Department of Economics and Finance

Corporate Finance

An empirical analysis of M&As in Italy: Abnormal returns and Procyclicality

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Introduction

The purpose of this dissertation is to analyze in depth the mergers and acquisitions (M&A) market particularly with respect to the Italian context from January 2013 to January 2020. M&A operations are fundamental since they are one of the most important methods of corporate restructuring. From an academical point of view this topic is significant because in order to fully understand the reasons and the effects of such operations it is not possible to base an analysis exclusively on the corporate aspects, but it is necessary to have a multidisciplinary approach. Indeed, this work is based on analysis and methodologies that come from financial econometrics, statistics, macroeconomics and international economics.

This dissertation is aimed at giving both a theoretical and empirical overview of the M&A operations. In order to achieve the aforementioned goal this dissertation is divided in four chapters.

The first chapter will include a review of the most significant M&A literature. Despite being particularly broad, this part is necessary to fully understand the different dynamics needed to grasp the concepts that will be developed in the other chapters. Specifically, this chapter is split into three subparts. The first subpart will describe the four main directions that M&A operations can take. The second subpart will review the most relevant value creating, value neutral and value destroying theories on which M&A decisions are based. The last subpart will investigate the international aspects behind cross border M&As and it will also explain the tendency of M&A operations to move in aggregate and the formation of M&A waves both in the domestic and foreign market.

The second chapter will have an empirical approach aimed at demonstrating the correlation between macroeconomic variables and the number and value of M&A deals.

The third chapter goal is twofold. Firstly, it will discuss the efficient market hypothesis (EMH) in its three dimensions as well as the EMH violations with additional references to behavioral finance. On this basis this chapter will go on to discuss the main goal of this dissertation, that is, to verify whether after an M&A announcement the market is semi-strong efficient or not. In order to do that, the event study methodology will be analyzed with the aim of finding abnormal

returns on the acquiring company's stock and verifying whether such abnormal returns are significantly different from zero.

The last chapter is strongly empirical. Firstly, some constraints will be applied to the M&As occurring between 2013 and 2020. The sample resulting from the application of such constrains will be statistically described in order to grasp the main features of the Italian M&A market. At this point five core M&A deals will be analyzed by applying the six steps provided by the event study methodology.

The reference period of this dissertation (January 2013 - January 2020) was chosen because it does not take into account the 2011-2013 sovereign debt crisis, the United Kingdom's withdrawal from the European Union and the ongoing Covid-19 pandemic. In fact, such events have deeply influenced business decisions across the globe and thus they would have given a distorted picture of the M&A trends.

I. M&A Rationale

M&As have been under the spotlight for several decades because of their complexity and importance in corporate restructuring. Given the aim of this thesis, starting with a broad categorization and general review of the M&A process is pivotal in order to prepare the field for the empirical analysis that will take place in the following three chapters of this thesis.
Indeed, this first part of our analysis will focus on the motifs underlying mergers and acquisitions highlighting the importance of such type of corporate restructuring for faster growth and stability but also the ambivalent aims for which they can be undertaken. In order to do so, we are going to analyse the four archetypes of M&As and the differences between them. Later on, we will discuss the value creating, value reducing and value neutral theories in the M&A literature and to conclude we will consider the tendency towards an internationalization of the acquisition process and the main features of cross-border mergers and the determinants of M&A waves.

1. The Four Types of M&As

Starting from the classic motifs underlying the strategy behind M&As we begin our analysis taking into consideration the four classical types of M&As found and analysed by Barney and Walter (1990); namely vertical, horizontal, concentric and conglomerate mergers.

1.1. Vertical Merger

The decision underlying the vertical integration is based on transaction costs. Indeed, every market transaction involves some transaction costs such as searching costs, negotiating costs, monitoring and enforcement costs. Thus, these transaction costs are the costs related to the non-operation of the market price mechanism (Coase, 1937) which incurred making an economic exchange (before, during and after transaction).
In order to avoid transaction costs when these are too high, can be a good move to internalize activities instead of contracting with third parties operating along the value chain.

Before integrating vertically, it is useful to:

1. Define the borders of the total activity of the company
2. Define the relationships between the company and third firms
3. Recognize the circumstances that could involve some modifications to the boundaries of the activity of the company

After the analysis of these three points, if the benefits of integrating outweighs the costs and the loss of flexibility stemming from the vertical acquisition, the company can decide to integrate. Vertical integration can be divided into two subcategories depending on the direction that this integration takes, these two are backward integration (if the company acquires a supplier) or forward integration (if the target is a customer firm).[1]

Backward (vertical) Integration

Forward (vertical) Integration

Despite the different rationales of the backward integration and forward integration, we must mention that companies can go in either direction and have the possibility to integrate both upstream and downstream and therefore that the decision to integrate vertically is not an aut-aut one. (Del Prete and Rungi, 2020)

Three main features should be identified and clarified within the vertical merger.

First, parent companies are more likely to integrate production stages that have a relatively low elasticity of substitution possibly because an underinvestment[2] by a firm which cannot be substituted easily would decrease the value that is generated at the end of the chain.

Second, integrated activities are usually close along the supply chain: a parent company is less likely to integrate subsidiaries if they perform activities that are technologically remote from

[1] *See* Lin and Swaminathan (2014) for more details on the differences between such types of vertical integrations

[2] A firm faces the underinvestment problem whenever the firm is so overleveraged that any investments in growth opportunities is not undertaken because all the gains would do to debtholders. If a company presents this situation and such firm plays a crucial role in the value chain of the acquiring company, there are higher possibilities that the acquiring company may decide to integrate vertically purchasing such overleveraged firm.

its core activity. Such vicinity on the supply chains can be explicated by the existence of economies of scope across similar phases, when it is more straightforward to coordinate activities that share some technological features[3].

Finally, there is evidence of the multiplication of subsidiaries that perform the same production stages in a given location. This is consistent with Atalay et. al (2019), who provide a first rationale for the duplication of integrated stages: they found that "having an additional vertically integrated establishment in a given destination ZIP code within the US has the same effect on shipment volumes as a 40% reduction in distance." [4]

Moving to the criteria adopted by managers when deciding to purchase a specific asset deployed along the value chain, the common analysis developed by the most relevant literature builds on the theories of the firm of Williamson (1971), Grossman and Hart (1986), and Hart and Moore (1990); who demonstrate that that it is most favorable for a party to integrate relationship-specific assets if the assets are more important to its productivity than to the other party's. Accordingly, a key mechanism underlying value creation in vertical acquisitions is the importance of the target's assets to the acquirer's productivity.

In the model developed by Grossman and Hart (1986), the ratio behind integration is that integrating with the target company yields a higher marginal return on investment than non-integration would. In other words, the more crucial are the assets to the firm, the greater is the benefit stemming from integration.

This synergistic gain is found to be directly proportional to the degree of vertical relatedness[5] between the acquirer and its target. Consistent with the Grossman and Hart (1986) model, this finding suggests that the benefit of vertical integration through an ownership transfer increases in the importance of in contractible relationship-specific investments to the acquiring firm. To conclude we can state that integrating vertically (especially in the case of the integration of a supplier) permits the acquirer to adapt its technology in much higher degree to the needs of its customers than when it is separate from the target company. (Schmitz and Sliwka; 2001)

1.2. Horizontal Merger

[3] For further information on economies of scope go to paragraph 2 of this chapter

[4] Atalay, E., Hortaçsu, A., Li, M. J., & Syverson, C. (2019)

[5] The degree of the vertical integration indicates the involvement of the target for each output-input produced and sold by the acquiring company. Totally integrated companies own 100% the activities of the value chain of an input/output. Nearly integrated companies do not own all the activities of the value chain of an input/output.

A horizontal merger or acquisition is a restructuring process that occurs between two firms that operate in the same industry and sell the same (or a very similar) product/service. A horizontal merger can help a company gain competitive advantages. For example, if one company sells products similar to the other, the combined sales of a horizontal merger will give the new company a larger share of the market.

If one company manufactures products complementary to the other, the newly merged company may offer a wider range of products to customers. Merging with a company offering different products to a different sector of the marketplace helps the new company diversify its offerings and enter new markets.

Thus, this type of merger occurs frequently because larger companies attempt to create more efficient economies of scale (lowering the prices at which the firm can sell) and gain a larger market share (selling a larger quantity of output). In other words, horizontal integration create value essentially through cost-based and revenue-based synergies[6]. In the horizontal acquisitions' literature cost-based synergies have substantially received more attention than revenue-based synergies, as horizontal acquisitions have typically been seen as a straightforward mechanism for reducing costs through asset divestiture.

Given that, I would like to stress that M&As which are done with the intention of reaching costs-based synergies are gaining much more importance and should be analyzed under different lens. In fact, following the traditional view adopted by many scholars, divestiture is part of a consolidation process that increases the profitability of the combined entity only because of the sale of the excess capacity deriving from the redundant assets present in the post-merger entity (Jensen and Ruback, 1983). In a more modern view based on a dynamic approach to the post-merger divestiture[7], the latter reflects a process which permits the newly combined entity to reemploy the assets in common with a configuration of new capabilities (Capron et al., 2001). In other words, asset divestiture is a logical consequence of a process in which firms often use acquisitions to reconfigure the organization and use of the resources internal to the firm. This approach, despite its novelty, takes its roots in the resource-based view of the firm (Penrose 1959; Porter, 1985), evolutionary economics (Nelson and Winter, 1973), and theories of intra-organizational change (Kogut and Zander, 1992). Indeed, the essential point is that acquiring a competitor is not just a way to add assets and sell the ones which are in common and yield no marginal utility, but it permits firms to change and innovate modifying their

[6] *See* Laurence Capron (1999) for further information about the definition of costs and revenues synergies

[7] *See* Capron, Mitchell, Swaminathan (2001) for additional details on their approach to the analysis of asset divestiture.

resources, as well as the routines and capabilities underlying such resources (Karima and Mitchell, 2000); so that their skills do not become obsolete and keep the pace with changes in their market.

For this reason, it is straightforward that the most salient feature for the success of the merger between two companies selling the same product or service is the reorganization[8] of the assets in the period following the operation. In the more concise terms used by Capron and Guillén (2009), "the post-acquisition process is all about reorganization". But this process is difficult to smooth because of the coalitional nature of the firm itself; this means that every decision, like the one involving the use and reorganization of a bundle of assets, is shaped by the interactions between stakeholders (Bendix, 2001; March, 1962). Therefore, the dynamics among the various agents involved in the organization of the firm, and the possible conflicts of interest among them, model the acquirer's ability to engage in the reorganization of the newly combined entity. Due to the importance of the relations between stakeholders in the context of reorganization is useful to adopt the institutional perspective used by Capron and Guillén (2009) to argue that the ability of acquirers to reorganize their acquisition targets depends on the characteristics of the national corporate governance systems of the merging firms. Precisely, the most important aspect that should be analyzed is the legal framework regulating the relationships between shareholders and employees, the two stakeholders' groups more involved in the reorganization of assets following an acquisition.

In order to understand the dynamics of this confrontation, is fundamental to realize that although the reorganization of assets is a phenomenon happening at the micro-level, the result of such operation is heavily influenced by the macrostructure, namely the national corporate governance institutions. Indeed, the results found by Capron and Guillén state that the stronger legal protection of shareholder rights in the acquirer country compared to the target country, the greater the acquirer's ability to restructure the target's assets and leverage the target's resources, while the stronger the protection of employee rights in the target country, the lower the acquirer's ability to restructure the target's assets and redeploy resources to and from the target.

[8] Reorganization embeds a twofold description: asset restructuring and resource redeployment. The first one encloses the actions such as the allotment of some of the acquired assets, the recombination of other assets within a different managerial structure and the elimination of redundant activities and the removal of inefficient management practices. Resource redeployment refers to the movement of firm-specific knowledge from the target to the acquirer or vice-versa which affect the stakeholders in different ways.

Despite horizontal acquisitions have been seen for a large timespan a straightforward value enhancing strategy (especially in the case of cost-synergies, as we saw few lines above), there are ambivalent factors which in the long run could decrease the profitability of the combined entity, like for example the efficiency of the R&D department[9].

Indeed, early studies discovered that, for the acquiring firm, the impact of the acquisition lowers research and development expenses (Hall, 1990) and innovation output (Hitt et al., 1991). Later studies proposed that the effect of acquisition on innovation performance is not sure, but it depends on the features of the two merging firms (Desyllas and Hughes, 2010). This stream of research identifies the technological similarity of the acquiring and acquired firms as an important predictor of the innovation impact resulting from acquisitions. In their study of horizontal acquisitions Cassiman et al. (2005) show that the more similar the technological resources and capabilities of acquired and acquiring firms, the more likely that the acquisition will result in a reduction in the combined R&D effort and the efficiency of R&D operations[10]. But the results are not unisonous, and the most recent ones found that in the cases in which the acquired firm's tor R&D manager is replaced there are productivity improvements that affect positively innovation performance (Colombo and Rabbiosi, 2014), while Makri et al. (2010) states that technological and scientific similitude seem to have no effects on the performance of the R&D department in the period following the acquisition.

Concluding this focus on horizontal mergers I would like to stress another pivotal aspect regarding this type of mergers: its regulation. In fact, for the results that can be achieved due to a horizontal integration (like monopolies and oligopolies), antitrust and competition regulation is of primary importance in this type of M&As in order to avoid distortions in the market[11].

1.3. Concentric Merger

The concentric merger, also known as congeneric merger, is a merger that takes place between two companies which operate in the same industry (thus, sharing the same customers) but offering different products/services. In this case the two companies may share similar technology, production processes, marketing, or distribution channels, making for easy

[9] *See also* Massimo G. Colombo, Larissa Rabbiosi (2014): Technological similarity, post-acquisition R&D reorganization, and innovation performance in horizontal acquisitions", *Research Policy*, Vol.43, 1039-1054

[10] Cassiman 2005

[11] *See* Kaplow (2021) for further information about the regulation governing horizontal acquisitions. See also cbcbcb (2…) for details on the latest law enacted in the U.S.

integration of the two entities. In fact, the acquirer may see the target as an opportunity to expand their product line or gain new market share.

1.4. Conglomerate Merger

A conglomerate[12] merger is a merger between firms that are involved in totally unrelated business activities.

There are two types of conglomerate mergers: pure, where the two firms continue to operate in their own markets, and mixed, where the firms seek product and market extensions.

Two firms would enter into a conglomerate merger to increase their market share, diversify their businesses, cross-sell their products, and, as we saw in all the mergers until now, to take advantage of synergies (less strongly than in the cases of vertical and horizontal mergers).

Conglomerate mergers became particularly relevant in the third wave of M&As in the U.S. (1961-1970), during which conglomerate mergers accounted for the 77.4% of the larger mergers[13].

A large part of the literature of the time sustains that the main ratio behind a conglomerate merger is one: the manager's will to lower the firm's risk and thus, the income risk.

In perfect capital markets such decrease in the risks faced by the combined entity yields no benefits to stockholders, since equity holders can decide individually their preferred degree of risk modifying the combination of assets present in their portfolios. In addition to this, the call-options model developed by Black and Scholes (1973) advises that the undertaking of projects which reduces the variance of the income's firm through diversification causes a modification in the income distribution with a transfer of wealth from shareholders to bondholders. The literature on "managerialism," and in particular the agency cost models, provide a possible explanation for the conglomerate merger phenomenon. In essence, such mergers may be viewed as an attempt of the management to decrease the risk associated with managerial human capital. Accordingly, the consequences of such mergers may be regarded as an agency cost. In fact, it has been concluded that, given the unimportance of the risk reduction for the shareholders, the main motif than can explain a conglomerate merger is the management's intention of reducing

[12] A conglomerate is a combination of multiple business entities which operate in different industries under one corporate group. The structure is usually made up of a parent company and multiple subsidiaries operating in various different sectors. Due to this type of organization, conglomerates are often large and operate internationally.

[13] For large merger or major merger is intended a merger in which the acquiring company has assets for a value of at least $10M at the time of the merger.

its "employment risk". Furthermore, also the Capital Asset Pricing Model shows that diversification lowers the unsystematic risk but not the systematic one (the one which shareholders care about because it cannot be decreased through holding a diversified portfolio) (*see* Jensen, Black and Scholes, 1972).

This argument is further strengthened from the empirical results which demonstrates that conglomerate mergers are often conducted by manager-controlled firm and quite seldom by owner-controlled firm[14]. (Yahmud and Lev, 1981)

Despite that, after seven years Yahmud (1986) revises its theory and provides additional clarification on the results achievable through conglomerate mergers. It is demonstrated that, when optimal contracting models are applied (Diamond and Verrecchia, 1982), conglomerate mergers can benefit both shareholders and managers. In fact, in firms whose management's effort is more easily monitored, the gains from diversification underlying the benefits wanted by the management only disappears and the undertake of a merger is justified only when there is the expectation of a synergy between the two firms.

2. Theories of M&A

As highlighted in the precedent paragraph, corporate restructuring through M&As is done in order to achieve particular goals of the management. However, the common denominator of every corporate restructuring program should be, theoretically, to augment the profitability of the business thereby leading to an increase in shareholders wealth. The means of reaching the goals depends upon various factors such as deal value, industry life cycle, method of funding the deal, liquidity, tax benefits, prior deal experience of the parties and the size of due diligence transaction costs.[15]

To be more precise, motives for M&As as referred to in most literature describe M&As as ways to predominately reach additional market shares or synergies (Walter and Barney, 1990, Porter, 1998, Schmitz and Sliwka, 2001, Ansoff, 1984). But if such analyses build on an idea of M&As which aims, as they should, to increase shareholders wealth, discussing M&A motives from other perspectives adds additional dimensions to the picture: agency theory (Kesner et al., 1994), hubris (Berkovich and Narayanan, 1993, Roll, 1986) and empire building (Trautwein, 1990) indicate the existence of other motivations hidden behind M&As.

[14] *See* Spielder and Murray (2008) for supplementary details on the distinction between owner controlled firms and management controlled firms

[15] *See* Kumar and Sharma (2019) for a complete summary of theories of M&A

Due to this opposition of arguments, the initial part of this second paragraph will cluster all the value creating theories such as synergies, market for corporate control and market power; then we will proceed with the value reducing ones which embed primarily all the issues linked to the free cash flow theory and in the end, we will discuss the cases in which M&As are configured as a zero-sum game and are consequentially neutral.

2.1. Value Creating Theories

Synergies are by far the most compelling factors which explain mergers and acquisitions and the premium paid to take advantage of the synergistic benefits. Synergies comes from cost reductions and revenue enhancement and "exists in an acquisition when the value of the new combined entity exceeds the sum of the values of the two merging firms, when acting independently"[16]. As I previously mentioned, the cost efficiency theories highlight the role of cost-based synergies that emerge when the combined entity can lower its costs through the divestiture of the assets of the merging firms. On the other hand, the resource-based view of the firm emphasizes the importance of the revenue-enhancement synergies which arise when the assets of the merging firms are redeployed in the newly combined entity leading to revenue-enhancing capabilities.

The value enhancing theories are spreading in the literature post-2009 also for another reason. In fact, as pointed out by Alexandris et. al (2017), after the 2008 financial crisis, all the internal controls mechanisms, executive compensation and risk management processes have been scrutinized more frequently and to a higher extent. This is primarily due to the significant improvements in the corporate governance environment, which permit to foresee optimal investment decisions yielding the potential to maximize the shareholders wealth.

Although developments in corporate governance have led to positive results in the last decade, the major and more discussed synergetic benefits coming from M&As are three, namely economies of scale, economies of scope, and market power.

Economies of Scale

Economies of scale after a merger arises when the companies are able to increase their efficiency through its size. Economies of scale is achieved when average costs fall as output increases; thus, the aspect which we have to focus on in the case of M&A, is that the combined entity can produce at a larger scale.

[16] Colombo and Rabbiosi (2014)

This process might take various forms. For instance, an individual entity might be having a highly leveraged balance sheet and raising capital through accessing capital markets or taking further debt would just not be possible or would be too expensive. If the same company is acquired by another company with a low leverage balance sheet, the combined entity can easily access markets for capital requirements and would be able to raise capital at a lower cost as the overall risk is reduced as a result of increase in size. Another way with which efficiency can be achieved is through higher bargaining capacity in the entire value chain process. For example, as pointed out in the five-forces model, a larger and stronger combined entity may be able to contract with raw materials suppliers at a cheaper cost if the newly combined entity has a larger market share (Porter, 1979). For these reasons it is possible to benefit from the gains achievable through economies of scale, namely lower operating and financing expenses, increasing margins, increasing efficiency and consequentially to the creation of value.

Economies of Scope

The term economies of scope is used in order to describe a basic and intuitively interesting property of production, namely cost savings which comes from the scope (rather than scale) of the firm. Economies of scope are typically found, however, not confined to non-conglomerate acquisitions and are a way of reaching synergy by using the complementary skills of each other companies. For example, one merging firm is particularly good at activity A, which enhances the value of assets of type B, and accordingly it proposes to acquire another firm that is weak at A and has substantial B assets whose value would be increased by the acquirer's application of its A. (Teece, 1980)

In more analytical terms, economies of scope arise when for all outputs y_1 and y_2, the cost of producing the two outputs jointly is more convenient than producing each output separately (Panzar and Willig, 1981).

$$c(y_1,y_2) < c(y_1,0) + c(0,y_2)$$

Mergers that achieve such economies of scope are typically regarded to generate merger-specific efficiencies. But further analysis is necessary in order to understand whether integrating another company might be the best strategy for improving cost efficiency.

First, the target might simply be able get its act together, perhaps with the aid of consultants, to improve its own A activity.

Second, perhaps the target could instead hire or license the proposed acquirer's A assets or skills. Indeed, intellectual property licensing is common, although asymmetric information and other incentive problems may impede such contracting.

Despite the importance of these two possibilities, in the model developed by Panzar and Willig (1981) it is proved that reaching economies of scale through integration is a pre-condition for the success of a multiproduct firm.

Market Power

When the combination achieved by way of acquisition helps in increasing the size, the entity might be able to achieve higher market power. This is one possible source of synergy which helps the company increase its shareholders value by increased profitability. Higher market power can be exerted by two means, monopoly and monopsony. In case of monopoly, the firm might be able to obtain a much stronger pricing power; in fact, as pointed out by Bloningen and Pierce (2016), on average M&As increase markups because of the reduction in competition. In case of monopsony, the combined entity might exercise more power in the purchase of raw materials or inputs for production at a lower cost from its suppliers as they would buy in bulk.

The Market for Corporate Control Theory

This theory argues that the acquisition would help achieve or increase economic benefit by way of improved operating performance achieved through efficient and effective management of the company's assets. Of course, the assumption that needs to be made is that the assets of the target company have not been managed properly. This is a stimulus for different managers, companies and funds to acquire those companies or the assets at a lower price and manage it themselves efficiently to increase its market value later upon[17]. This would naturally draw attention from various managers or the companies to acquire those assets. This competition would make sure the assets are purchased by that management which would manage it efficiently. This theory is based on the findings provided by Capron et. al (2001) which states that one of the main improvements in the newly combined firm following an integration, is the re-allocation of resources and a new interplay of capabilities stemming from the merger of the two firms.

2.2. Value Reducing Theories

Agency Costs of Free Cash Flow, Managerial Entrenchment and Empire Building

[17] This is the groundwork on which the business of the private equity firms is based. Indeed, these funds acquire public companies which are operating inefficiently, make them private, change the management, improve the efficiency of the company and after a life cycle of 5-10 years resell the company on the market at a higher price.

This theory is based on the agency theory and talks about the fact that at the origin of M&As there are agency costs related to conflict of interest between managers and shareholders regarding the free cash flow[18]. This theory is gaining importance in the last years as pointed out by the KPMG (2015) M&A outlook survey which reports free cash flow being the main driver of mergers and acquisitions.

Jensen (1986) lays the groundwork for the agency view claiming that firms' substantial free cash flows may provide managers with incentives to pursue unprofitable acquisitions for the sake of strengthening ownership. In his point of view, keeping within the firm a considerable amount of free cash would lead managers to expand the company beyond its optimal size engaging in projects yielding no benefits to equity holders. This happens because this free cash is contended between managers, who want to expand the quantity of assets under management (thus increasing their salaries, which are based on the amount of resources administrated), and shareholders, who prefer to receive this cash in the form of dividends or to save this cash for more profitable investments in the future.

"Martynova and Renneboog (2008) add that the handiness of excess cash reserves in firms leads managers to become bolder and motivate them to potentially undertake value-destroying investments instead of those that enhances shareholders' wealth.

In a similar vein, Gorton et al. (2009) propose a theoretical model in which managers increase firm size through takeovers in order to maintain control rights, in fact; they suggest that this occurs because larger firms are less likely to be acquired. Thus, self-interested managers undertake defensive acquisitions with a preemptive motive to avoid being taken over. Goel and Thakor (2010) apply the agency hypothesis to their envy-based model where managers try to expand the firm in order to receive higher salaries. In this context, managers envy their peers who have received higher compensation after undertaking mergers for expansion; thus, they are more likely to make acquisitions themselves, even if such deals are value decreasing and do not increase the profitability of the firm.

As a result, managers of firms that have a consistent amount of liquidity will be motivated to use this surplus of cash flow to make unsound expenses or undertake activities of M&As which are potentially unprofitable.

The literature provides various studies that confirm the free cash flow theory. For instance, (Lang, Walkling and Stulz 1991; Lin, Ma, Malatesta and Xuan 2013) point out that acquirers

[18] The free cash flow is the surplus of cash hold by the firm after all projects presenting positive net present value (NPV) have been financed.

who have substantial cash flow usually undertake deals that are value-destroying which becomes evident through the drop in firms' performance and earnings per share. Other researchers, however, find no evidence in support of the theory proposed by Jensen (1986), like for example Gao (2011). Empirically, the literature further suggests that, compared to their financially heal peers, firms that are financially challenged take whatever amount of cash or liquidity they have more seriously because cash holdings of these firms enable them to invest without having to access new costly debt or equity (Faulkender and Wang 2006). This idea is in line with many findings according to which deals financed through debt are usually undertaken only when profit maximizing investments arise.

On the other hand, according to Iyer and Miller (2008) and Kayo et al. (2010), managers of firms that have large amounts of free cash flow, low financial leverage and high levels of current ratio may be uplifted to use these loose resources to finance investment projects counting even those with negative NPVs, for instance, by acquiring another firm only for empire-building reasons (Trautwein, 1990). Therefore, free cash flow plays a crucial role in decisions relating to investment, including M&A deals. Liquidity can allow firms to execute acquisitions because it can be directly used as a means of payment. It means that, when corporate liquidity is increased, it augments firms' ability to undertake acquisitions. In line with this argument, Shleifer and Vishny (1992) note that high corporate liquidity has motivated global M&A waves over the last century. In fact, he concludes that since cash remains the major means of payment for conducting M&As, the acquirer's financial liquidity argument is one of the most relevant aspect to be considered.

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2. 3. Value Neutral Theories

A large part of corporate managers is afflicted by the behavioral bias known as managerial hubris or excessive overconfidence. In the cases of zero-sum acquisitions (particularly frequent when a firm is targeted by numerous firms), the winner's curse theory is fundamental.[19]

The transposition of this theory in the field of M&A theories claims that the acquisition is a mere transfer of wealth between the winning bidder and the target shareholders leading to no value creation. This occurs because the final acquirer would most likely end up paying an excessive price in order to win the bidding process. This overpaying is a derivative of

[19] The winner's curse is a tendency of the winning bid to overpay for the good it is paying for due to the overestimation of the intrinsic value of the object.

overvaluing the target firm's potential through optimistic forecast of target's business prospects. Thus, the value would most likely get netted out.

As seen above, different theories put forth different prospects toward a merger and an acquisition as some transaction might result in increased value or growth, some might result in reducing value and some might lead to neutral effects.

3. M&A Waves: Domestic v. Cross-Border

Plotting the number of executed mergers and acquisitions over the past few decades would produce a line which roughly go along with the movements of the business cycle. The large quota of M&As occurring in the late 1990s and in early 2000 represents the most recent peak, which was followed by a recession starting in late 2000. Weston and Weaver (2001) describe this development as M&A waves and claim that this last peak of mergers and acquisitions is the fifth M&A wave. Different peaks in the history of M&As have had different causes. In the 1960s and 1970s, the main motif behind merging or acquiring other companies was diversification and the creation of conglomerates. In the age of economic globalisation, the M&As of the late 1990s and early 2000 were more international in scope, involving companies from more than one country (namely, cross border mergers); their focus was also more to bring intra-industry companies together.

Thus, in this last merger wave is important to cite the importance of cross border mergers[20]. This type of mergers is highly affected by factors which are time invariant or that change vary slowly, such as a country's culture, legal framework and accounting standards, as well as foreign exchange rates, the volatility of stock markets and political turmoil.

An important issue to address is whether value is created or destroyed during cross-border merger waves and what are the motivations behind conducting these international operations within waves or outside waves.

Various scholars have provided an answer to this question for what concerns domestic merger waves. The **neoclassical theory** of mergers states that merger waves originate after structural changes caused by economic shocks which have a major impact on the industry structure. These shocks can happen due to deregulation, changes in government policy and technological innovations. According to this hypothesis, M&As are conducted with the aim of reallocating resources and using them more efficiently; using the distinction made in the precedent paragraph, merging during a merger waves is a value enhancing strategy.

[20]A cross border merger is a merger done by two firms which are incorporated in two different countries.

Once a shock arrives, merger activity aggregates because all the firms reacts simultaneously, try to organise resources more efficiently and attempt to acquire assets to improve efficiency. This idea was originally developed by Gort (1969), who applies an economic disturbance model to associate the frequencies of takeover activities to developments in technology. Jovanovic and Rousseau (2002) amplified Gort's work and demonstrate that firms with a high Q[21] acquire those with a low Q in a merger wave following technological changes. Mitchell and Mulherin (1996) and Andrade et al. (2001) document the grouping of US domestic merger activities across industries following economic-related shocks, such as industry regulation or abrupt changes in energy prices. Harford (2005) also finds that industry-specific shocks induce merger waves with the difference that his results, however, suggest that economic shocks alone are not sufficient to create merger waves and the overall capital liquidity is of primary importance for the proliferation of merger waves.

On the other hand, as we have already seen in the previous paragraph, the **agency view of mergers** highlights the misalignment of interests between managers and shareholders. As we saw in the precedent paragraph regarding value reducing theories, in these cases mergers are induced by managers' tendency to expand firms beyond their optimal sizes, which increases the managers' power, but hurts shareholders' value (Jensen, 1986; Martynova and Renneboog 2008, Gorton et. al, 2009; Goel and Thakor, 2010).

The **valuation theory** builds on the link between merger activity and stock market valuation demonstrated by Nelson (1959) and Maksimovic and Phillips (2001). Prior literature has shown that the amount of acquisition activities grows when stock markets are booming. Unlike neoclassical and agency theories, the valuation hypothesis does not correlate this theory to a specific prediction on merger outcomes.

In other words, if the increased stock price represents either a more favorable business environment with better investment opportunities or cheaper financial capital to carry out positive net present value projects, valuation theory should generate the same prediction as the neoclassical hypothesis.

Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) propose a misvaluation model and show that merger waves can be caused by the use of overvalued equity to purchase relatively undervalued target firms during bull markets. These authors argue that these valuation-driven acquisitions are advantageous and create shareholder value.

[21]Q is the ratio of the market value to the replacement cost of capital.

Jensen (2005) suggests, however, that overvalued equity may aggravate agency conflicts between managers and shareholders. In such cases acquisitions would happen as a result of managers' greediness, and are, consequentially, value decreasing.

Moving to the most recent and relevant statistics concerning cross-border M&As, we use the analysis conducted by Xu (2017) on the sample data consisting of the M&As conducted between 1990 and 2010.

The first notable feature of such mergers is the fact that the relative size[22] is significantly larger for deals within waves. A second relevant characteristic is that acquirers are more likely to conduct acquisition using cash than using stocks. This prevalence of cash payment in cross-border transactions was already discovered by Moeller and Schlingemann (2005) and Starks and Wei (2013) and is possibly explained by targets' reluctance to accept foreign equity. Similarly, the percentage of all cash deals is significantly greater than that of all stock deals. However, we find that deals made during waves tend to be financed using stocks, while cash payment is the favored method in outside-wave deals.

Talking about short-term returns Xu (2017) found out, in line with all the prior studies, that the average and median returns obtained by the acquirer are respectively 1.35% and 0.46% while ones for target firms are 18.45% and 10.39%. These data are consistent with prior evidence that cross-border M&As are value-enhancing and benefit both acquirers and targets (Kang, 1993 and Markides and Ittner, 1994), although larger gains accrue to targets (in line with domestic M&As).

The gains obtained by the two merging firms following the cross-border M&A announcement apply also to the real operating performance of the newly combined entity; indeed, integrating during wave mergers improve the profitability more than outside-waves mergers.

The positive returns in correspondence of the transaction announcement, as well as post-merger operating performance, provides rightfulness to the line of argument that cross-border M&As promote efficient asset reallocation, thereby maximizing shareholder value. As such, these results are in conflict with the agency view of mergers, in which managerial hubris and self-interest drives mergers.

The analysis of domestic merger waves in the US market shows that the timing within a wave matters; specifically, it demonstrates that mergers occurring during the early phase of a wave create more value than those occurring later in a wave. For instance, Carow et al. (2004), notice that early deals outperform late deals during merger waves in the US market. They justify these

[22] The relative size of the deal is calculated as the ratio of the transaction value to the acquirer's total assets.

findings claiming that early bidders use their superior information to identify the best targets to acquire, thereby obtaining a competitive edge over their rivals. Goel and Thakor (2010) also find that early deals in waves create more shareholder value than the later ones. They prove that mergers occurring at the later stage of a wave are a result of CEOs' predilection for larger firms, which can provide higher compensation rather than benefit stockholders. Although the two studies differ in the reasons why firms decide to participate early (or later) in merger waves, both concur with the argument that early bidders acquire targets which yield greater benefits than do late bidders in case of domestic acquisitions.

Cross-border mergers resemble domestic mergers in its core; namely that two firms integrate and come under single management. However, they significantly differ insomuch that cross-border transactions involve additional risks and frictions, such as political risk, cultural differences, and foreign exchange risk. Such resistances typical of a cross border M&A can justify why late cross-border deals create more value than early deals.

The literature is full of empirical evidence regarding such risks and frictions in cross-border mergers.

For instance, Ahern et al. (2014) shows that cultural polarity between countries discourage cross-border M&A activity, and synergies arising from M&As tend to be lower between firms located in countries with very different cultures. Rossi and Volpin (2004) and Lee (2013) demonstrate that companies are unwilling to acquire targets from countries where the protection of investors is weak or where the risk of political turmoil is high, and acquirers usually pay lower premiums if they choose to come by such targets. Moreover, firms experience an informational disadvantage relative to their local competitors in the target country. Lack of knowledge about the local industry and market structures makes the profitability of international investment more uncertain.

Given the tradeoff between potential opportunities and uncertainties and difficulties, the decision on whether to initiate a cross-border acquisition is crucial. On the one hand, valuable potential targets are scarce; therefore, firms may embark on cross-border mergers earlier than their industry competitors and may take the lead in foreign markets obtaining a first-mover advantage (Lieberman and Montgomery, 1988; Tufano, 1989). On the other hand, firms may wait until competitors enter the foreign market and then use the information obtained by their peers to structure and execute deals in a more intelligent way. In other words, followers may avoid risks and eventually capture considerable advantages through observing prior successful and/or failed deals. Faced with uncertain environments and in light of the irrevocable form of

cross-border M&As, it may be more important for firms to first learn from their peers' behavior and thereby develop the knowledge and capabilities required for successful transactions.

The real options literature offers theoretical support for this latter view. Dixit and Pindyck (1994) claim that in cases of uncertainty, firms should postpone irreversible investment until such uncertainty is cancelled out. Grenadier and Malenko's (2010) model suggests that firms delay investment under uncertainty; however, the extent of this postposition depends on the extent to which these firms learn. Their results suggest that learning can reduce uncertainty and encourage investment. Also, the most recent results provided by Xu (2017) on lower early bidder returns are consistent with such learning hypothesis.

Thanks to the extensive literature concerning cross border M&As and cross border M&A waves, we discover that mergers inside waves experience significantly greater performance (acquirer announcement returns, combined announcement returns, and post-merger operating performance) than mergers outside waves. We also observe that late deals show better performance than early deals within a merger wave, which is clearly in contrast to evidence provided by US domestic merger waves. Such late entrants' outperformance can be explicated by their learning from peers' prior acquisition experience and thus from the real options literature.

Additionally, the results shown in this last paragraph draw important conclusions in the perspectives of public policy. Indeed, policymakers in order to stimulate cross-border M&As may decide to adopt deregulation and privatization.

In conclusion, these results suggest that cross-border merger waves are value-enhancing, which is consistent with the neoclassical hypothesis that mergers and acquisitions facilitate efficient reallocation of corporate resources.

II. M&As Procyclicality

In this second chapter of this thesis, I will start analyzing the sample of M&As in light of its correlation with the Italian GDP in the years ranging from 2013 to 2019.

This focus on the link between the national production of a country and the amount and value of M&As occurring within the national borders is quite seldom. Indeed, the more common type of analysis adopted by a majority of scholars is the one stemming from the valuation theory discussed in the precedent chapter; namely that M&A transactions increase when the stock markets are in an expansionary phase.

Given this lack of researches, in this second chapter of this thesis I will assess if when the Italian economy is booming whether the amount/value of M&A deals increase, decrease, remains stable or, contrary, if merger waves are completely unrelated with the GDP course.

In addition to this type of analysis, after analyzing the link between economic production and M&As, I will also correlate the latter to other important macroeconomic variables such as interest rates, inflation and, as suggested by the valuation theory, the movements in the Italian stock exchange index (FTSE MIB). Indeed, I will conclude this second chapter with a more thorough macroeconomic analysis, and I will build a multiple regression model aimed at answering to the numerous hypothesis that will be formulated further on.

1. GDP - M&A: Literature Review

GDP and GDP per capita are probably the most used and common variables deployed in order to assess the economic conditions and development of a country.

The authors Hyytinen and Pajarinen (2002) used to analyze the impact of two macroeconomic factors, namely the growth rate of the economy and the reference rate set by the central bank, on the activity of mergers. Their study shows that high economic growth in a developed economy leads to a larger number of companies and mergers. Indeed, companies are more willing to engage in foreign direct investments (FDI) when the economy is expanding and are more cautious to purse them in times of economic depression, according to Xiaoxuan (2016).

One of the few papers investigating the link between GDP and M&As is provided by Kummer (2006), who analyzed the correlation between M&A deals in the pharmaceutical sector in South America and discovers that “the numbers of M&A transactions correlates with the development and size of an economy measured in the form of GDP”. Doytch, Cakan, Upadhyaya (2011)

studied the M&A deals occurring in different sectors and how those deals influence the expansion of the market in which the merging companies operate. This study demonstrates that there is no correlation between GDP and M&As and the only exception is to be found in the "services sector". Another work which focuses on this correlation is Chiriac (2021), who, despite investigating also the effect of other macroeconomic variables on M&As, find that in European countries GDP influences the activity of M&As.

2. GDP - M&A: Correlation and Scatterplot

Figure 1 and 2 shows the nominal GDP and the number and value of the M&A occurring in Italy from 2013-2019. It is easily to find out that the movement of nominal GDP[23] and the number and value of M&As[24] follow more or less the same pattern.

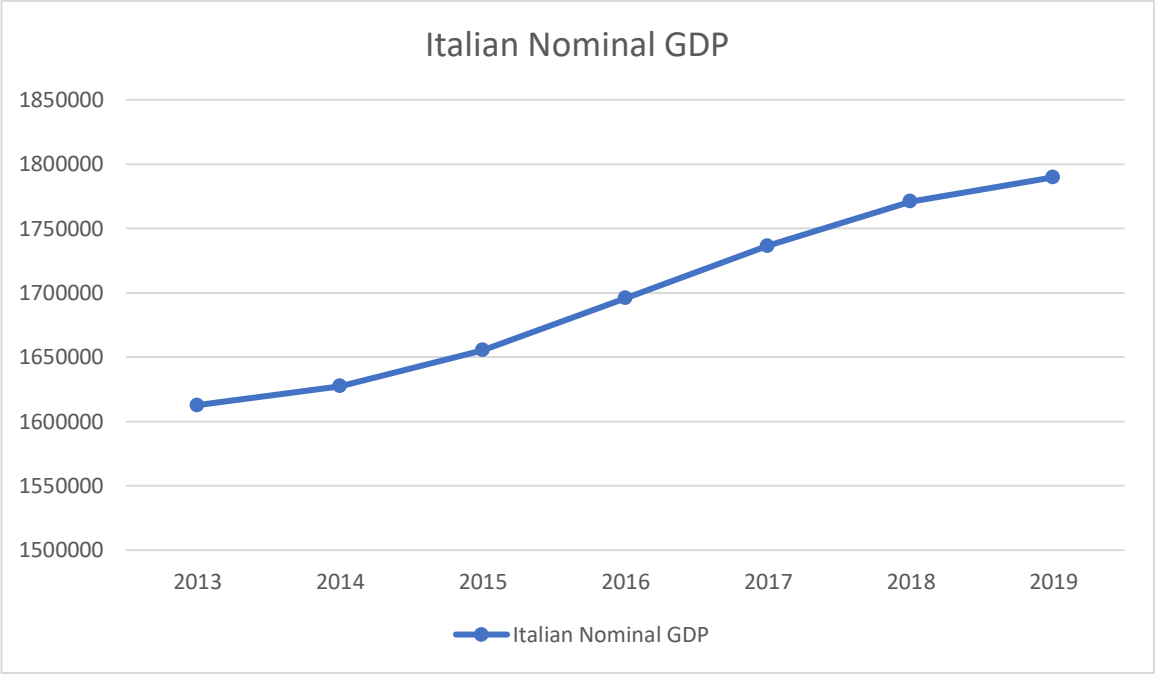

Figure 1. Italian Nominal GDP 2013-2019 (measured in million euros). Data Source: personal elaboration from ISTAT

[23] Data source: Istat. http://dati.istat.it/Index.aspx?lang=en&SubSessionId=3b89eea4-ee50-4511-be2c-69d725d14f48

[24] Data source: KPMG M&A report 2019 https://connect.kpmg.it/rapporto-mergers-and-acquisitions-2019,

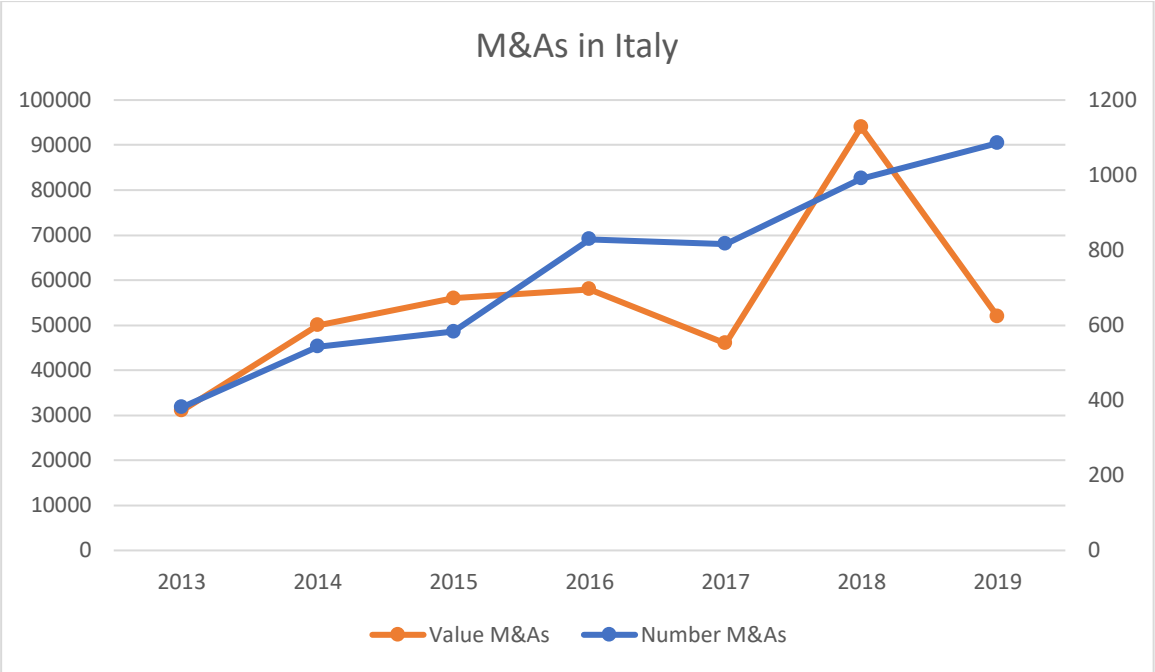

Figure 2. Number and value (measured in billion euros) of M&As in Italy 2013-2019. Data Source: personal elaboration from KPMG M&A report (2019)

In order to analyze, in more precise terms, the link between the number of M&A deals and the Italian GDP is useful to analyze a scatterplot.

A scatterplot is a type of mathematical diagram which uses Cartesian coordinates to display value for typically two variables for a sample consisting of various observations. The data are exhibited as a collection of points, each having the value of both the variable on the vertical axis and the variable on the horizontal axis.

A scatter plot can be used in two ways. Either when one variable is under control and the other is influenced by it, or when both the variables analyzed are independent. Our analysis falls in the second definition; indeed, we are investigating the correlation between GDP and the number M&A deals and not the causality link between the two.

A scatter plot can suggest various kinds of correlations between variables with a certain confidence interval. The three main types of correlation are positive (rising), negative (falling), or null (uncorrelated).

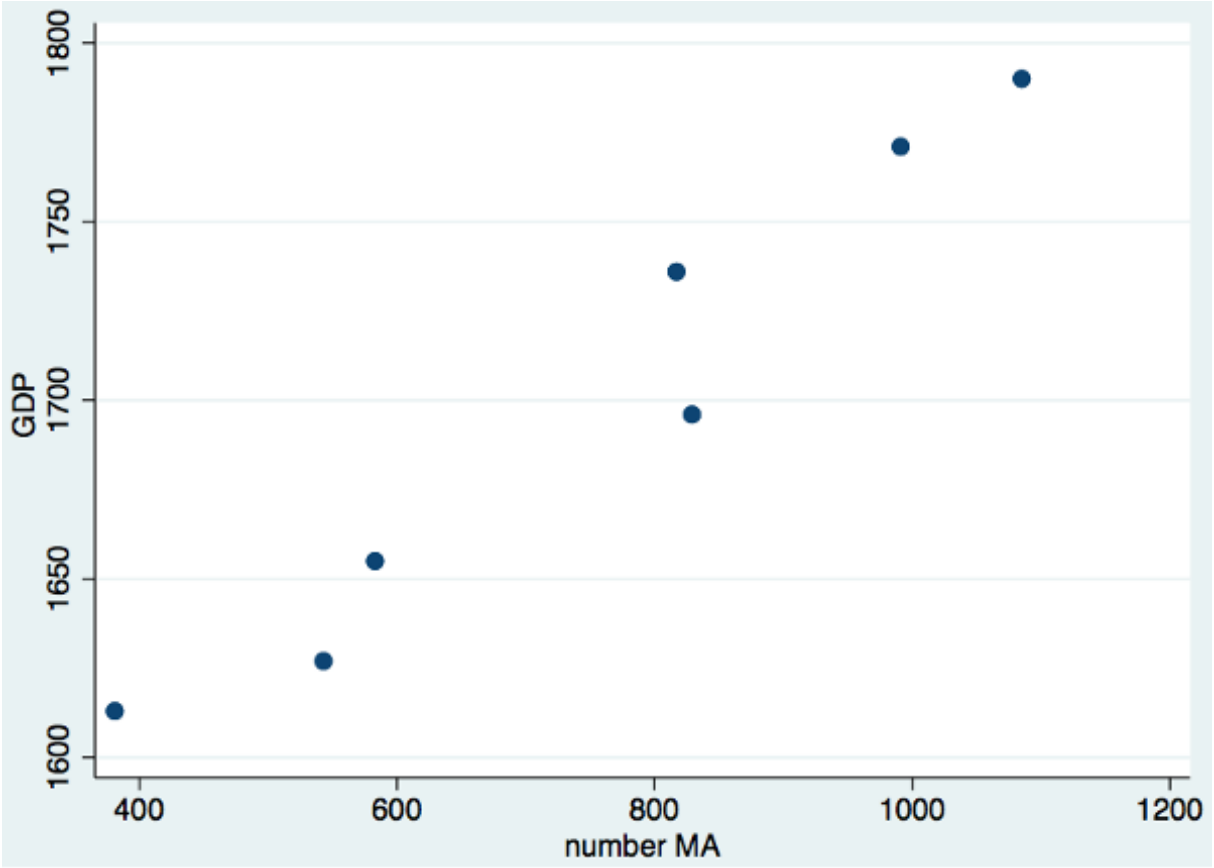

Figure 3. Scatterplot number M&As and GDP (measured in billion euros). Data Source: personal elaboration from STATA

As we see from the scatterplot above reporting the number of M&As on the horizontal axis and the Italian GDP on the vertical axis, we find that there is a positive correlation between the two variables.

An equation for the correlation between the variables can be determined by established best-fit procedures. For a linear correlation, the best-fit procedure is known as linear regression and it usually uses the least squares approach.

In order to estimate such linear correlation, we use the OLS method and we estimate that the slope of the regression line is 3,544489. This means that an increase in GDP equal to 1.000.000.000, would augment the number of M&As by 3,544489.

Source	SS	df	MS	Number of obs	=	7
				F(1, 5)	=	96.71
Model	368804.103	1	368804.103	Prob > F	=	0.0002
Residual	19067.8971	5	3813.57942	R-squared	=	0.9508
				Adj R-squared	=	0.9410
Total	387872	6	64645.3333	Root MSE	=	61.754

numberMA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
GDP	3.544489	.360431	9.83	0.000	2.617972	4.471007
_cons	-5272.555	612.5597	-8.61	0.000	-6847.19	-3697.92

Figure 4. Regression number M&As and GDP (measured in billion euros). Results computed with STATA.

The conclusion of this part of our first analysis end up with an unequivocal result: when the Italian economy is growing the number of M&As undertaken by Italian firms increases.

3. How the Interplay of GDP, FTSE MIB, Interest Rates and Inflation influence M&As

In this second part of the macroeconomic analysis of M&As I introduce a more sophisticated model similar to the one proposed by Chiriac (2021) with the aim of showing how the macroeconomic framework of a country, and not just its level of production, can play a vital role in the number of M&A deals.

Thus, I will analyze the impact of four pivotal macroeconomic factors; namely GDP, the Italian stock index (FTSE MIB), the reference rate set by the European Central Bank and the inflation rate. Indeed, the first part of our analysis will be the drawing of four different hypotheses that will be tested in the multiple regression which will be presented in the final part of this paragraph.

3.1. Hypotheses Formulation

Hypothesis 1 (H1)

There is a positive correlation between the number of M&A deals and nominal GDP.

In light of the analysis taken place in the prior paragraph, we already know that this hypothesis holds; despite that, in order to make our model more structured and capable of being a true

reflection of the macroeconomic conditions of our country, I have decided to include it also in this part of the research.

Hypothesis 2 (H2)

There exists a considerable link between the number of M&As and the stock market index (FTSE MIB).

This theory, as I previously mentioned, is in line with the valuation theory, which states that that the amount of acquisition activities grows when stock market is booming.

Indeed, as the precedent chapter pointed out, merger waves usually appear when the economy is expanding and thus the stock market value grows.

This increase of the stock market index can influence M&As for mainly two motivations: first, an increased stock index can help companies to finance their acquisitions. Indeed, the acquiring firm can avoid investing the operating profits or using leverage to finance the acquisition. The other motif is linked to an increase amount of available liquidity; in fact, when the stock market is in expansion it means that the price of equity increases and therefore the public companies can benefit from the increase in their valuation. In other words, these factors increase the purchasing power of a company (Hyytinen and Pajarinen, 2002). Martynova and Renneborg (2008), by employing a simple regression, show a positive and important link between the variables taken into consideration. Clarke and Ioannidis (1996) studied the relation between M&As and the trend of the stock market index too. For this analysis they took into account both the mergers value and their number. The result of the study was that the stock market index shapes both the value and the number of mergers. The same results were obtained by Sharma et. al (1989).

Hypothesis 3 (H3)

The interest rate set by the European Central Bank (ECB) has an impact on M&As activity.

One of the main factors influencing the management decision to undertake a merger or an acquisition are the prevailing interest rates. Rising interest rates in an economy which is growing slowly, have a negative impact on the M&A market. This implies that the rate at which interest rates rise or fall is a key factor affecting the M&A market. A slow but gradual rise in interest rates in a strong economy builds confidence among businesses and this results in increasing M&A activity. On the other hand, a sudden and large increase in interest rates in moderate economic conditions, creates higher volatility in the market, thus reducing the M&A activity for a certain period of time. Additionally, the type of acquisition ought to be considered.

Indeed, a substantial part of the transaction volume of the M&A deal is obtained from external finance sources. For this reason, it is fundamental to consider carefully the interest rates and the maturity of the financing, because high-interest costs decrease sales and consequentially have a negative impact on the free cash flow of the company.

The link between the interest rate chosen by the Central Bank (CB) and M&A deals is a subject largely analyzed. Marsh (1982) shows that CB interest rate affects M&A trends, in fact, firms issue less debt when the CB interest rate is high and then prefer to engage in reorganization. Additionally, also Taggart (1977) demonstrates that the interest rate set by the CB affects significantly the number of mergers and acquisitions. The motif is that companies are more inclined to issue equity when their share prices are high and avoid borrowing when interest rates are low. Nevertheless, unlike Marsh and Taggart, Choe, Masulis and Nanda (1992) find that the CB interest rate effect is not significant for mergers and acquisitions.

Hypothesis 4 (H4)

The inflation rate has a negative impact on the number of M&A deals

Inflation is considered one of the most important macroeconomic factors that affect investors' decision when conducting a transaction. Considering inflation and its link to economic development in general, it is well established that high rates of inflation are detrimental to growth in the medium in the long term. Indeed, inflation is an obstacle to the efficient resource's allocation because, obscuring the "signaling of relative price changes"[25], it makes more difficult to analyze correctly the various economic outcomes of an investment. The minimum threshold below which is not advisable to go varies across countries, being lower in industrial countries and higher for developing ones.

In addition to this, inflation rate plays a fundamental role also due to its link with the reference interest rate. In fact, when inflation increases the governments try to reduce the money supply by augmenting interest rates. When interest rates increase, the cost of financing an acquisition is much higher and such increased cost usually discourages acquirers from buying. Secondly, the valuation method most commonly used is the discounted cash flow model. Thus, when calculating the amount by which to discount your projected cash flow, the starting point is usually the Treasury rate (or risk-free rate). This means that when the Treasury rate is higher, the discount factor is larger because an acquirer could safely invest in a risk-free asset obtaining a high interest. Therefore, if the reference interest rate is high, there is a reasonable chance that

[25] Khan, Ssnhadjyi, 2001

all valuations would underestimate the value of the target company leading to a decrease in the number of acquisitions.

If on one hand the effects of inflation on economic growth and on capital markets have been deeply analyzed, on the other hand a little existing research has studied in more detail the relationship between inflation and M&A operations. Boateng, Hua, Uddin and Du (2014) found a negative relationship between inflation rate and the number of M&A for UK firms during the period 1990 to 2008. The size of the coefficient shows that M&A will decrease by 1.47% if Inflation rate increases by one unit. However, the result is not statistically significant. Additionally, Black (2000) investigated the M&A operations on American firms in mergers and acquisitions deal between 1985 and 1999. The result suggests that inflation rate is negatively related with the growth of mergers strategy.

3.2. Data Analysis, Multiple Regression and Results

In order to reach the objectives formulated in the second part of this chapter, the econometric methodology adopted is a multiple regression, which is used to obtain information meant to elucidate the questions addressed so far.

Multiple regression is basically a simple linear regression expanded. It is deployed when an experiment wants to predict a specific dependent variable (number of M&As between 2013 and 2019 in this case) with the use of explanatory variables (in this case GDP, inflation, interest rate and the stock index).

In other words, the objective of multiple regression is to represent the linear relationship between the explanatory variables and response variable. Thus, this model is used in order to assess the validity of the general hypothesis underlying the analytical framework of this chapter; namely if the number of M&A deals is correlated to specific macroeconomic factors.

The formula used in order to investigate such linear relation is the one below.

$$Y_1 = \beta_1 X_1 + \beta_2 X_2 + .. + \beta_n X_n$$

General hypothesis

The evolution of the number of mergers and acquisitions is influenced by factors at macroeconomic level.

The data, which is summarized below, that will be utilized in this multiple regression of the analysis is taken from the ISTAT (GDP), the KPMG M&As 2019 report and from the European Central Bank website.

Number M&As	GDP (in M)	FTSE MIB	Inflation rate	ECB interest rate
381	1.612.751	18.968	0,012	0,005
543	1.627.406	19.012	0,002	0,0015
583	1.655.355	21.418	0	0,0005
829	1.695.787	19.235	-0,001	0
817	1.736.593	21.853	0,012	0
991	1.771.063	18.324	0,011	0
1085	1.789.747	21.286	0,006	0

Figure 5: Summary of the variables value used in the multiple linear regression.

Results

Using the command Reg on STATA, I find the following results.

Source	SS	df	MS	Number of obs	=	7
				F(4, 2)	=	108.32
Model	386089.805	4	96522.4511	Prob > F	=	0.0092
Residual	1782.19547	2	891.097733	R-squared	=	0.9954
				Adj R-squared	=	0.9862
Total	387872	6	64645.3333	Root MSE	=	29.851

numberMA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
GDP	.0039073	.0003884	10.06	0.010	.002236	.0055786
FTSEMIB	-.0174661	.0091646	-1.91	0.197	-.0568984	.0219662
Inflation	-9744.208	3499.271	-2.78	0.108	-24800.35	5311.938
Interestrate	2654.746	15478.61	0.17	0.880	-63944.34	69253.84
_cons	-5483.765	698.0183	-7.86	0.016	-8487.096	-2480.435

Figure 6: Results obtained using the command Reg on STATA. Data Source: personal elaboration

The first aspects to be considered are the measures of fit, namely the R-squared (R^2) and the adjusted R-squared (adj. R^2), which are used to understand if the explanatory variables are relevant or if should be excluded.

The R^2 is the fraction of variance of Y which can be explained by the variation in the independent variables.

The R^2 has a value ranging from 0 to 1, where 0 means that that the outcome cannot be predicted by any of the independent variables and 1 indicates that the outcome can be predicted without error from the independent variables. In the model adopted the R squared is equal to 0,9954.

The R^2 suffer from a major bias, namely that when regressors are added its figure always increases.

For this reason, to measure correctly the fit of regressors is used the adjusted R-squared, which works penalizing for including too many independent variables in the multiple regression.

Despite that, a high adjusted R- squared, as the one in my model (0,9862), does not mean that we do not have omitted variable bias[26]. In addition to this, also the validity of regressors is not explained by the R^2, but it must be explained through hypothesis testing[27].

In order to do this, analyzing the t-test reported in the table above, we find that:

Variable	Confidence Interval
GDP	99%
FTSE MIB	90%
Inflation rate	99%
ECB Interest rate	No significant

Figure 7: Confidence intervals of the regressors. Data Source: personal elaboration

Final Remarks

GDP is significant at a 99% confidence interval and, as I have already pointed out in the first part of the chapter, is positively correlated to the number of M&A deals.

The FTSE MIB index is significant at a 90% confidence interval and oddly it is negatively related with the number of M&As. This can be explained by the fact that Italian companies may

[26]Omitted-variable bias occurs when a statistical model leaves out one or more relevant variables. The bias results in the model attributing the effect of the missing variables to those that were included

[27] For a more thorough exlanation about hypothesis testing go to chapter 3 and 4 of this thesis, where a complete explanation is provided in order to show in detail the the event study methodology

be reluctant to reorganize when the stock market grows and consider such expansions as an overvaluation of equity and thus prefer not to acquire other companies.

The inflation rate is significant at a 99% confidence interval and is negatively related with the number of M&As. This can be explicated by the fact that, as we pointed out in hypothesis 3, high inflation is related to higher uncertainty and is a deterrent to investments.

The interest rate set by the European Central Bank is not significant. This finding can be explained by the fact that in 2016 the ECB set the reference interest rate at zero to lower the cost of borrowing and to stimulate the European economy. Thus, firms adequate their investment decisions to this zero-interest rate and the variation in the number of M&A deals cannot be explained by a variable which has not changed since 2016.

In conclusion, the results obtained are almost completely in line with the hypothesis formulated previously.

Indeed, M&A deals are heavily affected by the country's economic environment, not simply by its gross domestic product, but also by the movements in the stock market and the inflation rate.

The importance of these macroeconomic factors on M&As is furtherly emphasized by the effect that coronavirus had on the number of M&As in the last year. In fact, as pointed out by the latest report on Italian M&As released by KPMG (2020), in the last year the market for M&As interrupted its growing trend and decreased by 24% in number and by 34% in value with respect to 2019.

These findings highlight once again how M&As are inevitably related to the movements in the real economy, showing an increase in value and in number when the economy expands and contracting when there is an economic recession.

III. EMH, Abnormal Returns and Event Study Methodology

The interrogations of whether announcements of merger and acquisitions are informative to investors, and how investors react to such announcements, have been a subject of research in multiple papers and articles over the past few decades. As previous empirical work on M&A transactions are nearly unanimous regarding the returns to targets being significantly positive (Jensen & Ruback, 1983) (Trifts & Scanlon, 1987), I have decided to center the analysis on the returns of the acquiring firm. In other words, I will analyze the effects that M&A announcement has on the shares of the firm undertaking the acquisition.

In order to conduct this experiment, I will apply the event study methodology with the aim of investigating the abnormal return of companies before, during, and after a common type of event, where the goal is to analyze whether the event has any influence on the company's share price.

This second part of the thesis will be constructed on previous literature and will provide some further data into the stock price reaction following an M&A announcement. In addition to explain the econometric and quantitative results, I will also try to discuss the interplay of human perceptions and behavioral finance as a potential motif for possible violations of the efficient markets hypothesis.

Consequentially, the first and foremost question I will address is the following: *Does the semi-strong form of the efficient market hypothesis hold in the case of M&A announcements in five specific transactions happened in Italy between 2013 and 2019?*

The second component of this analysis, which will be built on the event study methodology and on the concept of abnormal returns, will be divided in different subsections.

The first part will be based on a review of the existing literature concerning the empirical market efficiency in relation to M&A announcements.

The second component of this analysis will present and review the event study methodology and a comprehensive analysis of all the steps that will be conducted in the empirical analysis that will take place in the last chapter of this thesis.

3.1 Efficient Market Hypothesis

The American economist Eugene Fama constructed the Efficient Market Hypothesis (EMH), namely the argument that markets absorb all available information in the market prices accurately, thoroughly and instantaneously. A prerequisite of the strong form of this theory is that the cost of information and trading costs are always equal to zero (Fama, 1991). Theoretically, this theory states the impossibility of earning excess returns by outperforming the market without undertaking riskier investments.

The model assumes that:

1. Successive price changes must be independent and that
2. Successive returns must conform to some probability distribution (Fama, 1965)

Fama (1965), affirms that “a situation where successive price changes are independent is consistent with the existence of an "efficient" market for securities, that is, a market where, given the available information, actual prices at every point in time represent very good estimates of intrinsic values". Nevertheless, in a world where we cannot exclude uncertainty, the intrinsic value of securities may not be equal to the actual prices. Hence, uncertainty modifying intrinsic values is denominated as “noise” in the market (Fama, 1965).

The question of whether historical data can efficiently predict stock prices has been a source of debate in both academic and business circles for several years. Provided solutions can be separated into two different views: the chartist theories and the theory of random walks. The chartist argument is based on the same assumption, namely that past behavior of a security gives a high degree of information about the future price behavior and that this data can be exploited by identifying specific patterns. Conversely, the random walk theory states: "the future path of the price level of a security is no more predictable than the path of a series of cumulated random numbers” (Fama, 1965). Hence, unlike the chartist view, the random walk theory states that it is impossible predict future stock prices in a meaningful way (Fama, 1965).

According to Fama, there are three conditions that must hold for capital market efficiency:

1. The transaction costs of trading securities are null.
2. All available information is available in the same way to all market participants without incurring in any particular costs.
3. All market participants agree on the implications of the available information on the current price and also on the distribution of the future security development

When all three conditions are fulfilled, the securities are by definition "fully reflecting" all available information. However, such a frictionless market neglects the fact that in reality, information is not available to everyone.

Given the difficulty of meeting at the same time all these criteria, the market can still be efficient without meeting all three conditions. For example, if an "adequate number" of investors have access to all available information the market is nonetheless efficient (Fama, 1970).

Even though the EMH is an important concept with increasing acceptation after Fama's first papers on market efficiency, it is also the subject of dispute and criticism.

Grossman and Stiglitz (1980) argue that prices cannot embed all available information. This stems from the fact that information is not free and agents who invest resources in obtaining the information would have no incentives to provide it to the other market participants. Indeed, they say: "there is a fundamental conflict between efficiency with which markets spread information and incentives to acquire information". Furthermore, they conclude that the more costly the information gathering is, the lower the number of individuals disposed to pay for such information and therefore benefit from it.

Also, other researchers assert that the assumption of all investors being fully rational and always processing all available information correctly is not realistic. One of the groups who have been critical of this are those adhering to the relative new field of behavioral finance documenting departures from rationality and behavioral biases that tend to be present in human when decisions are conducted in an uncertain context (Lo, 2010).

Some studies argue that under and overreaction lead to market inefficiency when stock prices react to new information. However, in line with the hypothesis of an efficient market, apparent underreaction will be approximately as frequent as an overreaction. Additionally, Fama (1997) shows that "post- event continuation of pre-event abnormal returns is about as frequent as post-event reversal". Both findings imply that that market efficiency does not have to be discarded, supporting market efficiency's viability (Fama, 1997). In his paper published in 1970, Fama divided the EMH into three relevant information subsets: weak form, semi-strong and strong tests (Fama, 1970).

Weak form

"A market is said to be weak-form efficient if current security prices completely incorporate the information contained in past prices" (Fama, 1970). The weak-form EMH is not able to predict future prices and therefore is incapable of earning extraordinary profits. As past data

reflect only the current market price, the accessible information will not be able to forecast new movements in the price of securities by analyzing their past performances.

According to Fama (1965), random walk tests have been used to test the weak form of the EMH. These tests state that the future development of a security's price is no more predictable than the path of series of accumulated random numbers (Fama, 1965). Indeed, the random walk theory affirms that "successive price changes are independent, identically distributed random variables". The tests serve their purpose as they strongly support the EMH (Fama, 1970).

Two decades later, Fama (1991) issued a new paper called "Efficient Capital Markets: II", where he revised this threefold classification. The weak form category became the "test for return predictability", which as well as having forecasting power on past returns, incorporates forecasting of other variables like dividend yields and interest rates. The addendum is a result of his beliefs that various term-structure variables utilize prediction of future returns (Fama, 1991).

Semi-strong form

"A market is said to be semi strong-form efficient if current prices incorporate all publicly available information" (Fama, 1970). In contrast with the weak form, the available information now includes announcements concerning earnings and dividends, multiple-ratios, news about the economy, political news, etc. Generally, the semi-strong form of EMH analyzes whether current market prices "fully reflect" all public information. However, each test focuses on price adjustments tied to one kind of information generating event (e.g., earnings announcements, mergers and acquisitions, stock splits, etc.).

Surveys on market efficiency, such as the ones conducted by Fama in 1970 and 1991, concentrated on checking informational efficiency. They concluded that various empirical evidence is supportive of the weak and semi-strong form of efficiency. However, the most updated study of Fama (1991) shows even more solid evidence of predictability of returns both on the basis of historical data and on publicly available information, namely the semi-strong form (Fama, 1991). Additionally, in 1970 Fama corroborates that accessible semi-strong form evidence of different types of a public announcement on common stock returns is in general significantly in line with the theory of efficient markets (Timmermann & Granger, 2004).

When Fama published his article in 1991, he renamed the semi-strong form tests of efficiency to "event studies" (Fama, 1991). After this moment, the event study methodology had increased rapidly for over 20 years; especially thanks to powerful computers and CRSP (Center for Research in Security Prices) data. The event study methodology gives ways of recording regular

patterns in the response of stock prices to investment and financial decisions and therefore passes the test of scientific usefulness (Fama, 1991).

Strong form

"At the extreme, a market is strong-form efficient if current prices reflect all information - public and private, including inside information;" namely "information about a firm which is available only to "insiders" including corporate executives and major shareholders" (Fama, 1970). Evidence seems to indicate that such valuable insider information does not exist without facing additional costs. Hence, the hypothesis is certainly false.

The strong form of the EMH is the most stringent version of the EMH and cannot, for above-mentioned reasons, hold in reality. Indeed, followers of the strong efficiency believe that insider information cannot provide any advantage to investors and therefore the existence of abnormal returns is not present. In other words, information cannot lead to returns in excess of the normal ones.

The empirical evidence stating the impossibility of this strong form of the EMH comes from Barnes (2009), who clearly shows that the possibility of gaining profit from inside information exists.

Instead of the strong-form efficiency test, in 1991 Fama developed a new version called "tests for private information" (Fama, 1991). The new evidence brought to life by Fama's new paper only demonstrates that corporate insiders may possess private information that may entail a variation in the stock's prices (Fama, 1991).

3.1.1. Market Anomalies

The January Effect

The January effect is described as a seasonal increase in the price of securities in the month of January which follow the dip occurring every December. Analysts generally explain the phenomenon resulting in the price increase that typically happens in January when investors, after selling the securities in December engaging in tax-loss harvesting, immediately re-buy securities in the following month pushing the share prices up. (Thaler, 1987). Rozeff and Kinney (1976) discovered this typical pattern in an equally weighted portfolio in the NYSE index over the period 1904-74. Specifically, they found that the average monthly return in January was 3.5 %, compared to the other months which averaged at about 0.5 %.

The Monday Effect

The Monday effect is a theory which predicts that stock market returns on Mondays usually follow the trend from the previous Friday (Wang, Erickson, & Li, 2012). It was first reported by Frank Cross in 1973. The motifs for the existence of such effect are not clear. However, when considered in terms of weekly trading on any given Monday, equity markets experience opening performance that clearly resembles Friday's closing trend.

The Small Firm Effect

The small firm effect is a theory which states that smaller firms or companies with relatively small market capitalization (less than $1 billion) tend to outperform larger companies (Roll, 1981). Banz (1981), Reinganum (1981), among others, discovered that stock returns tend to be negatively related to aggregate market values, in other words to the “firm size”. When taking into account also the risk, Banz (1981) showed that small firms generate higher risk-adjusted returns compared to larger firms. However, later studies have found the opposite, that stocks with large market capitalization can actually generate higher returns (Malkiel, 2003). Hence, it is difficult to prove whether the original formulation of this theory holds or if it has suffered from bias, as recent papers have not demonstrated its empirical validity.

The Momentum Effect

In finance, momentum is the tendency of stock prices to maintain their trend. This means that rising prices continue to rise, while falling prices keeps falling. Various studies have proved this pattern, among which we find the one proposed by Rouwenhorst (2002), who applied the study to twenty emerging markets and found that such phenomenon exists also in non-developed markets.

On the other hand, other researchers have demonstrated the existence of the opposite phenomenon (contrarian effect) where past losers outperform past winners (Bondt & Thaler, 1985). Due to these opposite views, Fama and French (1996) decided to analyze both theories applying their three-factor model. While the contrarian effect was demonstrated to be insignificant, the model highlighted significant abnormal returns for past low returns and past high returns, providing validity to the momentum effect.

3.1.2. Behavioral Finance

Hand in hand with the acknowledgment of the market anomalies came the flowering of research on behavioral finance. This new science, being a subcategory of behavioral economics, states

that psychology plays a pivotal role in investors' decisions and that market anomalies can be explained by this new approach.

Indeed, in the 1990s, a substantial part of the academic discussion moved from quantitative econometric analyses towards investigating how human psychology and behavior impacts on financial markets. Thus, the theoretical models were no longer viewed as sufficient in order to capture and describe all the anomalies occurring in the market.

For this reason, the theory of behavioral finance has shown an alternative view and questioned the efficient market hypothesis and its validity (Schiller, 2003). In fact, while the EMH illustrates particularly well the characterizations of an ideal world, the pure form does not manage to explain accurately the movements of real markets. Research on behavioral finance has discovered that economic agents do not follow one of the main assumptions of this theory and which is built on centuries of classical economics, namely that investors are all equally "rational", and consequentially there is the possibility of having inefficiencies in the market (Peters, 2003). According to Fama (1965), the semi-strong form of the efficient market theory states that stock prices incorporate all publicly available. Thus, the theory assumes that stocks are priced efficiently and coincide with their true values and that all investors are capable act rationally when valuing all available information. Hence, an investor is not able, on average, to earn returns above the risk encapsulated in the stock he is buying. The contribution of behavioral finance of investors being irrational is fundamental and in contrast with this view, thus stating that deviations in stock prices from their actual value may occur.

3.2 Methodology

This section presents the methodology which will be used in this paper to analyze the stock reactions following M&A announcements. First, I will give an introduction to the concept of event studies before explaining why and how I decided to apply a process made up of six steps. Furthermore, I will present the market model applied in the estimations of both normal returns, abnormal returns as well as cumulative abnormal returns. Last, various test statistics including both parametric and non-parametric tests are introduced. In other words, this section will prepare the ground for understanding the methodology applied in the last chapter of this thesis.

3.2.1. Event Study

In spite of the fact that researchers and scholars have studied M&A for numerous decades, one resolute instrument for measuring the effects of M&A announcements has never been found.

For this thesis, I have decided to apply an event study methodology which resembles the one used by MacKinley (1997) who stated that event studies analyze the "abnormal return of companies before, during, and after a common type of event, where the goal is to analyze whether the event has any influence on the company's share price" (MacKinley, 1997).

Indeed, confining event studies to the analysis of M&A announcements effect would be inaccurate. Within finance, they have been applied to a variety of events such as mergers and acquisitions, earnings announcements and debt or equity issuance.

The history of event studies backdates to 1933 when James Dolley investigated the price effects of stock splits. Until the late 1960s, the accuracy of event studies grew, including advancements of separating out confounding events and detaching general stock price movements. In the late 1960s, Ball and Brown (1968) and Fama, Fisher, Jensen and Roll (1969) introduced the methodology that is essentially the one used nowadays.

The rationale underlying the implementation of an event study is to prove whether the market behaves efficiently as maintained by the EMH; namely whether the market embodies in stock prices all the information surrounding an event in an efficient and unbiased matter.

As I am considering a semi-strong form of the EMH by studying event windows longer than one day, I will not look for complete market efficiency. However, the semi-strong form will permit me to control whether there are information leakages prior to the event and whether investors use such information to gain abnormal returns.

By looking at the most relevant literature and combining the methods proposed by Henderson (1990) and Bowman (1983) I present the following six-step process:

1. Determine and validate the event and event date
2. Define selection criteria
3. Calculate normal returns
4. Estimate abnormal returns
5. Aggregate abnormal returns
6. Test for statistical significance

I believe that following the above-mentioned steps is in line with previous literature and will secure that the thesis is easy to understand. In the following sections, I will discuss each step more in detail.

Determining and validating the event and event date

As claimed by Henderson (1990), "misidentification of an event can obscure an issue". In addition to this, he also points out the fundamental role of this first step by referring to earlier

studies which were incapable of finding significant and consistent results due to the fact they were looking only at the date of the merger, without considering any days before and after the event. Indeed, he discovers that in order to decrease the uncertainty that appears when the researcher has to determine an exact time of the event the best thing to do is to extend the event window considering more than one day. Thus, in order to analyze the effect of a M&A announcement the event window should take in a few days before and after the announcement itself. This choice is further justified by the fact that the studies adopting this approach manage to analyze correctly the validity, and the potential violation, of the efficient market hypothesis. The inclusion of some days before and after the event is done for two distinct reasons. While the pre- event period is included to analyze if there were leakages of information prior to the event, the post-event period permits the analyst to study any effect potentially delayed by disseminated information (Peterson, 1989). In the following chapter I will discuss how long will be the event window and the estimation period in which I will calculate the normal and abnormal return of the deals analyzed.

Defining selection criteria

In order to conduct an event study is fundamental to clarify what are the criteria adopted in order to decide which deals to include in the analysis. The two main criteria are that

1. The data of each transaction has to be available on Refinitiv, the database I use through this thesis.
2. The companies' historical data, such as daily stock data, must be accessible.

Given the decision of describing statistically a sample of 837 transactions occurred between 2013 and 2019 and the choice of conducting the event study on 5 specific deals only, the specific criteria I adopted choosing these two samples will be discussed in detail at the beginning of the last chapter.

Calculating normal returns

The next step of the event study is to assess which method should be applied when estimating normal returns of the stocks. The normal return of a security is the estimated return in the absence of the event, which in this thesis is the absence of the merger announcement. There are several different models available for measuring normal performance and the selection of the best one is fundamental as event studies are conducted with the aim of capturing abnormal returns, objective that would be impossible to achieve without a proper way to estimate the

normal return of a security.[28] Indeed, as pointed out by Strong (1992), the precise calculation of the normal return is pivotal to obtain robust and valid results.

According to MacKinley (1997), there are numerous models which can be used to assess the normal performance of a security. Overall, there are two main groups from which we can choose the model, namely statistical and economic. Statistical models take into consideration only the behavior of security returns and do not contemplate any economic arguments. Contrarily, the economic models based their procedure on considerations and assumptions regarding investor behavior and are not limited only to statistical assumptions.

I will start first with statistical model and then I will proceed with the economic ones.

The first statical model is the **constant mean return model** (**CMR**); this procedure assumes that the expected return on a security is different across companies, but it is independent and identically distributed with a constant mean and variance over time.

$$R_{i,t} = \mu_i + \epsilon_{i,t}$$
$$E\lfloor\epsilon_{i,t}\rfloor = 0 \quad VAR\lfloor\epsilon_{i,t}\rfloor = \sigma^2_{\epsilon_i}$$

$R_{i,t}$ = return for stock i in period t

μ_i = mean return for asset i

$\epsilon_{i,t}$ = disturbance term for stock i in period t

According to Brown and Warner (1985), the CMR is the simplest method and consequentially is also the more limited. However, despite its plainness, they affirm that the results obtained using this method are not significantly different from the ones obtained using more sophisticated methods.

The second statistical method is the **market model** (**MM**); this procedure lies on the assumption that there is a positive and constant relation between the return of a stock and the index market's return. As claimed by Strong (1992), the market model is the most common method deployed in order to estimate the expected return of a security. For any stock, the expected return predicted by the market model is:

[28] Abnormal returns are calculated by subtracting from the realized return the normal return that should theoretically be observed.

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + \epsilon_{i,t}$$
$$E[\epsilon_{i,t}] = 0 \quad VAR[\epsilon_{i,t}] = \sigma^2_{\epsilon_i}$$

$R_{i,t}$ = return on stock i in period t

$R_{M,t}$ = return on the market portfolio in period t

$\alpha_i, \beta_i, \sigma^2_{\epsilon_i}$ = parameters for the market model regression (OLS)

$\epsilon_{i,t}$ = disturbance term for stock i in period t

Thus, in order to compute the normal return of a security is important to assess what is the market index that should be used. Due to the correlation between market return and security return the MM improves the CMR because it takes out a portion of the stock return which is linked to fluctuations in the market's performance. As a result, the variance of the abnormal returns shrinks.

According to Cable and Holland (1999), there is a robust preliminary preference in favor of the Market Model, which outperforms also the CAPM. Furthermore, Brown and Warner (1985) showed that procedures based on the OLS market model are valid in various scenarios, which further strengthens the conclusions from their earlier work. Hence, the market model proves to be highly effective in calculating normal returns and due to this empirical evidence, it will be the method used in our analysis.[29]

Despite the proved validity of the market model, with the passing of time more and more statistical procedure have been formulated. A very famous model is the **multi-factors model**, which is particularly appreciated by its ability in reducing abnormal returns data's spread by explaining more of the variance in the normal returns through the inclusion of more explanatory variables. For this reason, the market model is just a specific case of general model with just one single factor. Applying the multifactor models which use several factors (e.g., size factors, book-to-market values, industry indices) would lead us to expect a more thorough analysis. But, despite the higher complexity of this model, empirical evidence implies that the benefits of including more explanatory variables in the model are few. The reason behind this fact is that by adding other factors than solely the market return factor decreases the marginal statistical power of the regression. Hence, the reduction of variance in the abnormal returns will be smaller the greater the number of factors included in the model (MacKinley, 1997).

[29] In the following chapter will be specified the index market and the linear regression which will be used to estimate $\alpha_i, \beta_i, \sigma^2_{\epsilon_i}$

Despite having assessed the superiority of the market model in estimating normal returns, the role played by economic models should be cited and analyzed. Although we draw a clear distinction between economic and statistical procedures, also in the economic ones are present some statistical assumptions.

The first economic model is the very well-known **capital asset pricing model** (**CAPM**), an equilibrium theory stating that the expected return of a security is linked to its covariance with the market portfolio. Thus, the CAPM shows that the expected return for a given security i is equal to:

$$E\left[R_{i,t}\right] = r_f + \beta_t(E\left[R_{m,t}\right] - r_f)$$

$$\beta_i = \frac{Cov(R_i, R_m)}{SD(R_m)^2} = \frac{SD(R_I)Corr(R_i, R_m)}{SD(R_m)}$$

$E\left[R_{i,t}\right]$ = expected return on stock i at time t

r_f = risk free rate

β_i= firm-specific beta for firm i

$E\left[R_{m,t}\right]$ = expected return on the market portfolio in period t

Until the 1970s, the CAPM was the most common method used in order to assess the normal return in event studies. In the following years and decades, when more and more market anomalies started to appear, the assumptions on which was based the CAPM started to collapse. Indeed, the CAPM can be considered as a special case of the market and index models where the market is perfectly efficient and the alfa in the long term has a value equal to zero. In other words, the CAPM subsumes that, given the possibility of investors to diversify completely their portfolio leading to a null idiosyncratic risk, the only risk associated with the return on a stock depends on its correlation with the market volatility. However, this simplifying assumption does not hold in reality because it has been showed multiple times that there are many other factors which influence the risk premium of a stock as pointed by the Fama- French three and five-factor model.

The other economic model noteworthy is the **arbitrage pricing theory** (**APT**). This theory is a multi-factor asset pricing model whose ratio is based on the idea that the return of a security can be assessed using a linear relationship that links the asset's return to a series of macroeconomic variables that incorporates systematic risk.

This innovative theory was developed by Ross in 1976 and proposed as an alternative to the CAPM. In contrast with the latter, the APT suggests that financial markets are not perfectly efficient and that there are possibilities of finding securities which are mispriced and consequentially the possibility of gaining extra profits. However, as the name suggests, this theory assumes that arbitrage opportunities are not available and that the operation conducted in order to exploit a mispricing is not a riskless one (in contrast with what arbitrage opportunities entail, namely a risk-less profit).
According to Ross (1976), the APT in analytical terms is expressed by the following formula:

$$E[r_i] = r_f + \beta_{i1}RP_1 + \cdots + \beta_{iK}RP_K$$

r_f = risk free rate
β_{iK} = stock i's sensitivity to factor k
RP_K = risk premium for bearing the factor risk

According to MacKinley (1997), empirical evaluation of the APT demonstrates that, despite the inclusion of numerous economic factors in the equation, the major impact on the computation of the security's return is always the market factor, leaving to the other variables only a marginal relevance. Thus, in line with what I have said about multi-factor models, the main advantage of the APT is that it eliminates the biases present in the CAPM. Nonetheless, given that also the statistical models do the same, such models are the best choice for conducting event studies.

Estimating abnormal returns

The measure of abnormal returns is probably the most important step in the process of identifying the effects of an economic event, indeed, it is through the estimation of such abnormal returns that we understand the true effect of a financial phenomenon. In the words used by Kirchhoff and Schiereck (2011), abnormal returns are the "deviation of the actually observed stock returns from the theoretically expected stock returns" and are the measure of the impact of the occurring event.
The formula for calculating abnormal returns is extremely simple and it is obtained subtracting from the stock observed returns the normal return we would have observed in the same event window without the occurrence of the event.

$$Abnormal\ Return = Actual\ Return - Expected\ Return$$

Thus, any discrepancy between the actual return and the expected return will be captured by the abnormal return and will be attributed to the event under analysis. Indeed, in the absence of the event, the expected return should be equal to the realized return leading to an abnormal return null. In more precise terms, the abnormal return (AR) is equal to:

$$AR_{i,t} = R_{i,t} - E\left[R_{i,t}|X_t\right]$$

$AR_{i,t}$ = abnormal return at time t for firm i

$R_{i,t}$ = actual return at time t for firm i

$E\left[R_{i,t}|X_t\right]$ = expected return that would be observed in absence of the event under analysis

In other terms, the AR will vary depending on the normal return estimated through the market model. Indeed, the complete formula is the following:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{M,t})$$

To put it another way, the AR is estimated through:

1. the relationship between the stock and its reference index (expressed through the regression parameters α and β) and
2. the actual reference market's return ($R_{M,t}$).

To calculate the abnormal returns on each deal, we apply the formula written above to estimate the daily abnormal return for every acquiring firm.

Aggregating abnormal returns

To be able to analyze correctly the overall impact of M&A transactions' impact on stock prices, every single abnormal return observed in a specific day of the event window has to aggregate into one; namely the sum of all the observed ARs. This summation can take two different directions, across stocks and through time.

Given that in this thesis I will focus specifically on five deals, aggregating abnormal returns of these five different companies would be statistically insignificant due to the extremely low of number of observations. For this reason, I will aggregate separately the ARs of each acquirer computed during the event window.

To investigate an event window consisting of more than one day is important to express the notion of cumulative abnormal return (CAR). The CAR (t_1, t_2) is the accumulation of abnormal returns observed in the event window.

$$CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{i,t}$$

Hence, the CAR of the stock i is the sum of the abnormal returns between period t_1 and t_2[30]. The null hypothesis that "the event has no impact on the distribution of the return" (MacKinley, 1997), can be tested under this H_0 distribution of cumulative abnormal returns[31]:

$$CAR_i(t_1, t_2) \sim N(0, \sigma_i^2(t_1, t_2))$$

Giving that the event window is the same for all the transactions, it is possible to aggregate results not just across the time dimension, but also across stocks. In other words, after having calculated the AR for each transaction at a specific time of the event window, we can sum together these ARs and compute the average AR for that particular day. Therefore, the sample average abnormal return (AAR) for period t, given N events at the given day, is.

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{i_t}$$

In addition to this, the same procedure applied for the computation of the CAR can be extended for any time interval in the event window as

$$CAAR_{t_1 t_2} = \sum_{t=t_1}^{t_2} AAR_t$$

[30] t_1 is the first day of the event window and t_2 is the last day of the event window.

[31] I would like to stress that in addition to this null hypothesis I will test also the statistical significance of each daily AR for every deal.

Testing for statistical significance

To be able to assess the statistical entity of abnormal returns we need statistical tests. There are multiple methods which can be used to verify the results of an event study. It can be done through either parametric (e.g., student's t-test and multiple regressions) or non-parametric tests (e.g., sign test and rank test). According to Cowan (1992) and Dutta (2014), applying parametric tests is currently the most popular way to investigate the significance of the different variables in an event study, while non-parametric tests are usually used as a complement. For this reason, the statistical test used throughout this thesis will be the **t-test**.

I will apply the student's t-test for the AR and the CAR, following a normal distribution. If the test shows that the null hypothesis implying that AR and CAR are equal to zero cannot be rejected, it means that the market is efficient and that the expectations of the merger were already incorporated in the price of the security.

First, I will test the significance of the abnormal returns in every day part of the event windows, where the null is $H_0 = AR_{i,t} = 0$ and the alternative hypothesis is $H_1 = AR_{i,t} \neq 0$.

$$t_{ARi,t} \frac{AR_{it}}{SD_{AR}}$$

Second, the significance of the cumulative abnormal returns will be tested with a similar null hypothesis; H_0: $CAR_i = 0$ and the alternative hypothesis H_1: $CAR_i \neq 0$.

$$t_{CAR_t} \frac{CAR_t}{SD_{CAR}}$$

If the null hypothesis is accepted, the t-test has proven to follow a student distribution with degrees of freedom equal to (n-1) where n is the number of observations. The sign of the t-statistic shows whether the correlation is positive or negative. Hence, a positive t-value suggests a positive relationship between the ARs/CARs or, conversely, a negative relation. To understand whether the ARs/CARs are statistically significant we must look at a 1%, 5% and 10% significance level. If the t-value we get exceeds the critical value, the correlation is significant.

The appropriate significance levels adopted in this thesis, with their associated critical values, are presented in the table below.

Significance Level	Critical Value	# of stars
1%	2,576	***
5%	1,96	**
10%	1,645	*

Figure 8: Critical values for different significance levels. Data Source: personal elaboration

IV. Empirical Analysis of Abnormal Returns

In the last chapter of this thesis, I am going to analyze the M&A market in Italy between 2013 and 2019 (the same timespan used when investigating the correlation between macroeconomic variables and the number of M&A transactions).

In particular, as anticipated in the precedent paragraph, the empirical analysis will be conducted with the aim of analyzing the abnormal and cumulative abnormal returns observed in the five most onerous M&A deals occurred in these seven years.

Before digging in the core of the analysis and before applying in real terms the event study methodology described in the precedent chapter, I am going to describe statistically the complete sample of 837 M&As that I obtained after applying some specific constraints.

Indeed, this last chapter will be divided in three main parts. In the first one I will explicate the constraints adopted in order to obtain the sample made up of 837 M&A transactions and I will describe the sample in order to understand the specifics of the M&A market in Italy. In the second part I will narrow down the analysis and I will focus on 5 specific M&A deals. This second part will be the most analytical one and will present all the steps of the event study methodology applied in these five real scenarios. In the third part, after having valued the statistical significance of the results obtained and after having aggregated the results of these five transactions, I will discuss the economic meaning of what has been found, namely if the financial markets reacted efficiently to these M&A announcements.

4.1 Data Selection and Sample

All the data present in this fourth chapter (M&A deals, stock prices, information about the acquirer and target companies) are all taken from Refinitiv Workspace.

4.1.1. Criteria for Initial Data

The criteria adopted in order to decide which type of M&A to include in the first general statistical analysis are summarized below.

1. Time period
2. Deal type

3. Current deal status
4. Geographic region
5. Deal value

Time period

I have limited the sample to include only deals announced between 01.01.2013 to 01.01.2020. I have decided to analyze this specific period for three main reasons. The first is to provide homogeneity with the second chapter of this thesis where I investigated the effect of macroeconomic variables on the number of M&As. The second one is that I want to give the analysis the most possible generality and I wanted to exclude from the analysis all the years following the 2008 financial crisis and all the repercussions on the sovereign debt lasting until 2011-2012 and the consequential political and economic turmoil. The last reason is that I want to analyze this period is because of its temporal proximity and can provide a picture that probably, apart from the Covid 19 pandemic, may resemble the future one.

Deal type

Refinitiv Workspace presents a wide domain of deals, ranging from IPOs to LBOs, share buy backs and many others. Given that this thesis is focused only on M&As we took from the database only mergers or acquisitions.

Current deal status

To ensure that the data that will be analyzed are correct and usable for a proper analysis the deal status must be *completed*.

Geographical region

This thesis is focused only on the Italian market and the analysis of the ARs and CARs will be conducted on five Italian bidders. Given that, all the acquirers must be Italian. This constraint will not be applied also to target companies. Indeed, one of the statistical analysis that will be conducted is about the number of cross-border transactions.

Deal value

All deals included in the dataset have a deal value[32] greater than €10 million. By factoring out the M&As with lower deal value, I ensure that the sample would be composed by deals large enough to affect the value of the acquirer's stock price. I set the threshold to €10 million as this is commonly used in previous studies (Högholm, 2016) (Chang, 1998) (Datta and Puia, 1995).

[32] Deal value is taken as the sum of the consideration paid by the acquirer for the equity stake in the target plus the value of the net debt in the target, where applicable.

4.1.2. Sample Description

As previously anticipated, the final sample obtained after applying the constraints specified above consists of 837 M&A transactions.

The first analysis that I will conduct is about the geographical scope of these mergers, namely whether they are national or cross border, and in the latter case, whether they are conducted in developed countries or in emerging ones.

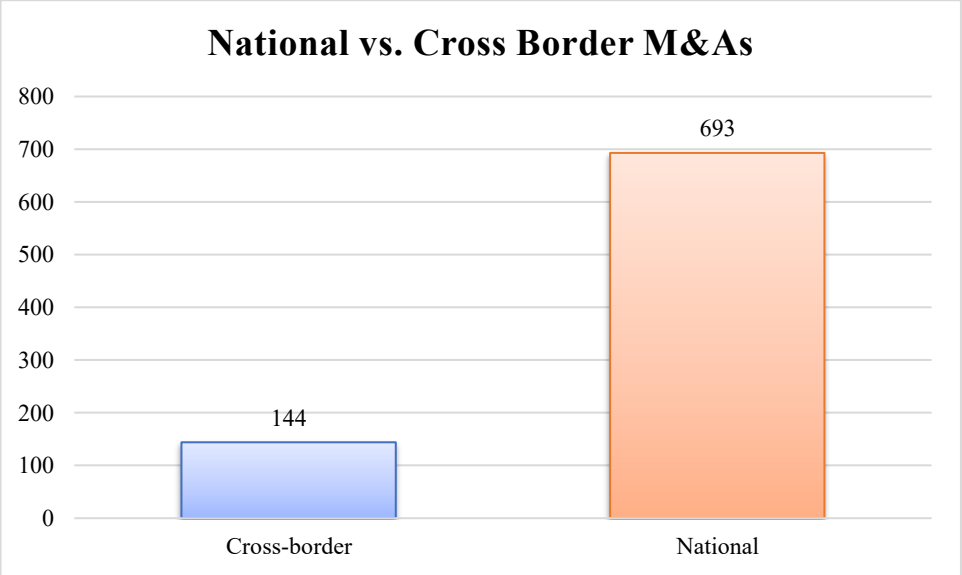

Figure 9: Number of national and cross-border M&As conducted by 837 Italian companies between 2013 and 2019. Data Source: personal elaboration from Refinitiv Workspace

As pointed out by the graph above, there is a clear discrepancy between the transactions conducted within the national borders and the ones conducted abroad. This means that Italian companies are more inclined to invest in Italy and prefer to strengthen their position in the domestic market rather than in foreign ones.

This finding is not limited to the Italian M&A market, but it is a feature that characterizes all the European countries, implying that domestic mergers have been dominating the merger process for a long time (Walkner and Raes, 2005).

Despite that, the number of cross border M&As is growing in Italy and in Europe (with respect to the decade 2000-2010), and this is due to the integration of capital markets, globalization and technological development.

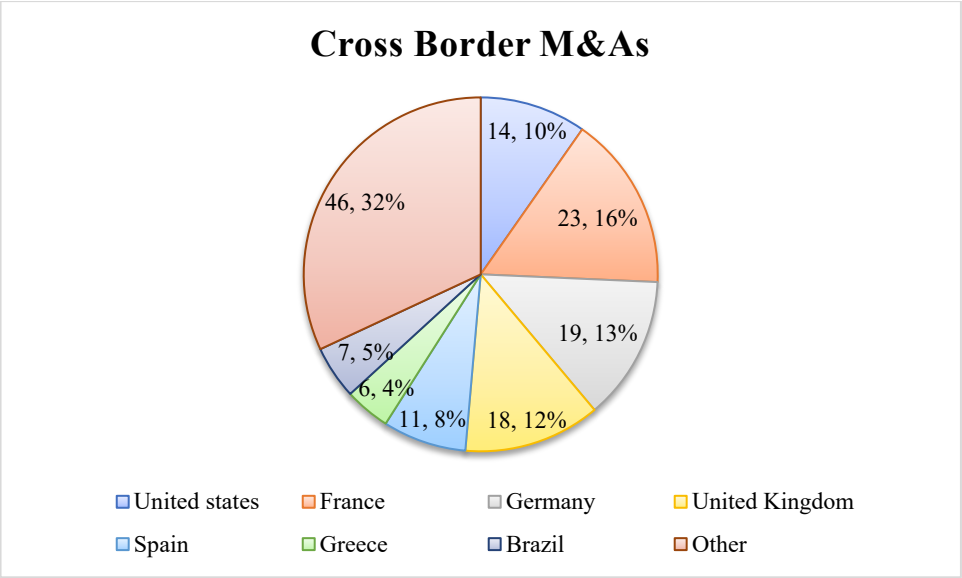

Figure 10: Repartition of the 144 cross-border M&As conducted between 2013 and 2019. Data Source: personal elaboration from Refinitiv Workspace

From the graph above we see that more than the 50% of the cross-border mergers undertaken by Italian acquirers were conducted in seven countries, each of them being a developed country (with the exception of Brazil). From this simple statistic, it is clear that Italian companies are more inclined to acquire companies operating in countries culturally similar to Italy and with a comparable GDP per capita.

In addition to this, apart from the U.S., the four major partner countries were France (23,16%), Germany (19,13%), U.K. (18,12%) and Spain (11,8%); the four more prosperous economies in Europe along with Italy before Brexit.

This observation answers to the most consistent deterrent characterizing cross-border M&As: the higher riskiness of such transactions. Indeed, for Italian companies, conducting M&A deals in the Euro Area permits to eliminate the risk associated with the exchange rate, and to lower the risks linked to the difference in the legal system and in culture.

In addition to this, the fact that Italian companies prefer not to invest in developing country (aside from Brazil), means that at the basis of the expansion strategy of Italian companies there is not the aim of lowering the costs of production (vertical integration), but the intention of expanding their sales volume by conquering new markets abroad with the certainty of facing almost the same type of clientele.

A second analysis I would like to conduct in order to understand better the M&A sector in Italy is the industry in which the target companies operate.

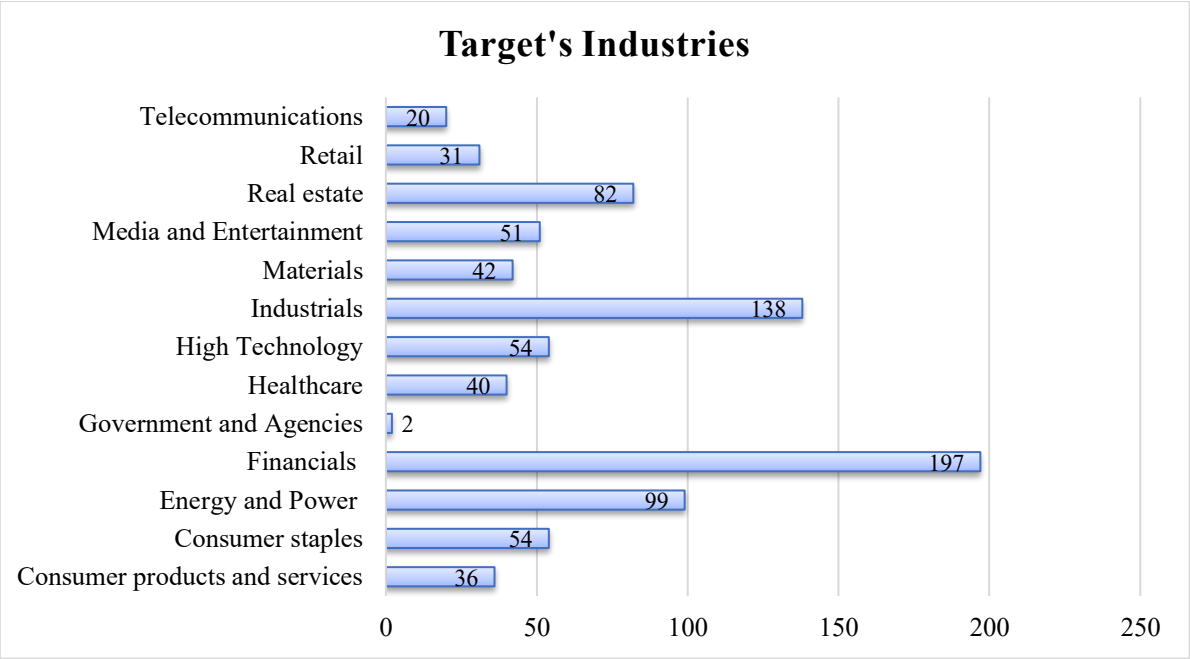

Figure 11: Sectors in which operate the 837 targets. Data Source: personal elaboration from Refinitiv Workspace

As pointed out by the diagram above the three sectors where there are more acquisitions are Financials, Industrials and Energy and Power. This is in line with the Italian economy and the composition of the FTSE MIB, where the majority of the companies' present are indeed banks, financial institutions and large companies operating in the Infrastructure and Industrial market. The relevance of these three sectors will be at the center of the choice of the five companies I will analyze in the next paragraph.

4.2 Abnormal and Cumulative Abnormal Returns

The five acquirers that will be analyzed using the event study methodology are the following:

- **Inwit**
- **Enel**
- **Atlantia**
- **Eni**
- **Prysmian**

I have decided to investigate these five acquirers for three main reasons:

1. These transactions are the ones with the largest deal value involving public acquirers in the period 2013-2019[33]. For this reason, given that this analysis aims at investigating the abnormal returns associated with an M&A announcement, the most onerous deals will certainly have a larger impact on the stock prices.
2. These five companies are some of the largest Italian companies and are part of the FTSE MIB which contains the 40 Italian companies with the largest market capitalization.
3. These five companies operate in the most relevant sectors of the Italian M&A market and give an overview of each of them. Indeed, Enel and Eni operate in the Energy sector, Prysmian and Atlantia in Industrials and Inwit in Telecommunications.

For each company I will proceed as follows:

1. Listing the most relevant information concerning the transaction
2. Estimation of the normal return showing the alfa and beta estimated with the market model (for each company will be provided the summary statistics and the regression table)
3. Computation of the ARs and the CARs and graphical representation of the ARs and CARs.
4. T-Test for analyzing the statistical significance of each AR and CAR.

After having completed this process for each company, I will aggregate the results of these 5 companies, and I will analyze the average CAR (CAAR) and average AR (AAR).

Before starting with the analysis of each single deal I would like to emphasize the procedure underlying the market model in practice.

As already discussed in chapter III, the market model assumes a linear relationship between the return on each individual asset and the market index return. For this reason, it is fundamental the decision of the market index used to estimate the normal return for each firm. In our case, the obvious choice is to select the market index that contains the five companies analyzed and that is the best proxy of the Italian economy: the FTSE MIB.

In order to estimate the alfa and the beta, which will be used to compute the normal return of the security, I will run the following standard OLS regression:

$$R_{i,t} = \alpha_{i,FTSEMIB} + \beta_{i,FTSEMIB} R_{FTSEMIB} + \varepsilon_{i,t}$$

[33] I excluded from the event study every private company. Indeed, for such companies I could not analyze the historical stock prices.

$R_{i,t}$ = return on stock i in period t

$R_{FTSEMIB}$ = return on the FTSE MIB in period t

α_i, β_i = parameters for the market model regression (OLS)

$\epsilon_{i,t}$ = disturbance term for stock i in period t

Inwit

The merger was with Vodafone Europe BV-Mobile Tower Assets and was conducted in 2019 with a deal value equal to 5.208M. The merger was performed via a purchase by Inwit of 43,4% of Vodafone Towers and the annulment of the participation of Vodafone Europe in Vodafone Towers in exchange of 360,2 million shares of Inwit. Following the merger, Inwit's major stake, namely the 37,5% of its equity, was controlled conjunctly by Tim and Vodafone Europe.[34] Indeed, these two companies wanted to exploit the gigantic set of towers of the newly combined entity in order to conquer the 5G market in Italy. In fact, the merger led to the creation of the largest Towerco of Italy and the second in Europe, with a total number of towers equal to 22.000.

The data collected in the estimation window, which counts 151 days before the event window, are the following.

Variable	Obs	Mean	Std. Dev.	Min	Max
Stock	151	.0003817	.0151515	-.0454864	.048346
Index	151	-.0003903	.011771	-.0371609	.0336687

Figure 12: Summary statistics returns Inwit and FTSE MIB. The data are gathered from Refinitiv Workspace and the summary statistics is provided by STATA.

Regressing the Inwit return and the FTSE MIB return over the same estimation window gives us the following results. The estimated alfa is 0,0005034 and the estimated beta is 0,439615. Such alpha (0,05%) represents the amount that the investment has yielded in comparison to the market index. The Beta on the other hand represents the volatility of the Inwit stock. With a Beta equal to 1 representing a stock that co-moves with the market, a beta equal to 0,44 means that the Inwit stock is more than half times less volatile than the FTSE MIB.

[34] See more at https://www.inwit.it/it/comunicati/tim-e-inwit-insieme-lo-sviluppo-del-5g/

Source	SS	df	MS	Number of obs	=	169
				F(1, 167)	=	24.24
Model	.004727535	1	.004727535	Prob > F	=	0.0000
Residual	.032571702	167	.00019504	R-squared	=	0.1267
				Adj R-squared	=	0.1215
Total	.037299237	168	.000222019	Root MSE	=	.01397

stock	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
index	.439615	.0892929	4.92	0.000	.2633265	.6159034
_cons	.0005034	.0010765	0.47	0.641	-.0016219	.0026288

Figure 13: Regression table returns Inwit and FTSE MIB. Results computed with STATA.

Given that the estimate alpha and Beta we find the normal return that should be observed in the event window. Computing the difference between the realized return and the normal return we find the following ARs and CARs (with the following critical values).

Day	AR	T- test: AR = 0	CAR	T-Test CAR = 0
-2	-0,22%	-0,156	-0,22%	-0,164
-1	-0,16%	-0,113	-0,38%	-0,199
0	3,67%	2,585***	3,29%	1,402
1	13,80%	9,711***	17,09%	6,307***
2	-3,94%	-2,772***	13,15%	4,341***

Figure 14: ARs and CARs Inwit with relative statistical significance. Data Source: personal elaboration

As we can see in the two days before the event window the realized return is very close to the normal one (indeed we cannot reject the null hypothesis that the ARs in these two first day are equal to zero). At the event date we have an increase in prices that keeps growing in the day following the M&A announcement (as the two positive critical value suggests for the ARs). At the fifth day instead, we have a significant decrease that pushes the realized return below the normal one.

Talking about the CARs, we have a cumulative CAR that reaches its maximum at the fourth day with a value equal to 17,09%; while considering the complete event window we have a CAR equal to 13,15%.

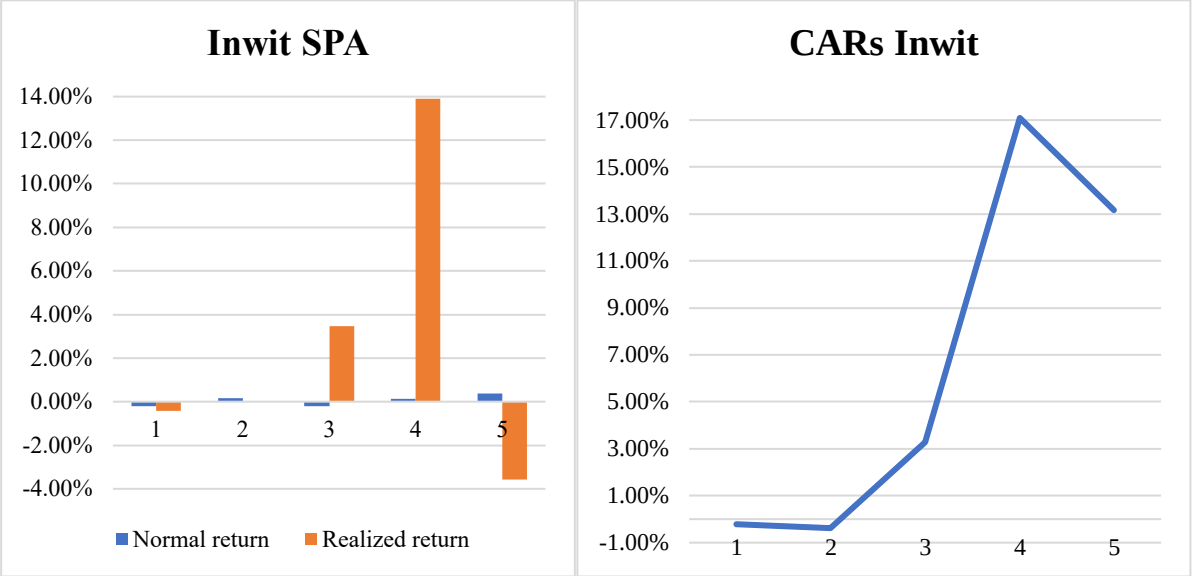

Figure 15: On the left, Comparison between Inwit estimated normal return and realized return. On the right, Inwit CARs. Data Source: personal elaboration

The positive CAR observable after the event date may be due not simply to inefficiencies in the market but to high expectations concerning the profitability of a merging entity that will lead the spread of 5G in Italy. Indeed, in February 2020, the stock price reaches 9,94 euros with an annual return of 34%. Consequentially, despite the market model estimated a normal return significantly lower, the merger was a strategy that has been demonstrated significantly value enhancing for Inwit shareholders also in the long term.

This finding is therefore in line with the revised relatedness theory (Barney, 1988), stating that the abnormal returns following an M&A announcement can be found only in cases in which bidding firms enjoy with targets private, inimitable and uniquely valuable synergistic cash flows.

Enel SPA

The target of Enel was Enel Green Power, the branch of Enel focused on reneweable energies established in 2008 and listed on the market in 2010. The transaction was conducted in 2015 and the deal value was 3.215M. The integration of Enel Green Power was conducted via a stock for stock merger after which Enel Green Power was delisted from the market. The decision of integrating back Enel Green Power into Enel Group was part of the restructuring strategy began by Enel in 2015. In fact, in that delicate phase, a more centralized control of the subsidiary

operating in the renewable energies sector was central in order to strengthen the position of Enel in the market.[35]

The data collected in the estimation window, consisting of 151 returns, are the following.

Variable	Obs	Mean	Std. Dev.	Min	Max
Stock	151	-.0003811	.0191449	-.0603926	.0594537
Index	151	-.0004832	.0172875	-.0595847	.0586423

Figure 16: Summary statistics returns Enel and FTSE MIB. The data are gathered from Refinitiv Workspace and the summary statistics is provided by STATA.

The estimated alfa and beta are collected in the regression table. As we can see also in this case, we have a low alpha, meaning that the excess return over the market portfolio is moderate. On the contrary the Beta, which is almost one, communicates that the volatility of the stock is almost identical to the one of the FTSE MIB. These findings can be justified by the fact that Enel is the Italian company with the largest market capitalization and it strongly influences the movements of the FTSE MIB.

Source	SS	df	MS			
				Number of obs	=	151
				F(1, 149)	=	587.54
Model	.043857059	1	.043857059	Prob > F	=	0.0000
Residual	.011122167	149	.000074645	R-squared	=	0.7977
				Adj R-squared	=	0.7963
Total	.054979226	150	.000366528	Root MSE	=	.00864

stock	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
index	.9891027	.0408059	24.24	0.000	.9084697	1.069736
_cons	.0000968	.0007034	0.14	0.891	-.0012931	.0014866

Figure 17: Regression table returns Enel and FTSE MIB. Results computed with STATA.

Proceeding with the same procedure we find the following ARs and CARs.

Day	AR	T- test: AR = 0	CAR	T-Test CAR = 0
-2	0,97%	1,118	0,97%	0,530
-1	0,21%	0,247	1,18%	0,458

[35] https://www.enelgreenpower.com/content/dam/enel-com/pressrelease/porting_pressrelease_IT/1662027-1_PDF-1.pdf

0	-2,03%	-2,352**	-0,85%	-0,270
1	-0,07%	-0,078	-0,92%	-0,253
2	0,47%	0,538	-0,46%	-0,112

Figure 18: ARs and CARs Enel with relative statistical significance. Data Source: personal elaboration

In this case we find that Enel co-moves with the market index and that the only day where we can see a substantial abnormal return is the event day. In such day, as also proved by the negative t-value, the abnormal return is significantly negative.

After the event date the stock returns to co-move with the market and the final CAR after five days is -0,46%.

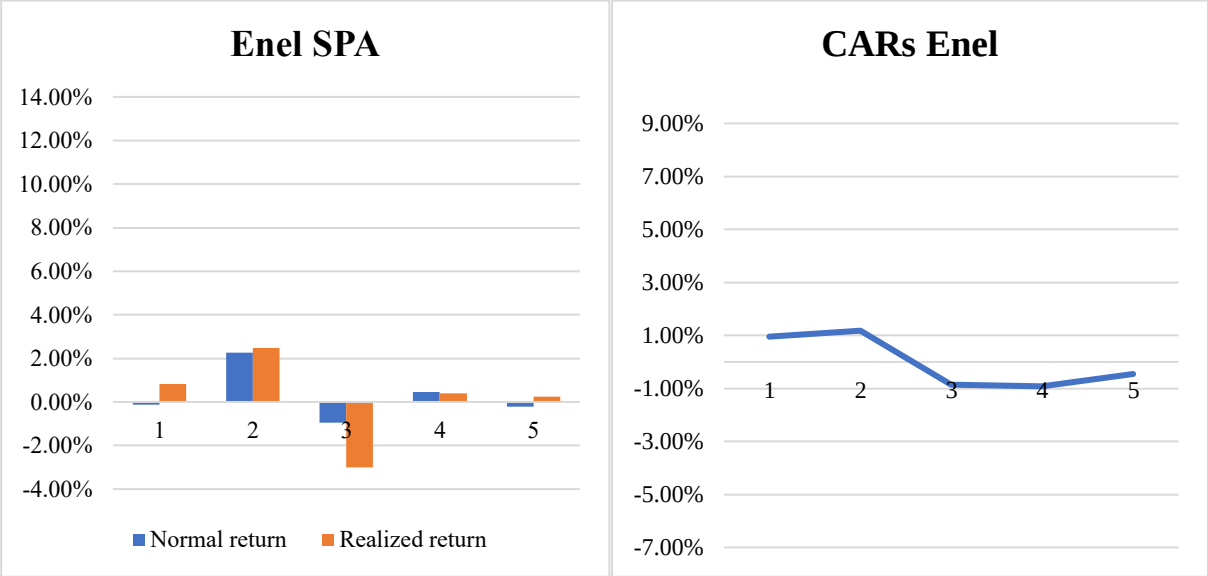

Figure 19: On the left, comparison between Eni estimated normal return and realized return. On the right, Enel CARs. Data Source: personal elaboration

In this case, the negative abnormal return at the event date can be explained by the fact that many investors have seen this move as a strategy aimed principally at increasing investments of Enel Green Power, therefore exploiting the financial resources of Enel for undertaking projects that Enel Green Power alone could not handle; therefore, yielding no particular benefits to actual Enel shareholders in the very short-term.

Atltantia SPA

The deal involved Atlantia SPA and Gemina, was announced in 2013 and was valued 3.154M. The counterpart of the transaction, Gemina, was the holding company of Aeroporti di Roma (controlling Fiumicino and Ciampino airports), and along with Atlantia was conducted by

Sintonia, the holding company controlled by the Benetton family. The deal was an all-share merger and Atlantia offered one newly issued share for nine shares of Gemina. The deal was at a slight premium with respect to the ratio of the closing prices of the two operators the day before the announcement, though Atlantia was known to be preparing a bid for Gemina.

The merger was friendly and was conducted mainly to improve Aeroporti di Roma's ability to finance upcoming capital expenditure, and possibly to provide Atlantia with additional expertise in pursuing the creation of a leading motorways and airports infrastructure group with global reach.

The summary statistics below provides an overview of the returns of Atlantia and FTSE MIB during the estimation window.

Variable	Obs	Mean	Std. Dev.	Min	Max
Stock	151	-.0003811	.0191449	-.0603926	.0594537
Index	151	-.0004832	.0172875	-.0595847	.0586423

Figure 20: Summary statistics returns Atlantia and FTSE MIB. Data Source: personal elaboration

The regression table provides a Beta that is once again below one. The alpha this time is higher than the alphas found in the precedent two deals and means that in proportion Atlantia performed better than Inwit and Eni with respect to the FTSE MIB.

Source	SS	df	MS	Number of obs	=	150
				F(1, 148)	=	235.51
Model	.03249607	1	.03249607	Prob > F	=	0.0000
Residual	.020420932	148	.000137979	R-squared	=	0.6141
				Adj R-squared	=	0.6115
Total	.052917002	149	.000355148	Root MSE	=	.01175

stock	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
index	.8163178	.0531925	15.35	0.000	.7112028	.9214328
_cons	.0011261	.000965	1.17	0.245	-.0007808	.003033

Figure 21: Regression table returns Atlantia and FTSE MIB. Results computed with STATA.

Applying the same calculations, we find the following ARs and CARs.

Day	AR	T- test: AR = 0	CAR	T-Test CAR = 0
-2	-1,68%	-1,432	-1,68%	-0,912
-1	-0,19%	-0,158	-1,87%	-0,716

0	0,32%	0,275	-1,55%	-0,484
1	-3,65%	-3,109***	-5,20%	-1,409
2	0,64%	0,542	-4,56%	-1,106

Figure 22: ARs and CARs Atlantia with relative statistical significance. Data Source: personal elaboration

From the data above we can see how in this case we have a completely different trend of ARs. Indeed, it is two days before and one day after the event date that we found the most significant differences between the normal return and the realized return. Despite that, the only abnormal return that justifies the rejection of the null hypothesis is the day after the announcement date when the AR reaches -3,65%.

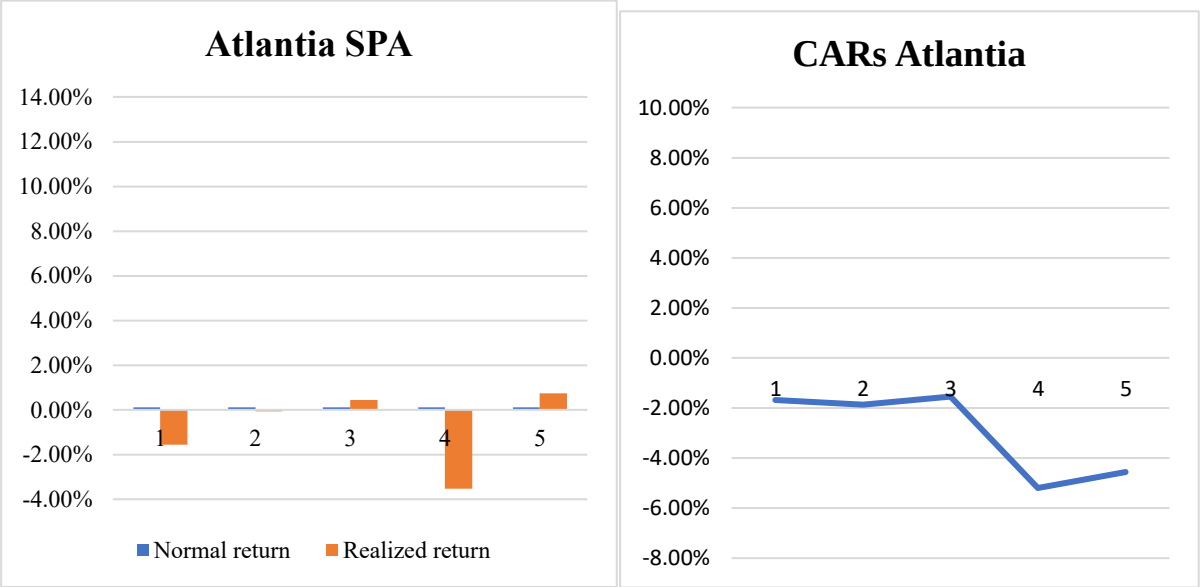

Figure 23: On the left, comparison between Atlantia estimated normal return and realized return. On the right, Atlantia CARs. Data Source: personal elaboration

In this case the negative trend of the CAR can be also explained by some relevant aspects concerning the nature of the transaction. First, at the inception of the deal the rationale of the offer made by Atlantia was unclear and numerous experts were skeptical about the potential synergies arising from the deal. The second reason was that immediately after the announcement of the transaction the Italian and European Antitrust Authority started immediately to investigate whether there were the possibilities for the creation of a monopoly, therefore causing a general fear for the annulment of the transaction.

Eni SPA

In this case the target of ENI was an Arabian company, ADNOC refining, a subsidiary of the Abu Dhabi National Oil Company (ADNOC).

The transaction was conducted in 2019 and it consisted of the acquisition of 20% of the shares of the refining department of ADNOC, a diversified and integrated group of energy companies, for a total deal value equal to 3.245M. The transaction was conducted in cash only and allowed Eni to expand its refining capacity by 35%. The agreement also sets up a new trading joint venture between ADNOC, Eni, and Austria's OMV (the Austrian leading refining company which purchased concurrently with Eni the 15% of ADNOC Refining).

The transaction was conducted in order to create synergies between the three companies. In fact, Eni and OMV participation aimed at providing ADNOC with the technological and operational expertise and at supporting the growth of the trading joint venture both at the financial and international level.

ADNOC Refining has a refining capacity of more than 922,000 barrels per day at Ruwais and Abu Dhabi-based refineries with the former being the fourth largest refinery in the world.

The noticeable feature of the summary statistics provided below is that the mean return for both the market index and the Eni stock is negative.

Variable	Obs	Mean	Std. Dev.	Min	Max
Stock	151	-.0004654	.012239	-.0319104	.0361272
Index	151	-.0007941	.0117077	-.0371609	.0336687

Figure 24: Summary statistics returns Eni and FTSE MIB. The data are gathered from Refinitiv Workspace and the summary statistics is provided by STATA.

Running the OLS regression we estimate the alfa and the beta. Once again, the beta is less than one denoting a stock volatility inferior to the market's one.

Source	SS	df	MS	Number of obs	=	151
				F(1, 149)	=	175.52
Model	.012152456	1	.012152456	Prob > F	=	0.0000
Residual	.010316421	149	.000069238	R-squared	=	0.5409
				Adj R-squared	=	0.5378
Total	.022468876	150	.000149793	Root MSE	=	.00832

stock	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
index	.7688022	.0580302	13.25	0.000	.6541338	.8834706
_cons	.000145	.0006787	0.21	0.831	-.0011961	.0014862

Figure 25: Regression table returns Eni and FTSE MIB. Results computed with STATA.

After having estimated the regression coefficient, I found the following ARs and CARs

Day	AR	T- test: AR = 0	CAR	T-Test CAR = 0
-2	0,03%	0,039	0,03%	0,027
-1	0,10%	0,121	0,13%	0,079
0	-0,19%	-0,228	-0,06%	-0,027
1	0,24%	0,292	0,19%	0,078
2	0,55%	0,664	0,74%	0,276

Figure 26: ARs and CARs Eni with relative statistical significance. Data Source: personal elaboration

This third transaction denotes the highest degree of co-movement between the stock and the market index. The ARs obtained when computing the ARs are almost null and are not statistically significant, leading to a CAR after five days equal to only 0,74%.

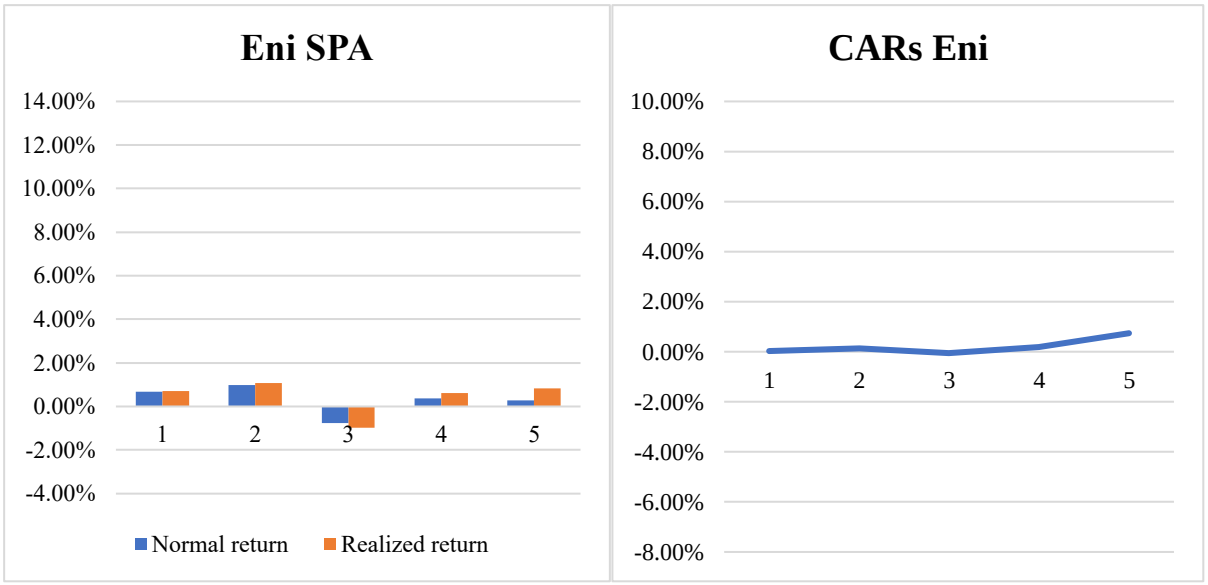

Figure 27: On the left, comparison between estimated Eni normal return and realized return. On the right, Eni CARs. Data Source: personal elaboration

In this case the market absorbed promptly the information. In fact, Eni had been operating along with ADNOC for one year before this transaction; namely when in March 2018 it was awarded a 10% interest in ADNOC's Umm Shaif and Nasr concession, a 5% interest in the Lower Zakum concession and in November 2018 a 25% interest in the Ghasha Concession, ADNOC's mega offshore sour gas project.

Prysmian SPA

This acquisition was a cross-border one too, but in this case the acquirer, General Cable Technologies Corp, was American.

The transaction is dated 2017 and was conducted via the acquisition of all the outstanding shares of General Cable for $30 per share in cash. With the completion of the transaction, General Cable became a privately held company and was delisted from the NYSE. The transaction valued General Cable at approximately $3 billion, including debt and other General Cable liabilities, namely a premium of approximately 81% to the General Cable closing price of $16.55 per share established before the announcement of the transaction.

The strategic rationale was mainly related to the geographical scope of Prysmian; indeed, the company conducted the transaction with the aim of being more exposed to the North American market. In addition to this was also expected €150m pre-tax annual cost synergies to be realized within 5 years after closing, with a substantial portion to be achieved by the third year.

As for all the other transactions, the summary statistics below provide all the relevant data regarding the stock and market returns collected during the estimation window.

Variable	Obs	Mean	Std. Dev.	Min	Max
Stock	151	.0002756	.0124761	-.0349833	.0375757
Index	151	.0005066	.0076444	-.0231404	.0208368

Figure 28: Summary statistics returns Prysmian and FTSE MIB. The data are gathered from Refinitiv Workspace and the summary statistics is provided by STATA.

For the first time in this analysis, the OLS regression gives us a negative alpha. The financial meaning of such information is that Prysmian stock underperforms the FTSE MIB. Indeed, it is important to stress that the alpha is adopted as proxy for performance, indicating when a strategy, or in this case a specific security, has managed to beat the market return over some period. Talking about the beta, I find once again a beta lower than one signaling a less volatile stock in comparison with the FTSE MIB.

Source	SS	df	MS	Number of obs	=	150
				F(1, 148)	=	35.10
Model	.004451389	1	.004451389	Prob > F	=	0.0000
Residual	.018767407	148	.000126807	R-squared	=	0.1917
				Adj R-squared	=	0.1863
Total	.023218796	149	.000155831	Root MSE	=	.01126

stock	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
index	.7128626	.1203176	5.92	0.000	.4751002	.950625
_cons	-.0000215	.0009216	-0.02	0.981	-.0018427	.0017997

Figure 29: Regression table returns Prysmian and FTSE MIB. Results computed with STATA.

The ARs and the CARs are estimated with the same procedure and are provided below.

Day	AR	T- test: AR = 0	CAR	T-Test CAR = 0
-2	0,37%	0,328	0,37%	0,358
-1	2,70%	2,394**	3,07%	2,096**
0	-4,89%	-4,346***	-1,83%	-1,020
1	-1,49%	-1,321	-3,31%	-1,603*
2	1,28%	1,133	-2,04%	-0,882

Figure 30: ARs and CARs Prysmian with relative statistical significance. Data Source: personal elaboration

The trend underlying the ARs and the CARs is the most peculiar among the five transactions selected. The most significant ARs are found at the announcement date and at the prior day, with the latter being significantly positive and the latter significantly negative. The negative movement persists in day four of the event window and stops at the fifth days, when the Prysmian restarts growing reaching a return higher than the normal one.

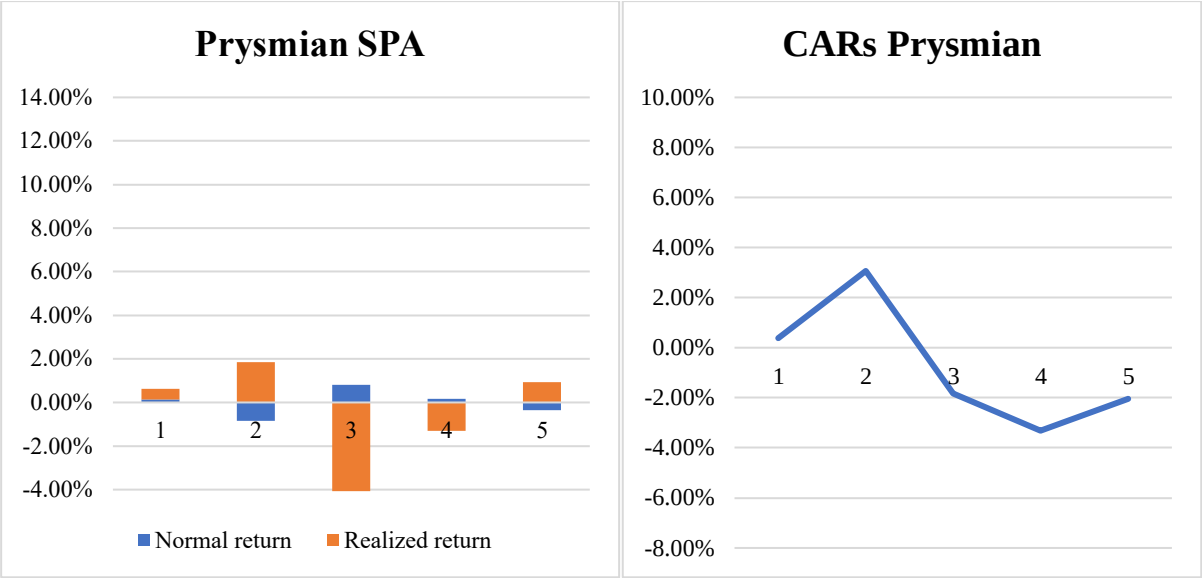

Figure 31: On the left, comparison between Prysmian estimated normal return and realized return. On the right, Prysmian CARs. Data Source: personal elaboration

In this case the negative abnormal returns observed in the event date and in the following two days can be explained taking into consideration the nature of payment and the type of transaction. Indeed, this transaction is the only full acquisition among the five considered and it was conducted with the offering of a very large premium, a factor that is well-renowned to diminish stockholders' value in the short term.

4.1 Aggregating Abnormal and Cumulative Abnormal Returns and Final Remarks

Despite the exiguous number of transactions does not permit an aggregation of the results and a thorough econometric analysis of the complete effect of an M&A announcement on the acquiring company, in this last part of this chapter I compute the and the average CAR (CAAR) observed at each day of the event window for every company.

For example, during the event window (-2, -1), namely during the two days before the announcement, the average CAR that an investor would have earned purchasing shares of these five companies (if these transactions had been announced the same day) would be 0,426%. The same procedure applies to the first day of the event window (coinciding with the average AR of each company) and for all the other timeframes that can be considered during the five days of the event window.

Day	Inwit	Enel	Atlantia	Eni	Prysmian	CAAR
-2	-0,22%	0,97%	-1,68%	0,03%	0,37%	-0,11%
-1	-0,38%	1,18%	-1,87%	0,13%	3,07%	0,43%
0	3,29%	-0,85%	-1,55%	-0,06%	-1,83%	-0,20%
1	17,09%	-0,92%	-5,20%	0,19%	-3,31%	1,57%
2	13,15%	-0,46%	-4,56%	0,74%	-2,04%	1,37%

Figure 32: Average CAR (CAAR) found at each day included in the event window. Data Source: personal elaboration

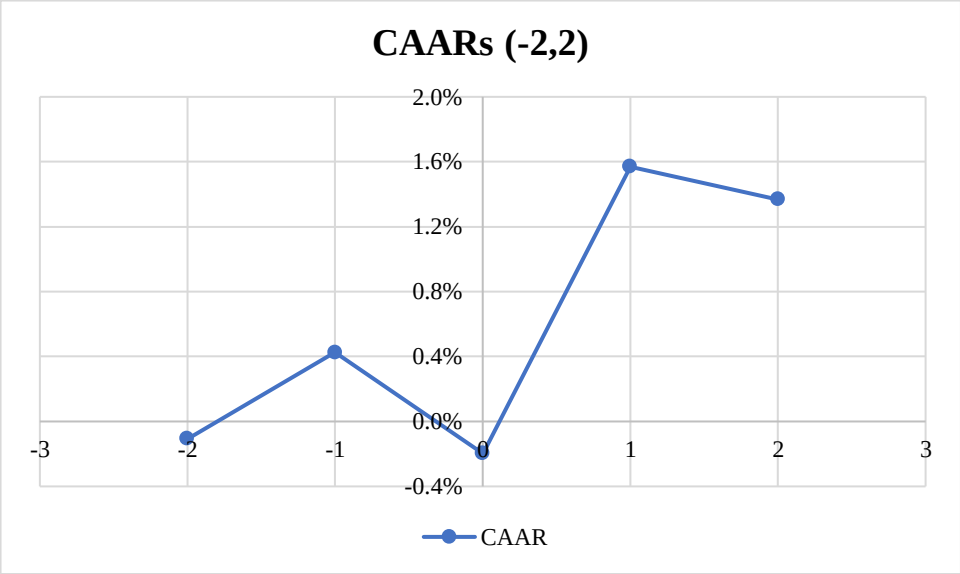

Figure 33: Graphical representation of the CAAR movements during the event window. Data Source: personal elaboration

As we can see from the graph picturing the CAAR and from the table above, two days before the event date the average movements of the five stocks give a negative AAR. The positive AAR found at the second day of the event window pushes the CAAR to 0,43% which falls once again at the event date reaching -0,20%. The average AR of the day following the announcement has a significant positive impact on the CAAR leading it to its maximum considering the event window (-2, 1), while the final AAR is slightly negative and gives a final CAAR (-2, 2) equal to 1,37%.

The conclusion of this event study is that, individually, we have four deals in which the M&A announcement had a visible impact on the returns of the acquiring companies (Inwit, Enel, Atlantia and Prysmian) while in the transaction conducted by Eni the movements of the stock closely resembled the FTSE MIB.

Despite the aggregation of these five transactions cannot give a statistically significant result, given the small size of the sample under consideration, the CAAR obtained reveals how in these transactions the EMH in its semi-strong form does not hold. Indeed, it is clearly visible how following the M&A announcement an investor would earn an abnormal return by investing in these five acquiring companies, meaning that the market is not semi-strong efficient because shares prices do not include all the publicly available information.

Despite the individual study of these five transactions give us the possibility to highlight this market inefficiency, the main limitation of this thesis is that it cannot give an overall result concerning the Italian market. Indeed, given the small size of the sample analyzed, I cannot imply that this market inefficiency is to be found in all the M&As announced in Italy nor that the effect of an M&A announcement would have yield the same result for all the Italian acquiring companies.

Conclusions

Undoubtedly M&A operations have always played a paramount role in the corporate world and in the global economy. In order to properly understand such transactions, it is necessary to have a multidisciplinary approach that takes into account different studies and methodologies.

The empirical aim of this dissertation was double: first, it has investigated the effects that specific macroeconomic variables have on the number and value of M&A transactions in Italy. As seen in Chapter II, the number of M&As has been proved to be positively correlated to the nominal Italian GDP and negatively to the inflation rate and to the Italian stock index FTSE MIB. Secondly, the other goal of this work was to provide a statistical description of the Italian M&A market and to test the efficient market hypothesis in its semi-strong form in the context of an M&A announcement. The aggregate analysis of the Italian M&A market was based on 837 transactions occurred between 2013 and 2020. The statistical study has showed how these transactions were mainly conducted domestically, while most of the cross-border transactions took place in developed countries, underlining how Italian companies are skeptical when it comes to investing in foreign emerging markets. The study of this sample has also highlighted how the M&A market composition resembles the pillars of the Italian economy, namely the financial, industrial and energetic sector.

The efficient market hypothesis was tested in Chapter IV by using the event study methodology, which was described in detail in Chapter III, and was applied to the stocks of five Italian companies, namely Inwit, Enel, Atlantia, Eni and Prysmian. The results have showed that at least one daily abnormal return was statistically significant for all the five companies except for Eni. The results of these five deals were aggregated and averaged showing that the cumulative average abnormal returns were slightly negative two days prior to the event date and on the event date itself while one day before the M&A announcement and in the two following days the cumulative abnormal returns were significantly positive.

A final reflection is needed on the value of the efficient market hypothesis. As proved by some recent events such as “the GameStop’s wild ride” and the increase of the value of Dogecoin cryptocurrency following some tweets from the visionary SpaceX and Tesla CEO Elon Musk, it is no longer possible to rely exclusively on the efficient market theory as thanks to social media information among retail investors is partially deformed. Albeit the efficient market theory is still fundamental to explain the functioning of financial markets nowadays it is necessary to revise the assumption according to which investors are completely rational. In any

case, it seems that behavioral finance should play a more decisive role while assessing the functioning of capital markets since financial news and information are no longer restricted to a privileged few but are widely accessible by a plethora of individuals.

Bibliography

- Agyenim Boateng, Xiuping Hua, Moshfique Uddin, Min Du (2014): "Home country macroeconomic factors on outward cross-border mergers and acquisitions: Evidence from the UK", *Research in International Business and Finance,* Vol. 30, 202-216.
- Ajit Singh (1971). "Take-Overs: Their Relevance to the Stock Market and the Theory of the Firm". *Cambridge: Cambridge University Press*
- Allan Timmermann, Clive W. J. Granger (2004): "Efficient market hypothesis and forecasting", *International Journal of Forecasting*, Vol. 20, 15-27.
- Allen, E. H. Schwalie (1981): "The key to successful acquisitions", *Journal of Business Strategy*, Vol. 2, 14-24
- Anand M. Goel, Anjan V. Thakor, "Do Envious CEOs Cause Merger Waves?", *The Review of Financial Studies*, Vol. 23, 487–517
- Andrei Schleifer, Robert W. Vishny (2003): "Stock market driven acquisitions", *Journal of Financial Economics*, Vol. 70, 295-311
- Andrei Schleifer, Robert W. Vishny (1992): "Liquidation Values and Debt Capacity: A Market Equilibrium Approach", *The Journal of Finance*, Vol. 47, 1343-1366
- Andrew C. Spieler, Andrew s. Murray (2008): "Management Controlled Firms v. Owner Controlled Firms: A Historical Perspective of Ownership Concentration in the US, East Asia and the EU", *Journal of International Business and Law*; Vol. 7, 49-76
- Andrew W. Lo (2010): "Reconciling Efficient Markets with Behavioral Finance: The Adaptive Markets Hypothesis." *Journal of Investment Consulting,* Vol. 7, 21-44.
- Anju Seth (1990): "Value creation in acquisitions: A re-examination of performance issues." *Strategic Management Journal,* Vol. 11, 99-115.
- Anupam Dutta (2014): "Parametric and Nonparametric Event Study Tests: A Review", *International Business Research,* Vol. 7, 136-142
- Ari Hyytinen, Mika Pajarinen (2002): "External finance, firm growth and the benefits of information disclosure: evidence from Finaland", *ETLA Discussion Papers*, 1-44.
- Arnold Richard Cowan (1992): "Nonparametric Event Study Tests", *Review of Quantitative Finance and Accounting*, Vol. 2, 343-358.
- Arthur M. Johnson (1959): "Merger Movements in American Industry, 1895-1956", *The Business History Review*; Vol. 34, 256-258

- Atalay, E., Hortaçsu, A., Li, M. J., & Syverson, C. (2019): “How wide is the firm border?” *The Quarterly Journal of Economics*, Vol. 134, 1845–1882.
- Avinash K. Dixit, Robert s. Pindyck (1994): “Investments under Uncertainty”, *Princeton University Press, Princeton, NJ*
- Boyan Jovanovic and Peter L. Rousseau (2002): "The Q-Theory of Mergers" *American Economic Review*, 92:198-204.
- Birger Wernerelt (1984): “A resource-based view of the firm”, *Strategic Management Journal*, Vol.5, 171-180
- Bruce Kogut, Udo Zander (1992): “Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology”, *Organizational Science*, Vol. 3, 383-393
- Burton G. Malkiel (2003): “The Efficient Market Hypothesis and Its Critics”, *Journal of Economic Perspectives*, Vol. 17, 59-82.
- Chen Lin, Yue Ma, Paul Malatesta, Yuhai Xuan (2013): “Corporate ownership structure and the choice between bank debt and public debt”, *Journal of Financial Economics*, Vol. 109, 517-534.
- Christina Oberg, Johan Holstrom (2006), “Are mergers and acquisitions constagious?”, *Journal of Business Research*, Vol. 59, 1267-1275
- Christopher B. Kummer (2006). “Mergers & acquisitions in the pharmaceutical industry in South America: activity and strategic intentions”, *The institute for Business and Finance Research*, Vol. 1, 169-172.
- Craig MacKinley (1997): “Event Studies in Economics and Finance”, *Journal of Economic Literature*, Vol. 35, 13-39.
- Cristoph Walkner, Jean Pierre Raes (2005): “Integration and consolidation in EU banking – an unfinished business”, *European Economy – Economic Papers 2008 – 2015*, Vol. 226
- David J. Tecce (1980): “Economies of scope and the scope of the enterprise”, *Journal of Economic Behavior and Organization*, Vol.1, 223-247
- Davide Del Prete, Armando Rungi (2017): “Organizing the global value chain: A firm-level test”, *Journal of International Economics*, Vol. 109, 16-30
- Deepak K. Datta, George Pula (1995): “Cross-Border Acquisitions: An Examination of the Influence of Relatedness and Cultural Fit on Shareholder Value Creation in U.S. Acquiring Firms”, *Management International Review*, Vol. 35, 337-359.

- Dinesh N. Iyer, Kent D. Miller (2008): " Performance Feedback, Slack, and The Timing of Acquisitions"; Academy of Management Journal, Vol. 51, 808-822
- Douglas W. Diamond, Robert E. Verrecchia (1981), "Optimal Managerial Contracts and Equilibrium Sccurity Prices", *Journal of Finance*, Vol. 37, 275-288.
- Edgar Peters (2003): "Simple and Complex Market Inefficiencies: Integrating Efficient Markets, Behavioral Finance, and Complexity", *Journal of Behavioral Finance*, Vol. 4, 225-233.
- Eduardo Kazuo Kayo, Herbert Kimura, Mauricio Rea Patrocínio, Oliveira Neto (2010): "Acquisitions, joint ventures or arm's-length alliances? Analyzing the determinants of the choice of growth strategy in Brazil from 1996 through 2007", *Brazilian Administration Review*, Vol.7, 397-412.
- Elazar Berkovitch and M. P. Narayanan (1993): "Motives for Takeovers: An Empirical Investigation", *The Journal of Financial and Quantitative Analysis*, Vol. 28, 347-362
- Emma Qianying Xu (2017), "Cross-border merger waves", *Journal of Corporate Finance*, Vol. 46, 207-231
- Eugene Fama (1965): "The Behavior of Stock-Market Prices." *The Journal of Business*, Vol. 38, 34-105
- Eugene Fama (1970): "Efficient Capital Markets: A Review of Theory and Empirical Work." *The Journal of Finance*, Vol. 25, 383-417
- Eugene Fama (1991): "Efficient Capital Markets: II." *The Journal of the American Finance Association*, Vol. 46, 1575-1617.
- Eugene Fama (1996): "Multifactor Explanations of Asset Pricing Anomalies", *The Journal of Finance*, Vol. 51, 55-84
- Eugene Fama (1997): "Market efficiency, long-term returns, and behavioral finance." *Journal of Financial Economics*, Vol. 49, 283-306.
- Eugene Fama, Lawrence Fisher, Michael C. Jensen, Richard Roll (1969). "The Adjustment of Stock Prices to New Information", *International Economic Review*, Vol. 10, 1-21.
- Fischer Black, Myron S. Scholes (1973): "The Pricing of Options and Corporate Liabilities, *Journal of Political Economy*, 637-659
- Frank Cross (1973), "The Behavior of Stock Prices on Fridays and Mondays", *Financial Analyst Journal*, Vol. 29, 67-69

- Friedrich Trautwein (1990): “Merger motives and merger prescriptions”, *Strategic Management Journal*, Vol. 11, 283-295
- Gary Gorton, Matthias Kahl, Richard J. Rosen (2009): “Eat or Be Eaten: A Theory of Mergers and Firm Size”, *The Journal of Finance*, Vol. 64, 1291-1344
- Geert Rouwenhorst (2002): “International Momentum Strategies”, *The Journal of Finance*, Vol. 53, 267-284
- George Alexandridis, Nikolas Antypas, Nati Travlos (2017): “Value creation from M&As: New Evidence”, *Journal of Corporate Finance*, Vol. 45, 632-650
- George Stigler (1968): “The organization of industry” *Chicago: University of Chicago Press*
- Glenn V. Henderson (1990): “Problems and Solutions in Conducting Event Studies”, *The Journal of Risk and Insurance*, Vol. 57, 282-306
- Gordon A. Walter, Jay B. Barney (1990): “Research notes and communications management objectives in mergers and acquisitions”, *Strategic Management Journal*, Vol. 11, 79-86
- Gregor Andrade, Mark Mitchell, Erik Stafford (2001). "New Evidence and Perspectives on Mergers." *Journal of Economic Perspectives*, Vol. 15, 103-120.
- Hyuk Choe, Ronald W. Masulis, Vikram Nanda (1993): “Common stock offerings across the business cycle: Theory and evidence”, *Journal of Empirical finance*, Vol. 1, 3-31.
- Idaline F. Kesner, Debra L. Shapiro, Anurag Sharma (2017): “Brokering Mergers: An Agency Theory Perspective on the Role of Representatives”, *Academy of Management Journal*, Vol. 37, 123-145
- Irina Chiriac (2021): “The Impact of Economy on Mergers & Acquisitions in European Markets”, *Journal of Financial Studies & Research*, Vol. 1, 1-8
- Isil Erel, Rose C. Liao, Michael S. Weisbach (2012): “Determinants of Cross-Border Mergers and Acquisitions”, *The Journal of Finance*, Vol 67, 1045-1082
- Jack Trifts, Kevin P. Scanlon (1987): “Interstate Bank Mergers: The Early Evidence” *Journal of Financial Research*, Vol. 10, 305-311.
- Jay B. Barney (1988): “Returns to Bidding Firms in Mergers and Acquisitions: Reconsidering the Relatedness Hypothesis”, Strategic Management Journal, Vol. 9, 71-78

- James Dolley (1933): “Characteristics and Procedure of Common Stock Split-Ups”, *Harvard Business Review*, Vol. 11, 316-326
- Jarrad Harford (2005): “What drives merger waves?”, *Journal of Financial Economics*, Vol. 77, 529-560
- Jeffrey Pfeffer, Geral R. Salancik (1978): “The External Control of Organizations: A Resource Dependence Perspective”. *Harper & Row: New York.*
- Ji Xiaoxuan, (2016): “How the GDP will affect M&A deals in US, OpenSIUC, 1-23.
- John C. Panzar, Robert D. Willig (1981): “Economies of Scope” *The American Economic Review*, Vol. 71, 268-272
- John Cable, Kevin Holland (1999): “Modelling normal returns in event studies: a model-selection approach and pilot study”, *The European Journal of Finance*, Vol. 5, 331-341.
- John J. Hampton (1989). “Financial Decision Making: Concepts, Problems, and Cases” (4th ed.). *New Jersey: Prentice-Hall*
- Johnathan Berk, Peter DeMarzo (2013): “Corporate Finance (3rd edition).” *Boston, The United States of America: Pearson Education.*
- Joseph T. Mahoney, Yasemin Y. Kor (2003): “Edith Penrose’s (1959) Contributions to the Resource-based View of Strategic Management”, *Journal of Management Studies*, Vol. 41, 183-191
- Jun-Koo Kang (1993), “The international market for corporate control”, *Journal of Financial Economics*, Vol. 34, 345-371
- Kenneth Carow, Randall Heron, Todd Saxton (2004): “Do early birds get the returns? An empirical investigation of early-mover advantages in acquisitions”, *Strategic Management Journal*, Vol. 25, 563-585
- Kenneth Högholm (2016): “Bidder’s Gain in Public M&A Transactions: Does Size Matter?”, *International Journal of Economics and Finance*, Vol. 8, 1-12
- Kenneth R. Ahern, Daniele Daminelli, Cesare Fracassi (2015): “Lost in translation? The effect of cultural values on mergers around the world”, *Journal of Financial Economics*, Vol. 117, 165-189
- Kyeong Hun Lee (2018): “Cross-border mergers and acquisitions amid political uncertainty: A bargaining perspective”, *Strategic Management Journal*, Vol. 39, 2992-3005

- Ko Wang, Yuming Li, John Erickson (2012): "A New Look at the Monday Effect" *The Journal of Finance*, Vol. 52, 2171-2186
- Larry H.P. Lang, René M. Sttulz, Ralph A. Walkling, (1991): "A test of the free cash flow hypothesis: The case of bidder returns", *Journal of Financial Economics*, Vol. 29, 315-335.
- Laura T. Starks, Kelsey D. Wey (2013): "Cross-Border Mergers and Differences in Corporate Governance", *International Review of Finance*, Vol.13, 265-297
- Laurence Capron (1999): "The long-term performance of horizontal acquisitions", *Strategic Management Journal*, Vol. 20, 987-1018
- Laurence Capron, Mauro Guillén (2009): "National corporate governance institutions and post-acquisition target reorganisation", *Strategic Management Journal*, 30, 803-833
- Laurence Capron, Will Mitchell, Anand Swaminathan (2001): "Asset Divestiture Following Horizontal Acquisitions: A Dynamic View", *Strategic Management Journal*, Vol. 22, 817-844
- Laurent Frésard, Gerard Hoberg, Gordon M Phillips (2019): "Innovation Activities and Integration through Vertical Acquisitions", *The Review of Financial Studies*, Vol. 33, 2937-2976
- Louis Kaplow (2021): "Horizontal merger analysis", *International Journal of Industrial Organization*, 1-17
- Manapol Ekkayokkaya, Krishna Paudyal (2019): "The importance of targets and value creation in vertical acquisitions", *International Review of Finance*, 1-9
- Maria Jose Pellicer, William Page Rees (2010): "Regularities in the equity price response to earnings announcements in Spain", *European Accounting Review*, Vol.8, 585-607
- Mark L. Mitchell, J. Harold Mulherin (1995): "The impact of industry shocks on takeover and restructuring activity", *Journal of Financial Economics*, Vol.41. 193-229
- Marvin B. Liebermann, David B. Montgomery (1988): "First-mover advantages", *Strategic Management Journal*, Vol. 9, 41-58
- Massimo G. Colombo, Larissa Rabbiosi (2014): Technological similarity, post-acquisition R&D reorganization, and innovation performance in horizontal acquisitions", *Research Policy*, Vol.43, 1039-1054

- Marc Reinganum (1981): “Misspecification of capital asset pricing: Empirical anomalies based on earnings' yields and market values”, *Journal of Financial Economics*, Vol. 9, 19-46.
- Marina Martynova, Luc Renneboog (2008): “A century of corporate takeovers: What have we learned and where do we stand?”, *Journal of Banking & Finance*, Vol.32, 2148-2177
- Massimo G. Colombo, Larissa Rabbiosi (2014): “Technological similarity, post-acquisition R&D reorganization, and innovation performance in horizontal acquisitions”; *Research Policy*, Vol. 43, 1039-1054
- Michael A. Hitt, Robert E. Hoskisson, R. Duane Ireland, Jeffrey S. Harrison (1991): “Effects of acquisitions on R&D inputs and outputs”, *Academy of Management Journal*, Vol. 20, 195-204
- Michael C. Jensen (1986): “Agency costs of free cash flow, corporate finance, and takeovers”, *The American economic review*, Vol. 76, 323-329.
- Michael C. Jensen (2008): “Agency costs of Overvalued Equity”, *Financial Management*, Vol. 34, 5-19
- Michael C. Jensen, Fischer Black, Myron S. Scholes (1972): “The Capital Asset Pricing Model: Some Empirical Tests”, *Studies in the Theory of Capital Markets, Praegers Publishers Inc*.
- Michael C. Jensen, Richard S. Ruback (1983): “The market for corporate control: the scientific evidence”, *Journal of Financial Economics*, Vol. 11, 5-50
- Michael E. Porter (1979): “The Five Competitive Forces That Shape Strategy”, *Harvard Business Review*, 1-17
- Michael E. Porter (1985): “Competitive advantage: Creating and sustaining superior performance”, *The Free Press*,
- Michael Faulkender, Rong Wang (2006): “Corporate Financial Policy and the Value of Cash”. *The Journal of Finance*, Vol. 61, 1957-1990
- Michael Gort (1969): “An Economic Disturbance Theory of Mergers”, *The Quarterly Journal of Economics*, Vol. 83, 624-642
- Michael S. Rozeff, William R. Kinney Jr (1976) “Capital Market Seasonality: The Case of Stock Returns”, *Journal of Economics*, Vol. 3, 379-402.
- Mohsin S. Khan Abdelhak S, Ssnhadji (2001): “Threshold Effects in the Relationship between Inflation and Growth” *IMF Staff Papers*, Vol. 48, 1–21

- Nadia Doytch (2012). “Linkages between mergers and acquisitions (M&A) and economic growth”, *GSTF Business Review (GBR),* Vol.1, 75-80.
- Nadia Doytch, Esin Cakan, Kamal Upadhyaya (2011). “Sectoral growth effects of United States mergers and acquisitions: a time series analysis”, *Journal of Applied Economics & Business Research*, Vol. 1, 4-11
- Ning Gao (2011): “The adverse selection effect of corporate cash reserve: Evidence from acquisitions solely financed by stock”, *Journal of Corporate Finance*, Vol. 17, 789-808.
- Norman Strong: (1992): “Modelling abnormal returns: a review article”, *Journal of Business Finance & Accounting*, Vol. 19, 533-553
- Pamela P. Peterson (1989): “Event Studies: A Review of Issues and Methodology”, *Quarterly Journal of Business and Economics*, Vol. 28(3), 36-66
- Panos Desyllas, Alan Hughes (2010): “Do high technology acquirers become more innovative?”, *Research Policy,* Vol. 39, 1105-1121
- Patrick Schmitz, Dirk Sliwka (2001): “On synergies and vertical integration”, *International Journal of Industrial Organization*, Vol. 19, 1281-1295
- Paul Barnes (2009): Stock Market Efficiency, Insider Dealing and Market Abuse: the UK experience”, *International Journal of Business Governance and Ethics*, Vol. 5
- Paul Marsh, (1982): “The choice between equity and debt: An empirical study”, *The Journal of finance,* Vol. 37, 121-144.
- Pavel G. Savor, Qi Lu (2009): “Do Stock Mergers Create Value for Acquirers?”, *The Journal of Finance*, Vol. 64, 1061-1097
- Peter Tufano (1989): “Financial innovation and first-mover advantages”, *Journal of Financial Economics*, Vol. 25, 213-240
- Ralph L. Nelson (1959): “Merger movements in American industry, 1895-1956”, *Princeton University Press Princeton*, 3- 23.
- Ray Ball, Phillip Brown (1968): “An Emprical Evaluation of Accounting Income Numbers”, *Journal of Accounting Research,* Vol. 6, 159-178
- Reinhard Bendix (2001): “Work and Authority in Industry: Managerial Ideologies in the Course of Industrialization.” *Transaction Books: New Brunswick,* NJ
- Richard H. Thaler (1987): “Anomalies: The January Effect”, *Journal of Economic Perspectives*, Vol.1, 197-201.

- Richard P. Rumelt, Dan E. Schendel, David J. Teece (1994): “Fundamental Issues in Strategy: A Research Agenda”, *Administrative Science Quarterly*, Vol. 41, 196-198
- Richard R. Nelson, Sidney G. Winter (1973), “Toward and Evolutionary Theory of Economic Capabilities”, *The American Economic Review*, Vol.63, 440-449
- Richard Roll (1981) “A Possible Explanation of the Small Firm Effect”, *The Journal of Finance*, Vol. 36, 879-888
- Richard Roll (1986): “The Hubris Hypothesis of Corporate Takeovers”, *The Journal of Business*, Vol. 59, 197-216
- Robert A. Taggart (1977): “A model of corporate financing decision”, *The Journal of Finance*, 1467-1484.
- Robert G. Bowman: (1983): “Understanding and Conducting Event Studies”, *Journal of Business Finance & Accounting*, Vol. 10, 561-584.
- Robert G. Morgan (1977): “Merger Motives: Conglomerates versus Congenerics”, *Nebraska Journal of Economics and Business*, Vol.16, 47-54
- Robert J Schiller (2003): “From Efficient Markets Theory to Behavioral Finance”, *Journal of Economic Perspectives*, Vol. 17, 83-104
- Roger Clarke, Christos Ioannidis (1996): “On the relationship between aggregate merger activity and the stock market: some further empirical evidence”, *Economics Letters*, Vol. 53, 349-356
- Rolf W. Banz (1981) “The Relationship Between Return and Market Value of Common Stocks.”, *Journal of Financial Economics*, Vol. 9, 3-18.
- Saeyoung Chang (1998): “Takeovers of Privately Held Targets, Methods of Payment, and Bidder Returns”, *The Journal of Finance*, Vol. 53, 773-784.
- Samina Karim, Will Mitchell (2000): “Path dependent and path-breaking change: reconfiguring business resources following acquisitions in the U.S. medical sector, 1978-1995”, *Strategic Management Journal*, Vol. 21, 1061-1081
- Sanford J. Grossman, Joseph E. Stiglitz (1980): “On the Impossibility of Informationally Efficient Markets”, *The American Economic Review*, Vol. 70, 393-408.
- Sanford J. Grossman, Oliver D. Hart (1986): “The costs and benefits of ownership: A theory of vertical and lateral integration”. *Journal of Political Economy*, Vol. 94, 691–719

- Sara B. Moeller, Frederik P. Schlingemann (2005): “Global diversification and bidder gains: A comparison between cross-border and domestic acquisitions”, *Journal of Banking & Finance,* Vol. 29, 533-564
- Stefano Rossi, Paolo F. Volpin (2004): “Cross-country determinants pf mergers and acquisitions”, *Journal of Financial Economics,* Vol. 74, 277-304
- Stephen J. Brown, Jerold B. Warner (1985): “Using daily stock returns: The case of event studies”, *Journal of Financial Economics,* Vol. 14, 3-31.
- Stephen Ross (1976): “The arbitrage theory of capital asset pricing”, *Journal of Economic Theory,* Vol. 13, 341-360
- Steven R. Grenadier, Andrew Malenko (2010): “A Bayesian Approach to Real Options: The Case of Distinguishing between Temporary and Permanent Shocks”, *The Journal of Finance,* Vol.65, 1949-1986
- Subhash C. Sharma, Ike Mathur (1989): “Do stock market prices affect mergers?”, *Managerial Finance,* 40-42
- Vinod Kumar, Priti Sharma (2019): “An Insight into Mergers and Acquisitions”, *Palgrave Macmillan,* 31-43
- Vojislav Maksimovic, Gordon Phillips (2002): “The Market for Corporate Assets: Who Engages in Mergers and Asset Sales and Are There Efficiency Gains?”, *The Journal of Finance,* Vol.56, 2019-2065
- Werner F. M. De Bondt, Richard Thaler (1985): “Does the Stock Market Overreact?”, *Journal of Finance,* Vol. 40, 793-805.
- Yakov Ahimud, Baruch Lev (1981): “Risk Reduction as a Managerial Motive for Conglomerate Mergers”, *The Bell Journal of Economics,* Vol.12, 605-617
- Yakov Ahimud, Peter Dodd, Mark Weinstein (1986): “Conglomerate mergers, managerial motives and stockholder wealth”, *Journal of Banking & Finance,* Vol. 10, 401-410
- Yen-Ting Lin, Jayashankar M. Swaminathan (2014): “Vertical Integration under Competition: Forward, Backward, or No Integration?”, *Production and Operations Management Society,* Vol. 23, 19-35