (2) and (3), CARs (-20; +20) are defined as the dependent variable, whereas the deal and firm specific characteristics outlined in Section 3.2 are the independent or explanatory variables. On the other hand, the models (4), (5) and (6) consider the same variables as the first three models but the CARs are computed in a different time period: (-10; +10) days around the M&A announcement date. The two time intervals were selected since they are the periods where the majority of CARs result to be significant on a stand-alone basis, as depicted in Section 5.1. Models (1) and (4) are the basic models for the two periods, whilst in models (2) and (5) the dummy *Fintech* is added to the original regression to test whether being a Fintech acquirer is a driver for the value creation through Fintech M&A deals, in line with the Industry relatedness hypothesis. To confirm the same supposition, another variable, the dummy *Bank*, is inserted in the regression model in models (3) and (6) respectively for the two different CARs in order to assess if being a bank acquirer contributes to the shareholders' wealth.

	(1) *CARs (-20; +20)*	(2) *CARs (-20;+20)*	(3) *CARs (-20;+20)*	(4) *CARs (-10;+10)*	(5) *CARs (-10;+10)*	(6) *CARs (-10;+10)*
MB	-0.0000272	-8.94E-06	-0.0000317	0.000172	0.000229	0.000372
	(0.000117)	*(0.000115)*	*(0.000118)*	*(0.000412)*	*(0.000407)*	*(0.000410)*
Ln Total Assets	-0.0092**	-0.005692	-0.003875	-0.030773*	-0.019908	-0.031344*
	(0.004592)	*(0.004893)*	*(0.005303)*	*(0.016155)*	*(0.017348*	*(0.018435)*
Effective tax rate	0.114944*	0.087678	0.073374	0.075098	-0.009345	0.080680
	(0.069853)	*(0.069914)*	*(0.071843)*	*(0.245736)*	*(0.247888)*	*(0.249754)*
Deal Size	2.11E-08	1.57E-08	1.37E-08	4.28E-08	2.63E-08	3.91E-08
	(2.39E-08)	*(2.35E-08)*	*(2.37E-08)*	*(8.39E-08)*	*(8.33E-08)*	*(8.22E-08)*
Full	-0.051881	-0.077256*	-0.090874*	-0.210251	-0.288837*	-0.203130
	(0.043340)	*(0.044635)*	*(0.047222)*	*(0.152465)*	*(0.158257)*	*(0.164160)*
Industry	0.150734***	0.114437*	0.126250**	0.390330*	0.277918	0.203568
	(0.058671)	*(0.060775))*	*(0.062302)*	*(0.206398)*	*(0.215483)*	*(0.216586)*
Payment	-0.050777	-0.063716*	-0.071095**	-0.198768*	-0.238841**	-0.192397*
	(0.032074)	*(0.032154)*	*(0.033249)*	*(0.112834)*	*(0.114004)*	*(0.115587)*
Fintech		0.064284	0.064673*		0.1999090	0.196646
		(0.035749)	*(0.035826)*		*(0.126742)*	*(0.1246)*
Bank			-0.036842			0.231878
			(-0.040968)			*(0.142419)*
Sample size	54	54	54	54	54	54
adj. R^2	13%	16%	16%	5%	7%	10%

*Standard errors in parentheses; The superscripts *, ** and *** denote significance at the 10%, 5% and 1% level, respectively*

Table 5 - Results of the multivariate regression analysis for the models (1), (2), (3), (4), (5) and (6).[8]

For each model, it is possible to identify the coefficients of the variables and the related standard errors (in parentheses). The sample size, which is 54 for all the regressions, and the adjusted R^2 of the regression are also reported.

Firstly, models (1), (4) and (6) illustrate how the coefficient *ln Total Assets* is, as predicted, effectively negative and statistically significant respectively at 5% and 10% significance level. Thus, the obtained result is consistent with the one achieved by Dranev

[8] Source: Personal elaboration

et al. (2019) on the same variable, that obtained a negative and 10% significant *lnTA* coefficient, supporting the *Size effect hypothesis*, already mentioned in Sections 2.1.1., 2.2, 2.3 and 3.2, under which the larger is the size of the acquiring company the lower is the value created by a Fintech M&A deal. This could be explained by the fact that smaller firms incorporate higher growth potential therefore the expectations on the outcome of an acquisition are better or alternatively by the hubris hypothesis, under which management tends to overpay for target companies because of their egos. In addition, the result is also in line with the studies by Faccio *et al.* (2016), Beltratti *et al.* (2013) and Beitel *et al.* (2004), testing the same effect taking into account different variables.

Regarding model (1), the positive impact of the *Effective tax rate,* included as proxy for the regulation in the financial technology industry, is also significant at 10% level, in accordance with the results obtained by Dranev *et al.* (2019) both regarding the sign and the significance level of the coefficient. This could suggest that investors are positive in the belief that acquirers of Fintech companies will lower the amount of taxes they due since several countries are introducing incentives to invest in Fintech.

Furthermore, the coefficient *Full* –a dummy variable equal to 1 in the case of a 100% acquisition and 0 otherwise- appears to be negative and statistically significant at 10% significance level in models (2), (3) and (5). This negative effect of a full acquisition is totally in line with the empirical study conducted by Cappa *et al.* (2020), that shows as well a 10% significance of the coefficient. This negative impact on CARs finds its explanation in the potential issues concerning the integration of diverse business models that could undermine the shareholders' expectations on the possibility of future profits for the firm. On the other hand, a partial acquisition might be more appreciated as it is a softer way to gradually achieve the new technologies, avoiding huge disruption of the business.

The *Industry relatedness hypothesis*, aforementioned in Sections 2.1.1., 2.2., 2.3.1.2. and 3.2, is confirmed by models (1), (2), (3) and (4), as the related coefficient *Industry* -a dummy equal to 1 in case of acquirer involved in the financial services sector and 0 otherwise- is positive in all the regressions and statistically significant respectively at 1% and 10% significance level. The result is consistent not only with Dranev *et al.* (2019), that just obtained a 10% level of significance for the coefficient, but also Hoberg *et al.*

(2010), Delong (2001) and Beitel *et al.* (2004). This positive impact is due to the fact that investors expect to benefit from more synergies creation when the two companies operate within the same sector, and therefore achieve more value. In line with this finding, the coefficient *Fintech* -equal to 1 whenever the acquirer could be strictly defined as a Fintech company, and 0 otherwise- , is positive in all the regressions in which it is included. However, its positive impact results to be statistically significant only with regard to model (3), strengthening even more effectively the *Industry relatedness hypothesis*. Additionally, the dummy *Bank*, introduced to study the same phenomenon, appears to be slightly negative in the case of model (3) and positive in model (6). Nevertheless, the coefficient is not significant in either one or the other regressions, therefore this ambiguous result is not statistically different than zero.

Further, consistently with the results obtained by Cappa *et al.* (2020) and Dranev *et al.* (2019), the coefficient *Payment* -a dummy equal to 1 if the Fintech target is involved in the digital payment sector (e.g. e-wallets, in-app purchases, money transfer, contactless payment and P2P payments) is negative and statistically significant at 5% level for the models (3) and (5) and at 10% level in the case of the models (2), (4) and (6). Thus, if compared with the other Fintech sectors, Fundraising, Personal Finance and Analytics, it appears that the stock market reacts in a worse manner. This could be due to fact that the payment sector is the nearest to services already provided by financial institutions, as well as the potential cannibalization risk caused by the similarity of the two business models (Cappa *et al.,* 2019).

Lastly, comparing the significance of the coefficients obtained with this study with the two main studies of reference, performed by Dranev *et al.* (2019) and Cappa *et al.*, most of the coefficients seem show the same significance, with the exception of *Industry*, that being significant at 1% level appears to be more reliable in the present research. The limited significance of coefficients in this and the other aforementioned analyses regarding Fintech M&A is mainly due to shortage of data on transactions and the small size of the sample, considering that the market is still on a starting phase.

7. CONCLUSIONS

The aim of this section is to provide a final summary of the outcomes of the analysis and their implications, as well as signaling potential future developments of the research.
The present empirical study has examined the relationship existing between financial technology M&A activity and the shareholder's financial performance post-announcement. In the last years, digitalization has deeply shaped the financial services system, supporting the development of new business models and the consequent advent of Fintech companies in the field, bringing an element of disruption for the traditional players. Notwithstanding the rising interest among practitioners and academics, the impact of Fintech M&A announcements on the acquiring firms' stock market returns is still under debate, and up to the present time there is still lack of empirical evidence. This research contributes to the existing literature with the purpose of clarifying the implications of Fintech M&A activity on the acquirers and the factors responsible for these consequences.

More precisely, a sample of 54 M&A deals involving Fintech companies as targets and completed by US acquirers between 2014 and 2020 has been selected and analyzed. In order to test the research hypotheses, two distinctive methodologies have been conducted: an event study methodology and a multivariate regression analysis.

The first research question investigates whether or not the shareholders of firms involved in Fintech M&A activity as bidders experience value creation after the transaction announcement. There is no harmony in precedent literature around the investors' stock market response around the deal date. However, some of the previous studies depict negative returns for the bidders as M&A deals involving Fintech companies are perceived as excessively disruptive for the acquirer. In line with this view, the event study analysis suggests that Fintech M&A activity actually destroys value for acquiring shareholders considering a 21 days event-windows around the date of the announcement.

On the other hand, the second part of the empirical analysis indicate that the outcome of Fintech M&A activity for the bidders depends on several contingent elements concerning deal and firm-specific characteristics. More specifically, this empirical research provides new insights into the features that make a Fintech transaction beneficial or detrimental

for the acquirer. In accordance with the *Size effect hypothesis*, the empirical evidence show how deals involving larger acquiring firms are less beneficial for them due to their inferior growth potential. Likewise, the results also suggest that full acquisitions tend to have a negative impact on the bidders' returns since a complete M&A implies the possible issues connected with the integration of disruptive business models. Indeed, this concerns might be limited by undertaking partial acquisitions, whose results are higher returns since new technologies are obtained in a less aggressive manner. Another feature that lower the shareholders' returns around the date of the announcement is the belonging of the target Fintech company to the digital payments sector, as such a deal could arise the fear of cannibalization around investors due to the similarity with the services already offered by financial institutions. To the contrary, one of the contributors to the potential creation of value through Fintech M&A is the tax regime of the acquirer, as there is the belief that bidders could reduce their amount of taxes by acquiring a Fintech company due to the special tax incentives that financial technologies firms are usually subject to. In addition, the present paper confirms the *Industry relatedness hypothesis* under which acquisitions of firms belonging to the same industry are more beneficial for the acquirer since they lead to higher expectations on the exploitation of synergies. This thesis is supported in the circumstance of a bidder which belongs to the financial services sector and additionally strengthened by studying Fintech bidders.

However, this study is not exempt from limitations leaving room for further enhancements of the analysis. First, because of the difficulty in gathering data for the target, as many are not listed, the study only focuses on the acquirers' returns, even if it is known from M&A literature that returns are usually higher and more significant for the target after the merger announcements. It is also true that since Fintech is a phenomenon that has just raised in the last years, the sample of the transactions involving a US publicly traded acquirer is small, including only 54 deals, restricting the significance of the coefficients used in the regression as well as in previous literature. In addition, the research focuses on the value created by the transactions in the short term. Nevertheless, it is typical that all the information is not immediately captured by prices as it should be under perfect market efficiency, therefore it is suggested to develop new studies by looking also at the long term effects of the deals, such as analyzing Buy-and-Hold Abnormal Returns. In addition, the paper focuses just on few components that might be

responsible for the transaction outcome, and further research may include several other features in the analysis. Indeed, the majority of the components studied refers to the bidders. Thus, future studies may add some variables related to certain characteristics of the target company. Additionally, whilst this empirical analysis exploited an event study methodology to assess the potential value creation, further research might verify if the same outcomes are obtained through the adoption of other methodologies, such as studying operating and efficiency indices.

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APPENDIX

Appendix A – Variables description

This appendix provides a detailed definition of all the variables included in the models

MB: The ratio of the acquirer's capitalization to book value

lnTA: Logarithm of the total assets of the acquiring company

DealSize: The ratio of the deal value to the bidder's market capitalization

Tax: Effective tax rate of the acquiring company

Full: is a dummy variable equal to 1 when the deal is a full acquisition, and 0 otherwise (partial acquisition)

Industry: is a dummy variable equal to 1 if the acquiring company belongs to the Financial services industry, and 0 otherwise

Payment: is a dummy variable equal to 1 when the Fintech target is involved in the Digital Payments sector (e.g. e-wallets, in-app purchases, money transfer, contactless payment and P2P payments), and 0 otherwise

Fintech: is a dummy variable equal to 1 when the acquirer is strictly a Fintech company as well as the target, and 0 otherwise

Bank: is a dummy variable equal to 1 when the acquirer is a bank (either commercial or investment bank), and 0 otherwise

Appendix B – Sample

	Acquiror name	Acquiror country code	Target name	Target country code	Deal value th USD	Announced date
1	BBVA Compass Bancshares Inc.	US	Simple Finance Technology Corporation	US	115.862,04	20/02/2014
2	JP Morgan	US	Motif Investing Inc.	US	34.879,90	08/05/2014
3	SS&C Technologies Holdings Inc.	US	DST Global Solutions Ltd	GB	95.308,67	01/12/2014
4	SS&C Technologies Holdings Inc.	US	Advent Software Inc.	US	2.709.780,80	02/02/2015
5	PayPal Holdings Inc.	US	Paydiant Inc.	US	290.909,32	02/03/2015
6	PayPal Holdings Inc.	US	Cyactive	IL	61.253,26	05/03/2015
7	PayPal Inc.	US	Xoom Corporation	US	917.009,59	01/07/2015
8	McGraw-Hill Financial Inc.	US	SNL Financial LC	US	2.204.262,96	27/07/2015
9	Fidelity National Information Services Inc.	US	SunGard Data Systems Inc.	US	9.632.756,91	12/08/2015
10	Intercontinental Exchange Inc.	US	Interactive Data Holdings Corporation	US	7.878.068,13	26/10/2015
11	Fiserv Inc.	US	Community Financial Services Inc.'s assets	US	198.422,22	20/01/2016
12	Total System Services Inc.	US	TransFirst Holdings Corporation	US	2239430,438	26/01/2016
13	Ally Financial Inc.	US	TradeKing Group Inc.	US	281.456,21	05/04/2016
14	Morningstar Inc.	US	PitchBook Data Inc.	US	195.096,76	14/10/2016
15	Mastercard UK Holdco Ltd	GB	VocaLink Holdings Ltd	GB	1405782,826	14/07/2016
16	Goldman Sachs Group Inc.	US	Meilleurtaux SAS	FR	276.281,15	21/12/2016
17	Goldman Sachs Group Inc.	US	Finizy SAS	FR	271.068,30	21/12/2016
18	PayPal Holdings Inc.	US	TIO Networks Corporation	CA	219.137,33	14/02/2017
19	First Data Corporation	US	CardConnect Corporation	US	738.536,60	29/05/2017
20	Paymentech LLC	US	WePay Inc.	US	233.472,85	17/10/2017
21	Principal Strategic Investments Group	US	Manipal Integrated Services Pvt Ltd's Yoho	IN	51.838,86	17/10/2017
22	Intercontinental Exchange Inc.	US	Virtu Financial Inc.'s BondPoint business	US	391.764,68	24/10/2017
23	SS&C Technologies Holdings Inc.	US	DST Systems Inc.	US	5.270.631,82	11/01/2018
24	Intercontinental Exchange Inc.	US	CHX Holdings Inc.	US	73.425,37	05/04/2018
25	PayPal Holdings Inc.	US	iZettle AB	SE	2.223.668,22	17/05/2018
26	State Street Corporation	US	Charles River Systems Inc.	US	2.598.196,75	20/07/2018
27	Ebix Inc.	US	Miles Software Solutions Pvt Ltd	IN	26.855,52	04/09/2018
28	Carlyle Global Financial Services Partners III LP	US	Sedgwick Claims Management Services Inc.	US	6.803.290,03	12/09/2018
29	Fiserv Inc.	US	First Data Corporation	US	39.963.359,44	16/01/2019
30	Virtu Financial Inc.	US	Investment Technology Group Inc.	US	1017340	07/11/2018

	Acquiror name	Acquiror country code	Target name	Target country code	Deal value th USD	Announced date
31	EM Eagle Purchaser LLC	US	Ellie Mae Inc.	US	3.711.329,76	12/02/2019
32	ACI Worldwide Inc.	US	Western Union Company's Speedpay United States Domestic Bill Pay Business	US	762.330,62	21/02/2019
33	Fidelity National Information Services Inc.	US	Worldpay Inc.	US	43.710.895,64	18/03/2019
34	BlackRock Inc.	US	Efront Holding SAS	FR	1.307.316,98	22/03/2019
35	JP Morgan	US	Mosaic Smart Data Ltd	GB	9010,99544	29/04/2019
36	Broadridge Financial Solutions Inc.	US	RPM Technologies	CA	295.797,40	21/05/2019
37	Global Payments Inc.	US	Total System Services Inc.	US	21.836.231,42	28/05/2019
38	JP Morgan	US	InstaMed Communications LLC	US		17/05/2019
39	Project Six Intermediate Parent LLC	US	Credible Labs Inc.	US	412.813,71	04/08/2019
40	MasterCard	US	Nets A/S' Account-to-Account Payment Business	DK	3.190.865,32	06/08/2019
41	Prudential Financial Inc.	US	Assurance IQ Inc.	US	3.518.216,96	05/09/2019
42	PayPal Holdings Inc.	US	Honey Science Corporation	US	4.039.390,41	20/11/2019
43	Visa Inc.	US	Plaid Inc.	US	4.857.946,42	13/01/2020
44	Ally Financial Inc.	US	Cardholder Management Services Inc.	US	2.533.909,59	18/02//2020
45	LendingClub Corporation	US	Radius Bancorp Inc.	US	164.943,26	18/02/2020
46	Halo Merger Sub II LLC	US	Credit Karma Inc.	US	6256572,185	18/02/2020
47	Enova International Inc.	US	On Deck Capital Inc.	US	102.826,88	28/07/2020
48	MasterCard Inc.	US	Finicity Corporation	US	940797,2246	23/06/2020
49	Apple Inc.	US	Mobeewave Inc.	CA	99.979,19	01/08/2020
50	Intercontinental Exchange Inc.	US	Ellie Mae Intermediate Holdings I Inc.	US	10.912.339,17	06/08/2020
51	Roper Technologies	US	Vertafore Inc.	US	5841929,691	13/08/2020
52	American Express Company	US	Kabbage Inc.	US	822.159,98	17/08/2020
53	S&P Global Inc.	US	IHS Markit Ltd	BM	38496556,75	30/11/2020
54	Osprey Acquisition Corporation	US	Verafin Inc.	CA	2687036,66	19/11/2020

Appendix C – Deal and firm-specific features of the sample

	Target's region			Domestic vs Cross-border		Bidder's Industry relatedness		Bidder's Bank subsector		Target's Fintech subsector			Full vs Partial	
	North America	Eu	ROW	Domestic	Cross-border	Industry	Non Industry	Bank	Non bank	Payment	Personal Finance & Analytics	Fundraising	Full	Partial
2014	2	1	0	2	1	3	0	2	1	1	2	0	2	1
2015	6	1	0	6	1	7	0	0	7	1	6	0	7	0
2016	5	3	0	5	3	8	0	3	5	6	2	0	6	2
2017	4	0	1	4	1	5	0	0	5	2	2	1	4	1
2018	5	1	1	5	2	6	1	2	5	2	5	0	6	1
2019	10	2	0	9	3	12	0	4	8	5	5	2	10	2
2020	10	0	1	9	2	10	1	2	9	4	5	2	11	0

Appendix D – CAARs computation

Once the CARs are obtained by summing up the abnormal returns as outlined in Section 3.1 and Section 5.1, CAARs are computed by further aggregating the CARs to test the overall reaction of the market to the announcement:

$$CAR_i(T_1, T_2) = \sum_{t=T_1}^{T_2} AR_{i,t}$$

$$CAAR(T_1, T_2) = \frac{1}{N} \sum_{t=1}^{N} CAR_i(T_1, T_2)$$

Where N is the number of securities included in the sample, in this specific case equal to 54, and T1 and T2 are respectively the first and last day of the time interval considered. A cross-sectional t-test might be used to assess the significance of CAARs. The null hypothesis H_0 states that the CAAR, corresponding to the average of the CARs, is statistically not different from zero as follows.

H_0: $CAAR = 0$.

The related t-statistic is computed as:

$$t_{CAAR} = \frac{CAAR - 0}{\hat{\sigma}_{CAAR}/\sqrt{N}} \sim t_{(N-2)}$$

With the Standard Error $\hat{\sigma}_{CAAR}$ given by:

$$\hat{\sigma}_{CAAR} = \sqrt{\frac{1}{N-1} \sum_{i=1}^{N} (CAR_i - CAAR)^2}$$

The t-statistic is distributed as a Student's t-distribution with N-2 degrees of freedom.

SUMMARY

To accomplish their strategic objectives, companies often employ mergers and acquisitions. M&As are one of the typical tools of the market for corporate control, happening when one legal entity results from the combination of two legal entities' assets and liabilities. Clearly, they are a major area of study in corporate finance, as a large part of the present literature has attempted to investigate the determinants and the effects of such transactions.

In the mergers and acquisitions context, there is typically a buyer, the acquirer or bidder, and a seller, also called the target. The two main mechanisms that allow a change in ownership of a public corporation are the acquisition by another company or group of individuals or the merger of the two firms. In both situations, the acquirer purchases the stock or the existing assets of the seller either for cash or shares of equivalent value through a mechanism called takeover.

Generally speaking, there are several advantages connected to M&As. Common reasons to conduct a merger is to achieve inorganic growth, surging the market share through the inheritance of clients from company being acquired or the drive to purchase firms beyond the company's business line, achieving diversification. M&As could also be explained by the management's sentiment that the financial conditions are favorable to perform a transaction, such as during a merger wave, or when they believe an inadequately managed company is mispriced. Further, determinants like managerial hubris, exploitation of foreign capital or tax considerations might be other motives behind M&A activity. To conclude, the motive most often mentioned in literature is synergies realization. Synergies are achieved when the value generated by the combination of the two entities is higher than the values of two stand-alone companies involved in the M&A activity.

Nevertheless, due to the unique nature of the companies involved, the reasons for M&As are very different from one deal to another. Hence, most researches related to mergers have focused their analyses on the impact rather than motives behind the acquisitions. Regarding this, the majority of the literature analyzes the effect that the transaction has on the acquirer and target short-term performance through an event case study, by looking at the bidder's Cumulative Abnormal Returns (CARs) around the date of the M&A

announcement. In addition, they usually investigate which factors enhance or lower this effect on shareholders' wealth through a multivariate regression analysis.

Therefore, the aim of this paper is to assess whether the engagement in M&A activity creates value for the acquirer's shareholders. In particular, the current thesis follows the aforementioned empirical methodology by focusing specifically on Fintech mergers as the Financial Technology industry is nowadays one of the hot trends in the market. Thenceforth, the research investigates the drivers of the wealth generated for investors through the M&A announcement by performing a multivariate regression model.

After the financial crisis, the financial services industry has experienced dramatic technology-driven developments. Due to the information-intensive nature of the financial services industry, the influence of technological innovation on the sector has been a constant of last decade. Nevertheless, this novel digital landscape opened to new players the possibility of entering the market.

Financial Stability Board (FSB) defines Fintech as "technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services"(Cowan *et al.*, 2021).

The peculiarity of the recent Fintech revolution, that distinguishes it from past developments of the banking sector, is given by a faster than ever pace at which new technologies are tested and implemented. In addition, it is indeed significant that most of changes are happening from outside the financial services industry, since new-born start-ups and well established tech companies are trying to disrupt the incumbents. Their approach involves the introduction of new products and technologies, increasing significantly the competition in the market. As of February 2021, the number of financial technology start-ups in the Americas, the region where the phenomenon is more diffused, is 10,605, whilst in the EMEA and the Asia Pacific region there are respectively 9,311and 6,129 Fintech firms.[9] Further, the advent of these new actors has also be favored by increased lack of trust by customers towards financial institutions subsequent to the recent

[9] Data Source: Statista

financial crisis. In addition, a rising confidence in innovation and digitalization led to a shift from a centralized authority to an increase in participation in the creation of business ideas and opportunities, bringing to disintermediation of financial services industry and the active participation of individuals into finance through new financing products such as the blockchain, cryptocurrencies, crowdfunding, peer-to-peer lending.
Hence, based on their reactiveness to the new environment and their ability to adjust their business models and strategies accordingly, financial services could consider Fintech companies either as a competitive threat or as an opportunity. Considering the appeal of the novel business models, in the recent years traditional banks and other well-established financial institutions have increasingly expressed interest in acquiring Fintech companies. In fact, since 2015, the year Fintech entered the mainstream, the new companies started to be seen not just as a disruptors for existing financial institutions, but also as a trigger for large banks to embark their own innovation.

Therefore, Fintech M&A increased substantially year by year across different geographies, giving rise to mega deals. The peak was reached in 2019 with total deal value of Fintech-focused M&As reaching $135.7bn across 2,293 deals, with 46.2% of transactions involving the Americas[10]. Further, in 2020, financial services industry was shaped by an additional sudden acceleration in digital adoption, forced by the Covid-19 pandemic. Hence, in few months firms of every shape and size were strained to make developments to their technology and business models in a way that usually would have taken years.

Thus, considering the aforementioned disruptive influence of Fintech on financial services, and the willingness to focus the attention on the consequences of M&A announcements and their drivers, one of the two main research questions of this thesis is whether M&A deals involving Fintech companies as targets demonstrate to create value for the acquirer shareholders. The event study methodology is utilized to assess the latter, by analyzing the Cumulative Abnormal Returns for the bidders' shareholder around the announcement of a transaction involving a Financial Technology company in the side of the seller firm. On the other hand, the other crucial research question focuses on the potential determinants that could enhance or worsen these abnormal returns. Specifically,

[10] Data Source: CB Insights

the purpose of the thesis is to assess whether there are some deal characteristics, as well as firm-specific features of the acquiring and targets companies, that enhance the effect of a M&A with a Fintech company, by contributing to generate more or less value for the bidder' shareholders.

To answer these questions, an empirical analysis is conducted following the previous studies from Dranev *et al.* (2019) and Cappa *et al.* (2020), which are among the first having analyzed the drivers of the impact of Fintech M&As on the acquirer. The present thesis differentiates from them by focusing entirely on short term returns, but simultaneously expands the scope of research by using a more recent sample of deals and by introducing new determinants.

Indeed, the tested features comprise the *Size* of the acquirer (measured by the total assets and the Market to Book ratio), to verify whether a smaller bidder will experience higher abnormal returns such as in precedent studies; the deal size; the acquirer's effective tax rate, as it should decrease due to Fintech incentives. In addition, some dummies are introduced to test if more value is created through partial or full acquisition and which targets' Fintech subsectors lead to a more intense stock price reaction. Additionally, the *Industry relatedness hypothesis*, also found in precedent literature such as Beitel *et al*. (2004) and Cybo-Ottone *et al.* (2000) is tested in order to verify whether the abnormal returns are higher for industry-related acquirers*,* through the coefficients *Industry*, *Bank* and Fintech.

To assess the shareholders' reaction to firm-specific events such as merger announcements, one of the most used methodologies is the event study analysis.

Regarding this, most of authors analyze the impact that the merger has on the acquirer and target short-term performance through an event case study. The event study methodology relies on the idea of abnormal returns, measured as the difference between raw stock return and the required return given by a model such as the CAPM or a market index around the date of the M&A announcement.

In literature, when authors want to assess the shareholder wealth generated as a response to a M&A announcement there is generally a focus on the target companies. Indeed, there

is harmony that deals usually create value for the target firms, as both in United Kingdom and United States markets and in continental Europe target shareholders can benefit from large abnormal returns (Bauguess et *al*., 2009, Goergen *et al*., 2004). It could happen that these abnormal returns are even perceived before the day of the announcement as result of bids anticipations originated by rumors, leaks of information or insider trading activity. That is why often studies consider different event windows around the date of announcement (Beltratti and Palladino, 2013).

Nevertheless, the effect is not that clear around bidder performance as it is for target companies. In fact, existing literature is not uniform as most studies illustrate abnormal returns close to zero, but some give slightly positive results (Moeller *et al*., 2005; Schwert, 2000), whereas other empirical evidences show negative returns (Andrade *et al*. 2001). However, this empirical study focuses on the acquirer's returns as the majority of Financial Technology firms, that represent the targets in this specifical analysis, are not publicly traded.
Although the existing literature has widely examined the two areas of study of M&A and Fintech on a stand-alone basis, since the Fintech sector is currently in an early phase, there are still few empirical analyses on the M&A activity involving financial technology firms.

In particular, the recent research conducted by Dranev *et al.* (2019) on the drivers of acquiring firms' stock price reaction to Fintech M&A activity finds its roots on previous studies related to mergers involving high-tech firms. Previous evidences discovered by Koehers and Kohers (2000) suggest how mergers generate positive abnormal returns in the short-term for the acquiring companies due to the technological advantages provided.

Given this assumption, the market response to the company's aim to enhance its technology development is consequently positive. Therefore, Dranev *et al.*'s purpose is to investigate whether a Fintech M&A announcement could encourage investors to purchase bidders' shares in the short-term by performing an event study and thus analysing the CARS. In addition, the scope of Dranev's work is to explore the specific factors leading to value creation in Fintech mergers through a multivariate regression analysis. The selected sample is composed of 178 deals over the period 2010-2018 across different geographies, having as acquirers public firms and as targets Fintech companies

operating both in the finance and IT sectors according to Zephyr classification. The sample includes firms from both developed countries such as United States, Canada and Europe and emerging countries like China and India.

Through an event study methodology conducted on several event windows to gauge the sensitivity of the obtained results, the authors calculate CARs adopting market model, market adjusted model and mean adjusted returns methodology. In addition, the study analyses long-term effect of the acquisition by observing Buy-and-Hold Abnormal Returns over a 250 days event window.

The empirical results find significant positive average abnormal returns after Fintech M&A activity in the short-term, consistently with previous studies on mergers involving tech firms, confirming that investors perceive financial technology mergers as value-creative in a short-term frame. In particular, realized CARs are respectively 1.25%, 0.87%, 0.84% and 1.02% for (-10, +10), (-3, +3), (-1, +1) and (0, +1) days event windows. Nevertheless, in a longer frame of 250 days deals do not appear to create value for acquirers' shareholders. This poor performance in the long run is motivated by author referring to the hubris hypothesis, that states that management is prompt to pay a high purchase price for a company overestimating the integration efforts needed after the transaction.

Further, in order to investigate the contingencies leading to the abnormal returns, the model specifies several control variables to include in the regression based on previous empirical studies. Thus, the employed regression model, that represents the main reference for the regression performed in this paper, results to be:

$$CAR_i = \beta_0 + \beta_1 MB_i + \beta_2 lnTA_i + \beta_3 Tax_i + \beta_4 DealSize + \beta_5 RD_i + \beta_6\, Industry_i + \sum^4 B_j Dummy_j + \varepsilon_i$$

MB is the target's ratio of market capitalization to book value, *lnTA* is the natural logarithm of acquiring company's total assets, tax is the effective tax rate of the bidder, *DealSize* is the ratio of the deal value to the market capitalization of the acquirer, *RD* the acquiring company's expenses for R&D, industry dummy that shows value of 1 if the seller belongs to the finance sector and 0 otherwise, and to conclude specific dummy variables to divide targets into four different categories: "money transfers and trade

credit", "brokers and dealers' services", "accounting, research and advisory services" and "consumer credit" sub-sectors, respectively.

Features such the cross-border nature of the deal, whether the acquirer was from a developed country or not have been tested in order to explain the response of investors to the deals announcements, considering a (0, +1) event windows as it results to be the more significant timeframe. Both domestic and cross-border Fintech M&As with a bidder from a developed county generates higher stock returns of 1.08% compared with companies from emerging countries. This is due to both the fact that an advanced environment might support the implementation of the target's technology and as signal that expansions strategy is positively perceived by investors. Evidences suggest how one of the crucial motives behind Fintech mergers is the possibility to get access to advanced technologies as the returns are higher for companies not involved in the Fintech sector. This is supported by the fact that acquisitions result to be more beneficial, with CARs of 1.19%, for buyers with no prior experience in Fintech M&A.

In addition, shareholders' reaction results to be more positive when the acquirer invests heavily on Research and Developments, indicating their tendency for successful post-deal tech integration due to capability of implementation of new technologies and therefore more growth potential. The impact of the factor related to the *Effective tax rate*, included as a proxy for the regulation of the Fintech sector, appears to be significant at 10% level. This positive effect can indicate that shareholders think that bidders of financial technology firms will decrease the amount of taxes they will pay, as different countries are introducing incentives to invest in Fintech. Further, in line with the previous studies on the *Size* effect mentioned in Section 2.1.1 and 2.2, since the impact of the *lnTA* variable is negative and significant at 10% level, a smaller bidding company will have higher stock market reaction after a Fintech M&A announcement.

In conclusion, the study illustrates how stock market performance is better for bidders operating in the financial sector (+0.018) at 10% significance level, confirming the higher level of integration due the realization of synergies between banks and Fintech companies (Dranev *et al.*, 2019).

Further, Cappa *et al.* (2020)'s empirical analysis enlightens the contingencies that could make an acquisition successful for the acquiring bank in terms of stock market reaction to the deal announcement, exploiting a (0, +2) three-day event window. Using CB Insight database, the authors construct a sample identifying Fintech companies acquired by banks between 2016 and 2020 in United States and Europe.

Cumulative abnormal returns are calculated comparing the actual experienced returns of the bidder with the returns of the MSCI index. The study is then developed through a multiple regression analysis to assess the performance of the bidder in different conditions.

Two dummy variables, representing one of the main features tested also in the present paper, are inserted to distinguish between the effect of Partial and Full acquisitions and another binary variable help differing between deals where the target is a Fintech company in the payment sector or not:

$$CAR_i = \alpha_0 + \beta_1 Dummy\_Full_i + \beta_2 Dummy\_Payment_i + \varepsilon_i$$

Albeit negative effects of -0.016 have been observed for full M&As of Fintech companies at 10% significance level, partial investments show better results. Indeed, partial acquisitions might be a way to exploit the benefits of Fintech firms without facing the issues related to integrating diverse business models, giving the market a signal of commitment towards innovation. Full M&As imply instead a quicker and more disruptive integration, that could find acquiring banks unprepared, implying negative expectations on future profits and a negative stock price response. In addition, partial acquisitions of companies involved in Personal Finance or Fundraising activities seem more value creating, illustrating positive abnormal returns, if compared with partial deals in the Payment sector, whose result is effect on CARs of -0.018 at 5% significance level.

Along with the aforementioned motives for Fintech acquisitions, focusing on enhancing the bidders' technological developments, these previous evidences give rise to the main question of this dissertation: whether or not a Fintech acquisition may create value for the acquirer and which are the specific factors responsible for this shareholder's wealth enhancement. Thus, the present empirical study will expand previous literature by

including some M&A deal- and firm-specific determinants to assess more precisely the boundary conditions that make Fintech deals beneficial for the bidders.

The announcement of a transaction provides the market with new information to the market therefore, if the Efficient Market Hypothesis holds, shareholders' expectations related to this new information should be instantaneously and entirely reflected in stock prices. Thus, the value created by an M&A deal is captured by the abnormal return in a short event window around the announcement date. The rationale behind the adoption of CARs instead of other firm's performance measures such as ROE, Enterprise Value etc. is that abnormal returns are proxies of expectation of shareholders on future profits of the company under the assumption of stock market efficiency (Cappa *et al*., 2020).

In case the acquisition creates value, following the announcement there will be positive returns, whereas negative returns are signals of value-destroying acquisitions. In order to avoid biases due to potential information leakages, it is best practice in literature to include the time period immediately previous to the M&A announcement, while the insertion of the trading days straightway subsequent to the announcement takes count of possible delays in the market response.

The stock price reaction to the M&A is measured by computing the shareholders' abnormal returns surrounding the announcement day. using a 41 trading days event window that is 20 days before and 20 days after the announcement of acquisition. The selected window is long enough to avoid the effect of further economic features and to incorporate the response of inefficient markets. In addition, the results were obtained using the subsequent event windows: (−10, +10), (−3, +3), (−1, +1), (0, +1).

Abnormal returns ($AR_{i,t}$) are defined as the difference between the actual experienced arithmetic return and the expected return ($ER_{i,t}$), that is the predicted return that would have been achieved in case there was the takeover bid would have been announced and is based on the relation between acquirer's stock price and a benchmark index previous to the merger. Expected returns are calculated using the OLS market model as in Dranev *et al.* (2019) and Cappa *et al.* (2020) with Beta calculated with respect to the market index according to the Capital Asset Pricing Model. In the present study, the benchmark used

is the MSCI index, following the methodology used by Cappa *et al.* The abnormal returns are computed daily as follows:

$$AR_{i,}=R_i - \beta_i R_m$$

In order to estimate the systematic risk β_i, an event window from -250 days to -30 days related to the first event date t_0 has been used following Cappa *et al*. (2020) and Dranev *et al.* (2019). The advantage of the selected approach is that it permits to disregard the profitability associated with the market dynamics, and simultaneously to shrink the variance of abnormal returns (Dranev *et al.,* 2019).

Once the Abnormal Returns are calculated, Cumulative Abnormal Returns, that represent the excess returns generated by the M&A announcement, are measured for the different event windows by aggregating through time the ARs for each security as: $CAR = \sum AR_i$

A multivariate regression analysis is performed in order to investigate more deeply the contingencies that give rise to the returns following a Fintech M&A announcement. As previously done in all the researches mentioned in the Literature review outlined in Section 2, estimated CARs are employed as the dependent variable, while several deal-specific characteristics and firm-specific features of the bidders and the targets are employed as explanatory variables. Appendix A provides a more detailed definition of all the variables included in the model.

Thus, following *Dranev et al.* (2019)'s study, and introducing a variable to distinguish between the effect of full and partial investments as done by Cappa *et al.* (2020), the model includes the sets of variables whose impact on stock returns around the announcement date is tested:

$$CAR_i = \beta_0 + \beta_1 MB_i + \beta_2 lnTA_i + \beta_3 Tax_i + \beta_4 DealSize + \beta_5 Full_i + \beta_6 Industry_i + \beta_7 Payment_i + \varepsilon_i$$

The multivariate regression analysis has been conducted over two of the different event windows used to compute the CARs, as done in the aforementioned precedent empirical researches: (−20, 20), (−10, 10).

The variables *MB* and *lnTA*, as above-mentioned in Section 2.1.1. and Section 2.2. for other empirical researches, allow to assess the *Size effect hypothesis*, under which larger

bidding companies usually experience lower returns. The expected result of the *Tax* determinant is instead positive, as it is forecasted, according to Dranev *et al.* (2019), that the acquisition of Fintech companies will lead to tax reductions as there are fiscal incentives for financial technology firms. Further, the impact of the *Full* dummy variable is predicted to be negative since, according to Cappa *et al.* (2020), a partial M&A would lead to more benefits for the acquiring firms due to its less disruptive nature, therefore it will be more appreciated by investors. The dummy *Payment*, present in both Dranev *et al.* (2019) and Cappa *et al.* (2020), is also introduced to test whether the mergers involving specifically the Fintech Payment sector imply a negative stock price response. Thus, for the purpose of the analysis, the Fintech targets in the sample are divided in the Payment, Personal Finance & Analytics and Fundraising categories.

In addition, as in Dranev *et al.* (2019), CARs are tested within different subsets to assess specific hypothesis on the drivers of the value creation:

1. the impact on acquirers specifically belonging to the banking industry
2. the impact on bidders strictly belonging or not to the Fintech industry.

These two other dummies, *Bank* and *Fintech*, in fact, together with the dummy *Industry*, allow to test the *Industry relatedness hypothesis* that predicts that deals generate more value when they involve companies in the same sector as it is a method to deploy more synergies.

Following the same approach of the inherent previous literature, the coefficients are estimated using Ordinary Least Squares (OLS) adopting heteroskedastic and autocorrelation consistent (HAC) standard errors. This approach is compulsory as the White (1980) heteroskedasticity test rejects strongly (at even the 1% level) the null hypothesis of homoskedasticity. After computing the coefficients, a two-tailed test for significance is realized for the individual variables to assess their statistical significance. For each model, a standard F-test for overall significance is also performed.

As abovementioned, one of the hypotheses tested in this empirical study focuses on the impact that a Fintech M&A announcement has on the acquirer's stock price. In this respect, CARs were calculated for the bidders companies in the sample. A estimation window was used to measure the correlation between the yield of the security and the one

of the market, which was previously described corresponding to the MSCI US index. This estimation period was set to start 250 days and end 30 days before the occurrence of the event. For each of the 54 observations in the sample the parameters related to the intercept and slope of the regression were found, α_i and β_i respectively.

$$R_{i,t} = \alpha_i + \beta_i \cdot R_{m,t} + \varepsilon_{i,t} \text{ for } i = 1,2,\ldots, 54$$

Once the parameters are obtained, expected values are measured through the development of the following equation for each bidding company in the sample chosen:

$$R_{i,t} = \hat{\alpha}_i + \hat{\beta}_i \cdot R_{m,t}$$

Thenceforth, abnormal returns are calculated as the difference between expected and actual values. After computing the CARs for each firm by summing up the abnormal returns in the selected event windows, a two-tailed test at a 5% significance level is performed to assess whether a Fintech M&A announcement has a significant impact on the returns of stocks of the acquiring company.

The performed analysis suggests that that, in the case of the 41 days (-20; +20) and 21 days (-10;+10) event windows the cumulative abnormal returns are significantly different than zero. Specifically, the bidders in the sample have obtained significant CARs in 79.6% and 85.2% of the deals considering respectively the 41 days and 21 days periods. On the other hand, the shorter intervals do not result to guarantee significant returns for the acquirer.

The CAARs are positive in all the time intervals with the exclusion of the 21 days one (-10; +10). However, the latter is the only time window that results to be significant at 1% significance level, in line with the fact that the same period was the one with the largest number of significance CARs taken individually (85.2%), the majority of which were negative (35 out of 46 significant CARs). The first reaction after the announcement of a M&A deal involving a financial technology company appears to be only slightly negative, to then become sharply more negative on the seventh day after the news related to the deal. This is in line with previous literature that shows how negative results are obtained after a technology deals considering a longer period of time (Dranev *et al.*, 2019). In addition, this significant negative result is in line with the one obtained by De Long (2001)

in its analysis involving banks acquisition, implying negative cumulative average abnormal returns of -1.68%, and with the one by Cappa et *al.* (2020), -0.02%.

On the other hand, the second part of the empirical analysis indicate that the outcome of Fintech M&A activity for the bidders depends on several contingent elements concerning deal and firm-specific characteristics. More specifically, this empirical research provides new insights into the features that make a Fintech transaction beneficial or detrimental for the acquirer.

The multivariate regressions are performed to assess the impact of several deal-specific and firm-specific features on the bidders' returns. In the case of the cross-sectional regressions (1), (2) and (3), CARs (-20; +20) are defined as the dependent variable, whereas the deal and firm specific characteristics are the independent or explanatory variables. Model (2) integrates model (1) with the introduction of the variable *Fintech*, whilst model (3) adds the variable *Bank* as well to the multivariate regression. On the other hand, the models (4), (5) and (6) consider the same variables as the first three models but the CARs are computed in a different time period: (-10; +10) days around the M&A announcement date. The two time intervals were selected since they are the periods where the majority of CARs result to be significant on a stand-alone basis.

The empirical evidence show how deals involving larger acquiring firms are less beneficial for them. In fact, the coefficient *ln Total Assets* is, as predicted, effectively negative and statistically significant respectively at 5% and 10% significance level in model (1), (4) and (6). Thus, the obtained result is consistent with the one achieved by Dranev *et al.* (2019) on the same variable, that obtained a negative and 10% significant *lnTA* coefficient, supporting the *Size effect hypothesis* under which the larger is the size of the acquiring company the lower is the value created by a Fintech M&A deal. This could be explained by the fact that smaller firms incorporate higher growth potential therefore the expectations on the outcome of an acquisition are better or alternatively by the hubris hypothesis, under which management tends to overpay for target companies because of their egos. In addition, the result is also in line with the studies by Faccio *et al.* (2016), Beltratti *et al.* (2013) and Beitel *et al.* (2004), testing the same effect taking into account different variables.

Likewise, the coefficient *Full* –a dummy variable equal to 1 in the case of a 100% acquisition and 0 otherwise- appears to be negative and statistically significant at 10% significance level in models (2), (3) and (5). This negative effect of a full acquisition is totally in line with the empirical study conducted by Cappa *et al.* (2020), that shows as well a 10% significance of the coefficient. This negative impact on CARs finds its explanation in the potential issues concerning the integration of diverse business models that could undermine the shareholders' expectations on the possibility of future profits for the firm. On the other hand, a partial acquisition might be more appreciated as it is a softer way to gradually achieve the new technologies, avoiding huge disruption of the business.

Another feature that lower the shareholders' returns around the date of the announcement is the belonging of the target Fintech company to the digital payments sector, as such a deal could arise the fear of cannibalization around investors due to the similarity with the services already offered by financial institutions. Consistently with the results obtained by Cappa *et al.* (2020) and Dranev *et al.* (2019), the coefficient *Payment* -a dummy equal to 1 if the Fintech target is involved in the digital payment sector (e.g. e-wallets, in-app purchases, money transfer, contactless payment and P2P payments) is negative and statistically significant at 5% level for the models (3) and (5) and at 10% level in the case of the models (2), (4) and (6). Thus, if compared with the other Fintech sectors, Fundraising, Personal Finance and Analytics, it appears that the stock market reacts in a worse manner.

To the contrary, one of the contributors to the potential creation of value through Fintech M&A is the tax regime of the acquirer, as there is the belief that bidders could reduce their amount of taxes by acquiring a Fintech company due to the special tax incentives that financial technologies firms are usually subject to.

In addition, the present paper confirms the *Industry relatedness hypothesis* under which acquisitions of firms belonging to the same industry are more beneficial for the acquirer since they lead to higher expectations on the exploitation of synergies. In models (1), (2), (3) and (4), the related coefficient *Industry* -a dummy equal to 1 in case of acquirer involved in the financial services sector and 0 otherwise- is positive in all the regressions and statistically significant respectively at 1% and 10% significance level. The result is

consistent not only with Dranev *et al.* (2019), that just obtained a 10% level of significance for the coefficient, but also Hoberg *et al.* (2010), Delong (2001) and Beitel *et al.* (2004). This positive impact is due to the fact that investors expect to benefit from more synergies creation when the two companies operate within the same sector, and therefore achieve more value. In line with this finding, the coefficient *Fintech* -equal to 1 whenever the acquirer could be strictly defined as a Fintech company, and 0 otherwise- , is positive in all the regressions in which it is included. However, its positive impact results to be statistically significant only with regard to model (3), strengthening even more effectively the *Industry relatedness hypothesis*. Additionally, the dummy *Bank*, introduced to study the same phenomenon, appears to be slightly negative in the case of model (3) and positive in model (6). Nevertheless, the coefficient is not significant in either one or the other regressions, therefore this ambiguous result is not statistically different than zero.

Comparing the significance of the coefficients obtained with this study with the two main studies of reference, performed by Dranev *et al.* (2019) and Cappa *et al.*, most of the coefficients seem show the same significance, with the exception of *Industry*, that being significant at 1% level appears to be more reliable in the present research. The limited significance of coefficients in this and the other aforementioned analyses regarding Fintech M&A is mainly due to shortage of data on transactions and the small size of the sample, considering that the market is still on a starting phase.

Nevertheless, this study is not exempt from limitations leaving room for further enhancements of the analysis. First, because of the difficulty in gathering data for the target, as many are not listed, the study only focuses on the acquirers' returns, even if it is known from M&A literature that returns are usually higher and more significant for the target after the merger announcements. It is also true that since Fintech is a phenomenon that has just raised in the last years, the sample of the transactions involving a US publicly traded acquirer is small, including only 54 deals, restricting the significance of the coefficients used in the regression as well as in previous literature. In addition, the research focuses on the value created by the transactions in the short term. Nevertheless, it is typical that all the information is not immediately captured by prices as it should be under perfect market efficiency, therefore it is suggested to develop new studies by

looking also at the long term effects of the deals, such as analyzing Buy-and-Hold Abnormal Returns. In addition, the paper focuses just on few components that might be responsible for the transaction outcome, and further research may include several other features in the analysis. Indeed, the majority of the components studied refers to the bidders. Thus, future studies may add some variables related to certain characteristics of the target company. Additionally, whilst this empirical analysis exploited an event study methodology to assess the potential value creation, further research might verify if the same outcomes are obtained through the adoption of other methodologies, such as studying operating and efficiency indices.