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Liquidity and profitability as main drivers in successful distressed M&A during downturn

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Introduction

In the dynamic and constantly evolving world of business, mergers and acquisitions represent a pivotal strategy adopted by corporations seeking growth, diversification, or enhanced competitiveness. These corporate strategies are pursued in varying economic landscapes, sometimes characterized by vibrant economic activity, while at other times necessitated in downturns marked by economic recessions or crises.

Over recent years, the globe witnessed an unprecedented downturn brought about by the COVID-19 pandemic, starting from early 2020, which led a wide number of firms facing financial distress.

In this context, the technology sector emerges as a unique domain characterized by high R&D expenses and a rapidly changing competitive landscape. The intricacies involved in M&As in this sector, especially concerning profitability and liquidity during downturn scenarios, opened spaces for examination through the lens of well-established and contemporary theories and methodologies, a gap this research endeavors to fill.

The current body of literature presents a range of conflicting views on the positive and negative implications of liquidity and profitability indicators in guiding M&A transactions during downturns. This dichotomy creates an opportunity of clarity and consensus, significantly pronounced due to the lack of substantial research in this area. The recent downturn triggered by the COVID-19 pandemic presents an opportune moment to delve into this aspect with a fresh perspective, considering the distressed acquisitions in the technology sector.

The core objective of this research is to discern whether profitability and liquidity positively affect M&A operations during downturn scenarios. Leveraging a multiple case study approach, this research endeavors to explore the underlying dynamics affecting the outcomes of M&As during downturns, to evaluate the efficacy of liquidity and profitability indicators in predicting the success of acquiring distressed targets during downturns and understand the role of different deal characteristics, including the nature of the acquisition (friendly or hostile) and the number of participants in influencing the outcomes.

Based on the research objectives, the following primary research questions will be whether liquidity and profitability indicators aid in predicting the successful acquisition of distressed targets in downturn situations in order to understand the nature of the distress and the health status of the target company.

The second question this study seeks to answer is what role the economic backdrop play in influencing the outcomes of M&As, and how has this been reflected in deals made before and during the COVID-19 pandemic.
Understanding the intricate dynamics of M&As in downturn scenarios is critical in informing corporate strategies and policy formulations. This research stands significantly as it bridges gaps in the existing literature by offering a timely investigation into the M&As carried out before and during the COVID-19 pandemic. Moreover, the deep dive into the technological sector, characterized by high R&D expenses and pivotal roles in modern economies, extends the study's relevance, offering targeted insights that could steer strategies in a sector fundamental to contemporary society.

As reported before, this research narrows its focus on M&A deals in the technology sector, categorizing them into two based on their occurrence: pre-March 2020 (non-downturn) with the analysis of the acquisition of LinkedIn by Microsoft and the one of Yahoo by Verizon and from March 2020 to December 2021 (downturn, marked by the COVID-19 pandemic) analyzing the acquisition of Slack by Salesforce and the one of Fitbit by Google. Within this scope, the research examines the target characterized by negative net income, designating them as distressed, and explores the chosen parameters to understand the role of liquidity and profitability indicators in successful acquisitions.
This thesis is organized into three chapter, commencing with a literature review that lays down the theoretical framework drawing from various studies and perspectives. Following this, the research methodology elucidates the multiple case study approach adopted to analyze the M&A deals selected for this study, considering their various characteristics and the economic backdrops during which they were pursued. Subsequent section will present the conclusions and the final discussions in order to answer to the questions raised before.

1. Literature Review

1.1 Merger & Acquisitions

The main objective in M&A deals is to create value by acquiring target companies that can benefit the acquirer through synergies or innovation and thus generate greater returns through this inorganic growth. (Alexandridis, Antypas, & Travlos, 2017)

In the last two decades M&A operations have changed a lot in deal attributes and quality, especially in the post-2009 period. Research conducted in the US market by Alexandridis, Antypas and Travlos in 2017, showed that acquisition after 2009 were subject to an average abnormal return of 1.05% meanwhile, in the period between 1990 and 2009, they recorded an average loss of 1.08%. Among all these deals, the return differentials were prevalent among cash and stock financed deals.

1.2 Merger & Acquisition waves

Over the years, there have been periods when M&A activities have been more widespread and others when there is a reduced presence of deals. This is due to multiple factors that influence a starting of the M&A waves. A commencing of wave can be due to technological innovation or changes in regulation that might increase the opportunity for profitable merger (Klaus Gugler, 2011). These innovations can affect either the whole market or just a single industry, and therefore we might refer to wider or narrower waves (Jovanovic, 2022).
Other part of the literature believes that one of the main motives is the mispricing of some firms during stock market booms and because the managers of the overvalued companies know this overvaluation, in order to protect their shareholders from the possible wealth loss deriving from market corrections, might decide to exchange their shares for real assets of another companies (Shleifer, 2003).

In his book “Mergers, Acquisitions, and Corporate Restructurings”, Patrick A. Gaughan, (Gaughan, 2011) consistently with the actual literature, defined six different merger waves over the years:

1. The first Merger Wave (1897-1904)

   This wave affected mainly manufacturing, mining and infrastructure industries and registered its peak in 1899 with 1,208 deals. It is also called “Horizontal consolidation wave” due to its predominance of horizontal integrations that led to more concentrated

sectors with creation of large monopolies. In fact, horizontal merger accounted for 78% of the total deal in that period.
One of the main reasons that started the wave is the development of the transportation system in U.S. This fact made easier to trade goods with distant markets and therefore it increased the competition leading to higher amount of merger to allow the local competitors to maintain their market shares. This wave is also characterized by the pursue of economies of scale in order to allow the firms to keep their prices competitive.

2. The second merger wave (1916-1929)

The second merger is a sort of continuation of what happened during the first but in this case the antitrust environment was more concerned of the presence of strong monopoly, and it implemented laws to reduce their power. This action resulted in an increase of vertical mergers and a creation of more oligopolies.
The beginning of the Great Depression represented the end of the second wave.

3. The third merger wave (1965-1969)

Due to the booming of the economy and to high P/E ratios, in this period there were high level of merger activities but differently to what happened in the previous two waves, in this case was not uncommon to see deal in which larger firms were acquired by smaller ones. Because of the higher valuation and the bullish market, there were a predominance of stock-financed acquisitions.
Since most of the transactions recorded in this period were conglomerate transactions, this wave is also defined as “The conglomerate wave”. Another difference from the previous wave is represented by the heightening of the antitrust law to prevent the further concentration in some industries.
The conglomerate wave registered its peak in 1969, with a number of mergers exceeding 6,000 but the decline in stock market combined with new tax reforms and the reducing incentive to merge declared the end of this wave.

4. The fourth merger wave (1984-1989)

After the third wave, M&A activities have been characterized by a downward trend in the 1970s.
In 1984, M&A announcements have started to increase again but this period is characterized mainly by hostile mergers. The fourth wave is also known as he “Megamerger wave”

because some of the U.S. largest firms became targets of the acquisition over that period. This cycle affected most the oil and gas and medical equipment industry among all the others because of their deregulations.
Other key differences among the previous waves are represented by the more aggressive role of investment bankers and more widespread use of debt in the transactions. Banks and law firms, having seen the growing prevalence of hostile acquisitions, started to develop innovative products and techniques aimed to help firms to prevent takeover and started to pressure them to be hired as advisors.
Because of the larger size of deals in this period, most of the transaction were financed with large amount of debt and for this reason even small companies were able to make bids for larger targets. In fact, this wave is also known as the first one in which a considerable number of deals were made through leverage buyout.

5. The fifth merger wave (1993-2001)

1993 can be defined as the beginning of the fifth merger wave. Even during this period, the deals were characterized by high value but differently from what happened in the previous cycle, the use of debt was reduced drastically. Managers, in order to not repeat the same mistakes of the 1980s, focused more on strategic deals in order to boost the internal expansion with long-term horizon and the relied more on friendly mergers rather than hostile. The increased use of equity helped to reduce the financial pressure of the acquirers and allowing the managers to carry out mor efficient transaction.
In this cycle, more than $1.4 trillion was spent, peaking in the 2000s coinciding with the end of the tech bubble. Such a high value is due in part to the fact that those years were characterized by massive overpayments, mega deals, prevalence of equity financing, and overvaluation of acquiring firms (Moeller, Schlingemann, Stulz, 2015).

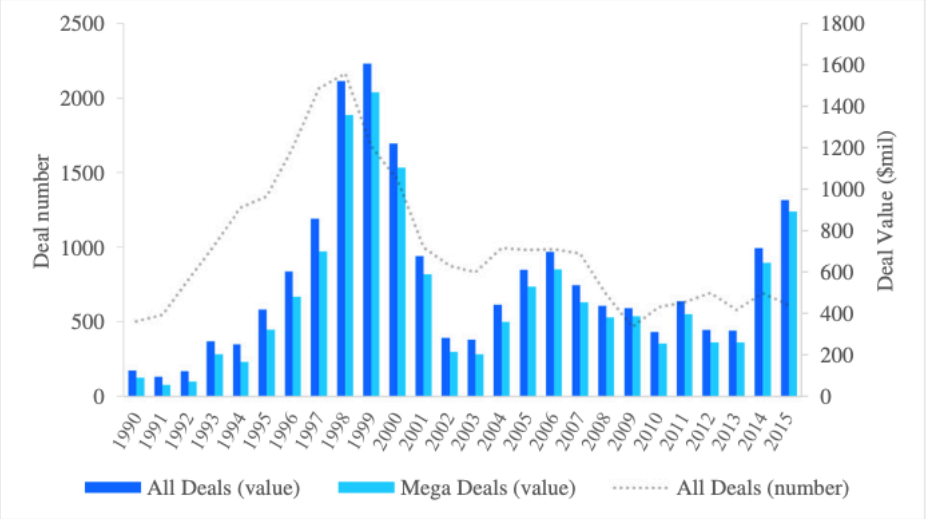
6. The sixth merger wave (2003-2007)

The sixth M&A wave began around 2003, peaked in 2006 and saw its end the following year.
This cycle shows lower values (both in terms of deal number and deal value) because the asset valuations of buyers and the differences in valuations between buyer and target are significantly lower than in the previous one. Other key factors that differentiate it from the previous wave are lower U.S. corporate loan prime rates and stronger cash balances for

acquirers, which result in deals characterized by cash or debt financing deals. (Alexandridis, Antypas, & Travlos, 2017).
A study conducted by Billet and Qian in 2008 showed how market for corporate control was less competitive in terms of value by 55.1 percent in the sixth wave than in the fifth wave and by 16.4 percent in terms of numbers.
On the other hand, regarding the average premium paid, the study reported values for 37.9% and 45% for the sixth and fifth waves, respectively.
Cash-financed acquisitions in this cycle led to value destruction (Harford, 2005) because the cash-paying acquirers had many more cash reserves than in the previous period leading to an exacerbation of the free cash flow problems (Jensen, 1993).
This leads to the conclusion that paying lower premium is not sufficient to contribute to value creation; in fact, another key element to consider is investor sentiment. In fact, there are evidence that in periods preceded by more investor over-optimism, the short-run abnormal returns to acquirers are higher. (Rosen, 2006)
Despite both fifth and sixth waves are considered as high valuation periods, in the fifth cycle the investor sentiment flourished, and this fact may explain why on average the returns to acquirers were higher.

As a consequence of the financial crisis in 2007/8, there were a deceleration in deal activity which marked the end of the sixth wave (Alexandridis, Antypas, & Travlos, 2017).
As we can see in the figure 1, starting from 2010 there is a slight recover of M&A activities until 2015.
Especially in this past year, deal value volume reached nearly 1 trillion, representing the highest value compared to the previous 15 years, almost returning to pre-sixth wave levels. Of this amount, 94% is represented by mega-deals only and indicates a greater trend toward large acquisitions in recent years.
Another major differences in the post-2009 deals are that synergistic benefits are quoted as part of the deal announcement in more than 61% of public deals, relative to 25.5% during 1990– 2009 and that there is a significantly lower levels of managerial hubris post-2009. (Alexandridis, Antypas, & Travlos, 2017)

Figure 1: M&A waves



Source: "Mergers, Acquisitions, and Corporate Restructurings" P. Gaughan

1.3 Distressed Firms

The actual literature on the determinants behind distressed acquisition is quite limited especially for developing countries. Even though acquisitions represent a way to enter in developing countries, there were, especially in the past, severe restrictions imposed by the local governments on foreign acquirers (Evenett, 2004)

With the advent of the global financial crisis in 2008, a large number of companies entered into financial distress and were forced out of the market. Simultaneously, the healthier companies were able to take over the distressed companies and this also represented a viable alternative for restructuring the assets of the distressed firms and to avoid bankruptcy.

In fact, one type of restructuring of distressed firms is to merge its operations with those of an acquirer (Clark, Ofek, 1994)

A study conducted by Iwasaki, Kocenda and Shida in 2021 (Iwasaki, Kocenda, Shida, 2021) analyzed a sample of 247,501 firms across 17 different European emerging economies from 2007 to 2019. The aim of this study was to find some evidence about the effect of the economic downturn in distressed acquisition in emerging economies.

The results of this study showed that among the sample, c.a. 10% of this distressed firm were acquired. They have also demonstrated that the number of distressed acquisitions accelerated from 2007 to 2010 and then receded because of the fact that the potential for restructuring the company through distressed acquisitions have diminished. After 2010 most of the companies in the sample have entered into bankruptcy or liquidation.

In order to evaluate the probability of distress and also the probability of survival, they analyzed the performance of these companies through Return on Assets (ROA), liquidity, solvency and labour productivity.

The first indicator is useful to understand the firm profitability and a higher ROA represents lower probability of financial distress and bankruptcy (Gorg, Spaliara, 2014). But in the context of distress, firms with above average profitability are seen as better target for the potential acquiror. Similarly, the other indicators mentioned above are also inversely correlated with probability of financial distress, but they are also positively correlated with the probability of acquisition. (DePamphilis, 2019).

Another variable that influences the probability of distressed acquisition is represented by the institution. High quality institutions are essential to facilitate the transaction among firms because, by improving the credibility of contract commitments, they lead to lower transaction costs (North, 1993).

The main role of the institution in acquisitions is to ensure the protection of the law, democracy and specially to control the corruption in order to reduce the costs that firms have to sustain because of higher regulatory burden or uncertainty (Acs, Szerb, 2007).

Also, the bank plays a crucial role in the distressed acquisition. Indeed, an efficient banking sector will not restrict lending and brings more competition among the financial institutions. This is rarer in emerging markets in which banks grant tighter lending because of the higher uncertainty and this leads to constraint in firms' capital structure (Agca, 2013).

Another relevant finding from this research is that no-profit goal (typically in state owned firm) can increase the probability of financial distress, especially among firms operating in energy sector (Matuszak, Kabacinski, 2021).

The final consideration is that ROA, liquidity and solvency are the most important factors when a firm consider buying a distressed target (Iwasaki, Kocenda, Shida, 2021), mainly because more profitable firms represent easier target for an effective restructuring (DePamphilis, 2019).

Regarding firms listed on stock market, the probability of distressed acquisition diminishes as a result of expected bureaucratic complications resulting from a delisting of the firms from the stock market (Iwasaki, Kocenda, Shida, 2021).

For what concern the firm size, larger firms have higher probability to be target of acquisition, but this variable is considered less important than the profitability of the firm assets (ROA); in fact, sales-generating ability is considered one of the most important aspects to be considered in distressed firm acquisition (Theodossiou, 1996).

Another crucial role in distressed acquisitions considerations is represented by the age of the company. Loderer and Waelchli in 2011 (Loderer, Waelchli, 2011) showed in a research that the older the firms and the lower the probability of acquisitions. This fact can be explained by the higher difficulty in the acquiror to apport restructuring changes in the target company.
Most of the available literature in distressed acquisition agrees that the main driver is the return on assets. This in turn is influenced by its composition. The same research conducted by Iwasaki, Kocenda and Shida shows that if the majority of the firm's assets are intangible, there is lower probability of distressed acquisition because assets that are not material may not represent a sufficiently lucrative argument in contrast to material assets.
So far, we have analyzed the main aspects that characterize distressed acquisitions by focusing on company-specific factors but an important equally weight in acquisitions decisions is to be attributed to the macroeconomic environment.
Country-specific economic growth and inflation contribute to increase the probability of distressed acquisitions; in particular the latter is associated with higher probability because of the diminishing in real value of the target assets over a lengthy bankruptcy procedure.
Under the U.S. regulation, when a firm becomes distressed can either appeal to Chapter 11 and voluntarily file for bankruptcy in order to seek protection against its creditor or can be filed for bankruptcy by the latter in such a manner that can be liquidated.
When the firms file for bankruptcy usually they are forced to sell their distressed assets below their fundamental values and this might represents a benefit for the acquirers because they are able to purchase it at discount but in the case in which the acquirer operates in the same industry of the target and the distress is at the industry level, this may results in worse deal and worse overall returns (Shleifer, Vishny, 1992).
Numerous studies over the past thirty years have been made. For example, in 1994 Clark and Ofek found that acquirers of distressed firms earned significantly negative long-run cumulative abnormal returns (CARs) while Hotchkiss and Mooradian in 1998 reported positive short-run CARs but not significant long-run operating performance.
More recently, Ang and Mauk (2011) analyzed distressed target (intended as negative net income) and they found evidence that acquirers earned negative announcement returns.
If we consider the distress at the industry level, acquirers may obtain both short-run and long-run returns by acquiring the target but only if they operate outside the industry (Oh, 2018).

Another method to define whether a company is facing financial distress or not is the Altman Z-score model, developed by Edward Altman in 1968.

This index uses five different variables namely liquidity (X_1), cumulative profitability (X_2), profitability (X_3), leverage (X_4) and asset turnover (X_5) to predict the probability of bankruptcy of a public firm.
The formula used by Altman is the following:

$$Z = (1.2 \times X_1) + (1.4 \times X_2) + (3.3 \times X_3) + (1.6 \times X_4) + (0.999 \times X_5)$$

$$X_1: \frac{Working\ Capital}{Total\ Assets}$$
$$X_2: \frac{Retained\ Earnings}{Total\ Assets}$$
$$X_3: \frac{EBIT}{Total\ Assets}$$
$$X_4: \frac{Market\ Value\ of\ Equity}{Total\ Assets}$$
$$X_5: \frac{Sales}{Total\ Assets}$$

Source: Edward Altman

He also evaluated the relative contribution of each variable to the total index and reported that profitability showed the highest contribution. Also, to interpret the result, the lower the Z-score and the higher the probability of default of the firm.
Usually, a score below 1.8 suggests that the company can be defined financially distressed while a score higher than 3 means that the firm is unlikely to file for bankruptcy.

1.4 Are M&A activities different during downturn?

In the previous section we analyzed the implication of distress in M&A operations but another crucial variable that may affect the outcome of the deal is represented by the economic environment. In fact, some companies may experience distress, but this might also be due to exogenous events such as financial crisis or downturn periods and it follows that the outcomes of M&A transactions will also be different and affected by different variables than in non-distressed periods. On this regard some studies have been done over the years, and among them is the one by Beltratti and Paladino in 2013 (Beltratti, Paladino, 2013).
In this research they tried to understand if deals during downturn period may register abnormal returns deriving from the opportunities generated by the crises and they conducted this study on a sample of European banks.

In fact, the literature agrees on the fact that crises may represent opportunities for healthier banks in term of capital and liquidity to acquire distressed banks at lower prices thus increasing their market share (Berger, Bouwman, 2009). Therefore, a reduction in the number of potential buyers would consists in another advantage for the acquirer as a fewer number of competitors in the procedure.
A particular feature of the banking sector is the higher level of opacity of their assets and because of these M&A operations in this sector may become costly because of the higher due diligence costs, especially after the financial crisis of 2008 (Flannery, 2010).
In order to understand whether and how M&A are different during financial crisis, they looked the abnormal return over different window periods by focusing on the main variable that might enhancing the abnormal returns.
During the period 2007/08, the European financial sector registered 292 deals with a total of €345 billions while in 2009 this amount was reduced to €80 billions, and it reached only €30 billions in 2010. This declining trend was explained by the higher credit risk during the crisis and by the lack of clear anti-crisis measures.
The study reported an average transaction value of €1,682 millions and showed that for the period in which the economic situation was at its worst, because of the crisis peak, the time required to complete the transaction was significantly higher than the one required for deals before July 2007 or after December 2008 (an average value of 109 days for the peak period versus an average of 55 days for non-peak period). This large different may be explained by the higher funding problems and by the longer due diligence process due to the higher opacity of the assets.
Another evidence from this study is that bidders located in Italy, Germany, France, Spain and UK were the most active during the period of the analysis.
Regarding the cumulative abnormal returns ("CAR"), considered as the differential between the raw stock return and the required return calculated with the CAPM, they focused on CARs around announcement date and CARs after the completion of the operation.

1.4.1 CARs around the announcement date

To analyze the CARs, they took into consideration the window composed by the day prior to the announcement and the day after the announcement [-1;+1].
In these results, Beltratti and Paladino contrary to the literature for non-distressed M&A, found evidence that cash-financed deals reported lower CARs of about 1.6% around the announcement date, especially for large deals.
This happened because in downturn situation the marginal value of cash is usually higher than in normal periods and by using liquidity there is also an increase in the risk of the assets of the acquirer.

Regarding the financial strength indicators such as ROE and equity, they found a positive impact on the CARs. In fact, an increase of one standard deviation in ROE led to an increase of 21 basis point in return while an increase of one standard deviation in equity generated an increase in returns of 89 basis points and this is consistent with the fact that banks with higher tangible equity faces better downturn situations (Beltratti, Stulz, 2012).
Focusing on the deal's characteristics, they showed that friendly deals and transactions in which bidder and target are located in the same country generated respectively a higher return of 25 and 24 basis points for one increase in standard deviation. These two characteristics contribute positively to reduce the uncertainty associated with higher opacity of the deal.
Transparency is indeed one of the most important variables that influence the returns, and this is supported by the evidence founded; in fact, CARs were higher when the acquisition involved more transparent targets in term of availability of information related to their economic condition in platforms such as BankScope or Bloomberg.
The higher transparency turns into less concern of the investors about negative findings during the due diligence process.

1.4.2 CARs after the completion date

In this case, they took two different windows. One composed by the day prior the completion and the day after its [-1;+1] and another larger window that extended the after-completion sample to 10 days [-1;+10].
Transparency in this case results to be even more important, in fact an increase of one standard deviation in these variable results to an increase in returns of 55 basis points. This higher return is also a consequence of the fact that a greater number of analysts have analyzed the acquired companies by giving more confidence to the investors and reducing the uncertainty due to the opacity.
After the announcement there was also an increase in the idiosyncratic volatility of on average slightly more than 1 percentage point, but this was only temporary, and it returned to the pre-announcement level after the completion date. The study reported that for one standard deviation increase in the volatility, there was a 160 basis points increase in returns.
Another important element is the speed of information dissemination during the process and an increase of the standard deviation for this variable registered a 72 basis points increase in returns.

1.5 Financing options in M&A

The literature distinguishes the methods of payment among cash, equity or mixed offers.

Most of the studies agree that equity-financed deals should earn lower returns compared to cash-financed deals, as the fact that financing through equity could hints to the market that the acquirer's stock could be overvalued (Mitchell, Stafford, 2000).

Martynova in 2007 analyzed a sample of European deals and showed that long-term operating performances of the acquirers increased by 1% for cash-financed deals while decreased by 1.2% for equity-financed deals and by 1.9% for mixed offers. Although this evidence, the study did not find statistically significant differences in excess operating performance among the different type of offers.

Regarding US deals, Fu in 2013 reported that overvalued acquirers that used stocks to finance the acquisitions significantly overpaid the transactions and that these deals did not create value.

This result has been confirmed by Ben-David two years later; in fact, overvalued acquirers are more likely to use equity to finance the deals and because of their overvalue they earn lower long-run stock returns and lower long-run operating performance if compared to acquirers using cash.

Although the literature shows that stock-financing deals could generate lower returns (both in term of stock prices and in term of operating performances), some firms may have no other solution than recur to this type of financing because of the presence of financial constraints. On the contrary, a presence of large controlling shareholder may discourage the use of equity as this may lead to control dilution.

Savor and Lu (2009) agree that, despite generating lower returns, stock financed deals are still better than no pursue the deal at all, supporting the idea that M&A operations are value creating.

Another variable that influences the post-deal returns is the firms' past asset growth. In fact, firms using equity to finance the deals are usually poorly monitored firms with higher assets growth rates and this fact could explain the poor long-run stock performance because of the maturity of their assets (Mortal, Schill, 2015).

Cash-financed deals, instead, are more frequent in transactions that involve private bidders who exert pressure on public bidders (Eckbo, 2018). Another evidence for cash-financing is represented by the fact that they are more common among cash-rich firms who have low opportunity cost of cash retention and who are less selective in choosing the target firms in such a way that they engage more value-destroying deals (Yang, 2019).

Other studies focused more on whether acquirer firms have used internal or external sources of financing.

The actual literature agrees on the fact that market usually react positively if firms use bank or debt financing to pursue M&A transactions because of the higher monitoring effects (Renneboog,

Vansteenkiste , 2017). According to this theory, Bharadwaj and Shivdasani reported in 2003 that deals entirely financed by banks obtained strongly positive announcements returns even if the acquirer firms were performing poorly.

Focusing on the use of internal funds, Martynova and Renneboog in 2009 (Martynova, Renneboog, 2009) demonstrated that deals in which firms use this type of financing tend to underperform deals debt-financed and in fact most large cash-financed deals were financed using debt instead of internal funds. However, their results only referred to short-term returns and no further studies have been conducted in long-run deal performance.

Notwithstanding debt-financed deals result to be the best choice, overleveraged acquiring firms may be forced to recur to other types of financing such as equity, because their high level of indebtedness, leading to lower returns (Uysal, 2011).

An alternative source of financing is represented by conditional value rights (hereinafter "CVR") combined with stock financing.

A CVR is a commitment by the acquirer to pay additional cash or stock if the share price declines below a predetermined level. Because of this mechanism, this instrument will guarantee to the shareholders a minimum payment.

Using a stock payment combined with CVR may generate higher announcement returns and better long-term operating performance compared to a solely equity-financed deal (Chatterjee, Yan, 2008).

When financing an acquisition, we always must assess the potential benefits and threats in increasing indebtedness. For example, an increase in leverage may increase the risk of default of the firm after the operation while in other case the bondholders may benefit from the co-insurance effect generated from the imperfectly correlated cash-flow generation of the two combined firms.

On this regard, Billet in 2004 analyzed a sample of US deals between 1980s and 1990s and found negative acquirer short-run bond returns while positive target bond returns in the following two months of the merger showing the co-insurance effect driven by these non-investment grade bonds.

On the opposite side, acquirer firms may reduce their leverage through a bond tender offer prior the M&A transaction. In this case, a target bonds subject to tender offers earned approximately 5% excess returns in the acquisition announcement month while bonds of firms not subject to tender offers registered insignificant returns (Billet, Yang, 2016).

Another factor that may lead to increasing in bond returns is represented by creditor protection intended as higher creditor rights or debt enforcement in cross border M&A. Renneboog, in 2017, reported higher bidder bond return by 0.07% and even higher values for riskier firms.

1.6 Timing of the operation

Great importance in the decision of whether to do an M&A deal should be attributed not only to the characteristics of the target firm or the methods of financing but also to the timing of the acquisition.

The actual literature delved into the topic by trying to understand whether deals made during a particular phase of an M&A wave might be more profitable than similar deals but made at other time phases of the same wave.

As said before, a company might take advantage of the higher valuation of his stocks and then acquiring a target firm using equity. For this reason, the studies have also focused on the importance of the Tobin's Q ratio.

Lang in 1991 and later Rau and Vermaelen in 1998, have reported that firms with higher market-to-book ratio obtained better performance when they acquired target firms with low market-to-book ratio, and this is due to the fact that if target company have been acquired when their prices were low, there were more potential of value creation from these deals.

Another study conducted by Heron and Lie in 2002 supported this evidence by showing how acquirer firms with high Tobin's Q outperformed in term of long-term operating performance prior and after the deals their industry comparable.

As reported before, M&A activities increase during period of stock market booming because of the higher valuation of the acquirer firms.

Contrary to this view, Bouwman in 2009 sentenced that the higher short-run announcement returns reported by the firms might be overestimated because deals done in higher valuation period earn lower long-run buy-and-hold abnormal returns (BHAR) and lower operating performance. These lower returns are even worse when deals are made in the final stage of the M&A wave especially in presence of managerial herding, that is when acquirer pursue the operation ignoring the profitability of its but basing only on the behavior of the peer CEOs.

The lower long-term stock and operating performance of end-of-wave M&A deals has also been confirmed by Duchin and Schmidt in 2013 but the same is not true for short-term announcement returns.

Regarding studies of cross-border M&A waves, Xu in 2017 found similar results. For in-wave cross-border deals, acquirers reported higher short-run cumulative abnormal return if compared to out-of-wave deals. With respect to long-run operating performance, in-wave deals still reported higher returns than out-of-wave, but also end-of-wave deals showed better performances than beginning-of-wave deals and this fact confirm the benefits generated from the presence of learning effect for the late entrants in the M&A operations.

This better performance of the end-of-wave deals is even more pronounced for the deals with higher degree of cultural, legal and financial differences between the acquirer and the target countries.

1.7 Types of buyers

The performance of a transaction is also strongly influenced by the reasons why it is made and thus by the type of buyer.

All the actual studies divide the acquirers into three categories: strategic, financial and private equity acquirers. The recent literature agrees with the fact that financial and private equity buyers tend to value the target lower on average (Renneboog, Vansteenkiste , 2017).

The ideal candidate for a private equity acquirer is a firm with high amount of tangible assets, lower Tobin's Q ratio and lower R&D expenses meanwhile this might not be the case for a strategic buyer that is looking to benefits from the synergies deriving from the merger.

Not only the type of buyer is important to understand the performance of the deal but also the selling mechanism can influence the outcome.

For example, if the strategic acquirers bid on target firm that has also been targeted by a financial acquirers may outperform, in term of short run cumulative abnormal returns and long-rung buy-and-hold abnormal returns, those who bid on targets that have been solely bid by strategic acquirers. These results are mainly explained by the fact that on average, strategic buyers are willing to buy target firms at higher prices than the ones offered by financial buyers and also by the fact that the latter, aim to buy mature companies that perform poorly (Malenko, 2014).

1.8 M&A as instrument to optimize capital structure

Capital structure represents a very important aspect to consider when starting a M&A operation or even the motivation itself to start the transaction.

One of the main motives behind an acquisition might be represented by the search of increasing debt capacity resulting from the combining of the two firms (Weston, 2007). In fact, when a firm make an acquisition can enhance its borrowing capacity through the increase in the merged firm's optimal leverage or through the target's excess debt capacity but if this acquisition will lead to consistently high leverage, it can negatively affect the future stock returns (Penman, Richardson, Tuna, 2007).

During the years, studies have been conducted on how the capital structure may affects the pricing and valuation of the operation. One of the latest is the one published by Ang, Daher and Ismail in 2018.

In their study, they analyzed the different implication in the transaction based on whether the buyer was over-levered or under-levered.
Regarding the first type of firms, one of the main reasons to acquire a target is the aim to reduce their leverage and increase the debt capacity in order to subsequently reduce the expected distress cost of debt. Due to the lack of excess debt capacity, the over-levered acquirers are usually willing to pay higher potential premium for the acquisition (Ang, Daher, Ismail, 2018).
For what concern under-levered firms, by not facing binding debt constraints, they are usually able to optimize the timing of the transaction and they generally pay lower premium and as seen in chapter 1.6, timing can determine also the method of payment of the operation and can influences the deal performance.

Returning to the study of Ang, Daher and Ismail, they analyzed a sample of 1,810 U.S. deals completed between 1990 and 2013 in which both acquirers and targets were publicly listed in the U.S. stock market and in which the percentage of shares acquired was at least 50%.
They defined as over-levered firms all those with leverage greater than their estimated optimal leverage ratio while under-levered firms all those with leverage lower than their optimal leverage ratio.
Another important aspect that they considered in the study is how to measure the increase in debt capacity. They defined the "change in leverage" as the pro forma pre-merger leverage of the acquirer and the target minus post-merger leverage; while "change is optimal leverage" is represented by the combined firm's optimal leverage ratio minus the acquirer's optimal leverage ratio in the year prior the acquisition.
Similarly to the other research presented, they also measured the announcement returns using the cumulative abnormal returns from the day prior to the announcement to the day after it CAR [-1,+1] and the buy-and-hold abnormal return over 12 and 24 months.

Consistently with the theory that over-levered firms pay higher average premium when pursuing merger to decrease their leverage (intended as "change in leverage") and to increase debt capacity, the authors reported a mean premium of 56.79% (and median of 46.88%) when there is decrease in leverage while a mean premium of 46.18% (median of 38.24%) when there is increase in leverage.
Using "change in optimal leverage" they found similar results and reported a mean and median premium paid of 54.95% and 44.65% for over-levered acquirers increasing optimal leverage while mean of 44.82% and median of 38.12% for over-levered acquirers that did not.

Regarding the stock market reaction (measured with CARs), they did not find an immediate differentiation between acquirers both under-levered and over-levered that increase or decrease their leverage. This means that market does not react immediately to the higher premium paid by over-levered firms even when this could suggest an overpayment made by the acquirers (for example when using over-valued stocks). The authors explained this market behavior as the unawareness of the market of the potential synergy gains that an increased debt capacity might produce. Also they explain the low CARs as the consequence of the over-valuation of the acquirers.

For what concern the longer-term returns, the mean and median BHARs 12-months were respectively 3.96% and 1.77% when the merger resulted in a leverage decreasing while mean and median for merger leading to increase in leverage were -20.63% and -21.35%. The same substantial difference in return was also reported for the BHARs 24-months.
These results reflect the value creation theory of the increased borrowing capacity for over-levered bidders.
Another important fact to denote is that longer term positive returns were also registered by under-levered firms who pursued M&A transaction that led to increasing in debt capacity.
This evidence is very important because it suggests us that the long-term returns realized by firms are the consequence of the gradual revelation to the market of the firm's growth opportunities deriving from the increase in borrowing capacity (Ang, Daher, Ismail, 2018)

The authors also reported that for one standard deviation increase in "change in leverage" (meaning a decrease in leverage) there were a subsequent increase in premium of 7 percentage point, an increase of 18.6 percentage point in BHAR 12-months for over-levered and 19.9 percentage point increase in BHAR 12-months for under-levered acquirers.
Regarding the share's overvaluation, a one standard deviation increase in the acquirer market-to-book ratio led to twenty-eight percentage point increase in the premium. Also, for one standard deviation increase in leverage.

1.9 Benefits from related and non-related acquisition

As a consequence of the different types of buyers, factor of considerable importance in the decision to pursue or not an acquisition is the presence of potential synergies.

The current literature is divided into those who think that vertical acquisitions can generate higher returns while others say that there is no difference in returns between acquisitions made with the aim to generate synergies and those made simply to diversify business units.
Schoar, in a study conducted in 2002, found evidence that asset complementarity can not only decrease the business risk but also strengths the firms' pre-existing resources and market position. This study showed how acquiring plants in unrelated industries might diminish the firm total productivity but by integrating them into an already diversified firms there is an increase in productivity more than for plants moving from a diversified firm into a stand-alone firm.
Another study by (Fresard, 2017), confirmed that a larger difference in industry specialization between acquires and target generates higher short-run announcement returns and in the long term higher operating performance. For example, in cross-border M&A this is mostly explained by the local knowledge that the acquired company have.
In the opposite side of the literature there are findings that support the theory of superior performance of related acquisitions; in fact, both short-term returns and long-term operating profitability are higher for deals between firms that have market similarities (Hoberg, Philips, 2010).
In another study by (Bena, Li, 2014), a significant importance should also be given to technological overlap. They showed that post-merger innovation output, such as patents, increased for deals where there was a technological overlap before the merger but no evidence for long-run performance have been founded.
Overlap in occupation also contribute to enhance short-term combined returns and better operating performance. This increase in performance is because firms can layoff duplicate workers and extract salaries reduction from the employee that stay on (Lee, 2018). The same study produced also evidence human capital relatedness is even more important in deals that do not involve overlap in term of product market because the latter significantly reduces the benefits of relatedness.
In conclusion we can affirm that most of the studies support the higher performance of related acquisition regardless of whether it is measured in term of industry, technology, product market or human capital. Most of them are based on short-term returns or long-term operating performance such as return on assets, return on sales, total factor productivity or sales growth in US or Europe (Renneboog, Vansteenkiste, Failure and success in mergers and acquisitions, 2019).

1.10 Divestures

An alternative to buy the firm in order to merge it is to divest the target's assets.

Usually, this practice is not positively perceived by the market, in fact the stock price reactions might be negative because the divesture could mean that the M&A decision was a mistake (Renneboog, Vansteenkiste, Failure and success in mergers and acquisitions, 2019).

Several studies have investigated about the number of operations that registered a subsequent divesture of the assets.

For example, between 1960 and 1970, 33 percent of the target firms acquired were divested (Ravenscraft, Scherer, 1987). During the 1980s, this percentage was around 35% (Grimm's Mergerstat Review, 1989), while between 1992 and 2009, 45% of the acquiring firms undertook at least one divesture (Netter, 2011).

Maksimovic in 2011 found that acquirer sell 27% of their target companies and close 19% of target's plant within 3 years from the acquisition date.

As said before this divesture could be intended as inadequate acquisition that led to value-destroying but there is also other aim behind the assets' divesting. For istance, an acquirer may decide to sell the assets of the target because of the decreasing synergies over the years with its core business, or because changes in antitrust regulation or because other technological innovation may improve deal performance.

Kaplan and Weisbach have conducted a study about the percentage of unsuccessful divestures, and they reported that among 44% of divested firms in US deals in 1970s only 34% of these resulted in unsuccessful earlier acquisitions.

Regarding more recent evidence supporting the value creation deriving from divestures, Owen in 2010 and Netter in 2011 showed that on average, the market does not react negatively to divesture announcement but contrary they reported short-term returns around the announcements in public US firms from 1.57% and 4.40%.

Netter, in the same study illustrated that the total short-term return accrues to over 16% when activities related to transaction are announced.

Maksimovic in 2011 has shown that plants retained by the acquirer, instead of being divested, significantly increase the acquirer total factor productivity and product margins even more if they would have been divested. This is possible through an improvement of the target productivity driven by a reduction in capital expenditures, wages, and employment (Li, 2013).

Within all these studies there is still not a clear idea about whether the divesture of assets would be more beneficial for the acquirer than keeping them and benefits from the synergies, especially in the long-run.

1.11 Fire Sales

As written in the previous chapters, a firm may benefit from M&A operations through synergies if the assets are acquired from a target company operating in the same sector or through the diversification deriving from non-related acquisition; but how the situation might change if we are in presence of a distressed target or downturn situation?

During a distress situation, the outcome of the acquisition may be affected by the different number of competitors in the process, health status of the firm, bargain power and accessibility to funding. As written in the chapter 1.3, a company would be able to buy the asset of distressed target at discount especially when the latter is in a weak situation and it has low bargaining power and this discount would represent the cost of distress for the target (Ang, Mauck, 2011).

One of the main causes of the fire sales is the illiquidity of the assets and in industries where the assets used are sector-specific there will be a greater likelihood of fire sales (Shleifer, Vishny, 1992). Another key element that might lead to sale at discount is the presence of distress at industry level. In this case also the acquirer could face some liquidity problem and if the target's asset were already illiquid, we might see even more illiquidity due the fact that even the few potential acquirer operating in the industry are not able to sustain the cost of the acquisition (Wang, 2009).

As a consequence, the target could be forced to sell at lower value registering a loss from this transaction, especially if we keep in mind that industry distress cause even less bargaining power for the target (Bruche, Gonzalez-Aguado, 2010).

In order to confirm this theory, Pulvino in 1998 tried to investigate fire sales in the aircraft sector. As a result, he confirmed the fact that, being sector-specific assets, when an airline is in distress situation the sale was at discount and this was even higher when the whole industry registered a distress.

Chong in 2006, focused on this type of sales but in the bank industry. He collected data from the Malaysia market regarding forced merger and he showed how the lack of bargaining power influenced negatively the target while benefits the acquirers that were able to gain from these operations.

In 2007 Coval and Stafford analyzed fire sales in mutual funds especially when faced liquidity issues and forced to sell at discount. Differently from firms that detain real assets, mutual funds were able to choose the assets to be liquidated and of course they opted for the most liquid ones.

As written before, fire sales might only be related to certain segment of the business and not to the entire company. In this case there might be also a potential agency problem cause by the seeking of the manager to retain control of the firm (Ang, Mauck, 2011). In fact, they might will to sell off assets in order to raise capital needed for the company survival.

1.11.1 Premium or discount resulting from Fire Sales?

As said before, the definition of the premium or discount is strictly related to the market valuation at that time and to the vision that the acquirer has over the target firm. For this reason, the acquirer view on the current stock price is the main variable that will lead to a premium or discount. For instance, if the acquirer believes that the current target stock price is temporarily depressed, it might use a higher benchmark as reference in valuing the target's fundamental (Ang, Mauck, 2011).
To understand whether the acquisition generates a premium and to quantify it, Ang and Mauck proposed in the same study of before different methods.
The conventional premium might be calculated comparing the offered price (that can be found in databases such as Refinitiv/Bloomberg ecc.) to the stock price one week prior the announcement (as reported in the formula below):

$$Premium = \frac{Offer\ price - reference\ price}{reference\ price}$$

Source: Fire sale acquisitions: Myth vs. reality, James Ang, Nathan Mauck

In case of partial acquisitions, we could calculate the premium price as:

$$Premium = \frac{Value\ of\ transaction - (reference\ Market\ Value\ \times\ \%\ of\ share\ oustanding)}{reference\ Market\ Value\ \times\ \%\ of\ share\ outstanding}$$

Source: Fire sale acquisitions: Myth vs. reality, James Ang, Nathan Mauck

Contrarily to what has been previously found by the literature, Ang and Mauck in 2011 published research in which they reported that acquisitions during periods of crisis and involving distressed companies were made at premium and that the acquirer did not generally benefit from them in term of long-run returns. They also affirmed that behind this evidence there is a behavioral explanation that consists in the references that acquirers use to fundamental valuation. To explain it better, we have to keep in mind that one of the main methods to valuing a merger is using 52-week high period (Baker, 2009). Using this as a starting point, we discover a perceived fire sale discount in terms of price paid for both distressed firms and crisis period acquisitions. We discover that the size of the traditional premium paid correlates positively with the perceived discount based on the 52-week high, supporting the idea that the prior high is being used by acquirers as a benchmark for fundamental value. In other words, there is a perception that the current price is depressed, and it will be corrected in the future.

This evidence was already discovered by Bouwman in 2009, when he reported that market valuation has a crucial role in merger outcome. He focused on the differences in merger operations during high valuation and low valuation period by showing how in the first case acquirers see higher announcement returns but lower long run returns compared to low valuation period. This is because acquirers may perceive higher fundamental values for targets during lower valuation periods and on the contrary, lower fundamental values in higher valuation periods.
Bouwman also stated that this is not the case of overpayment by the acquirers because he also reported lower premium paid on average during high valuation if compared to low valuation periods.

Regarding the results of the study of Ang and Mauck, they classified them in relation to the type of target (distressed, non-distressed) and to the period (crisis, non-crisis).
First, they highlighted the financial crisis discount by subtracting the premium received by financially distressed firms in non-crisis period to the premium of the same types of firms but received in crisis period. They found that the average crisis premium, for distressed firms was 30.81% suggesting that in downturn situation, the acquirers were willing to pay higher premium resulting from the assumption that prices were depressed. This is contrary to the belief that targets are in weakened bargaining positions during crisis time, but this premium would not mean that the latter have high ability to negotiate better deals but rather that there is a behavioral bias in comparing higher reference point than the current stock prices observed in the market.
Another analysis has been done on the distress cost in crisis period. They calculated it as the difference between premium received by distressed firm during a crisis and non-distressed firms' premium during a crisis. In this case, the mean value was 34.65%.
Regarding the distress cost in non-crisis period, the subtracted the premium received by non-distressed targets during normal periods from the premium of distressed targets in normal period and it amounted to 35%.
Ultimately, they analyzed the joint crisis and distress cost by subtracting the crisis cost for healthy firms from the crisis cost for distressed firms finding a value of 22.19%.
These values lead the author to the conclusion that both for the public and for the private acquirers, in the most case there were premiums related to distress and premiums related to the crisis when using price one week prior the announcement.
As said in the beginning of this chapter, the premium or discount is influenced also by the sector in which the firm operates. Ang and Mauck reported a negative interaction between fire sale acquisitions and High-Tech and Retail industries, while a positive relation with

Telecommunications sector. This means that for industries with high amount of fungible assets, fire sale acquisitions could take place at discount while for industries with less amount of these type of assets might take place at a premium.
The same negative interaction has been found for research intensive firms and for companies providing services.
Regarding deals that involved partial sales, they reported a high presence of premium paid by the acquirers. That is because, consistently with the literature presented before, targets might sell the most valuable assets, and this may attract more competition in the process enhancing the bids.

1.11.2 Announcement returns in fire sales

Announcement returns for non-distressed firms in normal periods were on average 17.48% while for the same type of firms in crisis period this amount increased to 20.43%. Regarding distressed firms in normal period the announcement returns were 18.33% but during crisis period these returns almost doubled reaching 35.69%.
From these results the author found that market viewed acquisitions during crisis period more favorably and distressed firms in crisis period were the ideal candidate for fire sale acquisitions.
Moving onto the acquirers' side, the results changed dramatically. The announcement returns when acquiring non-distressed firms were -0.62% in normal periods and -3.27% in crisis period while, when acquiring a distressed firm, the returns were -1.06% for normal period and -0.73% for crisis period. These results showed how the market reacted negatively especially in case of acquisitions of non-distressed target during crisis period as it considers the transaction value destroying because of the high premiums. Regarding the distressed firms' acquisitions, the market considered them slightly more value destroying in normal period compared to crisis period.

1.11.3 Long-term returns in fire sales

The authors calculated the long-run acquirer returns with a time horizon of three years using buy-and-hold abnormal returns method.
They found that both the mean and the median BHAR (respectively 6.38% and 3.34%) in panel A are statistically insignificant in case of non-distressed firms in crisis period and this suggested that acquisition of this type of firm in that period did not represent a fire sale discount. Similarly, mean and median BHAR (respectively -2.87% and -23.50%) for distressed firms during normal periods resulted to be statistically insignificant leading to a transfer of gains to the targets in form of higher premium paid.
Looking at the distressed firms in crisis period, Ang and Mauck found that the mean BHAR (30.49%) were statistically significant at the 10% level while the median (-10.78%) resulted to be

insignificant. This important finding meant that most of the acquirers realized a negative return in the years following the acquisition of the distressed firms during the crisis periods; in fact, removing the highest 1% BHAR from this group, also the mean resulted to be insignificant. Combining this evidence with the fact that during crisis periods distressed firms were the one that received higher premiums (as illustrated in chapter 1.10.1) we can affirm that this is due to the selection of riskier targets from the acquirers (Ang, Mauck, 2011). This is supported also by the greater dispersion in crisis acquisitions found in the research.

The authors have also reported the long-term portfolio returns by using the three factor Fama-French calendar time portfolio approach already illustrated in chapter 1.10.1.
They have also reported that there are no gains associated to the acquisition of distressed firm and the results found has been defined statistically insignificant.

1.11.4 The importance of the reference price in calculating premiums

As reported in the previous chapters, in order to calculate the premium/discount applied in the transaction we need a reference price.
The authors of the study presented before utilized as reference price the 52-week high also suggested by (Baker, 2009) but this might lead to a psychological bias making the investors believe that they are getting a bargain in this investment because of the relative large discount compared to the 52-week high interval. But if confronted with the current market value, it might appear clear that acquirers are paying a substantial premium (Ang, Mauck, 2011).
For this reason, they revaluated the premiums using the 52-week high and the average price of the last 104 weeks as references instead of the current stock price.

The results found by the study show us that, contrary to the previous calculation, there is a consistent distress discount of 14.79% for crisis period. Regarding the crisis discount, it amounts at 17.27%. Lastly, the distress discount in normal period amounted to 10.99%.
This suggested that pricing during crisis periods (intended as relative pricing of non-distressed and distressed firms) remained relatively efficient but in absolute term might have been biased by prior expectations of the fundamental values. As a result, the greater the target shares' perceived decline, the greater the target's valuation to the acquirers relative to the current price and the higher the premium paid over it (Ang, Mauck, 2011).
In conclusion, the authors affirmed that fire sales acquisition in most cases did not lead to superior performance and the discount in the transactions was only perceived in the mind of the acquirers and the market believed that these acquisitions were value-destroying.

1.12 Policy uncertainty effect in M&A

The actual literature states that policy uncertainty impacts the global economy and, as it represents a further source of risk, there might be some negative effects in M&A operations.

In a study published in 2018, Bonaime, Gulen and Ion (Bonaime, Gulen, Ion, 2018) tried to investigate whether there was a relationship between policy uncertainty and M&A activity with value higher than €1 million from 1985 to 2014 by comparing the latter with a BBD index that represents a proxy of the policy uncertainty.

The above-mentioned index has been developed in 2016 by Baker, Bloom and Davis and is the weighted average of three elements: the frequency of articles related to policy uncertainty in the ten leading US newspaper, the tax code change uncertainty, the monetary policy forecast disagreement and the fiscal policy forecast disagreement.

As written before, the main reasons behind M&A might be related to pursuit of innovation, synergies, taking advantage of the target misevaluation (Dong, 2006), risk management strategies (Garfinkel, Hankins, 2011) or to corporate liquidity strategies (Almeida, 2011) and therefore, uncertainty might affect these decisions. In fact, policy uncertainty is countercyclical (Bloom, 2014) and usually in period of high uncertainty there is also a low capital availability for the firms.

Policy uncertainty then, representing a further source of risk and usually being associated with higher stock price volatility and reductions in industrial production and in higher unemployment, might affects in a negative way the deals. For this reason, it also affects the pricing of the assets by increasing the risk premium (Pastor, Veronesi, 2013).

Other effects of higher policy uncertainty have been founded over the years. During this period, firms are less likely to raise equity through IPO (Colak, 2017), and also, they are less propense to do investments; in fact, Gulen and Ion in 2016 showed negative relation between capital expenditures and policy uncertainty. In the same year, Chen provided evidence of the delaying in M&A activities when facing uncertainty related to policy.

In their study, Bonaime, Gulen and Ion analyzed the deal in which the acquirer owned less than 50% of the target's shares and obtained 100% of the shares after the operation.

Consistently with previous findings about the importance of profitability, asset turnover, research and development, capital expenditures, employee growth, ROA and sales growth, they tried to understand how the shock generated from the economic situation impacted the M&A activities across each Fama-French 48 industries.

To investigate if higher valuation periods lead to more intense M&A operation, they used Shiller's cyclically adjusted price earning (hereinbelow "CAPE"). This index, by adjusting the P/E for a

longer period, can help to correct the ratio by isolating the effects deriving from market correction or recession and can offer a better view of whether the market is overvalued or undervalued.
They also calculated the industry median Tobin's q and the industry mean cumulative returns over the prior three years. In order to take into account also the industry return volatility of the period analyzed they reported the standard deviation of the monthly returns for each of the 36 periods.
They found that for one standard deviation increase in index volatility there is a 1.64% decrease in merger likelihood thus supporting the theory that high policy uncertainty is associated with lower probability of being an acquirer the following year.
Regarding the BBD index, one standard deviation increases of its components (news, tax, government spending and CPI) resulted respectively in a decrease of 9.82%, 10.11%, 7.16% and 9.98% of the probability of acquisition. For an increase in one standard deviation in the overall BBD is associated a 4.17% in the likelihood of wave commencing across all the industry analyzed.

Another important effect of the high policy uncertainty period is reflected on the increase of bargain power of the target firms caused by the increase in the value of the option to wait for the acquirer (Bonaime, Gulen, Ion, 2018).
In their research, they investigated about the deal premium paid by the acquirers in this particular period, and they found that it was significantly higher.

1.12.1 Why policy uncertainty affects M&A operations

There are several possible explanations emerged over the years for the negative effect of the higher uncertainty. For example, it might be explained by the increasing in the value of the real option to delay the investments (Bloom, 2014). Related to this, there is also the higher probability that the value of the target will change between the announcement of the deal and its completion, representing a further source of risk (Bhagwat, 2016). It also could be due by the fact that uncertainty may encourage managers to believe that they can engage in acquisition without immediate consequences, increasing the incidence of takeovers by poorly governed firms (Duchin, Schmidt, 2013).
Another explanation is that firms, during high uncertainty period might experience an increase in cash flows volatility and then, as a risk management tools, they are more likely to engage in vertical mergers with the aim to reduce this volatility (Garfinkel, Hankins, 2011).

1.12.1.1 Option to delay the investment

To better understand how to identify the value of this option, we report the research conducted by Bonaime, Gulen and Ion in 2018.

They used different variables to analyze the irreversibility of the investment as higher policy uncertainty should negatively affects the value of the option to delay impacting most on irreversible deals. The first one is the industry capital intensity ratio measured by property plant & equipment (hereinbelow as "PP&E") over the total amount of assets. The second one is the target industry-level asset redeployability while the third one is represented by the sunk costs of the company. Ultimately, the last proxy is the correlation between asset liquidation values and the cyclicality of the firm's sales. In fact, firms operating in high cyclical industries are unlikely to be able to sell their assets to firms operating in the same industry during poor economic periods because also the other companies have been negatively affected by the shock (Almeida, Campello, 2007). Unsurprisingly they reported that when facing high policy uncertainty period, firms are less likely to acquire targets that represent irreversible investment.

In more competitive industries, the cost of delaying the investments can significantly increase as the risk of rivals acquiring the target is higher (Grenadier, 2002). Not only industry competitiveness but also deal volumes are related to the likelihood of strategic actions from competitors by decreasing the value of the option to wait. Indeed, industries with higher concentration and low deal volume such as oligopoly regimes, the cost of delay the investment is significantly lower (Bonaime, Gulen, Ion, 2018).

Other important variables that influence the value of the option are represented by the sensitiveness of firm's revenues to the government spending and also the sensitiveness of the firm's returns to the BBD index. Bonaime, Gulen and Ion agree on the fact that policy uncertainty on M&A activities generetaes more negative effects on firms operating in industry more sensitive to government spending such as defense or aircraft.
Referring to the firms return they captured the overall firm exposure to the policy risks by regressing each Fama-French 48 industry's value-weighted monthly excess stock returns on the BBD index over 60 months prior to the acquisition announcement. In addition, they supplemented the pricing model with Fama-French three-factor model using the following formula:

$$R_{i,t} - R_{f,t} = \alpha_i + p_i BBD_t + \beta_i\left(R_{M,t} - R_{f,t}\right) + S_i SMB_t + H_i HML_t + \varepsilon_{i,t}$$

$R_{i,t} = value\ weighted\ return\ on\ industry\ i\ in\ month\ t$

$R_{f,t} = risk\ free\ rate\ (1m\ US\ Treasury\ bill)$

$BBD_t = policy\ uncertinty\ index$

$R_{m,t} - R_{f,t} = excess\ market\ return\ at\ time\ t$

$SML = Small\ minus\ Big\ factor$

$HML = High\ minus\ Low\ factor$

Source: "Does policy uncertainty affect mergers and acquisitions?" Bonaime, Gulen, Ion

The measure of the firm's return sensitivity to policy uncertainty is represented by the industry's beta coefficient associated with the policy uncertainty p_i.
As a result, they observed negative relation between uncertainty and likelihood of announcing an acquisition and unsurprisingly, this is even stronger for firms with high stock price sensitivity to policy uncertainty. In particular, they found retail and defense industry as the more sensitive to policy uncertainty.

1.12.1.2 Change in target's value between announcement and completion of the deal

Bhagwat in 2016 proposed a possible second explanation of why uncertainty might affect M&A operations as a consequence of possible change in value of the target between the announcement and the completion, the so-called interim risk. He showed that VIX (CBOE Volatility Index) plays crucial role in merger activity especially for public deals that usually on average reports longer interim period than private ones.
However, when analyzing the length of the interim period in their research, Bonaime, Gulen and Ion did not find significant differences across high and low policy uncertainty periods.
Regarding the private acquisition they reported shorter period and average lower number of tender offers per years in case in which the uncertainty is high (from 126 deals if uncertainty low to 88 deals if uncertainty high).
For what concerns the VIX, an increase in it is associated with decreased deal volume in the following month but this effect is only limited in M&A operations that involve public targets.

An interesting finding is that by extending the time horizon from one month to one year the result changes. The authors showed that VIX is meaningless for one year ahead deal volumes and this is related to the definition of VIX itself. According to Chicago Board Options Exchange (CBOE) definition, VIX index is a calculation designed to produce a measure of constant, 30-day expected volatility of the U.S. stock market. Because of its short-term horizon, when used for longer period is not an accurate measure of the long-term volatility.

1.12.1.3 Wrong manager belief

Duchin and Schmidt in 2013 suggested that during uncertainty, it could be easier for managers of poorly governed firms to engage value-destroying deals. They also demonstrated that firm-level

uncertainty increases during merger waves and that mergers announced during waves reported worse long-term performance.
In order to understand whether a deal is encouraged by a wrong managers belief, Bonaime, Gulen and Ion calculated cumulative abnormal returns of three and five days around acquisition announcements and they found no differences for period of high and low policy uncertainty. To exclude the possibility that market fails to immediately recognize the acquisition's value into prices they also investigated in long-term measurement such as operating performance and sales growth. On this regard, they calculated the change in industry-adjusted ROA from one year before the acquisition announcement to the year after.
Even in this case the deals announced in high or low policy uncertainty did not differ with respect to ROA and sales growth.

1.12.1.4 Vertical integration as risk management tool

According to Garfinkel and Hankins, firms with high cash flows volatility might opt to vertical integration as form of risk protection (also known as operational hedging).
An increase in domestic policy uncertainty should suggest a consequent increase in cross border M&A in order to hedge the domestic risk with a reduction of the national exposure. This is because foreign firms are less likely to be affected by the domestic policy (such as U.S. policy) and for this reason domestic targets might be considered less attractive than foreign targets.
Consistent with this view is the finding proposed by Bonaime, Gulen and Ion in 2018. They reported that the likelihood of acquiring domestically versus abroad decreases as policy uncertainty increase.
Summarizing, with heightened policy uncertainty at domestic level, vertical mergers might be attractive because firms acquiring their buyers or their suppliers could reduce their exposure to policy risk and also because they could reduce the price uncertainty (Garfinkel, Hankins, 2011).

1.12.1.5 How different policy uncertainties affect M&A operations

The most recent studies, such as the one of Bonaime, Gulen and Ion, agree with the theory that policy uncertainty does affects M&A activities and mainly by increasing the value of the option to postpone the acquisitions.
After defining this, we have also to question how the different policies will affect the transactions by pointing out the different implications of the main uncertainty illustrated by Baker in 2016 in his index BBD.
As illustrated in chapter 1.12 there are several sources of uncertainty.

Bonaime, Gulen and Ion investigated the effects of each policy to understand the consequences on M&A transactions.

Regarding the uncertainty related to fiscal (intended both as taxes and as government spending) and monetary policy they reported it as to be negatively related to the future M&A operations. Also, for the uncertainty related to regulation and, especially, financial regulation they reported strong negative effect on the future merger and operations activities. This fact can also be explained by the higher degree of regulation needed during the deals, more precisely referring to antitrust, merger policy, competition policy etc.

For what concern the uncertainty related to health care, entitlement programs, national security, trade policy and sovereign debt they did not find a meaningful relation with the subsequent M&A operations. In fact, as mentioned earlier, the effects that uncertainties have over the firms are related to the exposure that these firms have to the different policies.

The authors also focused on the frequency of mentioning of these policies in the main newspaper. They denoted that even though financial regulation was the least common source of uncertainty, it affected the larger fraction of firms in the sample analyzed; while, in the opposite situation, national security and health care were the most cited as source of uncertainty but they only affected a narrow fraction of firms by providing further support to the thesis that firms are exposed in a different way to the different source of uncertainty.

1.13 Fama-French three-factor model

The studies presented before, in order to calculate the long-term abnormal returns used different methods.

For example, Ang and Mauck in 2011, (Ang, Mauck, 2011) similarly to other precedent studies in the literature, focused on the buy-and-hold returns with a time horizon of three years (defined as "BHAR") allowing to better comparison of the performance of fire sale acquisitions to non-distress and non-crisis acquisitions.

They used the following formula:

$$BHAR_{i,t} = \left[\prod_{s=k}^{s+t}\left(1 + R_{i,t}\right)\right] - \left[\prod_{s=k}^{s+t}\left(1 + R_{m,t}\right)\right]$$

$R_{i,t} = return\ of\ stock\ i\ at\ time\ t$

$R_{m,t} = return\ of\ market\ at\ time\ t$

Source: Fire sale acquisitions: Myth vs. reality, James Ang, Nathan Mauck

Another important method used in order to calculate the equity return is the three factor Fama-French calendar time portfolio approach, reported as follow:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p\left(R_{m,t} - R_{f,t}\right) + S_p SMB + H_p HML + \varepsilon_{p,t}$$

$R_{p,t} - R_{f,t} = excess\ portfolio\ return\ at\ time\ t$

$\alpha_p = Abnormal\ return\ of\ the\ portfolio$

$R_{m,t} - R_{f,t} = excess\ market\ return\ at\ time\ t$

$SML = Small\ minus\ Big\ factor$

$HML = High\ minus\ Low\ factor$

Source: "Does policy uncertainty affect mergers and acquisitions?" Bonaime, Gulen, Ion

Over the years, a broad part of the literature started to criticize the use of capital asset pricing model (hereinafter "CAPM") when calculating the cost of equity.

One of the main reasons is that it fails to incorporate other source of risks, such as the size and value premium, not captured by the market portfolio and because of that, the CAPM will always underestimate the expected equity return (Fama, French, 1993).

In order to bridge this imperfection, Fama and French in 1993 proposed an expansion in the model by adding further risk factors represented by size and value. In fact, small caps firms showed historical excess returns compared to the one of the large caps; the same happened also for value stocks when compared to growth ones. They therefore assume that there is a negative relation between firm size and default risk while a positive one between book-to-market ratio and default risk. More precisely, firms with high book-to-market systematically require a value premium and small-cap firms systematically require a size premium.

The authors also reported that, with this implementation, the three-factor model explain more than 90% of the diversifies portfolios returns while when considering only market portfolio on average only 70% is captured.

1.13.1 The implication of three-factor model in pricing financial distress

Is Fama-French three-factor model still accurate when used for estimating the equity returns of distressed firms?

Even though during the last years several studies have been published to reply to this question, the current literature has not reached an unanimity of thought on this regard.

We are now reporting the main implication of the financial distress and the main results emerged in the studies to better understand how we could be more accurate in estimate the expected equity returns for financially distressed firms.

One of the first insights that has emerged from previous studies is whether financial distress should be considered as a non-diversifiable risk. In fact, asset returns of companies with a high likelihood of going bankrupt tend to move together, making it impossible to diversify and to reduce their risk (Campbell, 2008). Griffin and Lemmon in 2002 showed that HML and SMB factors were not sufficient in explaining financial distress. They also argued that investors are not willing to invest in distressed-equity unless they obtain higher remuneration represented by the distress risk-premium, especially during economic downturns.
Also, in contrast with the basic financial theory, portfolio of distressed firms usually has higher non-diversifiable risk (for example higher volatility, default probability and market beta) but they also have lower returns (Park, 2015). On this regard, also Campbell in 2011 showed how distressed firms' stocks significantly underperformed stocks considered safer by delivering lower returns. This suggests that market did not price accurately the distress risk, and this inconsistency was even more pronounced for small firms.
Other researchers, on the contrary, (including Fama and French) believe that three-factor model already includes the pricing of the default risk, and it is represented by the size and value premium. Also, probability of default not necessarily consider that some portion of the distress risk could be diversified by investors and therefore this factor should not be priced in calculating returns (Anginer, Yildizhan, 2010).

Chava and Purnanandam in 2010, to better analyze the lower returns of distressed firms reported by Campbell in 2008, conducted a further study in this field and they concluded that their underperformance was specifically related only to the 1980s. In fact, by excluding this decade from the sample, they did not find underperformance of high-risk stocks.

The different opinions about this topic may result from different methods used to investigate the interaction between the three factors included in Fama-French model and the distress risk. One of the causes might be represented by the fact that estimation of default risk of equity is based on accounting models that use backward-looking information from the financial statements and consequently they implicitly assuming that stocks with high distress probability have also higher exposure to systematic distress risk (Anginer, Yildizhan, 2010). On the contrary, other models (such as Merton model) are based on forward-looking information and might be more accurate in forecasting the likelihood of default of a firm (Groot, Huij, 2018).

In addition to the financial distress risk factor, Mselmi, Hamza, Lahiani and Shahbaz in their study published in 2019 (Mselmi,Lahiani, Shahbaz, 2019) proposed other two possible risk factors to be included in a Fama-French augmented model: liquidity risk factor and value-at-risk (hereinafter "VaR") risk factor.

Regarding the liquidity risk, it might represents an issue when economy is facing recessionary states (Liu, 2006). This is because, during this period, investors may not want to hold stocks of distressed firms because of their higher probability of default and therefore this type of stock might become illiquid. Liu also argued that liquidity factor can capture the distress risk better than what size and value factors do.

For what concern the VaR, it is the expected value that can be lost, with a certain probability, during critical and unfavorable market fluctuations. Bali and Cakici in 2004 showed that stocks with highest VaR were associated with highest average returns. Chen in 2014 also found that VaR factor, intended as the difference between high-VaR stocks and low-VaR stocks, further captured the variation in emerging stock markets, in particular for larger companies.

Mselmi, Hamza, Lahiani and Shahbaz, in their augmented model reported that the basic three-factor model was not enough to capture all the abnormal returns deriving from the financial distress. When they also augmented the model with the liquidity factor, it slightly improved the basic model by representing a systematic risk factor for the portfolio of distressed firms. In conclusion they provided evidence that, when adding all the factors simultaneously to the Fama-French three factor model, there were a significant additional explanation of the variation in portfolio's returns. They also affirmed that size, book-to-market ratio, liquidity an VaR are systematic risk factors that were priced for the portfolio of non-distressed firms. While, for distressed-firm portfolio they found the VaR factor to be insignificant in explaining returns and thus, size, financial distress and liquidity are systematic risk factors that were priced in distressed-firms portfolio. This finding that VaR was not a systematic risk for distressed firm is surprising since the main reason in risk management in calculating VaR is to remove the probability of heavy-tails outcomes that would lead to financial distress (Stulz, 1996).

To capture the higher risk that financial distress may generates, Groot and Huij in 2018 tried to add further sources of risk to the basic three-factor model.

They proposed three possible proxies for distress risk represented by financial leverage (intended as debt-to-assets ratio), distance to default (using Black-Scholes model) and credit spread (as it reflects the market view over the credit worthiness of the firm, and it contains the risk premium for systematic risk).

Regarding value stocks, the authors found that this type of stock is more exposed to distress risk than average stocks. They reported that value stocks showed higher median level of debt (Debt-to-value of 0.31 compared to 0.24 for average stocks), 1.8 standard deviations closer to their estimated point of default than average stocks and finally lower credit rating (BBB versus BBB+). They concluded that, because of these results, value stocks are exposed to distress risk. Regarding growth stocks they also reported higher credit spread but not significant differences in term of financial leverage and distance-to-default from average stocks.
The authors further investigated whether value stocks might have a value premium deriving for the distress risk, but they reported that only when using debt-to-assets ratio as a measure of distress risk, high-risk value stocks earned slightly higher returns (of 0.2% per annum) than returns of low-risk value stocks.
They concluded that there was no evidence that value premium could be attribute to distress risk related to default.
However, when they did the same analysis during downturn period the results changed.
In fact, when facing recessionary periods, value stocks showed better performance than growth stocks leading to large positive value premium. For all the three proxies used in the study, there were consistent return differentials between high-risk and low-risk stocks indicating that during recession financial leverage, distance to default and credit spread captured some form of distress risk.
Regarding small-cap stocks, consistently with Fama and French, they reported higher returns compared to the ones of large-cap. However, for all the three risk measures they did not observe that the returns of small-cap were higher for high-risk stocks and because of that, the distress risk did not drive the small-cap premium.
When analyzing returns in recession period, they reported that small-cap still outperformed large-cap during this period and not only during expansions.

In the same year, another study conducted by Boubaker, Hamza and Vidal-Garcìa (Boubaker, Hamza, Vidal-Garcia, 2015) supported the theory that financial leverage risk premium should be included in calculating equity returns by reporting statistically significant premium for high-leverage firms and thus it should be considered as a systematic risk factor. However, this leverage risk premium was significant only for the portfolio of distressed firms.

2. Research Methodology

We will focus our research in defining whether profitability and liquidity might affect positively the M&A operations during downturn situation. To do so, we will conduct our research by performing a multiple case study.

Considering the misalignment of opinions in the available literature and the lack of studies in this area, among the available methods to conduct the research it results to be the most suitable in this particular case.

This approach allows us to have a better understanding of whether liquidity and profitability indicators could help the acquirer to predict if the acquisition of distressed target in downturn situations would be more profitable and consequently to confirm, disconfirm or extend the existing studies available nowadays.

In fact, according to Mullen-Rhoads (2018) one of the main advantages of this type of study is the ability to move from a simple description to explanation of underlying dynamics that allows to confirm, disconfirm, or extend a theory.

A single case study would narrow too much the focus on the single deal rather than explore more in deep the phenomenon that we want to study, so including more cases in the analysis will increase the robustness of our findings (Yin, 2017).

Since the case study research employs non-random sampling (Stake, 2005), the cases will be selected because considered suitable for the research to be conducted.

In accordance with previous studies, we will identify two different categories of deals in relation to whether the acquisition has been made during non-downturn (Category A: distresses target acquisition in non-downturn) or whether it has been made during downturn period (Category B: distressed target acquisition in downturn).

The deals selected for category A have been made before March 2020 meanwhile the ones for category B have been pursued during the COVID-19 pandemic, more precisely from March 2020 until December 2021.

The deals that we are going to present involve companies that operate in technology sector, in fact from what emerged in the literature review it appeared to be the most suitable for this research because it's characterized by high R&D expenses.

We will use the less strict definition of distress, also used by Ang and Mauck in their study mentioned in chapter 1.11, considering distressed companies all the firms with negative net income.

In order to define the severity of the distress we will calculate the Altman z-score as it seems to be

the most reliable in identifying the level of distress because it also considers profitability and liquidity of the companies.
After having selected the deals and reported the deal evolution from its announcement until its closing, we will conduct a deeper analysis of their balance sheets with the aim to find whether there were similar characteristics that could have help the prediction of higher or lower return based on their liquidity and their profitability.
Particular attention will be given to the main target indicators that could lead to a successful deal and to higher performance of the acquirers both in the short and in the long-run.
Consistently with the actual literature, we believe that the most important element to analyze are represented by ROA, sales growth, net income, EBITDA margin, asset turnover, R&D, capex, employee growth and Tobin's q ratio and for this reason we will conduct an analysis based on these key indicators.

After presenting all the deals, we will analyze the announcement reaction by presenting the daily returns and by computing the abnormal returns using similar approach to the previous studies reported in the literature. It seems to be accurate to capture the returns to start it calculating 10 trading days prior the announcement in order to take into account the effect of some rumors, until 10 trading days after the announcement (CARs [-10; +10]). To be more precise we will also compute the cumulative abnormal returns based on different shorter intervals represented by CAR [-5; +5], CARs [-3; +3] and CARs [-1; +1].
Regarding the long-term returns, due also to the fact that the deals selected for the downturn sample have been completed less than three years ago, we will calculate the BHAR based on 24 months time horizon.
In order to capture the abnormal return and to test whether additional factors could better explain the hypothetical higher returns due to the financial distress we will use both capital asset pricing model and both Fama-French three-factors model. In fact, as emerged in the chapter 1.13.1, the distress risk might enhance the stock return during downturn situation.
The focus of the study will be also on how the operations have been pursued. As emerged in the literature review, for example in the study of Beltratti and Stulz in 2012, the outcome of the deal is positively influenced if the acquisition is friendly rather than hostile.
We will also consider whether the deals involved more participants or were involving a single buyer in order to better evaluate the effect of the competition in the procedure.
Lastly, we will analyze the results and present our conclusion regarding this study.

2.1 Category A: distressed target acquisition in non-downturn

2.1.1 Acquisition of LinkedIn by Microsoft

2.1.1.1 Companies overview:

Microsoft Corporation was founded in 1975 by Bill Gates and Paul Allen. The company is listed in the Nasdaq and at the time of the acquisition was already the leading platform and productivity company for the mobile-first, cloud-first world.

Regarding the target, it was founded in 2003 by Reid Hoffman, Jean-Luc Vaillant, Konstantin Guericke Allen Blue and Eric Ly and in May 2011 the company did the IPO and since then has been publicly traded in the NYSE until the completion of the acquisition by Microsoft.

The company provides a platform in which professionals can connect with each other's.

At the time of the acquisition, as reported in Microsoft press release, LinkedIn reported a 19% growth year over year (hereinafter "YoY") to more than 433m members, 9% growth YoY to more than 105m unique visiting members/month, 49% growth YoY to 60% mobile usage, 34% growth YoY to more than 45bn quarterly member page views and 101% growth YoY to more than 7m active job listing. (Microsoft, 2016)

Over the previous years Microsoft has been active in term of inorganic growth and among the various acquisition it made, the biggest were the acquisition of Nokia in 2013 for a total consideration of $7.2bn and the one of Skype Global in 2011 for a bid value of $9.0bn (EV/EBITDA 34.2x). (MergerMarket)

2.1.1.2 Deal overview:

According to Microsoft press release published on 13th June 2016, the company announced the acquisition of 100% stake of LinkedIn Corporation for a total consideration of $26.2bn and offering $196 per share with a 49.5% premium to the last closing price.

The deal was funded through the issuance of new debt and represented the biggest acquisition made by Microsoft since its foundation.

The acquisition was friendly, infact as reported in the press, LinkedIn would have retained its distinct brand, culture and independence. The agreement also stipulated that the CEO, Jeff Weiner, would remain the same.

The Chairman of the Board of Directors, co-founder and also controlling shareholder of LinkedIn, Jeff Weiner, supported the transaction as well.

Once the bid from Microsoft has been announced, it also turned out that its competitor, Salesforce, was in negotiation to acquire LinkedIn (King, 2016). This fact helps to explain why Microsoft made an offer of that magnitude.

Despite having more than $100bn in cash & cash equivalents, Microsoft decided to finance the operation by issuing new debt in order to avoid paying a 35% tax rate in case it would have repatriate this cash amount coming from overseas accounts. The issuance of new debt also allowed the company to benefit from the interest tax shield over the years following the acquisition.
Despite this tax benefit, Microsoft faced the consequences of this higher level of indebtedness. In fact, immediately following the announcement, Moody's declared Microsoft's rating AAA to be under review (Reuters, 2016).
The acquisition marked a significant milestone in the tech industry, as it brought together two corporate giants with complementary strengths and vast user bases.
At the time of the transaction, LinkedIn reported negative net income not only in the year before the announcement but also in 2014, respectively -$166.1m and -$15.7m.
For Microsoft the transaction was mainly driven by a well-crafted strategic vision. As reported before, LinkedIn at the time had more than 433m of professionals registered in the platform worldwide and this fact represented a golden opportunity for Microsoft to strengthen its presence in the social networking and professional services domains. The acquisition was aligned with Microsoft's objective of expanding beyond traditional software and hardware sales and diversifying its revenue streams in the rapidly evolving digital landscape.
In the investor presentation published by Microsoft on 13 June 2016, it clearly emerged that the main purpose behind this operation was to exploit synergies. Both the companies aimed to provide services to the world's leading professional cloud and network and to accelerate monetization through individual and organization subscriptions and targeted advertising.
Always according to the investor presentation, the two companies resulted to be highly complementary, and an acquisition would have allowed them to participate in a new total addressable market (TAM) of $315bn ($200bn Microsoft and $115bn LinkedIn).
Moreover, the integration of LinkedIn's vast user data with Microsoft's suite of products, such as Office 365 and Dynamics CRM, promised to enrich the user experience and open new avenues for monetization. By combining LinkedIn's talent solutions and premium subscriptions with Microsoft's extensive enterprise offerings, the newly united entity could create a more holistic and valuable proposition for businesses and professionals alike.
A special consideration was given to the implementation of LinkedIn to Cortana, the digital assistant of Microsoft. Having access to all the information regarding the academic or working background of professionals would have enabled Cortana to give even more accurate information to Microsoft users.

On the other side, also LinkedIn would have benefited from Microsoft’s fields and distribution channels by reaching wider audience and more customers.

As reported before, the announcement was made on 13 June 2016 but early talks about the deal began in February 2016, when Reid Hoffman, LinkedIn's chairman and co-founder, met with Microsoft's CEO, Satya Nadella. The initial discussions revolved around potential partnerships and integrations, but soon expanded into the possibility of an acquisition.
During the negotiations, LinkedIn was also approached by other potential buyers, but LinkedIn's leadership felt Microsoft's offer was more aligned with their vision and growth plans. The decision was influenced by Nadella's commitment to allowing LinkedIn to operate independently and keep its distinct brand and culture.
Microsoft's offer was an all-cash deal, priced at $196 per LinkedIn share, a nearly 50% premium on LinkedIn's stock price.
The announcement of the acquisition was met with mixed reactions. Some analysts applauded Microsoft's move into the social networking sphere, viewing it as a bold and forward-thinking step. Others expressed skepticism, questioning the price tag, and wondering how Microsoft would integrate LinkedIn into its ecosystem.
The acquisition was designed to accelerate the growth of LinkedIn and Microsoft's Office 365 and Dynamics 365.
Post-announcement, LinkedIn's stock surged about 47%, while Microsoft's fell by around 2.6%. The market’s reaction suggested concerns about how Microsoft would have integrated and leveraged LinkedIn, and whether it could have justified the premium price it was paying.

The deal was cleared by antitrust officials in late August 2016. The European Commission approved the deal in December 2016, marking the last major hurdle. Microsoft made several commitments to secure EU approval, such as keeping LinkedIn's API available to other social networks and allowing IT providers to maintain access to Microsoft's Office add-in program (European Commission, 2016).
Following regulatory approval, the acquisition was completed on 8 December 2016.
Post-acquisition, LinkedIn retained its brand, culture, and independence. Microsoft began integrating LinkedIn data with its Dynamics 365 software to enhance its sales and talent solutions.

Figure 2: Microsoft share price performance over the period

Source: Elaboration of Yahoo finance data

2.1.1.4 Financials analysis:

During the years prior the acquisition, LinkedIn registered increasing revenue with a CAGR of 54.7% over the period 2011-2015 reaching $2.9bn revenue.

Despite this outstanding CAGR, the revenue growth YoY kept reducing over the period analyzed, starting from 86.2% growth rate from 2011 to 2012 diminishing until 34.8% from 2014 to 2015.

As illustrated in the 10-k filing of FY 2015, the increase in revenue was driven by the constant increasing of sales in core products, specifically Recruiter, Jobs, Sponsored Content and Sales Solutions and as well due to the revenue from the acquired company, Lynda.com.

This growth was not reflected by EBITDA, in fact in the Figure 3 we can denote a decreased margin, from 13.2% to 9.0% due to the higher incidence of the SG&A over the years.

This loss in marginality is explained by the consistent investment that LinkedIn has made during the year, especially by analyzing more in deep the cost structure we can see how the overall SG&A expenses have registered a more than proportional annual growth compared to revenue.

Figure 3: Income Statement ($m)

Years	**2011**	**2012**	**2013**	**2014**	**2015**
Revenue	522,2	972,3	1.528,5	2.218,8	2.990,9
growth %		*86,2%*	*57,2%*	*45,2%*	*34,8%*
(COGS)	(81,4)	(125,6)	(202,9)	(293,8)	(418,8)
Gross Income	440,8	846,8	1.325,7	1.925,0	2.572,1
margin %	*84,4%*	*87,1%*	*86,7%*	*86,8%*	*86,0%*
(SG&A)	(371,8)	(710,1)	(1.143,3)	(1.651,9)	(2.302,5)
EBITDA	**69,0**	**136,7**	**182,4**	**273,1**	**269,6**
margin %	*13,2%*	*14,1%*	*11,9%*	*12,3%*	*9,0%*
(D/A)	(43,1)	(79,8)	(134,5)	(236,9)	(420,5)
EBIT	**25,9**	**56,8**	**47,8**	**36,2**	**(150,9)**
margin %	*5,0%*	*5,8%*	*3,1%*	*1,6%*	*-5,0%*
NFE	(2,9)	0,3	1,4	(5,0)	(63,8)
EBT	**22,9**	**57,1**	**49,2**	**31,2**	**(214,7)**
Income Taxes	(11,0)	(35,5)	(22,5)	(46,5)	50,0
Consolidated Net Income	11,9	21,6	26,8	(15,3)	(164,8)
Minority Interest	0,0	0,0	(0,0)	(0,4)	(1,4)
Net Income	**11,9**	**21,6**	**26,8**	**(15,7)**	**(166,1)**

Source: LinkedIn 10-k filings

Analyzing the revenue breakdown illustrated in Figure 4 we identify immediately Talent Solutions as LinkedIn's core product. In the last year, this segment reported an increase of $549.5m. Regarding the subsegment Hiring, its growth was mainly explained by higher spending by existing customers as well as additional business from new customers, compared to the prior year. Learning & Development consisted of revenue from the recent acquired company Lynda.com.

The second most important segment, in term of revenue contribution, is Marketing Solutions and its growth was driven by Sponsored Content from field sales and self-service channels, and to a lesser extent, by the revenue from products related to the previous acquisition of Bizo, Inc.

The last segment is represented by Premium Subscriptions. This business line was increasing at a faster pace than Marketing Solutions and the growth reported from 2014 to 2015 was primarily due to the increase in revenue from Sales Solutions products, which include Sales Navigator. Sales Solutions products, since its launch, continued to grow at a higher rate than the other Premium Subscription products as well as continued to represent a larger percentage of total Premium Subscriptions revenue. Sales Navigator represented 35% of Premium Subscriptions revenue in 2015.

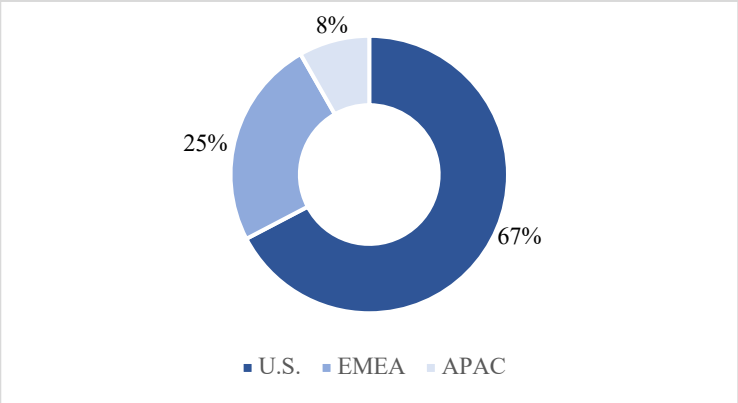
Figure 4: Revenue by products ($m)

Years	2011	2012	2013	2014	2015	CAGR
Talent Solutions:						
Hiring	260,9	523,6	910,3	1.327,7	1.769,8	
Learning & Development	0,0	0,0	0,0	0,0	107,4	
Total Talent Solutions	260,9	523,6	910,3	1.327,7	1.877,2	*63,8%*
Marketing Solutions	155,8	258,3	311,8	454,5	581,3	*39,0%*
Premium Subscriptions	105,5	190,4	306,5	436,5	532,4	*49,9%*
Total	**522,2**	**972,3**	**1.528,5**	**2.218,8**	**2.990,9**	

Source: LinkedIn 10-k filings

Regarding the geography, as reported in the Figure 5, as of 2015 the company generated 67% of its revenue operating in the U.S. market, 25% of the total came from EMEA and the residual 8% from APAC.

Figure 5: Revenue by geography (2015)



Source: LinkedIn 10-k filings

Despite the fact that most of the revenue came from the U.S. we can see, in Figure 6, that the other two regions recorded a fastest growth over the years, indicating that LinkedIn kept expand outside its core market.

Figure 6: Revenue by geography ($m)

Years	2011	2012	2013	2014	2015	CAGR
U.S.	382,6	685,6	1.051,8	1.477,2	2.013,8	*51,5%*
EMEA	110,0	217,3	358,2	554,6	730,2	*60,5%*
APAC	29,6	69,4	118,5	187,0	246,9	*70,0%*
Total	522,2	972,3	1.528,5	2.218,8	2.990,9	

Source: LinkedIn 10-k filings

The increase in international revenue was due to the expansion of sales, technical, and support operations in international locations and growth in LinkedIn global member base due to developing its brand across various geographies, partially offset by foreign currency fluctuations. Within Marketing Solutions, the United States has experienced stronger growth than international markets, primarily due to a higher adoption rate of Sponsored Content and less pronounced weakening of premium display advertising products domestically.
LinkedIn in 2013 also started to operate its websites and mobile applications in multiple languages and continued its expansion outside of the United States in offices across North America, as well as throughout Europe, Asia, South America, Australia and the Middle East.

Moving on to the cost structure, as illustrated in Figure 7 we can immediately see that the company invested heavily in marketing and R&D expenses.

Figure 7: Cost structure ($m)

Years	**2011**	**2012**	**2013**	**2014**	**2015**	**CAGR**
COGS	81,4	125,6	202,9	293,8	418,8	*50,6%*
Sales and Marketing	164,7	324,9	522,1	774,4	1.048,1	*58,8%*
Product development	132,2	257,2	395,6	536,2	775,7	*55,6%*
General and administrative	74,9	128,0	225,6	341,3	478,7	*59,0%*
Depreciation and amortization	43,1	79,8	134,5	236,9	420,5	*76,7%*
Total	496,3	915,5	1.480,7	2.182,6	3.141,8	

Source: LinkedIn 10-k filings

Starting from the COGS, they steady increased at a similar pace to revenue being directly related to them and as LinkedIn objective to keep them relatively flat as a percentage of revenue (c.25%). These costs were represented by salaries, benefits, and stock-based compensation for the company production operations while customer support, infrastructure and advertising operations teams, and web hosting costs related to operating its website. Credit card processing fees, off-network advertising costs, content-related expenses, author expenses, allocated facilities costs, and other supporting overhead costs were also included in cost of revenue. The main reason that led COGS to a consistent increase was the continue increase in headcount in order to support the growth of the business.

On this regard, we can see how the company kept hiring new employees over the years albeit at a declining growth rate. The overall employee growth in four years was of about 350%.

Figure 8: LinkedIn employees

Years	2011	2012	2013	2014	2015
Headcount	2.116	3.458	5.045	6.897	9.372
growth%		*63,4%*	*45,9%*	*36,7%*	*35,9%*

Source: LinkedIn 10-k filings

Moving on to the SG&A expenses, most of them were represented by Sales and Marketing and product development. According to the literature, companies operating in technology industry are the one in which R&D expenses have the highest incidence as they need to keep innovating their product.
For what concern LinkedIn, Sales and Marketing expenses mainly represented the salaries for its marketing employees and as illustrated in the Figure 9 the headcount in this division accounted for the highest percentage over the total.

Figure 9: Sales & Marketing division ($m)

Years	2011	2012	2013	2014	2015
Sales & Marketing employees	844	1.468	2.159	2.989	4.147
growth%		*73,9%*	*47,1%*	*38,4%*	*38,7%*
% over the total	40%	42%	43%	43%	44%

Source: LinkedIn 10-k filings

A further increase of Sales & Marketing costs in 2015 was due to the higher expenses sustained for advertise the new acquired company Lynda.com.

The second highest SG&A expense is represented by Product Developments. This category, as well as containing all expenses related to salaries, benefits and stock-based compensation for its engineers, product managers and developers, include outside services and consulting, as well as allocated facilities, and other supporting overhead costs.
Sales and marketing jointly with research and development made up nearly 60 percent of all expenses incurred by LinkedIn in 2015.

The increased COGS and SG&A, as said before, contributed to a deterioration in operating marginality over the years. This decreasing is even more pronounced when analyzing EBIT margin. In fact, Depreciation and Amortization expenses constantly increased, especially in 2015 always due to the higher amount of intangible assets resulting from Lynda.com acquisition. Consequently, LinkedIn reported a negative EBIT in 2015 of c.$ -150m.
The incidence of interest expenses has remained almost unchanged over the years except for 2015 in which it further contributed to lower the results of the period. This huge increase was explained by the issuance of new convertible senior notes in the previous year that led to higher interest expenses.
In 2015, for the second consecutive year, LinkedIn reported a net loss.

Despite the worsening in marginality and the negative results over the last two period, the company was still able to generate cash from its operating activities over the last three years analyzed.
As illustrated in the Figure 10, LinkedIn continued to sustain investment in technology hardware to support its growth, software to support website functionality development, website operations and corporate infrastructure.
Over the year the company had major capital expenditure. For example, in 2015, purchased property and equipment for $507.2 million, in the year before, other property and equipment for $547.6 million and in 2013, a purchase of property and equipment of $278.0 million, and payments for intangible assets and acquisitions, net of cash acquired, of $19.2 million.

Figure 10: Cash Flow Statement ($m)

Years	**2013**	**2014**	**2015**
CF from Operating Activities	436,5	569,0	807,0
CF from Investment Activities	(1.357,5)	(2.293,3)	(792,1)
CF from Financing Activities	1.454,2	1.388,5	77,8
effect of exchange rate	(0,5)	(6,4)	(7,4)
Change in Cash & Cash Equivalents	532,7	(342,2)	85,4

Source: LinkedIn 10-k filings

Despite this increase in Capex, as we can denote in Figure 11, during the years it still generated free cash flow, especially in 2015.

Figure 11: Free Cash Flow ($m)

Years	2013	2014	2015
CF from Operating Activities	436,5	569,0	807,0
Purchase of PPE	(278,0)	(547,6)	(507,2)
Free Cash Flow	158,5	21,3	299,7

Source: LinkedIn 10-k filings

To face this constant need of funding, in 2015, issued common stock from employee stock option exercises and stock purchase plan, and additionally, repurchased equity for $25.2 million, partially offset by proceeds from the issuance of preferred shares in its joint venture of $20.0 million.
In 2014, as mentioned before, it issued convertible senior notes of approximately $1,305.4 million.
In 2013, received net proceeds from the follow-on offering, net of underwriting discounts and commissions and other costs of $1,348.1 million in proceeds.
The company also stated that, except for the Notes issuance and the follow-on offering, its financing activities consisted primarily of the excess tax benefit from stock-based compensation and the proceeds from the issuance of common stock from employee stock option exercises and its employee stock purchase plan.
Looking at the balance sheet, LinkedIn did not have problem in facing its short-term liabilities. In fact, it always reported a current ratio well above 2x.

Figure 12: Balance Sheet ($m)

Years	2011	2012	2013	2014	2015
Cash & Cash equivalents	339,1	270,4	803,1	460,9	546,2
ST Investments	238,5	479,1	1.526,2	2.982,4	2.573,1
Other Current Assets	148,4	269,2	426,2	612,2	728,0
PPE	114,9	186,7	361,7	740,9	1.047,0
Intangible Assets	8,1	32,8	43,0	131,3	373,1
Other Assets	24,8	144,1	192,5	499,6	1.743,7
Total Assets	**873,7**	**1.382,3**	**3.352,8**	**5.427,3**	**7.011,2**
Current Liabilities	226,7	415,4	642,0	882,8	1.188,1
LT Debt	-	-	-	1.081,6	1.126,5
Other LT Liabilities	22,1	58,5	81,4	137,5	227,9
Equity	625,0	908,4	2.629,4	3.325,4	4.468,6
Total Liabilities	**873,7**	**1.382,3**	**3.352,8**	**5.427,3**	**7.011,2**

Source: LinkedIn 10-k filings

The other key indicators to be monitored that emerged in the literature review were the return on asset and the asset turnover.

Figure 13: Ratios

Years	2011	2012	2013	2014	2015
ROA	1,81	1,92	1,13	-0,36	-2,67
Asset Turnover	0,80	0,86	0,65	0,51	0,48

Source: Elaboration of data available from LinkedIn 10-k filings

As reported in Figure 13, the ROA kept decreasing from 2012 to 2015 mainly as a consequence of the higher investment in PPE and of course in the last two year as explanation of the negative net income.
This fact is also reflected on the asset turnover. Despite the increasing revenue, LinkedIn continued to acquire assets during the years, leading to a decrease in this indicator.

In Figure 14, we illustrated the results of the Altman Z-score.
Despite the worsening in its marginality, the company still presented robust indicator that can lead us to the conclusion that LinkedIn at the time of the acquisition was not likely to go bankrupt.
The distress of the company it seems to be just temporary and as a consequence of the investment made in the latest years prior the acquisition by Microsoft.
The high Altman score is mainly driven by huge values of X4. As written in chapter 1, this is represented by the ratio between the market value of equity and the total assets of the company.
This could also reflect the view that investors have on the company, as the market capitalization is driven also by the investors' perspective.

Figure 14: Altman Z-score

YEAR	2011	2012	2013	2014	2015
Sales	*522*	*972*	*1.529*	*2.219*	*2.991*
EBIT	*26*	*57*	*48*	*36*	*(151)*
Current Asset	*726*	*1.019*	*2.755*	*4.056*	*3.847*
Total Asset	*874*	*1.382*	*3.353*	*5.427*	*7.011*
Current Liabilities	*227*	*415*	*642*	*883*	*1.188*
NWC	*499*	*603*	*2.113*	*3.173*	*2.659*
Retained Earnings	*7*	*29*	*56*	*40*	*(129)*
Mkt value of Equity	*6.394*	*12.475*	*26.096*	*28.723*	*29.722*
X1	0,69	0,52	0,76	0,70	0,46
X2	0,01	0,03	0,02	0,01	-0,03
X3	0,10	0,14	0,05	0,02	-0,07
X4	11,71	14,44	12,45	8,47	6,78
X5	0,60	0,70	0,46	0,41	0,43
Z-Score	**13,10**	**15,83**	**13,74**	**9,61**	**7,57**

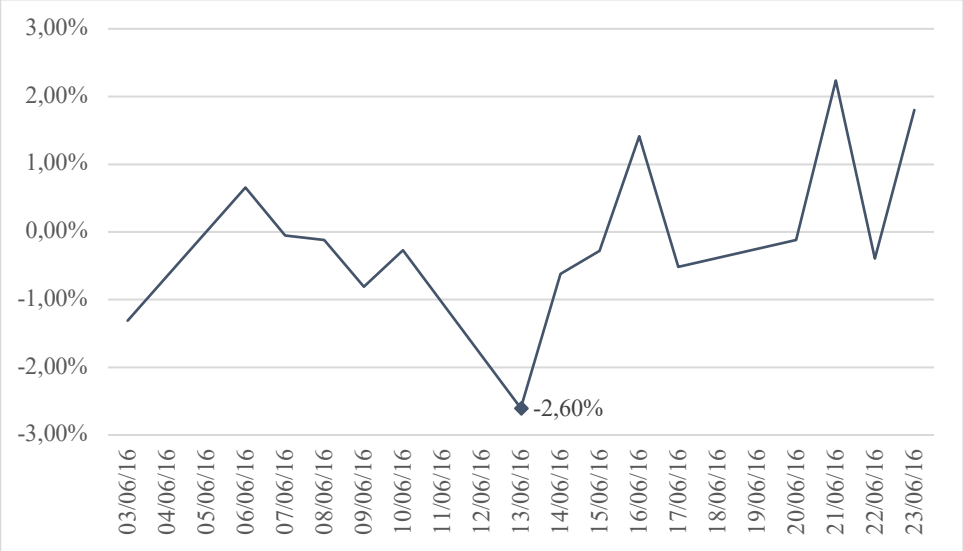
Source: Elaboration of data available from LinkedIn 10-k filings

2.1.1.5 Abnormal returns analysis

Analyzing the daily returns reported in Figure 15 around the announcement, it appears evident a general downward trend, with negative returns on most of the days except for the 6th of June. This period also saw a dip as low as -1.31% on the 3rd of June.

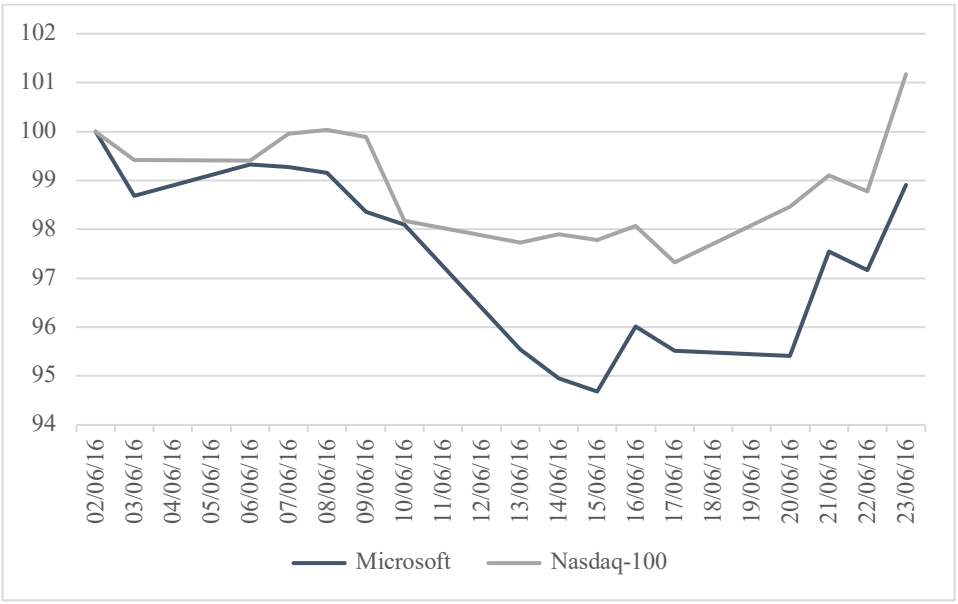
During the announcement date, the return was significantly negative, with a decrease of -2.60%. This indicates that the market reacted negatively to the announcement on the day itself. Following the announcement, we continue to see negative returns initially but starting from the 16th of June there was an upturn, and the market showed signs of recovery, with the highest positive return being 2.24% on the 21st of June.

Figure 15: Microsoft returns around announcement



Source: Elaboration of Yahoo finance data

Figure 16: Microsoft share price performance around announcement rebased to 100



Source: Elaboration of Yahoo finance data

Below are illustrated the results for the regression using CAPM and Fama-French three-factor model, respectively in Figure 17 and Figure 18.

Commencing with the CAPM results, a statistically significant influence of the market premium on Microsoft's excess return was noted, displayed by a beta coefficient of 1.3, with a p-value less than 0.01, affirming the robustness of the relationship. The model accounted for a substantial 55.2% of the variability in returns affirming a moderate explanatory power. Moreover, the F statistic stood at a very high value of 619.070, underlining the statistical significance of the model.

Turning our attention to the results obtained from the Fama French Three-factor model, the market risk premium mirrored a similar trend as in the CAPM, with a beta coefficient of 1.4, affirming its considerable influence on the excess returns, albeit marginally higher. Regarding the additional factors, both SMB and HML variables bore statistically significant coefficients at -0.4 and -0.6, respectively, illustrating their notable influence on the returns.

This negative coefficient for SMB indicates that Microsoft, being a large-cap company, experienced lesser returns compared to small-cap firms during the analyzed period. This could potentially highlight a market preference for smaller firms in that specific timeframe, possibly influenced by broader market dynamics or economic conditions that favored small-cap stocks.

Also, the HML factor displayed a negative beta statistically significant at the 0.01 level. This negative coefficient reflects a scenario where stocks with a lower book-to-market ratio (like Microsoft) garnered lower returns compared to high book-to-market stocks during the period under study. This showcases a possible market inclination towards value stocks, those considered to be undervalued but having substantial intrinsic value.

In this case the explanatory power of the model increased, signifying that approximately 63.4% of the variability in returns could be explained by the model, a substantial increase from the CAPM's predictive power.

In conclusion, while both models indicate a pronounced influence of the market risk premium on Microsoft's returns during the acquisition period, the Fama French model, with a higher R^2 , signals a more comprehensive encapsulation of the variations in the return, resulting in a slightly different image by accounting for firm size and book-to-market value differences.

Figure 17: CAPM model results

CAPM Results

	Dependent variable:
	ret_RF
Mkt.RF	0.013*** (0.001)
Observations	503
R2	0.552
Adjusted R2	0.551
Residual Std. Error	0.008 (df = 502)
F Statistic	619.070*** (df = 1; 502)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 18: Fama French Three-factor model results

Fama French Three-factor Model Results

	Dependent variable:
	ret_RF
Mkt.RF	0.014*** (0.0005)
SMB	-0.004*** (0.001)
HML	-0.006*** (0.001)
Observations	503
R2	0.634
Adjusted R2	0.632
Residual Std. Error	0.007 (df = 500)
F Statistic	288.700*** (df = 3; 500)
Note:	*p<0.1; **p<0.05; ***p<0.01

In the Figure 19 we reported over different windows surrounding the acquisition announcement, the CAR and BHAR for the time horizon spacing from the date of the announcement until 24 months after that.

Analyzed under the CAPM model, Microsoft illustrated a decline of -0.048% over a [-10, +10] window, with a steeper drop to -1.661% during the [-5, +5] window, hinting at possible market apprehensions in the immediate aftermath of the announcement. This trend continues with -0.420% and -2.193% for [-3, +3] and [-1, +1] windows respectively, signifying a sustained period of minor market reactions. Contrarily, the Fama-French three-factor model projects a slight positive bump with a 0.360% rise in the [-10, +10] window, albeit followed by negative CAR in shorter windows, with the harshest dip seen at -2.217% in the [-1, +1] window, supporting the short-term market skepticism perceived in the CAPM analysis.

Meanwhile, a glance at the 24-month BHAR results delineates a promising picture of the acquisition's long-term viability. Both the CAPM and Fama French models depict robust positive figures at 69.254% and 58.009% respectively, illustrating a favorable market reception in the longer-term, potentially driven by synergies realized post-acquisition, underscoring the strategic aptitude behind the acquisition.

In summary, while the CAR metrics elucidate a mix of short-term market reactions, characterized by a blend of skepticism and minor optimism, the BHAR metrics underscore a successful integration and perceived value addition in the long-run.

Figure 19: CARs and BHARs results

	CAR [-10,+10]	CAR [-5,+5]	CAR [-3,+3]	CAR [-1,+1]	BHAR [0,24m]
CAPM	-0,048%	-1,661%	-0,420%	-2,193%	69,254%
Fama French three Factor	0,360%	-1,509%	-0,682%	-2,217%	58,009%

2.1.2. Acquisition of Yahoo! by Verizon Communications

2.1.2.1 Companies overview:

Verizon Communications, commonly known as Verizon, was founded in June 2000 through one of the largest in U.S., the one between Bell Atlantic Corp. and GTE Corp. Headquartered in New York City, Verizon became a global leader in delivering communication and technology solutions to consumers, businesses, and government agencies.

Over the years, Verizon has made several strategic acquisitions to enhance its capabilities and expand its business. One year before to announce the acquisition of Yahoo! Inc, in 2015 acquired AOL LLC, a US-based online services provider, for a consideration of $3.9bn (EV/EBITDA: 9.6x). In 2008 the company did one of the biggest acquisitions in U.S. by acquiring ALLTEL Corp for $28.1bn corresponding to an EV/Sales multiple of 3.2x.

Yahoo! Inc. was a pioneering internet company founded by Jerry Yang and David Filo in January 1994. It played a significant role in shaping the early days of the internet and was one of the most popular web portals during the dot-com era. Originally, Yahoo! started as a directory of websites, but it rapidly expanded its offerings to include search, email, news, finance, sports, and various other online services. However, by the mid-2010s, the company had experienced a decline, struggling to compete against the main internet players like Google and Facebook.

At the time of the acquisition, Yahoo! Inc. reached a global audience of more than 1 billion monthly active users, including 600 million monthly active mobile users, through its search, communications, and digital content products.

2.1.2.2 Deal overview:

According to the Wall Street Journal (Shields, 2015) the negotiation between Verizon and Yahoo! Already started around December 2015. The article also reports that not only Verizon was interested in Yahoo!'s core internet business but also News Corp and Time.

At the beginning of February 2016, in another article published on the Wall Street Journal (MacMillan, 2016), it was confirmed that Verizon and News Corp were interested in the negotiation and also that IAC/Interactive and TPG were interested in the transaction. Also in February, Financial Times reported that Bain might have manifested interest in acquiring Yahoo! With analysts estimating a possible bid value between $3bn-$4bn (Fontanella-Khan, 2016).
Due to the number of potential buyers, Yahoo! set 11th of April 2016 as deadline for the preliminary bids comprehensive of all the details backing their offers (Reuters, 2016).
The non-binding offers were received from Rakuten, YP, Apax Partners, TPG Capital, Bain Capital, Apollo Global Management, Warburg Pincus and Verizon. Already at that time, analysts saw Verizon as the most likely candidate to prevail in the auction as the year before already bought AOL and could have more interest in Yahoo! due to potential synergies (Greg Roumeliotis, 2016).
On 25th of July 2016, Verizon confirmed officially that it entered into a definitive agreement to acquire Yahoo!'s operating business for approximately $4.83bn in cash, subject to customary closing adjustments. As some rumors predicted, Verizon confirmed that Yahoo! would have been integrated with AOL under Marni Walden, EVP and President of the Product Innovation and New Businesses organization at Verizon.
As reported in Verizon's press release, the main objective with this acquisition was to put the company in a highly competitive position as a top global mobile media company and help accelerate its revenue stream in digital advertising. Yahoo! generated interested because was the company that has changed the world and that would have continued to do so by combining it with Verizon and AOL. As Marissa Mayer, the current CEO at the time, said, the sale of Yahoo's operating business, which effectively separated their Asian asset equity stakes, was an important step in their plan to unlock shareholder value for Yahoo. The transaction also set up a great opportunity for Yahoo to build further distribution and to accelerate its work in mobile, video, native advertising and social.
Mayer also believed that Yahoo and AOL popularized the internet, email, search and real-time media and the collaboration with these companies would have allowed Yahoo to enter into a new chapter focused on achieving scale on mobile. Also the CEO of AOL, Tim Armstrong, was positive about the transaction as he believed that Yahoo has been a long time investor in premium content and created some of the most beloved consumer brands in key categories spacing from sports, news and finance. The CEO also showed is respect for what Yahoo had accomplished and he believed that the transaction would have unleashed Yahoo's full potential by generating synergies, strengthening and accelerating its growth. The combination of them would have created one of the largest portfolios of owned and partnered global brands with an extensive distribution capability.

The combined portfolio would have reached 25 brands. Among these, Yahoo's key assets included market-leading premium content brands in the major categories as well as one of the most popular email services globally with nearly 225m monthly active users. In addition, technology assets in the advertising space included Brightroll, a programmatic demand-side platform; Flurry, an independent mobile apps analytics service and Gemini, a native and search advertising solution (Verizon Press Release, 2016).

From the intention illustrated on the press release it clearly emerged that the reason behind this acquisition was highly strategic and bot of the company truly believed that the deal would have generated synergies by combining the complementarity of the target and the acquirer.

In October 2016, Verizon started to renegotiate the deal value after discovering that in August 2013 Yahoo! suffered one of the largest data breaches in history compromising more than 1bn user accounts' data and in 2013 other 500m accounts were affected by another breach. This news led Verizon to lower its original offers by $350m (Reuters, 2017).

In February 2017, the two companies amended the terms of definitive agreement as follow:

Yahoo would have been responsible for 50 percent of any cash liabilities incurred following the closing related to non-SEC (Securities and Exchange Commission) government investigations and third-party litigation related to the breaches. In the same way, liabilities that would have arisen from shareholder lawsuits and SEC investigations would have continue to be the responsibility of Yahoo.

The new valuation for Yahoo! lowered at approximately $4.48 billion in cash, subject to closing adjustments (Verizon Press Release, 2017).

In 8th of June 2017, Yahoo! stockholders approved the sale of Yahoo's operating business to Verizon and the transaction officially closed on 13th of June 2017.

As part of the completion of the deal, Yahoo!'s remaining business, a 15% stake in Alibaba and a 35.5% stake in Yahoo Japan, was spun off into a new company called Altaba.

Yahoo!'s assets have been combined with AOL business to create a new subsidiary named Oath, a diverse house of more than 50 media and technology brands that engages more than a billion people around the world.

The Oath portfolio includes HuffPost, Yahoo Sports, AOL.com, MAKERS, Tumblr, BUILD Studios, Yahoo Finance, Yahoo Mail and more, with a mission to build brands people love.

According to Marni Walden, Verizon president of Media and Telematics, the transaction represented a critical step in growing the global scale needed for Verizon digital media company.

The former CEO of AOL, Tim Armstrong, became CEO of Oath, which was part of Verizon's Media and Telematics organization (Verizon Press Release, 2017).

Figure 20: Verizon share price performance over the period

Source: Elaboration of Yahoo finance data

2.1.2.3 Financial Analysis:

Regarding Yahoo income statement reported in Figure 21, we immediate denote that revenue slightly increased over these five years at a CAGR of 0.9% illustrating the nuances of Yahoo's declining year-over-year performance.

Specifically, the firm grappled with revenue contraction in 2013 and 2014, witnessing declines of -6.1% and -1.3%, respectively but demonstrating a resurgence in the subsequent years, with growth rates rebounding to 7.6% and 4.0% in 2015 and 2016.

Diving deeper into the income structure, the gross income patterns revealed a decline, sliding from $3.366 billion in 2012 to $2.450 billion by 2016. The concomitant gross margin percentage, a critical indicator of operational efficiency and cost management, also regressed from 71.2% in 2013 to 47.4% in 2016. This downward trend might be emblematic of increasing costs and diminishing sales prices, both of which could be symptomatic of broader strategic misalignments or intensified market competition.

Anomalies also emerged in the Yahoo's non-production expenses. The Selling, General & Administrative (SG&A) expenses, typically a steady reflection of a company's operational expenditure, exhibited a surge in 2015. This escalation weighed down on the EBITDA, rendering it negative in 2015 with a margin of -83.3%. Although there was a modest recovery in 2016, the EBITDA margin lingered in the negative at -2.7%. Comparable fluctuations were manifested in EBIT, which accentuated the operational setbacks the company might have encountered.

Further intricacies arose when assessing the Net Financial Expenses. The data for 2014 showcased a huge increase due to the gain on sales of Alibaba Group ADS, profoundly impacting the Earnings Before Taxes (EBT). The oscillations extended to the net income, with 2015 marking a pronounced downturn before a slight recovery in 2016.

Figure 21: Income Statement ($m)

Years	2012	2013	2014	2015	2016
Revenue	4.986,6	4.680,4	4.618,1	4.968,3	5.169,1
growth %		*-6,1%*	*-1,3%*	*7,6%*	*4,0%*
(COGS)	(1.620,6)	(1.349,4)	(1.387,4)	(2.077,7)	(2.718,9)
Gross Income	3.366,0	3.331,0	3.230,8	2.890,6	2.450,2
margin %	*67,5%*	*71,2%*	*70,0%*	*58,2%*	*47,4%*
(SG&A)	(2.150,4)	(2.112,3)	(2.481,2)	(7.029,4)	(2.587,7)
EBITDA	1.215,6	1.218,7	749,5	(4.138,9)	(137,5)
margin %	*24,4%*	*26,0%*	*16,2%*	*-83,3%*	*-2,7%*
(D/A)	(649,3)	(628,8)	(606,6)	(609,6)	(507,6)
EBIT	566,4	589,9	142,9	(4.748,5)	(645,1)
margin %	*11,4%*	*12,6%*	*3,1%*	*-95,6%*	*-12,5%*
NFE	4.647,8	43,4	10.369,4	(75,8)	(53,9)
EBT	5.214,2	633,3	10.512,4	(4.824,3)	(699,0)
Income Taxes	(1.940,0)	(153,4)	(4.038,1)	89,6	126,2
Earnings in Equity interest	676,4	896,7	1.057,9	383,6	363,3
Consolidated Net Income (Loss)	3.950,6	1.376,6	7.532,1	(4.351,1)	(209,5)
Minority Interest	(5,1)	(10,3)	(10,4)	(8,0)	(4,9)
Net Income	3.945,5	1.366,3	7.521,7	(4.359,1)	(214,3)

Source: Yahoo 10-k filings

Yahoo Inc. was primarily an advertising business, with significant revenues generated from both search and display advertising across its proprietary and affiliate sites with a majority of this coming from advertising on Yahoo's own properties. The company's margins for advertising on its properties are notably higher compared to affiliate sites because of the Traffic Acquisition Costs (TAC) paid to affiliates. Alongside these primary sources, Yahoo also earns from listings-based services, e-commerce transactions, royalties, patent licenses, and various fee-based services for both consumers and businesses.

As reported in Figure 22 over the five-year period, Yahoo's total search revenue demonstrated a CAGR of 9.1%. The revenue from search advertising is mainly derived from both mobile and desktop users clicking on text-based links to advertisers' websites. By the close of 2016, there was a notable increase in search revenue by $559 million from the preceding year. This surge was attributed to the new accounting methodology post the Eleventh Amendment to the Microsoft

Search Agreement. However, when excluding this change in revenue presentation, a decline of €253 million was observed, primarily due to decreased Paid Clicks in the Americas.

For 2015, search revenue grew by €282 million or 15% compared to 2014. Growth was attributed to heightened search volume on desktop, particularly because of the Mozilla Agreement, and an uptick in mobile search ad revenue. External factors, like unfavorable foreign exchange fluctuations, subtracted €41 million from this increase.

Examining the revenue generated from display advertising reveals that Yahoo faced a negative CAGR of -1.9% from 2012 to 2016, a trend fueled by a mixture of graphical, non-graphical, and video advertisements. Despite seeing an uptick of 11% in 2015 compared to 2014 — a growth credited to heightened affiliate revenue across all geographical segments offsetting declines on Yahoo properties — the revenue had diminished by $104 million by the end of 2016 when compared to the previous year. This reduction stemmed from a substantial $144 million fall in ad revenue from affiliate sites, only partially counterbalanced by a $39 million surge in revenue from Yahoo properties. Moreover, unfavorable fluctuations in foreign exchange rates over the two years subtracted $22 million and $68 million from the revenues, respectively.

Simultaneously, other revenue avenues endured a steep descent, registering a CAGR of -14.4%. 2016 was particularly challenging, with a 33% dip equivalent to $254 million less than in 2015, primarily influenced by diminishing fees and listings-based revenues. The situation wasn't much brighter in 2015, which saw a 15% reduction amounting to $137 million less than in 2014, a downturn mainly triggered by a falloff in Alibaba Group royalty revenue coupled with a shrinking subscriber base for Yahoo Small Business. In addition, the landscape in 2015 was affected by external elements like shifting foreign currency exchange rates, which imposed a further $10 million decline.

Figure 22: Revenue by products ($m)

Years	**2012**	**2013**	**2014**	**2015**	**2016**	CAGR
Yahoo Properties	*1.206,2*	*1.371,1*	*1.557,2*	*1.839,4*	*1.802,5*	
Affiliates Sites	*679,7*	*370,7*	*274,8*	*274,4*	*870,6*	
Total Search Revenue	1.885,9	1.741,8	1.832,0	2.113,8	2.673,1	*9,1%*
Yahoo Properties	*1.930,2*	*1.744,1*	*1.702,8*	*1.490,7*	*1.530,1*	
Affiliates Sites	*212,6*	*205,7*	*177,3*	*595,1*	*451,4*	
Total Display Revenue	2.142,8	1.949,8	1.880,1	2.085,8	1.981,5	*-1,9%*
Other Revenue	957,9	988,8	906,0	768,7	514,5	*-14,4%*
Total	4.986,6	4.680,4	4.618,1	4.968,3	5.169,1	

Source: Yahoo 10-k filings

When analyzing revenues from a geographical standpoint, Yahoo's largest market remains the United States, showcasing a CAGR of 4.8% over the years. Meanwhile, the EMEA region showed a

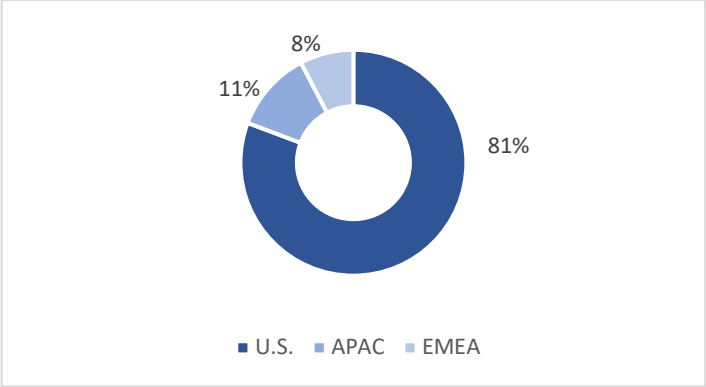
negative CAGR of -4.2%, and the Asia Pacific (APAC) region experienced a steeper decline with a CAGR of -13.2%

Figure 23: Revenue by geography ($m)

Years	2012	2013	2014	2015	2016	CAGR
U.S.	3.461,6	3.481,5	3.517,9	3.976,8	4.172,8	*4,8%*
EMEA	472,1	385,2	374,8	343,6	397,8	*-4,2%*
APAC	1.052,9	813,7	725,4	647,9	598,5	*-13,2%*
Total	4.986,6	4.680,4	4.618,1	4.968,3	5.169,1	

Source: Yahoo 10-k filings

Figure 24: Revenue by geography (2016)



Source: Yahoo 10-k filings

Moving on with the cost structure, looking at the Figure 25 we can denote that the company registered a constant increase in costs except for the year 2015 in which the total costs almost doubled due to the high value of goodwill impairment charge for Tumblr did in the fourth quarter. From 2012 to 2016, Yahoo's COGS showed a rising trend with a CAGR of 13.8%. Starting from $1.620,6 million in 2012, it reached $2.718,9 million by 2016. While there was a dip in 2013 to $1.349,4 million, the subsequent years exhibited steady increments. Most notably, as a proportion of total expenses, COGS surged from occupying 36.7% in 2012 to a significant 46.8% in 2016, underscoring a rising cost challenge for Yahoo.

During the observed period, Sales and Marketing expenses experienced a contraction, represented by a CAGR of -5.4%. After a modest rise in 2013 reaching $1,130.8 million, the expenditures diminished to $881.5 million by 2016. This category's share of total expenses shrank from 24.9% in 2012 to 15.2% in 2016, a trend primarily influenced by reductions across various factors such as a $88 million decrease in compensation costs, influenced largely by a 19% year-over-year reduction in headcount, and a $58 million reduction in marketing and public relations expenses, among

others. The latter can be attributed to the lack of similar brand marketing campaigns in 2016 that were active in 2015.

On the other hand, R&D expenses portrayed a fluctuating yet generally increasing trend with a 4.5% CAGR, showcasing a commitment to innovation and product development, despite seeing a dip in 2016 after peaking the previous year. This trend mirrored that of General and Administrative expenses, which observed a 4.8% CAGR, rising steadily to reach $650.8 million in 2016 from $540.2 million in 2012. Despite this, its proportion of total expenses saw a slight dip from 2012 to 2016.

Turning to the Goodwill impairment charge, a significant surge was noted in 2015, largely driven by the considerable correction in Tumblr's value. According to Yahoo's annual report, the fair value of Tumblr was almost on par with its carrying value, a situation that made it susceptible to any minor adverse shifts in forecasts potentially pushing its fair value below the carrying amount. This spurred continuous assessments of its reporting units' performance beyond 2015, characterized by forecasted revenue, operating income, and cash flow downturns for 2016 and the following years.

Figure 25: Cost structure ($m)

Years	2012	2013	2014	2015	2016	CAGR
COGS	1.620,6	1.349,4	1.387,4	2.077,7	2.718,9	*13,8%*
Sales and Marketing	1.101,6	1.130,8	1.084,4	1.080,7	881,5	*-5,4%*
Research and development	885,8	1.008,5	1.156,4	1.177,9	1.055,5	*4,5%*
General and administrative	540,2	569,6	686,3	687,8	650,8	*4,8%*
Goodwill impairment charge	0,0	63,6	88,4	4.460,8	394,9	*83,8%*
Other Expenses	272,0	(31,3)	72,3	231,8	112,7	*-19,8%*
Total	4.420,2	4.090,5	4.475,2	9.716,8	5.814,3	

Source: Yahoo 10-k filings

The changes in Yahoo's headcount over the five registered an initial expansion. However, the subsequent decline reflects the company challenges faced over the last years before the acquisition leading to a final headcount consistently lower than the amount reported in 2012.

Figure 26: Yahoo employees

Years	2012	2013	2014	2015	2016
Headcount	11.700	12.200	12.500	10.400	8.500
growth%		*4,3%*	*2,5%*	*-16,8%*	*-18,3%*

Source: Yahoo 10-k filings

Despite the negative net income over the last two period, analyzing the cash flow we can see a different situation.

Starting from 2014, Yahoo reported a strong cash inflow from operations amounting to $916.4 million. This inflow was also incremented consistently by the cash generated from the proceeds from the sale of Alibaba Group ADSs amounting for $9.4bn partially offset by purchases of marketable securities for $7.9bn. For what concern the financing side, in that year Yahoo faced a huge common stock repurchase that led to $4.1bn cash-out. At the end of the year the company was able to generate cash for $586.5m.

However, in the following year the company started to face difficulty in generating cash.

At the end of 2015, the company burned $1.0bn of cash. The red flag is that most of this cash out was driven by the operating activities. This result was mainly due to the payment of the $3.3 billion income tax liability associated with the Alibaba Group's IPO in the previous year. Yahoo continued its investment strategy by purchasing PPE and marketable securities but at the same time had proceeds from the sales of other marketable securities that generated cash for $6.7bn resulting in a positive cash flow from investment activities of $1.7bn. Also, in this year the company continued to repurchase common stock but in a more restrained way that limited the cash out resulting from financing activities.

In 2016, the company displayed a positive cash-flow from operating activities despite the negative net income of the year of $209m. The cash generated was mainly attributed by the non-cash items such as depreciation and goodwill impairment because of the investments made in the previous years.

Even in this year the company continued to purchase marketable securities but also placing excess cash in liquid and highly rated marketable debt securities, money market funds, and time deposits. The company also reduced its cash-outflow from financing as it stopped the common stock repurchase, closing the year with a total cash out of $512m.

Figure 27: Cash flow statement ($m)

Years	**2014**	**2015**	**2016**
CF from Operating Activities	916,4	(2.383,4)	1.248,9
CF from Investment Activities	3.738,5	1.752,1	(1.574,3)
CF from Financing Activities	(4.022,5)	(377,3)	(193,7)
effect of exchange rate	(45,9)	(23,6)	6,6
Change in Cash & Cash Equivalents	586,5	(1.032,2)	(512,4)

Source: Yahoo 10-k filings

Yahoo's financial trajectory over these years reflected a mix of strategic choices and market dynamics. The significant tax liability arising from the Alibaba deal impacted the FCF deeply in

2015 leading to a decrease of $3.6bn. However, the company's strategic decisions, including the sale of land and leveraging tax benefits from previous losses, played crucial roles in restoring the FCF to a positive state in 2016. This resilience and agility underlined Yahoo's capacity to manage financial challenges adeptly.

Figure 28: Free Cash Flow ($m)

Years	2014	2015	2016
CF from Operating Activities	916,4	(2.383,4)	1.248,9
Purchase of PPE	(395,6)	(543,0)	10,7
Excess tax benefits from stock-based awards	149,6	58,3	18,0
Dividends received from equity investees	(83,7)	(142,0)	(157,0)
Free Cash Flow	586,6	(3.010,2)	1.120,6

Source: Yahoo 10-k filings

The consistent use of cash also appears evident by having a look at Yahoo's balance sheet illustrated in Figure 29. The company started the period in 2012 with a robust cash position of $2.667,8 million. Although there was a dip in 2013, the company recovered its cash position by 2014, only to witness a decline in subsequent years. By 2016, cash and cash equivalents decreased to $1.119,5 million, that represents a substantial cash outflow due to significant investments in those years.
As illustrated in the cash flow, investments in marketable securities grew exponentially and led the total ST investment to increase from $1.516,2 million in 2012 to $5.700,9 million by 2016. This indicates Yahoo was strategically investing its liquidity in instruments that could be converted to cash within a year, perhaps aiming for higher returns. In terms of capex, the company seemed relatively stable across the years, suggesting consistent investments in infrastructure and operational assets. However, by 2016, there was a noticeable decline to $1.209,9 million, displaying a strategic decrease in capital investments already presented in the Free Cash Flow analysis.
From 2014, the balance sheet of Yahoo increased exponentially due to the investment in Alibaba Group. In this year, the company showed an enormous investment of $39.867,8 million. By 2016, despite some fluctuations, the investment's value was recorded at $33.680,9 million, showing its substantial role in Yahoo's assets.
Concurrently on the liabilities side, we can see increased tax liability corresponds with the significant investment in Alibaba and suggests potential tax implications upon liquidating the Alibaba stake. In 2014, Yahoo also experienced a significant jump in equity nearly tripling from the previous year. This surge is primarily due to the recognition of the Alibaba investment. However, in

subsequent years, while equity declined as a consequence of the accumulated losses reported over the years, it remained considerably higher than pre-2014 levels.

Figure 29: Balance Sheet ($m)

Years	2012	2013	2014	2015	2016
Cash & Cash equivalents	2.667,8	2.077,6	2.667,9	1.631,9	1.119,5
ST Investments	1.516,2	1.330,3	5.327,4	4.225,1	5.700,9
Other Current Assets	1.468,8	1.618,0	1.703,8	1.650,3	1.305,8
PPE	1.685,8	1.488,5	1.487,7	1.547,3	1.209,9
Investment in equity interests	2.840,2	3.426,3	2.489,6	2.503,2	3.192,9
Investment in Alibaba Group	-	-	39.867,8	31.172,4	33.680,9
Other LT Assets	6.924,5	6.864,2	8.416,2	2.473,7	1.873,2
Total Assets	**17.103,3**	**16.805,0**	**61.960,3**	**45.204,0**	**48.083,1**
Current Liabilities	1.290,2	1.340,3	4.528,6	1.277,4	1.287,4
LT convertible notes	-	1.110,6	1.170,4	1.233,5	1.299,9
Deferred tax Liabilities related to Alibaba Group	-	-	16.154,9	12.611,9	13.634,0
Other LT Liabilities	1.207,4	1.223,5	1.320,8	1.001,8	777,6
Equity	14.605,6	13.130,6	38.785,6	29.079,4	31.084,1
Total Liabilities	**17.103,3**	**16.805,0**	**61.960,3**	**45.204,0**	**48.083,1**

Source: Yahoo 10-k filings

Analyzing Figure 30, we can see that for the first three years analyzed Yahoo displayed great ability to generate profit from its assets. For what concern the efficiency to use its assets to generate sales indicated by the asset turnover, it appears evident how this ratio has been on the decline throughout the period under review. Starting at 0.31 in 2012, it decreased consistently each year until 2015, where it bottomed out at 0.09. This trend indicates that the company's efficiency in generating revenue from its assets was deteriorating. However, there's a slight uptick in 2016 to 0.11, hinting at a minor improvement or stabilization.

Figure 30: Ratios

Years	2012	2013	2014	2015	2016
ROA	24,75	8,06	19,16	-8,14	-0,45
Asset Turnover	0,31	0,28	0,12	0,09	0,11

Source: Elaboration of data available from Yahoo 10-k filings

With the Altman Z-score in Figure 31 we can give a final consideration to complete the health status analysis of the company over the years prior the acquisition.
In the first two years analyzed the company seemed stable and did not show red flags indicating potential financial distress. Especially in 2013, the high X4 suggested that the market had a strong

positive valuation of Yahoo's equity in comparison to its liabilities. This is consistent with the nearly doubled market value of equity in this year. However, starting from 2014 the Z-score started to decrease moving Yahoo from the "safe" zone to the edge of the "distress" zone. Most factors, particularly X1 and X3, decrease sharply. This indicates that Yahoo had issues with its working capital management and its ability to generate earnings in relation to its assets.
In 2015 the indicator further declined to 1.55, clearly indicating that Yahoo was now in the "distress" zone. This illustrates potential financial challenges and increased risk of bankruptcy. It's important to note the low X3 value of 0.02, which signifies that Yahoo's EBIT relative to its assets was significantly low. Even in 2016, despite a slight increase in the score, Yahoo was still in the distress zone.

Figure 31: Altman Z-score

YEAR	2012	2013	2014	2015	2016
Sales	*4.987*	*4.680*	*4.618*	*4.968*	*5.169*
EBIT	*1.049*	*935*	*755*	*342*	*365*
Current Asset	*5.653*	*5.026*	*9.699*	*7.507*	*8.126*
Total Asset	*17.103*	*16.805*	*61.707*	*45.204*	*48.083*
Current Liabilities	*1.290*	*1.340*	*4.529*	*1.277*	*1.287*
NWC	*4.362*	*3.686*	*5.171*	*6.230*	*6.839*
Retained Earnings	*5.792*	*4.267*	*8.937*	*4.571*	*4.354*
Mkt value of Equity	*23.535*	*41.024*	*47.851*	*31.409*	*36.896*
X1	0,31	0,26	0,10	0,17	0,17
X2	0,47	0,36	0,20	0,14	0,13
X3	0,20	0,18	0,04	0,02	0,03
X4	2,20	3,91	1,24	1,11	1,23
X5	0,29	0,28	0,07	0,11	0,11
Z-Score	3,48	4,99	1,66	1,55	1,66

Source: Elaboration of data available from Yahoo 10-k filings

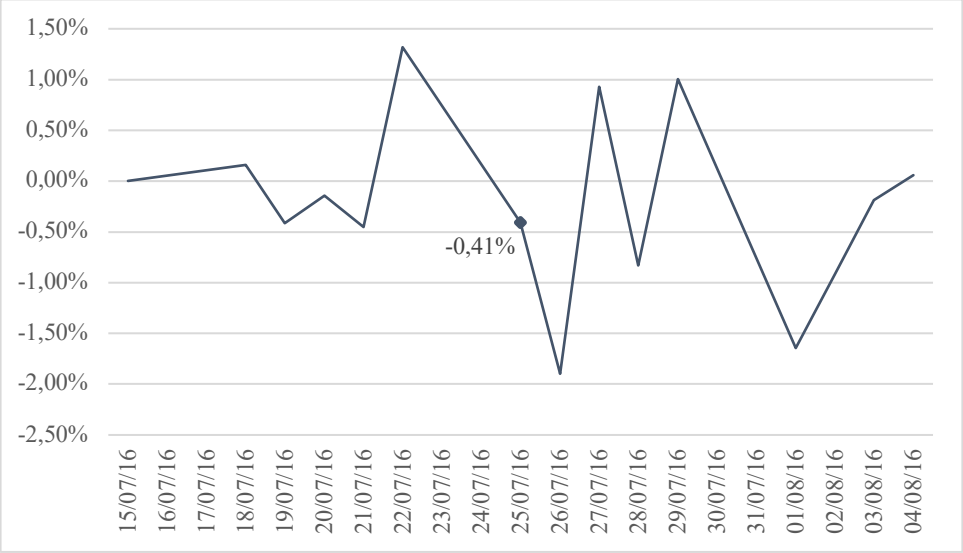
2.1.2.4 Abnormal returns analysis

In Figure 32, when looking at the daily returns, we notice a mixture of positive and negative returns in the days leading up to the announcement, signifying that the market was largely uncertain and perhaps responding to pre-announcement rumors and speculative trading activities. On the announcement day itself, the firm experienced a -0.41% return, which further decreased to -1.90% the following day. This negative trend mirrors a market reception characterized by skepticism and potential concerns regarding the strategic merits of the acquisition or the price paid for the transaction.
However, there was a rebound with a 0.93% return on 27th July 2016. This could reflect assimilating positive synergies that the acquisition could potentially foster in the long run.

The overall trading period experienced significant volatility with a range between -1.90% and 1.32%, implying a market indecision to find a consensus on the intrinsic value adjustments due to the acquisition. This can potentially indicate a distress factor in play, with investors keenly evaluating how the acquisition would fit into Verizon's strategy.

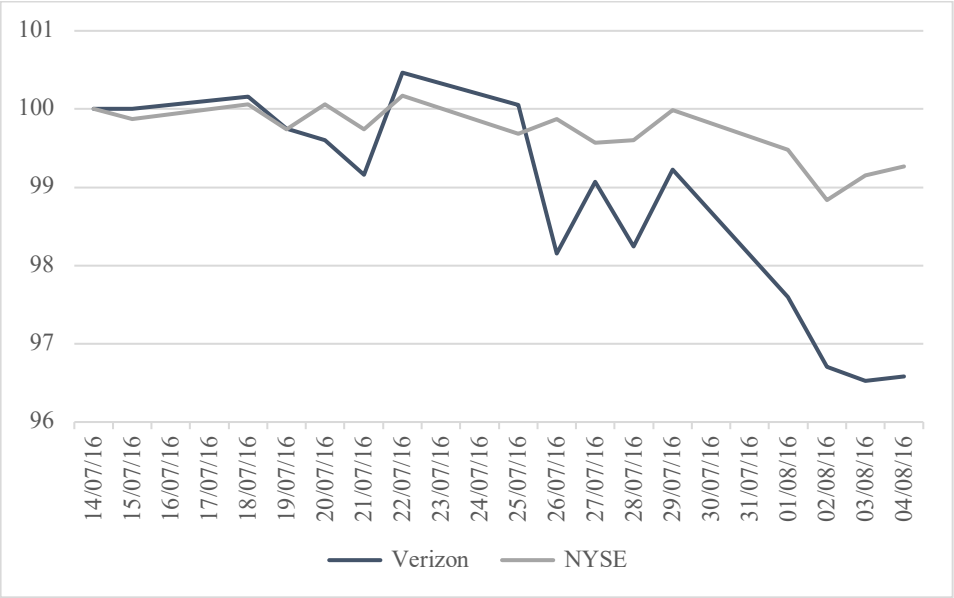
By investigating the broader picture which encapsulates the total responses within the window period, the analysis displays a market characterized by uncertainty, and a potential undervaluation, as reflected by a prominent dip immediately after the announcement. The market however showed signs of correction in subsequent sessions.

Figure 32: Verizon returns around announcement



Source: Elaboration of Yahoo finance data

Figure 33: Verizon share price performance around announcement rebased to 100



Source: Elaboration of Yahoo finance data

Moving on the regression analysis reported in Figure 34 and 35, the CAPM model demonstrated a significant relationship between the market return and Verizon's return, with a Market beta coefficient of 0.7, substantiated at a 1% level of significance. Despite this, the model could only account for 16.4% of the variability in the returns, evidenced by an R^2 value.

Taking a step further to incorporate more explanatory variables, the Fama French three-factor model slightly enhanced the R^2 value to 18.1%, indicative of a better fit than the CAPM model albeit marginally. While the market risk premium retained its significance, the model reported an additionally significant factor as the SMB, with a coefficient of -0.3, illustrating the negative impact small-cap stocks potentially have on Verizon's returns. The HML factor, however, did not emerge as statistically significant, signaling that the book-to-market equity ratio is less influential in determining Verizon's stock returns during the period under study.
While Fama French three-factor model showed a slightly superior explanatory power, the still moderate R^2 values from both models hint at the existence of other influential factors unaccounted for, such as momentum or a distress factor premium to capture a more wholesome picture of the market dynamics. In fact, as reported in the previous section, Yahoo appeared to be toward a distress situation over the last year since its Altman z-score deteriorated drastically over the period analyzed.

Figure 34: CAPM results

```
CAPM Results
================================================
                         Dependent variable:
                     ---------------------------
                                ret_RF
------------------------------------------------
Mkt.RF                     0.007*** (0.001)
------------------------------------------------
Observations                     503
R2                              0.164
Adjusted R2                     0.162
Residual Std. Error       0.010 (df = 502)
F Statistic            98.442*** (df = 1; 502)
================================================
Note:                *p<0.1; **p<0.05; ***p<0.01
```

Figure 35: Fama French Three-factor model results

```
Fama French Three-factor Model Results
================================================
                         Dependent variable:
                     ---------------------------
                                ret_RF
------------------------------------------------
Mkt.RF                     0.007*** (0.001)
SMB                       -0.003*** (0.001)
HML                         0.001 (0.001)
------------------------------------------------
Observations                     503
R2                              0.181
Adjusted R2                     0.176
Residual Std. Error       0.010 (df = 500)
F Statistic            36.873*** (df = 3; 500)
================================================
Note:                *p<0.1; **p<0.05; ***p<0.01
```

Examining the cumulative abnormal returns reported in Figure 36 for various windows around the acquisition announcement provides insightful delineations into the market's reception of Verizon's strategic move.

Across both CAPM and Fama-French three-factor models, a diffused trend of negative CARs is noticeable, although the magnitudes slightly diverge. Under the CAPM, the CAR spanned from -3.705% in a broad [-10, +10] window, and presented a more pronounced dip to -2.169% in the narrower [-1, +1] event window. Contrastingly, the Fama-French three-factor model, while still exhibiting negative returns, showed a decline to -2.104% in the [-1, +1] window, and a -3.068% over the [-10, +10] span, suggesting a somewhat less adverse market reaction when additional risk factors were considered.

In the long-term horizon, as illustrated by, buy-and-hold abnormal returns over a 24 months period post-acquisition, we notice a sustained negative trajectory with the CAPM and Fama-French models showcasing a substantial degradation in values to -37.227% and -21.530% respectively. This pronounced decline in the BHAR displayed a market sentiment fraught with skepticism towards Verizon's strategic trajectory post-acquisition. The sustained negative BHAR over two potentially symbolizes an acquisition perceived as suboptimal in leveraging market opportunities to foster shareholder value, thereby displaying an overall market disapproval.

Figure 36: CARs and BHARs results

	CAR [-10,+10]	CAR [-5,+5]	CAR [-3,+3]	CAR [-1,+1]	BHAR [0,24m]
CAPM	-3,705%	-1,138%	-1,275%	-2,169%	-37,227%
Fama French three Factor	-3,068%	-0,398%	-0,844%	-2,104%	-21,530%

2.2 Category B: distressed target acquisition in downturn

2.2.1 Acquisition of Slack by Salesforce

2.2.1.1 Companies overview:

Founded in 2009 and headquartered in San Francisco, Slack emerged as a leading platform for workplace communication, gaining significant traction for its ability to streamline collaboration and replace email.

At the time of the acquisition, Slack counted more than 100 average minutes of active usage per day, more than 520,000 connected endpoints, 240%YoY connected endpoints growth and 64,000 paid costumers using Slack connect.

Nowadays the company operates across 150 countries worldwide serving around 200,000 clients also including Uber, Airbnb and Expedia.

Salesforce, on the other hand, has been a dominant force in the Customer Relationship Management (CRM) software space since its inception in 1999. The company provides cloud-based software designed to help businesses finding more prospects, closing more deals, and providing customers improved services. As of today, the company counts around 150,000 customers across different industries such as communications, consumers goods, financial services, government, healthcare, manufacturing, media and retail.

By 2020, Salesforce had already made a series of strategic acquisitions to expand its product offerings.

2.2.1.2 Deal overview:

Toward the end of November 2020, some rumors regarding Salesforce being in an advanced talk for a potential deal with Slack Technologies began to spread (The Wall Street Journal, 2020).
These rumors said that Salesforce would have likely valued the target at more than its current valuation at the time, $17bn and the news made rose Slack's shares price by almost 20% (Kumar, 2020).
On 1st December 2020, Salesforce officially announced that entered into a definitive agreement for Slack's acquisition for a total consideration of $26.79bn in cash and 0.0776 shares of Salesforce common stock for each Slack share, representing a total enterprise value of nearly $27.7bn based on Salesforce's common stock closing price on 30th November 2020 and a premium of 6.95%.
The deal had an implied equity value of 26.34bn and a termination fee, in cash of $900m in cash or 3.41% based on that implied equity value, in case Slack would have accepted a superior proposal. (Mergermarket, 2020)
The main purpose of this transaction was to integrate Slack with Salesforce Customer 360, the CRM platform designed for costumer journey, in order to exploit synergies and to offer an optimized services to customers.
As reported in Salesforce's press release, the CEO Marc Benioff considered the acquisition as an opportunity to shape the future of enterprise software and to transform the way everyone works in the all-digital, work-from-anywhere world. Also Slack's CEO, Stewart Butterfield, saw in this transaction an opportunity and according to him Salesforce and Slack vision about reducing complexity, increasing power and flexibility were aligned.
As previously said, the main goal behind this operation was to integrate Slack solutions with Salesforce Customer 360. This would have accelerated the move by companies and governments to an all-digital world by allowing people to work remotely in a more efficient and flexible way. The two companies together would have given to clients a single source of truth for their business and a unified platform for connecting employees, customers and partners with each other and the apps they sue everyday all within their existing workflows.
The key solution of Slack, "Slack Connect", extended the benefit of the company to enable communication and collaboration between a company's employees and all its external partners ranging from vendors to customers. The goal of the acquirer was to deeply integrate the target into every Salesforce Cloud by transforming the way people communicate, collaborate and take action on customer information across Salesforce as well as by making apps and systems more productive,

smarter and faster. The final goal was to form the largest open ecosystem of apps and workflow for business. In fact, Slack's open platform at the time seamlessly integrated with more than 2,400 apps that people used to collaborate, communicate and to get work done. This would have allowed Salesforce platform to be the easiest way to build and deliver apps to connect customers in a whole new way.

Both the board of directors approved the transaction, and the Slack board recommended that its stockholders approve the transaction and adopt the merger agreement. The deal was expected to close in the second quarter of Salesforce's fiscal year 2022 (Fiscal Year ends in January 31).

At the same time Salesforce entered into a voting agreement with certain stockholders of Slack common stock, under which each stockholder agreed to vote all of their Slack shares in favor of the transaction at the special meeting of Slack stockholders to be held in connection with the transaction. Slack shares that were subject to the agreement represented approximately 55% of the outstanding voting power of Slack common stock at that time.

Regarding the financing method, Salesforce expected to fund the cash portion of the transaction consideration with a combination of new debt amounting to $10bn senior unsecured 364-day bridge loan facility and cash on its balance sheet (Salesforce Press Release, 2020).

On 21st of July 2021 Salesforce announced the completion of the acquisition (Salesforce Press Release, 2021). In Salesforce's press release, they affirmed that Slack integration to Customer 360 would have allowed to clients to have a single platform for connecting employees, customers and partners resulting in a more efficient structure. In fact, the aim was to create a unified platform for businesses, enabling them to manage their sales, customer service, and marketing efforts more efficiently while enhancing team collaboration.

The merger also bolstered Salesforce's position against competitors like Microsoft, whose Teams platform had been directly rivalling Slack in the enterprise communication space. By combining forces, Salesforce and Slack aimed to deliver a comprehensive suite of powerful business applications that fostered increased productivity, efficiency, and collaborative experiences.

The agreement also stipulated that Slack would have continued to operate under its brand and also that it would have been led by its CEO and Co-Founder Stewart Butterfly.

Figure 37: Salesforce share price performance over the period

Source: Elaboration of Yahoo finance data

2.2.1.3 Financial analysis

Over the five-year span from 2017 to 2021, Slack Technologies illustrated a solid growth trajectory, especially in the domain of its revenue generation. By the conclusion of this period, the firm reported revenue for $902.6 million, marking a CAGR of 71.2%.

Figure 38: Income Statement ($m)

Years	**2017**	**2018**	**2019**	**2020**	**2021**
Revenue	105,2	220,5	400,6	630,4	902,6
growth %		*109,7%*	*81,6%*	*57,4%*	*43,2%*
(COGS)	(8,7)	(12,1)	(34,5)	(61,1)	(55,3)
Gross Income	96,4	208,5	366,1	569,3	847,3
margin %	*91,7%*	*94,5%*	*91,4%*	*90,3%*	*93,9%*
(SG&A)	(238,1)	(338,0)	(503,5)	(1.091,1)	(1.062,5)
EBITDA	(141,7)	(129,5)	(137,4)	(521,8)	(215,2)
margin%	*-134,7%*	*-58,7%*	*-34,3%*	*-82,8%*	*-23,8%*
(D/A)	(6,8)	(14,3)	(16,8)	(36,1)	(66,4)
EBIT	(148,4)	(143,9)	(154,2)	(557,9)	(281,6)
margin %	*-141,2%*	*-65,2%*	*-38,5%*	*-88,5%*	*-31,2%*
NFE	1,7	4,6	16,2	(9,9)	(11,2)
EBT	(146,8)	(139,3)	(138,1)	(567,8)	(292,8)
Income Taxes	(0,2)	(0,8)	(0,8)	(0,6)	0,3
Consolidated Net Income (Loss)	(146,9)	(140,1)	(138,9)	(568,4)	(292,5)
Minority Interest	(0,1)	0,0	1,8	2,7	7,9
Net Income (Loss)	(146,9)	(140,1)	(140,7)	(571,1)	(300,4)
Preferred dividends	0,0	40,9	0,0	0,0	0,0
Net Income (Loss) to common SH	(146,9)	(181,0)	(140,7)	(571,1)	(300,4)

Source: Slack 10-k filings

Between 2017 and 2018, Slack witnessed its highest surge in revenue, registering a growth rate of 109.7%. Such a marked uptrend can be largely attributed to the strategic augmentation within its existing customer base, as denoted by a very high Net Dollar Retention Rate of 152% illustrated in Figure 39. Additionally, the company's efforts in expanding its clientele bore fruit, with the addition of new Paid Customers increasing by 59% within this time frame.

Figure 39: Customer breakdown

Years	**2017**	**2018**	**2019**	**2020**	**2021**
Paid Customers	37.000	59.000	88.000	110.000	156.000
Paid Customers > $100,000	135	298	575	893	1.183
Net Dollar Retention Rate	*171%*	*152%*	*143%*	*132%*	*123%*

Source: Slack 10-k filings

NRR is supplemental measure of the company organic revenue growth and could be a useful indicator that provide insights into Slack's long-term value of its subscription agreements and its ability to retain its paid customers. Over the last years this metrics registered a decrease mainly explained by the increase of revenue base.

Moving on to the geographical breakdown illustrated in Figure 40, for what concern the United States, Slack commenced with a revenue footprint of $69.1 million in 2017 and ended recording revenue for $554.5 million by 2021 corresponding to a CAGR of 68.3%.

In contrast to this, the International Market narrative, while rooted in smaller absolute revenue figures, showed higher growth and vast potential. Beginning at a modest $36.0 million in 2017, the revenue from international markets witnessed a near tenfold increment, culminating in $348.1 million by the close of 2021. This increase represented a CAGR of 76.3%, outstripping its U.S. counterpart.

Figure 40: Revenue breakdown by geography ($m)

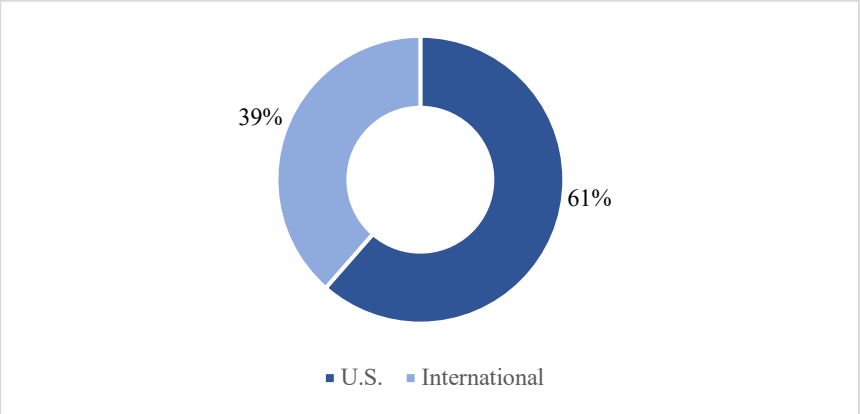
Years	**2017**	**2018**	**2019**	**2020**	**2021**	**CAGR**
U.S.	69,1	144,7	255,2	394,7	554,5	*68,3%*
International	36,0	75,8	145,4	235,7	348,1	*76,3%*
Total	105,2	220,5	400,6	630,4	902,6	

Source: Slack 10-k filings

As reported in Figure 41 the U.S., despite its dominant position as a revenue contributor (accounting for approximately 61% of the total revenue in 2021), has seen a slight dilution in its proportional contribution over the years. Back in 2017, the U.S. shouldered a heftier 65.7% of total

revenue, against the international market's 34.3%. Fast forward to 2021, and the scales tip slightly with the U.S. and international markets accounting for 61.4% and 38.6% respectively.

Figure 41: Revenue breakdown by geography (2021)



Source: Slack 10-k filings

Despite an increasing trend in revenue, the years after 2018 did display a gradual deceleration in its pace expansion.
By 2019, growth stood at 81.6%, slipping to 57.4% in 2020, and further tapering to 43.2% in 2021. However, as reported in its annual report, the continuous increase in Paid Customers, combined with a growing segment of higher-value clients, significantly bolstered revenue streams.
In fact, by the end of January 2021, the revenue share from Paid Customers, each contributing more than $100,000 annually, rose to 49%, marking an increment from the preceding year's figure of 46%.

Despite the fact that revenues have increased, Slack's EBITDA margin registered a trend of deterioration from an already negative -134.7% in 2017 to a slightly less but still negative, -23.8% by 2021. The primary cause behind this margin contraction appears to be the increasing in Selling, General, & Administrative (SG&A) expenses, which escalated over the years at higher rates than the one of revenue growth.

Also, COGS underwent consistent amplification year on year. The period between 2020 and 2021 observed a rise of $24.5 million, marking a 25% increase. The principal drivers behind this surge encompassed an $18 million accentuation in third-party hosting expenditures, a $9.9 million inflation in personnel outlays consequent to headcount expansion, and a $3 million escalation in credit card processing fees. Nonetheless, this period did witness a $6.1 million contraction in stock-based compensations and related payroll taxes.
Regarding the previous years the company presented similar cost pressures.

Between 2019 and 2020, the cost of revenue increased by $45.9 million (an 89% uptick), driven predominantly by stock-based compensations and augmented hosting costs.
The year before, 2018 to 2019, observed a cost elevation of $24.9 million (95% increase), largely induced by hosting and personnel expenses.
Even between 2017 and 2018, costs climbed by $10.8 million, or 70%, on account of hosting and personnel-related outlays.
At first glance it becomes evident that while Slack Technologies was able to enhance its revenue, it also started to reduce its margins due to a consistent increase in operational costs.

Analyzing more in deep the cost structure in Figure 42, we can denote that, from 2017 to 2021, the CAGR for COGS stood at 58.7%, underlining a substantial increase in costs associated with the production or delivery of Slack's services.
The research and development expenditure observed a CAGR of 41.0%, indicative of the company's aggressive focus on innovation. Slack experienced a substantial hike in Research and Development expenses by 190%, predominantly due to stock-based compensations considering the Direct Listing in June 2019.
Nevertheless, the increasing pace was lowered in 2021 because of reduced stock-based compensation and lesser corporate expenses mainly attributed to the Direct Listing mentioned before.

Concurrently, Sales & Marketing costs exhibited a 45.1% CAGR, reflective of Slack's assertive market penetration and customer acquisition strategies that was also reflected in the increasing customers' number. In 2021, Despite the pandemic's restrictive travel environment, the company manifested a 14% surge in Sales and Marketing expenses, driven by amplified personnel costs and higher marketing expenses, offset partially by reduced stock-based compensations and diminished travel.

In the last year, also General and administrative expenses reduced by 15%, with major decrements in stock-based compensations, financial advisory fees, and legal expenses, yet with incremental legal fees related to the proposed Salesforce merger. Overall, General and administrative expenses, encompassing a broad category of organizational costs, advanced with a 55.9% CAGR, whilst the Depreciation and Amortization saw significant increases in the latter years denoting the increased investments made over the years.

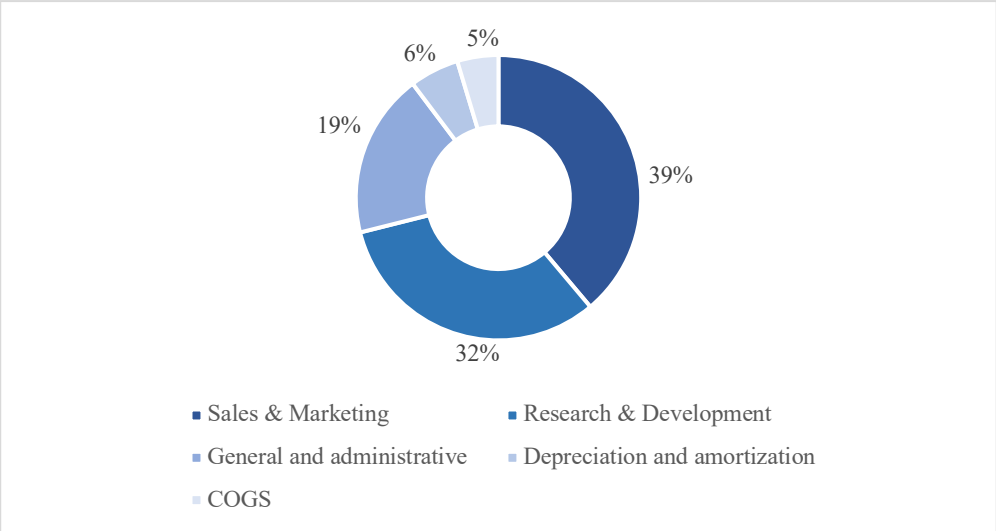
Figure 42: Cost Structure ($m)

Years	2017	2018	2019	2020	2021	CAGR
COGS	8,7	12,1	34,5	61,1	55,3	*58,7%*
Research & Development	96,7	141,4	157,5	457,4	382,1	*41,0%*
Sales & Marketing	104,0	140,2	233,2	402,8	460,7	*45,1%*
General and administrative	37,5	56,5	112,7	261,4	221,1	*55,9%*
Depreciation and amortization	6,8	14,3	16,8	36,1	66,4	*76,9%*
Total	253,6	364,4	554,8	1.218,7	1.185,7	

Source: Slack 10-k filings

In terms of proportional representation, the cost structure over the years delineated that by 2021, COGS constituted 4.7% of the total costs. In comparison, Research & Development, Sales & Marketing, General and Administrative, and Depreciation and Amortization stood at 32.2%, 38.9%, 18.7%, and 5.6% respectively.

Figure 43: Cost Structure breakdown (2021)



Source: Slack 10-k filings

Alongside financial figures, the human capital element provides further insights into Slack's growth narrative. The total headcount increased from 716 employees in 2017 to a remarkable 2,545 by 2021, translating into a consistent and robust growth percentage year on year.

Figure 44: Slack employees

Years	2017	2018	2019	2020	2021
Headcount	716	N/A	1.664	2.045	2.545
growth%		*52,4%*	*52,4%*	*22,9%*	*24,4%*

Source: Slack 10-k filings

Looking at the cash flow reported in Figure 45, over the last three years of the analysis, we can see that Slack faced challenges in generating cash from its core activities, especially in 2019, resulting in a negative cash flow of $41.1 million.
The reason was mainly attributable the growth strategy that the company has pursued. In fact, that year was marked by aggressive growth strategies, necessitating increased spending and expanding the employee base, a logical move for a company seeking market dominance. This situation was worsened by the consistent investment made by Slack that resulted in a cash outflow of nearly $333m mainly driven by the purchase of marketable securities and infrastructural enhancements. Despite the cash outflows, the company benefited from constant financing activities that contributed to increase the cash available over the years and in 2019 it consisted mainly by the issuance of convertible preferred stock.

In 2020 presented a slight respite as the negative cash position from operating activities reduced to a consumption of $12.4 million. Although a net loss of $568.4 million was still present, the impact of non-cash charges and changes in operating assets and liabilities provided a cushion.
For what concern investing activities, there was a significant positive cash inflow of $330.1 million, largely from sales and maturities of these securities that provided for the largest amount the cash increasing.
In the last year ending on January 31 2021, the company showcased financial resilience with operating activities generating a commendable cash inflow of $72.4 million. Despite a net loss, the firm exhibited strong financial management capabilities with significant non-cash charges and changes in operating assets and liabilities. This signals a maturing business model, possibly moving towards profitability. In this year the company continued its investing strategy that led to a decrease in cash deriving from investing activities of $263m, mainly explained by purchases of marketable securities.
The final cash generated was boosted by the consistent cash in-flow from financing activities of $773m primarily driven by proceeds from the issuance of the Notes.

Figure 45: Cash Flow Statement ($m)

Years	2019	2020	2021
CF from Operating Activities	(41,1)	(12,4)	72,4
CF from Investment Activities	(333,4)	330,1	(263,1)
CF from Financing Activities	437,7	18,5	773,0
Change in Cash & Cash Equivalents	63,2	336,2	582,4

Source: Slack 10-k filings

Lastly, moving to the Free Cash Flow analysis illustrated in Figure 46, we can assert how Slack's liquidity position changed over the three years prior the acquisition.
Despite being considered a distressed firm due to the high incidence of the cost that led to a consistent negative net income over the five years prior the acquisition by Salesforce, we can see how its Free Cash Flow constantly improved. While 2019 and 2020 reported negative FCFs, reflecting the company's growth-oriented investments, 2021 marked a positive turnaround at $62.2 million, signaling a possible inflection point.

Figure 46: Free Cash Flow ($m)

Years	2019	2020	2021
CF from Operating Activities	(41,1)	(12,4)	72,4
Purchase of PPE	(56,2)	(49,6)	(10,2)
Free Cash Flow	(97,2)	(62,0)	62,2

Source: Slack 10-k filings

Analyzing its balance sheet, it appears clear that the company has invested in its growth over the years. To face this constant need of sources, in 2019 especially we can see a huge increase in equity as a direct consequence of the above-mentioned direct listing. Also, the company started to issue debt, both short and both long terms, since 2020. The consistent amount of debt raised in 2021 was mainly explained by the need to face short term investment aimed to increase its working capital.

Figure 47: Balance Sheet ($m)

Years	2018	2019	2020	2021
Cash & Cash equivalents	120,5	180,8	499,0	1.081,4
ST Investments	428,3	660,3	269,6	505,9
Other Current Assets	61,8	136,3	190,6	277,8
PPE	43,0	88,4	300,2	307,1
Intangible Assets	8,7	63,8	62,1	94,1
Other LT Assets	35,5	69,4	120,2	167,4
Total Assets	**697,8**	**1.199,0**	**1.441,7**	**2.433,7**
ST Debt	-	-	30,5	34,9
Other Current Liabilities	171,7	332,4	489,5	662,2
LT Debt	-	-	196,4	876,7
Other LT Liabilities	6,8	25,0	1,5	2,5
Equity	519,3	841,6	723,9	857,4
Total Liabilities	**697,8**	**1.199,0**	**1.441,7**	**2.433,7**

Source: Slack 10-k filings

Due to the negative results at the end of each period, ROA indicator in this case becomes meaningless. Regarding asset turnover we can denote immediately that slightly increased over the year as a consequence of the higher pace of revenue growth if compared to the asset growth. However, this ratio has always remained well below 1, indicating the aggressive investment policy adopted by the company over the years.

Figure 48: Ratios

Years	2017	2018	2019	2020	2021
ROA	-33,65	-31,91	-14,83	-43,25	-15,50
Asset Turnover	0,2	0,4	0,4	0,5	0,5

Source: Elaboration of data available from Yahoo 10-k filings

In Figure 49 we reported the results of the Altman Z-score. According to these results, the company showed high probability of bankruptcy in the first three years. However, as we can see, the main driver for this high probability is the lack of the Mkt value of equity due to the fact that the company was not listed yet. Despite this fact, the indicator is also lower by the constant negative EBIT and retained earnings.

In the last two years, as a consequence of the direct listing, the indicators raised considerably. This could also mean that the market, despite the negative EBIT and the distress nature of the company, had strong confidence in Slack's prospects. Such a high Z-Score indicates a very low risk of bankruptcy.

Figure 49: Altman Z-score

Years	**2017**	**2018**	**2019**	**2020**	**2021**
Sales	*105*	*221*	*401*	*630*	*903*
EBIT	*(148)*	*(144)*	*(154)*	*(558)*	*(282)*
Current Asset	*361*	*611*	*977*	*959*	*1.865*
Total Asset	*436*	*698*	*1.199*	*1.442*	*2.434*
Current Liabilities	*82*	*172*	*332*	*520*	*697*
NWC	*279*	*439*	*645*	*439*	*1.168*
Retained Earnings	*N/A*	*(525)*	*(666)*	*(1.237)*	*(1.537)*
Mkt value of Equity	*N/A*	*N/A*	*N/A*	*11.513*	*24.483*
X1	0,77	0,75	0,65	0,37	0,58
X2	-	-1,05	-0,78	-1,20	-0,88
X3	-1,12	-0,68	-0,42	-1,28	-0,38
X4	-	-	-	12,78	16,10
X5	0,24	0,32	0,33	0,44	0,37
Z-Score	**-0,11**	**-0,66**	**-0,22**	**11,10**	**15,78**

Source: Elaboration of data available from Yahoo 10-k filings

2.2.1.4 Abnormal return analysis

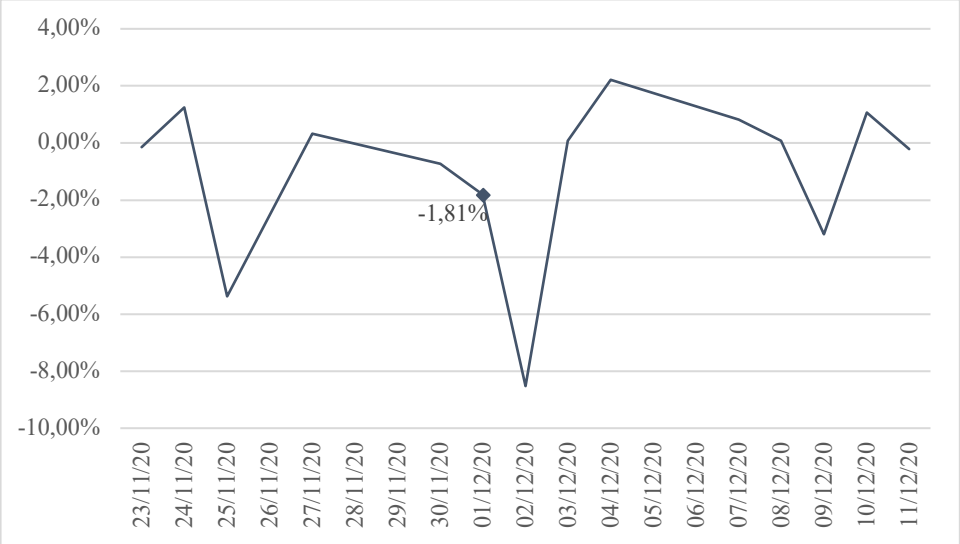
In the period leading up to and following Salesforce's significant announcement on December 1, 2020, the firm experienced considerable fluctuations in its daily returns.

Before the announcement day, there was a notable drop of -5.37% on November 25, followed by minor recoveries interspersed with dips, bringing the spotlight to the volatility that characterized this period. On the day of the announcement itself, the firm encountered a considerable slide, with a decline of 1.81%. However, it was the day succeeding the announcement where the most significant dip was registered, a -8.52% return, showcasing a substantially negative initial market reaction, possibly indicative of investors' concerns or unmet expectations concerning the details of the announcement.

Post this consistent decrease, Salesforce’s stock started a rise trajectory, with a rebound manifested through gains such as a 2.21% rise on December 4 and a smaller yet positive 0.81% increase on December 7. Despite these recuperative strides, the stock faced another pronounced dip on December 9, falling by 3.20%, hinting at sustained investor skepticism and volatile market sentiment.

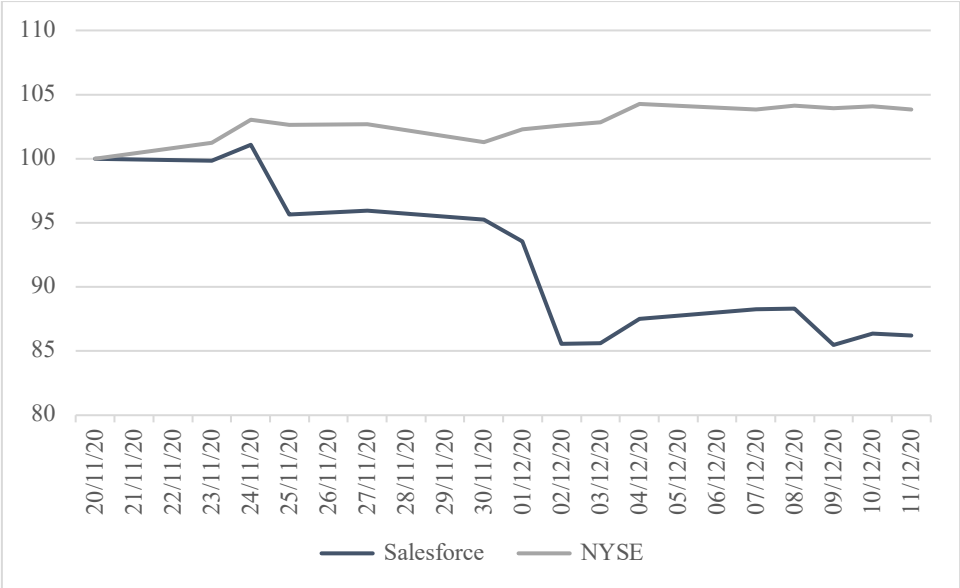
In conclusion, the pronounced volatility in daily returns around the Salesforce announcement period reflects a market grappling to assimilate and respond to the new information, displaying mixed sentiments.

Figure 50: Salesforce returns around announcement



Source: Elaboration of data from Yahoo Finance

Figure 51: Salesforce share price performance around announcement rebased to 100



Source: Elaboration of Yahoo finance data from Yahoo Finance

In figures 52 and 53 we presented the output of CAPM and Fama French three-factors model respectively.

Upon analyzing the financial metrics of Salesforce through CAPM regression, a substantial portion of the returns' variance, precisely 51.8%, is elucidated by the market risk premium with a high value of beta assessing at 1.4, as indicated by the R^2 value. This assertion is further supported by a substantial F-statistic of 539.466, pointing to the model's statistical significance.

In contrast, the Fama French three-factor model, which further introduces SMB and HML variables alongside the market risk premium, offers a heightened explanatory power with an R^2 of 58.2%. While the SMB variable presents a negligible impact, documented with a statistically insignificant coefficient of -0.04, it hints at the potential limited influence of the company size on the Salesforce returns during the analyzed period. Conversely, the HML variable signifies a robust negative relationship with the returns, highlighting a considerable impact of value factors on the asset pricing.

Notably, both models substantiate a critical role played by the market risk premium in explicating Salesforce's returns, albeit with a slight reduction in its coefficient value in the Fama French model, highlighting a distributed influence when other factors come into play. Furthermore, the diminishing residual standard error in the three-factor model to 0.016 reinforces a refined predictive precision, enhancing the understanding of the Salesforce's financial behavior.

Therefore, it can be concluded that the Fama French three-factor model provides a wider analytical framework, offering a more comprehensive perspective into the multiples determinants affecting Salesforce's return dynamics.

Figure 52: CAPM results

CAPM Results

	Dependent variable:
	ret_RF
Mkt.RF	0.014*** (0.001)
Observations	502
R2	0.518
Adjusted R2	0.518
Residual Std. Error	0.017 (df = 501)
F Statistic	539.466*** (df = 1; 501)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 53: Fama French Three-factor model results

```
Fama French Three-factor Model Results
================================================
                         Dependent variable:
                     ---------------------------
                                ret_RF
------------------------------------------------
Mkt.RF                     0.012*** (0.001)
SMB                         -0.0004 (0.001)
HML                        -0.006*** (0.001)
------------------------------------------------
Observations                     502
R2                              0.582
Adjusted R2                     0.580
Residual Std. Error       0.016 (df = 499)
F Statistic           231.822*** (df = 3; 499)
================================================
Note:                *p<0.1; **p<0.05; ***p<0.01
```

Analyzing the results derived from both CAPM and Fama French three-factor models elucidates a scenario of negative abnormal returns across all the event windows, with both models mirroring a downward trend. However, a slight differentiation is observable in the intensity of these negative returns.

Utilizing the CAPM model, we see a substantial decrement in CAR as we narrow down the event window, with the values ranging from -18.171% in a [-10, +10] window to -11.632% in a tighter [-1, +1] window. This trajectory exhibits the stock's increasing volatility as the announcement date approaches. Remarkably, the BHAR over a 24-month horizon manifests a significant downturn of -44.184%, suggesting a protracted adverse market reaction.

Contrastingly, the Fama French three-factor model, delineates a slightly more accentuated negative CAR during the event windows, culminating in a -12.044% CAR in the [-1, +1] window. Interestingly, it reports a less drastic 24-month BHAR of -18.185%, implying a milder long-term market apprehension when considering additional risk factors.

The discrepancy in the BHAR outcomes between the two models directs towards a substantial influence of the firm size and book-to-market value distinctions over a lengthened period.

This variation can be partly explained by the additional layers of complexity introduced in the Fama French model through the SMB and HML factors, which consider the company size and the book-to-market value, offering a more nuanced representation of the risk factors influencing the stock's returns.

A noteworthy element is the distress factor premium, which could potentially be incorporated more sensitively in the Fama French model. In this scenario, the augmented model could potentially be

capturing a distress factor premium that may have been significant in influencing Salesforce's long-term abnormal returns, essentially facilitating a less severe depiction of the BHAR over 24 months. Furthermore, it might indicate that during this time frame, the company's stock was influenced strongly by the market risk factors highlighted in the Fama French model - a period where size and value factors played a crucial role. Consequently, the model manages to capture further sources of risk, thereby explaining the softer downturn in BHAR as per the Fama French model compared to the CAPM results.

Figure 54: CAR and BHAR results

	CAR [-10,+10]	CAR [-5,+5]	CAR [-3,+3]	CAR [-1,+1]	BHAR [0,24m]
CAPM	-18,171%	-10,635%	-10,533%	-11,632%	-44,184%
Fama French three Factor	-18,707%	-11,722%	-10,656%	-12,044%	-18,185%

2.2.2 Acquisition of Fitbit by Google:

2.2.2.1 Companies overview:

Fitbit is a US-based tech company founded in 2007 by James Park and Erik Friedman.
The company was the leading health and fitness social network providing services related to fitness and health through diverse line of products including activity trackers, workout programs, smartwatches, and wireless headphones.
At the time of the acquisition its products were carried in approximately 39,000 retail stores and across more than 100 countries worldwide and it supported more than 28m active users across its platform (SEC, 2019).

Google LLC was founded in 1998 by Larry Page and Sergey Brin in California (U.S.).
The company provides technology and internet services ranging from internet search engine, online advertising, cloud solutions and software. More precisely, Google Services segment includes ads, Android, Chrome, hardware, Gmail, Google Drive, Google Maps, Google Photos, Google Play, Search and YouTube.
In October 2015, the company underwent a corporate restructuring and became a subsidiary of Alphabet Inc with the latter owning all the outstanding capital stock of Google (SEC, 2015).

2.2.2.2 Deal overview:

On 1st of November 2019, Google announced its intention to acquire Fitbit for $7.35 per share in cash for a total consideration, at a fully diluted equity value, of approximately $2.1bn with expected termination date within the end of 2020 (SEC, 2019).

The proposed consideration represented a 124% and 87% premium over the volume weighted average closing price of Class A Common Stock for the 30-day period and 90-day period ending on 20 September 2019. In that day some rumors regarding the potential acquisition were published by Reuters and as a consequence common A shares opening price was $3.67 per share while at the end of the day, they reached a price of $4.10 per share. Compared to the closing price on 31st of October ($6.18 per share) the premium was 19% (SEC, 2019).

The main goal of this acquisition for Google was to innovate its wearable offer. In fact, the company already paid c. $40m for technology and personnel from watchmaker Fossil Group's research and development team (TIME, 2019). With a growing competition in the wearable sector, such as Apple with Apple Watch and Samsung with Samsung Galaxy Watch, Fitbit would have helped Google to take on the two biggest players.

As reported in Fitbit press release, the acquisition was friendly and the co-founder and CEO of Fitbit believed that Google was an ideal partner to advance their mission; in fact, with Google's resources and global platform, Fitbit would have been able to accelerate innovation in the wearables category, to scale faster and to make health even more accessible to everyone. For Google, Fitbit was more than a pioneer in the wearables categories in fact the target was able to build a trusted brand that supported more than 28m active users around the world who relied on their products to live a healthier and more active life.

As consumer trust was the paramount to Fitbit, the company assured that it would have continue to guarantee strong privacy and security guidelines and that would have continued to put users in control of their data by remaining transparent about data collected. It also ensured that it would have never sold personal information and health and wellness data would have not been used for Google ads (Business Wire, 2019).

The acquisition process has been slowed down due to intense investigations from the European Commission caused by some concerns regarding the possible use of Fitbit data for targeted advertising with possible negative effects for competitors. Other concerns regarded the possible exclusion of third parties from the Fitbit platform and the disadvantage caused to rival wearable device-makers by degrading compatibility with Google's Android smartphone operating system. All these aspects would have led to higher barriers to entry and to further expand for Google's competitors.

Despite all these possible controversies, after Google clarification about the issued topics, the European Commission on 17th December 2020 approved the transaction.
Even though Google was declared compliant with European law, Australian Competition and Consumer Commission was still concerned about how Google could have stymied access by Fitbit's competitors to some Google services that allow wearable tech devices to work properly (The Sydney Morning Herald, 2021).
The deal has been officially completed on 14 January 2021 before the approval of ACCC and since that date the Australian commission has not provided further updated over its decision.
After the completion, Fitbit started to operate as a division of Google, focusing on creating innovative wearable devices and digital health solutions.

Figure 55: Google share price performance over the period

Source: Elaboration of data from Yahoo Finance

2.2.2.3 Financial analysis

In the annals of Fitbit's financial history, 2015 emerges as a standout year recording a 149.3% growth in revenue, reaching $1,858 billion. This rise can be attributed to a confluence of factors, including the burgeoning popularity of wearable fitness trackers, Fitbit's strategic branding initiatives, and perhaps a broader shift towards health consciousness among consumers. However, the positive results 2015 started to worsen in subsequent years.
By 2016, while revenue scaled to $2,169 billion, the rate of growth diminished sharply to 16.8%. A deeper introspection reveals that the years that followed, up to 2019, were characterized by a persistent contraction in revenue, signaling potential market saturation or the advent of competitors offering diversified or more cost-effective solutions. As also reported in its financial statements, one

of the most prominent transitions during this timeframe was the marked shift in consumer preference from simplistic fitness trackers to multifunctional smartwatches.
By 2018, this transition was evident in Fitbit's revenue structure, where smartwatches, began to account for an increasing share of the company's overall revenue.
This was a significant departure from previous years, especially 2017, where trackers, despite their waning popularity, still constituted the bulk of the firm's revenue.
The oscillations in the Average Selling Price (ASP) over these years can be interpreted as reflections of Fitbit's evolving product mix, proactive pricing strategies, and adaptative responses to external market conditions. For instance, the ASP decline in 2019 was influenced by the introduction of more affordable devices and heightened promotional activities, a clear move to capture a wider demographic amidst increased market competition.
Fitbit's New Product Introductions (NPI) emerged as a recurrent theme in its financial story. These products, ranging from the Fitbit Blaze in 2016 to the Fitbit Aria Air in 2019, played pivotal roles in revenue generation. The efficacy of these introductions, whether they resonated with the market or not, significantly influenced the company's annual performance.
Even analyzing Figure 56 we can see that one of the main drivers of the decreasing trend of revenue was the declining in devices sold.
One positive aspect could be represented by the consistent growth registered by active users in Fitbit platform but even the company in its annual report of 2019 states that this KPI could not have a direct effect in its revenue or operating results but this could just be a potential indicator of future demand from repeat buyers and other future monetization opportunities such as software services or coaching revenue.

Figure 56: Fitbit KPI

Years	2015	2016	2017	2018	2019	Growth
Devices sold	21.355	22.295	15.343	13.939	15.988	*-25,1%*
Active users	16.903	23.238	25.367	27.627	29.566	*74,9%*

Source: Fitbit 10-k filings

The gross income analysis reveals that in 2015, Fitbit reported a substantial margin of 49.6%, highlighting the company's considerable profitability during that period. However, the margins demonstrated a fluctuating pattern in the years that followed, dipping to 35.5% in 2019, a sign of challenges in upholding cost efficiencies which could have stemmed from disruptions in the supply chain, pricing pressures, or alterations in product designs.

Taking into account the SG&A, it becomes apparent that the company faced escalating costs, adversely affecting its EBITDA. Initially recording a margin of 19.9% in 2015, it experienced a downward trajectory, plummeting to -16.6% by 2019. This path, which we will delve deeper into later, could be a reflection of operational challenges emerging from a rise in research and development expenditures, increased marketing investments, and the costs incurred in diversifying their product range, coupled with a strategy centered on reducing average selling prices.
The distressing narrative is further solidified when considering the net income figures. From registering a profit of $175.7 million in 2015, the company began to accumulate losses, culminating in a net loss of $320.7 million in 2019. This downturn is indicative of the above-mentioned adversities, showcasing a challenging landscape for the company.

Figure 57: Income Statement ($m)

Years	**2015**	**2016**	**2017**	**2018**	**2019**
Revenue	1.858,0	2.169,5	1.615,5	1.512,0	1.434,8
growth %	*149,3%*	*16,8%*	*-25,5%*	*-6,4%*	*-5,1%*
(COGS)	(935,8)	(1.285,4)	(878,9)	(851,6)	(925,1)
Gross Income	922,2	884,0	736,6	660,4	509,7
margin %	*49,6%*	*40,7%*	*45,6%*	*43,7%*	*35,5%*
(SG&A)	(552,9)	(958,3)	(892,0)	(792,9)	(748,4)
EBITDA	369,3	(74,3)	(155,4)	(132,5)	(238,7)
margin %	*19,9%*	*-3,4%*	*-9,6%*	*-8,8%*	*-16,6%*
(D/A)	(21,1)	(38,1)	(45,7)	(56,8)	(82,0)
EBIT	348,2	(112,5)	(201,1)	(189,3)	(320,7)
margin %	*18,7%*	*-5,2%*	*-12,4%*	*-12,5%*	*-22,4%*
NFE	(60,2)	3,2	6,4	5,2	11,6
EBT	287,9	(109,3)	(194,6)	(184,1)	(309,1)
Income Taxes	(112,3)	6,5	(82,5)	(1,7)	(11,6)
Consolidated Net Income	175,7	(102,8)	(277,2)	(185,8)	(320,7)
Preferred dividends	(2,5)	-	-	-	-
Undistributed earnings	(59,1)	-	-	-	-
Net Income	114,0	(102,8)	(277,2)	(185,8)	(320,7)

Source: Fitbit 10-k filings

In Figure 58 we reported the revenue breakdown by geography.
While Fitbit grappled with challenges in its domestic U.S. market—most notably in 2017 with a revenue dip of 39%—it displayed resilience in international arenas. The growth in the EMEA region, for instance, spotlighted the brand's potential to enter into emerging markets and diversify its consumer base.

Overall, the US market registered the highest decrease over the period analyzed while EMEA the highest.

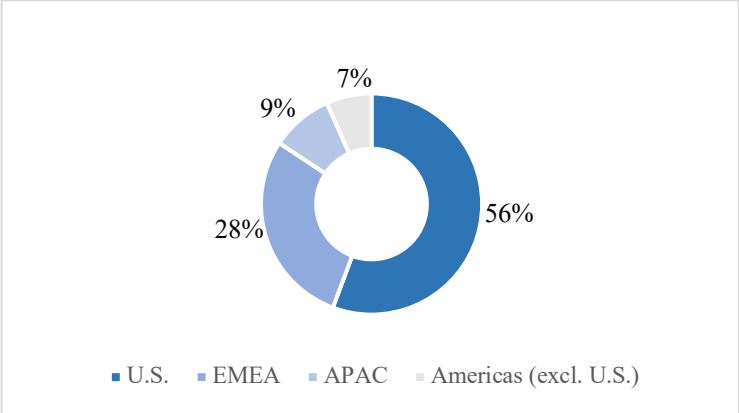
Figure 58: Revenue breakdown by geography ($m)

Years	2015	2016	2017	2018	2019	CAGR
U.S.	1.381,2	1.539,6	944,1	880,5	799,0	*-12,8%*
Americas (excl. U.S.)	92,3	110,1	116,3	101,3	95,0	*0,7%*
EMEA	208,8	389,2	440,1	384,2	410,5	*18,4%*
APAC	175,8	130,6	115,0	146,0	130,3	*-7,2%*
Total	1.858,0	2.169,5	1.615,5	1.512,0	1.434,8	

Source: Fitbit 10-k filings

As illustrated in Figure 59, US still account for the highest part of revenue generation with a 56% weight over the total revenue.

Figure 59: Revenue breakdown by geography (2019)



Source: Fitbit 10-k filings

As briefly analyzed before, the company reported constant decrease in its margin due primarily to the declining revenues while the cost structure although it has fluctuated over the years it has maintained an almost stable structure as showed in Figure 60.

Figure 60: Cost Structure ($m)

Years	2015	2016	2017	2018	2019	CAGR
COGS	935,8	1.285,4	878,9	851,6	925,1	*-0,3%*
Sales and Marketing	332,7	491,3	415,0	344,1	329,8	*-0,2%*
Research and development	150,0	320,2	343,0	332,2	300,4	*18,9%*
General and administrative	70,1	146,9	133,9	116,6	118,2	*14,0%*
Depreciation and amortization	21,1	38,1	45,7	56,8	82,0	*40,4%*
Total	1.509,8	2.281,9	1.816,6	1.701,3	1.755,5	

Source: Fitbit 10-k filings

Throughout the period, the COGS for Fitbit underwent significant changes. In 2019, there was an 11% increase from 2018, amounting to $1.0 billion, primarily attributable to tariffs affecting products manufactured in China, an escalation in product costs due to a greater number of devices sold, and a substantial increase in warranty costs. The latter was mainly due to more devices being sold and the non-recurrence of warranty accrual releases that had benefited the company in 2018. Interestingly, despite these cost increments, gross margin decreased by c.8 percentage points, moving from 44% in 2018 to 36% in 2019. A shift in product mix towards higher-cost smartwatches, which have slimmer gross margins than their health and fitness trackers, alongside increased promotional activities and volume-related variable costs, were significant contributors to this margin decline.
Earlier, in 2017 and 2018, the company had seen decreases in COGS by 3% and 30% respectively. The 2017 decrease was predominantly due to reduced device sales and improvements in product quality leading to lower warranty costs, despite the growing emphasis on selling higher-cost smartwatches.

Fitbit's commitment to innovation was evident in its R&D expenditures. However, in 2019, these expenses dipped by 10% from 2018, resting at $300.4 million. This decline was largely due to decreases in personnel-related expenses (attributed to an 8% average headcount reduction), consulting costs, hosting services, and certain allocated expenses. The preceding years saw a slight 3% drop in 2018 and a 7% increase in 2017. These fluctuations resulted from changes in tooling costs, consulting expenses, and shifts in personnel count.

Contrary to R&D, Sales and marketing expenses saw a consistent decrease across the years. In 2019, there was a 4% decline from 2018, influenced by better product quality resulting in reduced customer support costs, a 7% decrease in average headcount, and lower IT-related expenses. However, marketing expenses increased due to higher advertising costs. Similarly, in 2018, expenses reduced by 17%, and in 2017 by 16%. These reductions were due to shifts in marketing strategies, improved product quality leading to reduced customer support needs, and changes in personnel counts.

G&A expenses remained relatively stable with a 1% increase in 2019. This rise was linked to the company's Merger Agreement with Google, which led to higher consulting and advisory fees. However, there were offsets, including decreased legal fees and reductions in other professional fees. The company also witnessed a 3% decrease in average headcount. In the preceding years, the

expenses decreased by 13% in 2018 and 9% in 2017. These decreases were influenced by various factors, including legal settlements, reduced consulting expenses, and changes in bad debt expenses. As a consequence of the declining sales and eroding margins, we can also see in the Figure 61 that the company's number of employees has steadily declined since 2016.

Figure 61: Fitbit employees

Years	**2015**	**2016**	**2017**	**2018**	**2019**
Headcount	1.101	1.753	1.749	1.694	1.684
growth%		*59,2%*	*-0,2%*	*-3,1%*	*-0,6%*

Source: Fitbit 10-k filings

Despite the decreasing revenue and the constant negative net income, the company maintained its ability to generate cash from its operating activities until 2019.
Looking at the Figure 62, in 2017 Fitbit generated a cash in-flow of $64m. Meanwhile, investment activities witnessed an outflow of $28.7 million, primarily driven by investments in assets integral to the business. The financing activities contributed an additional $4.6 million, resulting in an overall net positive change in cash and cash equivalents of $40.2 million.
In 2018, Fitbit demonstrated better financial health, with operational activities generating a robust $113.2 million. Investment activities, largely influenced by the maturities and sales of marketable securities, returned a positive cash inflow of $17.5 million. This was despite the cash outlay for property and equipment, and acquisition-related expenses. Financing activities led to a cash-in of $1.3 million, making the year's total positive change in cash & cash equivalents climb to $132.0 million.

Finally, 2019 painted a contrasting picture. Operational activities saw a net cash usage of $156.8 million, primarily influenced by a significant net loss of $320.7 million. This situation was compounded by an increase in net operating assets and liabilities, as detailed in the balance sheet movements, including increased accounts receivable due to an increment in days sales outstanding, higher inventories attributed to newer Fitbit product launches, and reductions in lease liabilities. From the investment side, 2019 was a year of liquidity, with activities providing a net positive cash inflow of $25.8 million. This was majorly due to maturities and sales of securities, although offset by equipment purchases and acquisition costs. Financing activities, however, consumed $8.4 million, primarily from tax payments on stock issued under employee equity plans.

Despite the positive aspects of investment activities, the year ended with a net decrease in cash & cash equivalents of $139.5 million.

Figure 62: Cash Flow Statement ($m)

Years	2017	2018	2019
CF from Operating Activities	64,2	113,2	(156,8)
CF from Investment Activities	(28,7)	17,5	25,8
CF from Financing Activities	4,6	1,3	(8,4)
Change in Cash & Cash Equivalents	40,2	132,0	(139,5)

Source: Fitbit 10-k filings

Looking at the Free Cash Flow in Figure 63, the situation further worsened.
The positive cash-in derived from operating activities was lowered by a substantial investment in PPE, leading to a FCF of -$25 million.
The strong cash generation from its core activities in 2018, led to a positive FCF in that year, that largely covered the investment in capex.
In 2019, despite reducing the capex, the FCF plunged further into the negative, registering a decrease of $193.4 million, highlighting challenges in maintaining profitability against the backdrop of continued investments.

Figure 63: Free Cash Flow ($m)

Years	2017	2018	2019
CF from Operating Activities	64,2	113,2	(156,8)
Purchase of PPE	(89,2)	(52,9)	(36,5)
Free Cash Flow	(24,9)	60,3	(193,4)

Source: Fitbit 10-k filings

For what regards the balance sheet in Figure 64, a primary observation is that Fitbit consistently struggled to meet its short-term obligations. The balance of current assets versus current liabilities suggests potential liquidity challenges in several of the given years.
Despite this fact, the company had no short-term or long-term debt in its books from 2015 through 2018. It's only in 2019 that Fitbit took on both short-term and long-term debt, amounting to $24.9 million and $67.9 million, respectively. This introduces financial leverage to the firm, which also increased its risk.

From a growth perspective related to PPE we can see how difficulty in generating cash and declining profitability have not allowed the company to grow considerably.
Although there's an increase in PPE over the years, the pace of this growth seems subdued. This is indicative of Fitbit's challenges with cash generation and a potential downturn in profitability, which may have restricted aggressive expansion.
The equity trend over the given period is another major red flag. Beginning with a robust equity base of $981.5 million in 2015, the company saw this figure almost halve by 2019, reaching $487.3 million. The persistent losses over these years are the primary contributors to this decline. A diminishing equity base can be concerning for investors as it represents a dwindling net value of the company.

Figure 64: Balance Sheet ($m)

Years	**2015**	**2016**	**2017**	**2018**	**2019**
Cash & Cash equivalents	535,9	301,3	342,0	474,0	334,5
ST Investments	128,6	401,7	337,3	249,5	184,0
Other Current Assets	690,9	777,6	705,1	588,4	601,3
PPE	44,5	76,6	104,9	106,3	154,4
Intangible Assets	34,4	78,6	73,4	84,6	81,6
Other Assets	84,8	186,3	19,4	12,9	12,4
Total Assets	**1.519,1**	**1.821,9**	**1.582,1**	**1.515,6**	**1.368,1**
ST Debt	-	-	-	-	24,9
Other Current Liabilities	508,3	756,3	701,3	719,4	739,7
LT Debt	-	-	-	-	67,9
Other LT Liabilities	29,4	67,1	56,8	60,2	48,3
Equity	981,5	998,5	824,0	735,9	487,3
Total Liabilities	**1.519,1**	**1.821,9**	**1.582,1**	**1.515,6**	**1.368,1**

Source: Fitbit 10-k filings

Even in this case, ROA becomes meaningless as the company only generated negative net income after 2015. However, by looking at the asset turnover it becomes evident that the declining trend from 2015 to 2019 reveals that the company had been facing challenges in efficiently leveraging its assets to generate revenue. The stable asset turnover in the later years, despite decreasing revenue, indicates potential inefficiencies in asset management.

Figure 65: Ratios

Years	2015	2016	2017	2018	2019
ROA	10,83	-6,15	-16,29	-12,00	-22,24
Asset Turnover	1,73	1,30	0,95	0,98	1,00

Source: Elaboration of data from Fitbit 10-k filings

Looking at the Altman score in Figure 66, we can give a final comment on the overall health status of Fitbit at a first glance, we can immediately denote how this indicator worsened over the years.
In 2015 it started from a value of 9.57, that indicates the very low probability of bankruptcy in the following years.
In the subsequent year, despite decreasing sharply, the indicator was still in a safe zone being still above 2.99 but started to give the first signal of financial difficulty faced by Fitbit.
In the last three years it kept decreasing until it reached 1.97, showing the major threats encountered by the company.
The main causes were attributed by the constant decreasing in EBIT and retained earnings over the years that significantly impacted the Z-Score, indicating operational and profitability challenges as emerged in the analysis proposed before.
In 2019, even the strong increase in the market value of equity that possibly suggested a good sentiment by the investors after the announcement of the proposed acquisition by Google, was not enough to offset the other declining factors.

Figure 66: Altman Z-score

YEAR	2015	2016	2017	2018	2019
Sales	*1.858*	*2.169*	*1.616*	*1.512*	*1.435*
EBIT	*348*	*(112)*	*(201)*	*(189)*	*(321)*
Current Asset	*1.355*	*1.481*	*1.384*	*1.312*	*1.120*
Total Asset	*1.519*	*1.822*	*1.582*	*1.516*	*1.368*
Current Liabilities	*508*	*756*	*701*	*719*	*765*
NWC	*847*	*724*	*683*	*592*	*355*
Retained Earnings	*243*	*140*	*(132)*	*(319)*	*(640)*
Mkt value of Equity	*6.355*	*1.652*	*1.363*	*1.254*	*1.740*
X1	0,67	0,48	0,52	0,47	0,31
X2	0,22	0,11	-0,12	-0,29	-0,65
X3	0,76	-0,20	-0,42	-0,41	-0,77
X4	6,69	1,45	1,38	1,32	2,04
X5	1,22	1,19	1,02	1,00	1,05
Z-Score	9,57	3,02	2,38	2,08	1,97

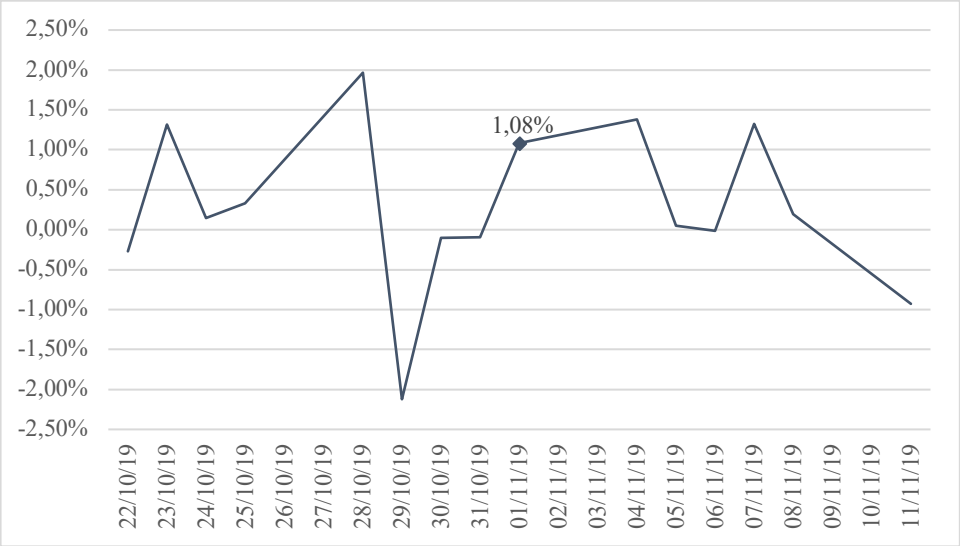
Source: Elaboration of data from Fitbit 10-k filings

2.2.2.4 Abnormal return analysis

Analyzing the daily returns around the announcement period for Google illustrated in Figure 67, it is clear that the stock experienced a mixed trajectory of returns with both notable surges and dips in the period under consideration.

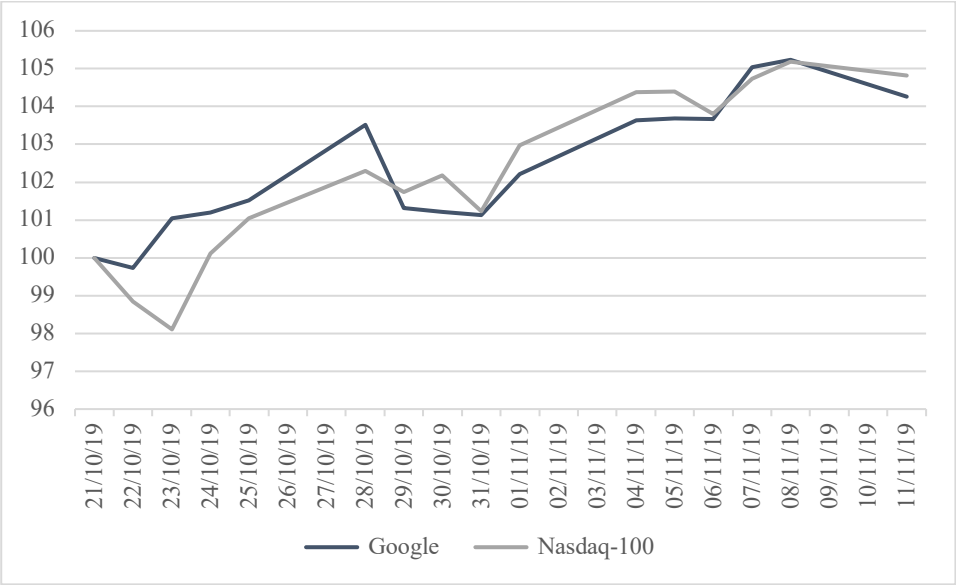
In the days leading up to the announcement, there were several fluctuations in the daily returns, with the most pronounced dip occurring on the 29th of October, where the stock decreased by -2.12%. Despite this significant dip, the stock managed to recover in the subsequent sessions. On the day of the announcement itself, the stock appreciated by 1.08%, which could be perceived as a positive reception from the market towards the announcement. Following the announcement, the early days of November showcased a predominantly positive trajectory with returns of 1.38% and 1.32% on the 4th and 7th of November respectively.

Figure 67: Google returns around announcement



Source: Elaboration of data from Yahoo Finance

Figure 68: Google share price performance around announcement rebased to 100



Source: Elaboration of data from Yahoo Finance

From the CAPM analysis in Figure 69, the market risk premium reported a coefficient of 1.0, significant at a 1% level. This substantial figure, alongside an R^2, suggests that approximately 65.8% of the variations in Google's returns can be explained by movements in the market portfolio. Furthermore, the high F-statistic value (969.605) reinforces the model's validity, indicating a strong relationship between the dependent and independent variables.

Transitioning to the Fama French three-factor model in Figure 70, while the market risk premium retains its significant influence with an identical coefficient of 1.0, additional layers of insight are introduced in with the SMB and HML factors, exhibiting coefficients of -0.2 and -0.3, respectively, both statistically significant at the 1% level. These values suggest that Google's returns have a negative relationship with small-cap stocks and value stocks and could potentially indicate a market behavior leaning towards growth stocks, a classification that Google inherently belongs to. The R^2 value in this case denote that the model can explain 70.4% of the variations in Google's returns, providing a more detailed understanding of the influencing factors compared to the CAPM model.

Figure 69: CAPM results

```
CAPM Results
================================================
                         Dependent variable:
                     ---------------------------
                                ret_RF
------------------------------------------------
Mkt.RF                    0.010*** (0.0003)
------------------------------------------------
Observations                     504
R2                              0.658
Adjusted R2                     0.658
Residual Std. Error       0.012 (df = 503)
F Statistic           969.605*** (df = 1; 503)
================================================
Note:                *p<0.1; **p<0.05; ***p<0.01
```

Figure 70: Fama French three-factor model results

```
Fama French Three-factor Model Results
================================================
                         Dependent variable:
                     ---------------------------
                                ret_RF
------------------------------------------------
Mkt.RF                    0.010*** (0.0003)
SMB                       -0.002*** (0.001)
HML                       -0.003*** (0.0004)
------------------------------------------------
Observations                     504
R2                              0.704
Adjusted R2                     0.702
Residual Std. Error       0.011 (df = 501)
F Statistic           396.518*** (df = 3; 501)
================================================
Note:                *p<0.1; **p<0.05; ***p<0.01
```

In examining the Cumulative Abnormal Returns and Buy-and-Hold Abnormal Returns for Google, illustrated in Figure 71, we notice a general increase in the abnormal returns as we widen the event window from [-1, +1] to [-10, +10], with the three-factor model generally predicting slightly higher CAR values than the CAPM model. The most notable difference arises in the [-3, +3] window where the Fama French model predicts less negative returns than the CAPM model, suggesting the inclusion of SMB and HML factors may be capturing additional risk dimensions that are pertinent during this shorter event window. Furthermore, when we narrow down to the immediate event window of [-1,+1], we see a slight positivity in the CAR, showcasing an instantaneous positive market reaction to the announcement.

BHAR presents a substantial positive abnormal return over a 24-month horizon, with both models indicating that holding Google stocks would have yielded substantial positive abnormal returns.

Notably, there is a difference between the results from the two models, with the CAPM predicting a higher BHAR (65.165%) compared to the Fama-French three-factor model (59.781%). This discrepancy indicates that the additional factors in the Fama French model play a substantial role in explaining the stock's returns over a long-term horizon, potentially highlighting further risk dynamics that are at play over extended periods.

A distress factor premium might have raised from the previously identified financial distress of the acquired company Fitbit displayed by the diminishing Altman Z-score over the five years prior the acquisition. In the context of the Fama-French three-factor model, such distress could be partially captured through the HML factor, which denotes the value premium and encompasses firms with high book-to-market ratios, a metric often elevated in financially distressed firms.

In this case the BHAR outcomes highlight a slight discrepancy in the results from the two models and this might indeed highlight a distress premium factor at play. The Fama-French model indicates a slightly lower BHAR over a 24-month period compared to the CAPM model, potentially alluding to a more intricate risk structure captured through the additional factors that are sensitive to distress premiums.

Figure 71: CAR and BHAR results

	CAR [-10,+10]	CAR [-5,+5]	CAR [-3,+3]	CAR [-1,+1]	BHAR [0,24m]
CAPM	1,527%	0,317%	-1,185%	0,205%	65,165%
Fama French three Factor	1,899%	0,658%	-0,909%	0,319%	59,781%

3. Conclusions

After analyzing all aspects of the deals from each category, encompassing the acquisition process, a detailed financial analysis conducted over the years preceding the acquisition announcement, and the analysis of abnormal returns, we need to determine whether each deal could be classified as successful or not also in relation to the main drivers illustrated in the research question and to the influence of downturn period.

Starting with the first deal presented, we observed a deteriorating financial performance of LinkedIn leading up to its acquisition by Microsoft. The margin erosion over time and the increase in costs resulted in decreased profitability and cash generation, thereby reducing the Altman Z-score. However, despite categorizing the company as distressed due to its consistent negative net income over the years, it cannot be assessed as severely financially distressed, as it maintained a health status well above the risk of bankruptcy and this aspect led to contrasting outcomes in the abnormal return analysis. While the deal initially caused Microsoft's share price to underperform, a subsequent analysis of the BHAR suggested the deal was successful, with the BHAR valued at 58% and 69% when calculated using the Fama-French model and CAPM respectively. The success might be attributed to the sustained good Altman Z-score values and LinkedIn's continued investment in R&D and workforce growth over the years.

In contrast, the second deal in category A was less successful than Microsoft's acquisition. In fact, Yahoo experienced margin erosion and volatile cost structure over the years, evidenced by a decreasing headcount, relatively stable R&D investment, continuous liquidity decline, and diminishing asset profitability year over year. These factors steered the company toward financial distress according to the Altman score, reflected in the negative announcement returns for Verizon and high stock volatility during the announcement period. The abnormal returns analysis confirmed this negative response, even though the regressions done with the three-factor model showed different numbers compared to the market models. This discrepancy was further pronounced in the BHAR calculation, with the CAPM reporting a significant underperformance of -37% relative to the market returns. Both models recorded a low R^2 value of around 16-18%, suggesting that other factors influenced the returns. The inclusion of SMB and HML increased the explanatory power of the model, indicating that the Fama-French model might have captured additional risk sources potentially related to the distress factor of the acquired company, enhancing the BHAR over time.

In category B, Slack demonstrated improvement in margins despite constant negative net income over the years, pointing to increased profitability. The company also significantly invested in growth, as seen in the augmentation of R&D expenses and a steady headcount growth rate.

Although facing negative income every period, the company enhanced its liquidity and generated positive free cash flow in the year before the acquisition. This improved health status is also marked by a better asset turnover and increased asset value.
However, the abnormal returns analysis for Salesforce presented a disparate view, with broader event windows showing lower abnormal returns, potentially due to acquisition rumors circulating at the end of November. The initial negative market reaction persisted in the long term, manifested in negative BHAR for both models used. The Fama-French regression results reveal that incorporating additional risk sources significantly increased Salesforce's expected returns over a 24-month interval compared to the CAPM prediction and elevated the R^2 markedly. This suggests the model might have seized the distress elements of the target, enhancing acquirer returns, albeit remaining below theoretical expectations.
Regarding the acquisition of Fitbit, the company faced diminishing margins and a reduction in yearly revenues. Despite these challenges, Fitbit maintained relatively high asset turnover, potentially explaining its asset profitability. The company seemed distressed according to the Altman score, displaying also a stagnant situation in terms of employee growth and deteriorating liquidity each year. Surprisingly, most event windows reported positive cumulative abnormal returns, notably in the [-10, +10] range. BHAR results affirm the acquisition as a success, with the acquirer significantly outperforming the market. The Fama-French model, which explained approximately 70% of Google's return variations, a value higher than the CAPM's, noted slightly lower returns due to significant additional factors at a 1% level with negative beta values of -0.2 and -0.3 for SMB and HML, respectively. This illustrates Google's negative correlation with small-cap and value stocks, contributing to the diminished returns predicted by the market model.

In an overall assessment, acquisitions in Category B elicited more extreme market reactions, both positive and negative, with more variance in post-acquisition performances compared to Category A. Google and Microsoft showcased robust post-acquisition performances, while Salesforce's acquisition of Slack stood out for its extremely negative market reaction and disappointing post-acquisition outcome.
Focusing on the companies with the lowest Altman Z-scores, namely Yahoo for category A and Fitbit for category B, a comparison of the regression results for the acquirers showcases drastic differences in R^2 values. For Verizon, the CAPM explained only 16% of the returns, a figure slightly improved by the Fama-French model that captured a possible distress factor enhancing the BHAR over the period yet remaining substantially below the expected return.

Google's returns displayed a high R^2 for the CAPM, signifying a strong correlation with market returns. Incorporating the highly significant SMB and HML factors enabled the model to account for almost 70% of the variations. However, the relative BHAR slightly decreased compared to CAPM predictions, given Google's negative relationship with small-cap and value stocks.

Upon considering the primary drivers highlighted in the research question, such as profitability and liquidity, it becomes clear that Yahoo faced challenges in cash generation and profitability, enduring constant margin erosion and extremely low asset turnover despite a substantial increase in its balance sheet. Fitbit encountered similar issues with margin and weak cash generation, yet managed to maintain decent liquidity without severe issues, keeping a relatively high asset turnover in light of the constant decline in revenue and profitability. This scenario crafted an opportune transaction for Google, allowing it to harness Fitbit's untapped potentials through strategic restructuring and synergy optimization, leveraging the relatively good liquidity and profitability ratios for a company labeled as severely distressed.

According to the results analyzed, companies in a severely distressed state with sufficiently good indicators of profitability and liquidity could be the subject of successful deals during downturn periods. However, this study was focused on a multiple case study and as such is limited to the analysis of the deals in question operating in the U.S. market and in the technology industry. For this reason, it leaves room for further research perhaps pursued by analyzing a larger sample of deals in different geographies and focusing on companies operating in different industries.

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