M&A IN THE ITALIAN ENERGY MARKET

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1. Introduction

Mergers and Acquisitions often represent a good tool for two companies, for example of little dimension, in cooperation and that want to enforce their position in the market becoming a unique entity. Mergers and Acquisitions can occur in different contexts. They represent a solution taken by competitors when they want to stop being an obstacle to each other. Companies in cooperation who exchange synergies, instead, will opt for M&A to complete their business through the acquisition of new product lines, new production process and knowledge. In fact, M&A can be seen as an alternative way of making investment since from it derives the exchange of skills and expertise which can enhance the firm's productivity, (Pautler, 2003). Finally, M&A are also a tool to increase the value of the firm and its stocks (DeYoung *et al.*, 2009).

Mergers are of different kinds and among them the two most known are horizontal/vertical mergers. A merger is horizontal if the two companies share the same product line and market. A merger is vertical if one of the two companies is a customer or a supplier of the other one. In economics, mergers produce positive externalities. From a contractual point of view, it is reasonable that, in a duopoly, a firm will accept the offer of a merger only if the bid is at least as high as its profit.

Therefore, the firm who desires to merge will make an offer that will be accepted only if the profit in monopoly is greater than the profit in duopoly: $\pi^m = \pi(1) > 2\pi(2)$. The conclusion is that in a market in which firms of homogeneous product operate, a merger to monopoly is always profitable. Results are different in markets wherein there are more than two firms: mergers and acquisitions will be profitable only if the market is concentrated and not fragmented. This success in profitability will depend on two effects. First, the firm born from the merge will reduce its quantity implying as a result an increase in its profit. This effect must be big enough to compensate the second effect: firms outside from the merge will increase their quantity, in Cournot competition, making the merge less profitable. This condition is satisfied only if the market is concentrated (Belleflamme and Peitz, 2010).

The industry studied is the one of the energies. We focused our analysis on the Italian energy market since it is in evolution especially in the recent years as the transition towards the sustainability and renewability has become more marked.

In Italy the birth of new energetic firms has been encouraged by the decentralisation process which has made the energy market more fragmentated and pluralistic. However, from a bureaucratic point of view, this has created new slowdowns in the transition towards the renewability due to the lack of coordination (Di Nucci and Prontera, 2021).

The European Union has proposed the energy efficiency as a tool in order to achieve this target. In this, the Energy Efficiency Directive (2012/27/EU) steps in, which provides binding measures to meet goals as the transition towards renewable energy and reduction in emission. This directive has recorded success in eight European countries where obsoleted plants have been substituted by new technology (Malinauskaite *et al*., 2019).

2. Analysis of the Context

M&A operations have recorded a rise in their importance and widespread over time. Since the early 1990s, the number of mergers and acquisitions in the Energy industry increased in line with the development of the European market.
This was possible thanks also to the introduction of the unique currency which allowed to cross-border deals (Belleflamme and Peitz, 2010).

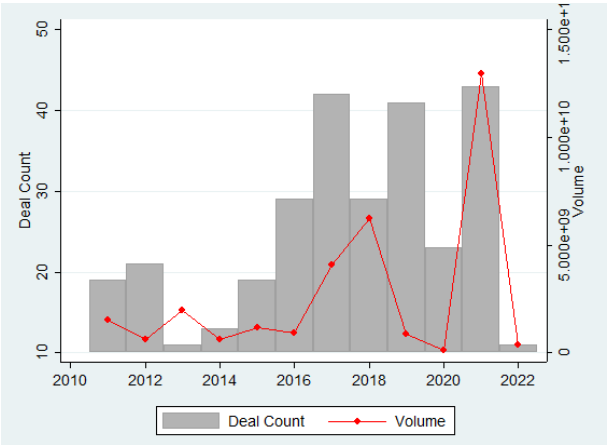
The chart above summarises the number of mergers and acquisitions and their volume for the time period 2011-2022. It is possible to observe that by the middle of the first period 2011-2014, the number of deal count has recorded a decrease. This may be reconduct to the residual effects of the Great Recession in 2008. It is true indeed that mergers occur easier in periods of growth, while they reduce in recessions, (Banal-Estañol *et al.*, 2006).

In the following years, the number of deals count increased, until the 2018, year in which there was again a reduction. Then, there was an increase until the 2020, in which there was recorded a decrease both in number and especially in the volume of M&A, in correspondence of the Covid-19 pandemic.

The next year was characterised by an increase in the two components.

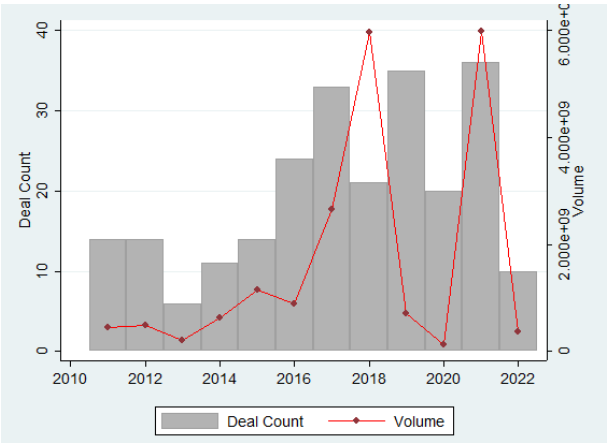
This may reasonable since this year, the 2021, encompasses M&As of both 2020 and 2021 itself. This graph summarises the same trend but only for Italian renewable energy firms. The path towards the green energy can been easily seen by the number of deals count which represents a substantial share of the total number of M&A.

Figure 1 – *Volume (in Dollars) and Deal Count of M&A in the (General) Italian Energy Industry.*



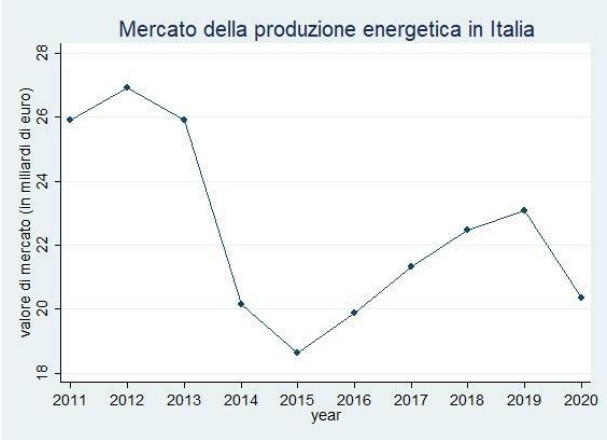
Source: Bloomberg.

Figure 2 – *Volume (in Dollars) and Deal Count of M&A in the Renewable Italian Energy Industry.*



Source: Bloomberg.

Figure 3 – *Volume (in Euro) of the Italian Energy Industry*.



Data Source: Aida.

The energy industry volume reached its trough in 2015. In the previous three years the negative trend was due to the economic crisis of that time. Furthermore, together with the reduction in the national production, there was the increase in the imports and therefore in the dependency degree abroad.

The trend started its increasing path until 2020, year in which, because of the Covid-19 Pandemic, the shock both in the demand and supply has led to a decrease in the production and consumption of energy.

Figure 4 – *Number of Firms and Market Share in the Italian Energy Industry*.

Data Source: Aida

Figure 4 shows a chart which summarises the Italian energy market trend over time. By 2012, the number of firms operating in this industry followed an increasing path making the market more fragmentated. This fragmentation is explained also by the market share, which, despite it has recorded a rise over time, it has always been below 0,001%, which indicates indeed a market that is not concentrated.

3. Research Question and Econometric Analysis

Our aim in this paper is to understand mergers and acquisitions in the Italian energy industry. In particular, our goal is to investigate the probability that a firm has to be acquired and the factors that affect this probability.

3.1 Data

In this paper, we have made use of the Aida database provided by Bureau van Dijk. Aida collects and classifies data from the balance sheets of a massive number of firms: joint-stock companies, cooperative firms, consortia, insurance companies, domestic subsidiaries of foreign companies, European groups of significant economic interests, and local institutions. Our data consists of 7209 firms in Italy from 2011 to 2020. From the Aida database, we selected the following variables: revenues as a measure of firm's dimension (variable name: *Revenue*); labor costs as a measure of firm's production costs (variable name: *Labor Cost*); liquidity index as a measure of firm's creditworthiness (variable name: Liquidity); labour productivity as a proxy of efficiency (variable name: Productivity).

The choice of the variable *Revenue* can be reconducted to the fact that firm's dimension is one of crucial qualities in M&A. Costs arise from M&A, and among these there is the one named "cost of digesting": the larger is the dimension of the firm, the greater will be the cost to digest the acquired or merged firm (Palepu, 1986, cited in Meisel, 2007).

Moreover, we included two other variables to take into account the potential impact of corporate ownership structure on mergers and acquisitions: Chief Executive Officer's nationality (variable name: CEO_nationality) which takes value 1 if CEO is Italian, otherwise 0; management's control (variable name: Management) which takes value 1 if the management is composed by a sole administrator otherwise 0. Finally, for the dependent variable, we selected data on the mergers and acquisitions which assumes value 1 if the merger or the acquisition has occurred otherwise 0.

The choice of the variable on management nationality is relevant since cross-border M&A are increasingly establishing themselves. Cross-border M&A, in fact, represent a way to enter the global market increasing market power and avoiding entry barriers, (Brakman *et al.*, 2008, Hitt *et al.*, 2001b cited in Hitt *et al.*, 2012).

3.2 Methodology

In the building of the econometric analysis, we have followed the method used by Harris *et al.* (1982). We have implemented three models that make use of a probit regression which uses as dependent variable the probability of being acquired/merged in the time range 2018-2022. The choice of this time period, which comprehends also the Covid-19 pandemic outbroke in 2020, is justified by the fact that this volatile range is characterised by two troughs respectively in 2018 and 2020, and two peaks respectively in 2019 and 2021.

Concerning the independent variables, we have used the average value which synthetises values for the previous three years, namely 2015-2016-2017.

The first model studies whether the probability of being merged is affected by labour productivity. It follows a probit regression in which the probability of M&As is used as dependent variable and labour productivity is used as independent variables. The hypothesis that we want to verify is whether the firms that are acquired are also the most efficient in terms of labor productivity.

$$M\&A_i = Productivity_i + \varepsilon_i \quad (1)$$

The second model provides a probit regression in which we have included the main firm dimensions: revenue, labor cost, and liquidity.

$$M\&A_i = Revenue_i + Labor\_Cost_i + Liquidity_i + \varepsilon_i \quad (2)$$

The third model provides a full probit model which includes financial and management variables: revenue, labor cost, CEO nationality, and management control. In this last model we exclude variables that in previous estimates have not produced statistically significant estimates (such as productivity and liquidity index).

$$M\&A_i = Revenue_i + Labor\ Cost_i + CEO\ Nationality_i + Management_i + \varepsilon_i \quad (3)$$

5. Results

Table 1 reports results for the three probit models.

Table 1 – *Estimation.*

	(mod 1)	(mod 2)	(mod 3)
Productivity	5.48e-08		
	(1.95)		
Revenue		7.28e-09**	6.78e-09*
		(3.21)	(2.53)
Labor Cost		-1.15e-6**	-1.14e-6**
		(-3.29)	(-3.26)
Liquidity		0.0142	
		(1.00)	
CEO nationality			-1.925***
			(-20.20)
Management			-1.433***
			(-13.69)
Constant	-1.728***	-1.397***	-0.189***
	(-25.95)	(-34.68)	(-4.17)
N	1178	4407	4525

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The first column shows results for the first model (1). Labour productivity is not statistically significant. This finding shows that mergers and acquisitions, in the energy industry, are not likely to target firms with the highest levels of efficiency. It is not the efficiency of the individual company which justifies the acquisition, but the final outcome obtained by the new business structure.

Results for the second model are reported in column 2. Revenue and Labor Cost are both statistically significant. Intuitively, the probability of being acquired increases as revenue increases, and it comes down to increasing labor costs.

Liquidity index is not statistically significant. In other words, it seems that in the Italian case study, firm's creditworthiness is not a determinant of the cases of mergers and acquisition. The third column refers to estimates given by the third model. Adding the two management variables, CEO nationality and management, the third estimation is able to explain quite well the variability in the data since the pseudo R^2 is 45%. Revenue are positive and significant, while Labor Costs are negative and significant. On the other hand, CEO nationality and management result

negative and significant, telling us that the probability of M&As in the most recent years is affected by the corporate governance structure. The economic interpretation of these results suggests us that firms are more likely to be acquired and merged if they record high revenues and low costs, and if the management is foreign and plural.

6. Conclusions

Merges and acquisitions are strategic managerial operations that are good for firms which want to increase their market value.

The Italian energy market has undergone a big growth, in terms of number of firms, since 2012 thanks to the transitions towards decentralisation and fragmentation. Although M&A occur less likely when the market is fragmentated, we studied the conditions in which firms are more likely to be merged.

We have implemented a probit analysis which consists of three models and that studies in which conditions mergers and acquisitions are more probable to occur.

From the analysis we have run, it seems that the high revenues are a good requisite for M&As that have occurred from 2018 until 2022, contrary to costs which discourage merges and acquisitions. Instead, the firm's disposable liquid money and labour productivity does not affect the probability of being merged/acquired or not. It seems also that corporate governance has great importance. Firms that have a management which is Italian and composed by a sole administrator are instead less likely to be merged or acquired.

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SUMMARY

The Italian Energy industry has undergone changes and it had to adapt to alterations given by the economic and environmental trend in the last decades, especially in the last months with the war outbreak. The transition to the green economy and to the renewable energy has put this market in front of challenges of various perspectives leading it to a new framework. The passage from a centralised to a more decentralised arrangement, both in terms of consumption and production, has affected the organisational structure of the interested firms. Furthermore, new EU policies have been enacted in order to face the severe environmental issue, using the energy efficiency as a tool to incentivise the improvement on sustainability and renewability.

This paper investigates the Italian energy industry and the effects given by M&A in it. Mergers and Acquisitions are operations relevant not only from a financial or corporate point of view, but they also imply effects on the economy related to the market and its forces. We focus our study on the merger and acquisitions of the firms involved in the research. We build a model which studies the probability of being acquired of the firms involved in the analysis and all the factors that influence this probability, since the latter implies a higher concentration in the market. The analysis is implemented by using the stochastic frontier analysis. In addition, we include in the analysis all the variables that may affect the dependent variable such as the revenues, costs management, nationality others.

The analysis makes use of data on M&A collected on Bloomberg and data on firms' balance sheet collected on the Aida database, both for the period from 2011 to 2020. According to this analysis, this paper sets his aim on the study of the energy market based on the evolution which interested the most recent past.

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