



Dipartimento di Impresa e Management  
Corso di Laurea Magistrale in Gestione d'Impresa  
Cattedra di Analisi Finanziaria

**Buyback and Dividend Policy in the listed Italian Companies:  
The effects on the value performance.**

Relatore  
Prof. Fabrizio Di Lazzaro

Candidato  
Leonardo Arzilli  
Matr. 736091

Correlatore  
Prof.ssa Francesca Di Donato

Anno Accademico 2021/2022



## **Acknowledgements**

*Un ringraziamento a tutti coloro che mi sono stati a fianco durante questo percorso.*

*Grazie alla mia famiglia, per il supporto incondizionato.*

*Grazie agli amici di sempre e grazie ai colleghi e alle colleghe che amici lo sono diventati ed hanno contribuito a rendere memorabile questa esperienza.*

*A special mention for the guys and girls I met in Korea during the International Exchange in Seoul, without you it would not have been as unforgettable as it was.*

감사합니다

## **Abstract**

What is the effect of the dividend policy and the buyback programs on the Italian listed companies' performance? The main purpose of this study is to investigate how the dividend policy, and the decisions of buying back own shares, affect the value of the performance of the companies listed on the Italian Stock Exchange, and in particular, in the FTSE MIB index.

From a sample of 35 companies, this paper collects data about dividends, own shares, and many performance measurement indices, related to the period from 2015 to 2019, and examines the correlation between these. Correlation has been investigated by computing a simple correlation first, and a multiple linear regression then. Empirical evidence suggests that, on average, there is no correlation between the aggregate effect of dividends and buyback and the enterprise value and ROE taken separately as dependent variables. If it is possible to identify a simple correlation among firms' data, it is not possible to define if this has a positive or a negative effect. The multiple linear regression analysis shows that the model is not better than a simple mean in explaining and predicting the EV and the ROE values given the dividend yields and the own shares repurchases. This leads to affirm that other variables need to be taken as observations if we want to find a clear relationship with the value performance.

## Table of contents

<b>Introduction.....</b>	<b>7</b>
<b>1. Literature review and theory.....</b>	<b>9</b>
1.1. Share buyback.....	9
1.2. Dividend policy.....	12
1.3. The firm's performance.....	16
1.4. Performance measurement .....	17
1.4.1. Enterprise value.....	17
1.4.2. Return on Equity.....	18
1.5. The listed Italian companies.....	18
<b>2. The data.....</b>	<b>21</b>
2.1. Data collection and database construction.....	21
2.2. Descriptive statistics.....	22
<b>3. Empirical analysis.....</b>	<b>25</b>
3.1. Research question and Hypotheses developing.....	25
3.2. Correlation Analysis: model and results.....	26
3.3. Multiple Linear Regression: model and results.....	28
<b>4. Conclusion.....</b>	<b>32</b>
<b>Suggestions for future research.....</b>	<b>34</b>
<b>References.....</b>	<b>35</b>
<b>Appendix.....</b>	<b>36</b>
<b>Summary.....</b>	<b>69</b>



## Introduction

On October 28<sup>th</sup>, 2021, *Il Sole 24 Ore* reported: “Atlantia scalda i motori per lanciare un piano di buyback da 2 miliardi” (Condina, 2021)<sup>1</sup>, and on March 9<sup>th</sup>, 2022: “UniCredit conferma cedola e buy back”<sup>2</sup> meaning that UniCredit confirmed the dividend and the buyback program.

Dividend policy and share buyback are highly debated topics in financial analysis, corporate finance, and all the business-related fields and not only, indeed they attract interest even from investors and public opinion.

From a research point of view, many are the papers that evaluated these topics in the past years around the globe, and I will report the most significant facts found in them in the Literature review and theory paragraph below.

Reading many of these studies conducted on the topics of dividend policy, share repurchase, and companies’ performance, I understood that the relationship which links these subjects is not as limpid and immediate as I thought. In particular, I expected marked declarations and conclusions of how the performance was affected by these commonly used financial policies. Furthermore, I found that most of the works took the focus on dividends and buybacks all over the world, but almost none took into consideration Italy and its companies. So, I will try to analyze these aspects through an empirical approach.

The first chapter aims to evaluate and discuss the literature done on the research. I will divide the chapter into five main paragraphs, respectively about share buyback, dividend policy, the definition of firm performance, the performance measurement systems, and the Italian Stock Exchange description.

In the second chapter of the thesis, I will explain how I collected, organized, and elaborated the data composing the dataset of the research, moreover, I will report some interesting facts found while analyzing the sample, supported by graphs and tables that I will report in the appendix section at the bottom of the paper.

---

<sup>1</sup> Condina, C. (2021, October 28). Atlantia scalda i motori per lanciare un piano di buyback da 2 miliardi. *Il Sole 24 Ore*, p.34.

<sup>2</sup> Unknown. (2022, March 9). UniCredit conferma cedola e buy back. *Il Sole 24 Ore*, p. 27.

The third chapter is the core business of this research. In this, I will point out the framework of the model, starting from the research question and the development of the hypotheses that I will test with the model. In detail, I will analyze the effect of dividend yield and buyback, on enterprise value, and Return on Equity, taken as dependent variables. Firstly, I will run a simple correlation analysis among all the firms in the sample, secondly, I will execute a multiple linear regression analysis aiming at a deeper understanding of the relationship sought. Results will be given and discussed in the respective analysis paragraphs.

The last chapter is the conclusive one, where I will summarize the findings of the research, and try to give a very little hint for future research in the last paragraph.



## **1. Literature review and theory**

This section aims to provide an overview to the reader of the empirical analyses and past studies done about the main components of this research, which are: dividend policy; share buyback; and value performance.

Said this, the first paragraph of this section reports the main findings of research and studies carried out on the buyback topic, considering a wide range of objectives and reasons called in question for the different research scopes.

The second part shows the analysis, studies, works and research done on the dividend policy adopting the same framework of comment on the buyback's research, highlighting questions and results.

The last part is mainly theoretical, and I will use it to clearly explain definitions and components of the topics examined in this research, also giving a starting point of what I want to focus on.

### **1.1 Share buyback**

By definition, a share repurchase is a transaction whereby a company buys back its own shares from the marketplace<sup>3</sup>. Different purposes have had, and still have, the studies conducted on the share buybacks so far. They can be distinguished by geographical focus, industries, or goals, and the correlation with many other firms' components.

I have analyzed some of them and I further on report the results of the most relevant of them. Md. Musharof and Afzal analyzed the motives for the share repurchase and the results of the buyback programs, concluding that "if a company uses buying back of shares as a financial strategy, it will lead to increase in its capital gearing when financing is made for stock repurchase in the form of debt" (Musharof et Afzal, 2015)<sup>4</sup>.

Manconi et al. studied the correlation between buybacks and long-term shareholder value using a sample of 9.000 buyback announcements from 31 countries, finding that, on average, "share

---

<sup>3</sup> <https://www.investopedia.com/terms/s/sharerepurchase>.

<sup>4</sup> Md. Musharof, H., Afzal, A., (2015). Is buying back of shares a dangerous financial strategy? *Global Journal of Management and Business Research: Economics and Commerce*. 15(7), 32-35.

buybacks around the world are associated with positive announcements returns and are followed by positive long-run excess returns” (Manconi, Peyer, Vermaelen, 2019)<sup>5</sup>.

It has also been found that “accretive share buyback is an efficient earnings management tool caused no negative effect to firms and shareholders. And the long-term firm performance is greater in the accretive share buyback rather than in the non-accretive ones” (Chandren, Ahmad, and Ali, 2017)<sup>6</sup>.

Furthermore, research carried out by Kim et al. examined how share repurchase and dividend policies are influenced by controlling shareholders among Korean firms, finding that the use of share buyback is opportunistic rather than strategic (Kim, Jo, and Yoon, 2013)<sup>7</sup>.

Moving to India, Bhullar et al. pointed out the impact of buyback on firm value. In their research, they examined 180 firms listed on the Bombay Stock Exchange of India from 2006 to 2016, suggesting that “the firm value differs from pre and post buyback of shares” and moreover that “the proportion of paid-up equity capital employed by companies for buyback of shares does not have any significant effect on firm value” (Bhullar, Bhatnagar, and Gupta, 2018).<sup>8</sup>

Keeping the Indian context, Gupta found the effects of buyback announcements on the price movements in the market, analyzing it for different industries to understand whether a particular type of industry had any effect on the returns or not. The result of her study concluded that the abnormal returns have been observed not only in the case of manufacturing but also in other sectors and thus concluded that the industry did not play any role in the announcement returns (Gupta, 2017).<sup>9</sup>

Regarding the correlation between share repurchase announcements and the share market price, still in India, it has been examined “whether open market share repurchase announcements lead to excess stock returns”, reporting that, on average, the firms did not experience price

---

<sup>5</sup> Manconi, A., Peyer, U., Vermaelen, T., (2019). Are Buybacks good for long-term shareholder value? Evidence from buybacks around the world. *Journal of Financial and Quantitative Analysis*. 54(5), 1899-1935. doi:10.1017/S0022109018000984.

<sup>6</sup> Chandren, S., Ahmad, Z., Ali, R., (2017). The impact of accretive share buyback on long-term firm performance. *International Journal of Economics and Management*. 11(1), 49-66.

<sup>7</sup> Kim, H. J., Jo, H., Yoon, S. S., (2013). Controlling shareholders’ opportunistic use of share repurchases. *Review of Quantitative Finance & Accounting*, Springer Science & Business Media. 41, 203-224. DOI 10.1007/s11156-012-0306-z.

<sup>8</sup> Bhullar, P. S., Bhatnagar, D., Gupta, P., (2018). Impact of buyback of shares on firm value: empirical evidence from India. *Iranian Journal of Management Studies (IJMS)*. 11(3), 425-436. DOI: 10.22059/ijms.2018.246143.672914.

<sup>9</sup> Gupta, M., (2017). Share buyback and announcement effects: an industry wise analysis. *FII Business Review*. 6(2), 43-50.

improvement after the announce, and more in detail, 24% of the firms lost and 10% gained, while the rest experienced no change (Mukherjee, and Chatterjee, 2019).<sup>10</sup>

Nevertheless, a recent paper published in the *Journal of Economics, Business and Management*, concludes that “stock buyback is negative to the companies’ performance” (Zhen and Xiaoyang Li, 2021). This result came after an analysis done on 119 companies’ financial information from 2006 to 2014, collected and examined from SZSE (Shenzhen Stock Exchange) and SSE (Shanghai Stock Exchange).<sup>11</sup> Their research points out very well how important is the buyback phenomenon in China, indeed, Zhen and Xiaoyang observe that until October 2019, more than 900 listed companies have taken repurchases with an unprecedented 107 billion yuan in the year, leading to increased attention from the Chinese authorities.

A different point of view was taken canalizing the attention on the combined impact of share buybacks and managers remunerations on the firm value, evaluating how these, overall, influence “firms’ investment decisions and the evolution of their competitiveness and share values” (Dawid, Harting, and Van Der Hoog, 2019)<sup>12</sup> and how this is related to technological change and economic growth.

In a similar way, research from Henning focuses on the debate over, whether or not, stock buybacks are harmful to the economy, especially for wages and rising income inequality throughout the United States, with the primary goal of examining the effect of the stock buybacks on the innovation of large multi-national corporations. This study has demonstrated that buybacks are correlated with an increased likelihood that a given company increase its research & development expenditure in the subsequent year following the repurchase (Henning, 2019).<sup>13</sup>

Overall, the effect of the share repurchases on the performance of the firms examined in the past research is unclear, even if it is possible to determine some positive, negative, and non-effect impacts.

---

<sup>10</sup> Mukherjee, P., Chatterjee, C., (2019). Does share repurchase announcement lead to rise in share price? Evidence from India. *Global Business Review*, Sage. 20(2), 420-433. DOI: 10.1177/0972150918825327.

<sup>11</sup> Li, Zhen, Li, Xiaoyang, (2021). Stock buyback: Toxic cure for the company to get out the dilemma. *Journal of Economics, Business and Management*. 9(1), 9-14. doi: 10.18178/joebm.2021.9.1.647.

<sup>12</sup> Dawid, H., Harting, P., Van Der Hoog, S., (2019). Manager remuneration, share buybacks, and firm performance. *Industrial and Corporate Change*, Oxford University Press. 28(3), 681-706. doi: 10.1093/icc/dty073.

<sup>13</sup> Henning, N., (2019). Stock buybacks and innovation: an analysis of the effects of share repurchases on research & development expenditures. *Economics Student Theses and Capstone Projects*. 140. [https://creativematter.skidmore.edu/econ\\_studt\\_schol/140](https://creativematter.skidmore.edu/econ_studt_schol/140).

## 1.2 Dividend policy

Moving ahead, the same considerations as the previous paragraph can be done in the studies carried on about the dividend policy. Indeed, even for this topic, the purposes, the questions, and the reasons for research are broad and diversified.

After having analyzed them, I extracted the conclusions I valued most relevant to the hereby work and I reported them below.

By definition, a dividend is an amount of cash distributed by the company to shareholders as a return on invested capital.<sup>14</sup> While, a dividend policy is “the practice that management follows in making dividend pay-out decisions or, in other words, the size and pattern of cash distributions over time to shareholders” (Lease, 2010).<sup>15</sup> Dividend policy is one of the most controversial issues in modern corporate finance. Black argued that “the harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don’t fit together” (Black, 1976).<sup>16</sup>

As dividend policy is considered such an important and controversial financial decision, many theories have been determined on this topic.

In this context, it is impossible to not mention the Neutral Theory of Dividend Policy from Miller & Modigliani, according to which business values are not affected by dividend policy but depend on the investment decisions, keeping in mind that the assumptions were made on an efficient and perfect capital market basis (Miller and Modigliani, 1961).<sup>17</sup> From this theory started another one, intending to criticize the M&M Theory. Their assumptions try to demonstrate that the dividend policy has a direct impact on the market value of the corporation through its effect on the market share price because the required rate of return on the funds owned decreases with the increase in dividends (Gordon and Litner, 1963).

Analyzing investors’ preferences, a study claimed that investors preferred lower payout companies for tax reasons. They evaluated the data on the basis of the American Stock Market, comparing cash dividends and capital gain, concluding that “if capital gains related to the sale

---

<sup>14</sup> Definition taken from Borsa Italiana website:

<https://www.borsaitaliana.it/borsa/glossario/dividendo.html?lang=it>.

<sup>15</sup> Lease, J.O. (2010) Measuring and analysing the effects of dividend policy in banking profits and growth, *Journal of Policy and Development Studies*, 9(1), 167-178.

<sup>16</sup>Black, F. (1976). The dividend puzzles. *Journal of Portfolio Management*. 2(2), 5-8. DOI: <https://doi.org/10.3905/jpm.1976.408558>.

<sup>17</sup> Miller, M. H., Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *The Journal of Business*. 34(4), 411-433.

of shares are not subject to tax, or if the tax rate on these profits is less than the tax rate on cash dividends distributed, investors prefer that corporations do not distribute cash dividends but retain profits in the form of profits undistributed” (Litzenberger and Ramaswamy, 1982)<sup>18</sup>.

Going forward, the Signal Theory states that managers use the payment of dividends as a signal to communicate private information about the corporation to external investors and shareholders about the prospect of profits and their successful performance, therefore, a higher distribution will give a signal to investors that the corporation’s prediction of future earnings is positive (Kanakriyah, 2020)<sup>19</sup>. Same considerations, but amplified, can be done when the firm stops paying dividends. Indeed, Michaely et al. show that when the company starts to pay dividends the market price of its shares gains an average of 3,4%, on the other hand, when it stops, the price falls 10% (Michaely, Thaler, and Womack, 1995).<sup>20</sup>

Returning to the tax focus, the Clientele Effect Theory states that the differences in the tax percentage create the so-called clientele effect, according to which the dividend policy is determined by an investor’s tax preferences function. That is to say that investors prefer shares that don’t pay dividends due to the related taxes (Michaely and Allen, 2002).<sup>21</sup> Moreover, the theory suggests that “due to the changes in dividend policies, investors always make decisions depending on the dividend policies chosen by firms which may encourage investors to continue with this firm or transfer to another” (Kanakriyah, 2020)<sup>22</sup>.

Lastly, the Agency Theory calls into question the investors and managers’ views. In fact, according to this theory, investors prefer to receive cash from dividends, while managers prefer to keep it for future investments or expansion purposes. This leads to an agency problem because managers could maintain non-profitable investments instead of increasing the investors’ wealth (Ross, Mitnick, 1973).

Frankfurter affirmed that “corporate dividend policy has captured the interest of economists of this century and over the last five decades has been the subject of intensive theoretical

---

<sup>18</sup> Litzenberger, R. H., Ramaswamy, K. (1982). The Effects of Dividends on Common Stock Prices Tax Effects or Information Effects?. *The Journal of Finance*, 37(2), 429-443.

<sup>19</sup> Kanakriyah, R. (2020). Dividend policy and companies’ financial performance. *Journal of Asian Finance, Economics and Business*. 7(10), 531-541. doi: 10.13106/jafeb.2020.vol7.no10.531.

<sup>20</sup> Michaely, R., Thaler, R., Womack, K. (1995). Price reactions to dividend Initiations and omissions: overreaction or drift? *Journal of Finance*. 50(2), 573-608.

<sup>21</sup> Allen, F., Michaely, R., (2002). Payout policy. *Handbook of the Economics of Finance: Corporate Finance*. Volume 1A, Chapter 7, Elsevier, Amsterdam, The Netherlands.

<sup>22</sup> Kanakriyah, R. (2020). Dividend policy and companies’ financial performance. *Journal of Asian Finance, Economics and Business*. 7(10), 531-541. doi:10.13106/jafeb.2020.vol7.no10.531.

modelling and empirical examination” (Frankfurter and Wood, 2002)<sup>23</sup>. Thus, in recent years, dividends, and their related policies, continue to attract attention and many have been the developments, from a wide point of view.

A study conducted on the Nigerian Stock Exchange firms pointed out that “among all, firms willing to maximize value should endeavor to consistently increase their dividend payment as this sends a signal that the firm is financially healthy” (Ogbuagu, 2020)<sup>24</sup>, confirming the Signal Theory for the Nigerian environment.

Moving the focus on the emerging markets, analyzing the nature of the association between dividend policy and a corporation’s financial performance, concluding that dividend policy explains a company’s financial performance, and the dividend policy has a statistically significant impact on it (Kanakriyah, 2020).<sup>25</sup>

Dividend payout is one of the factors that have a positive and significant impact on corporate value, studying the Vietnamese stock market with 2,278 observations, and finding that “dividend policy has a significant impact on the corporate value of companies that implement a higher dividend payout policy (Dang et al., 2020). Conversely, firms that do not pay dividends or pay low dividends do not experience a significant impact of dividend policy on corporate value (Dang, Vu, Ngo, Hoang, 2020).<sup>26</sup>

Investigating the relationship between dividend policy and firm performance in the manufacturing firms in Pakistan, it is possible to carry out that the dividend payout ratio has a positive relationship with the performance factors (Hafeez et al., 2018).<sup>27</sup>

An industry study work has been carried on in Pakistan Khalid to establish if dividend policy impacted the listed companies in the Karachi stock exchange from the cement sector. This research finds and confirms again that dividend policy, and other components, influence the performance of the firm, even if in Pakistan, firms had no standard policies Khalid et al, 2019)<sup>28</sup>

---

<sup>23</sup> Frankfurter, G. M., Wood, B. G. Jr. (2002). *International Review of Financial Analysis*. 11(2), 111-138. Doi: [https://doi.org/10.1016/S1057-5219\(02\)00071-6](https://doi.org/10.1016/S1057-5219(02)00071-6).

<sup>24</sup> Ogbuagu, N. M. (2020). Effect of dividend policy on firms’ performance. *Journal of accounting, business and social science*. 3(2), 36-53.

<sup>25</sup> Kanakriyah, R. (2020). Dividend policy and companies’ financial performance. *Journal of Asian Finance, Economics and Business*. 7(10), 531-541. doi: 10.13106/jafeb.2020.vol7.no10.531.

<sup>26</sup> Dang, N. H., Vu, V. T. T., Ngo, X. T., Hoang, H. T. V. (2020). Impact of dividend policy on corporate value: Experiment in Vietnam. *International Journal of Finance and Economics*, 26, 5815-5825. <https://doi.org/10.1002/ijfe.2095>.

<sup>27</sup> Hafeez, M. M., Shahbaz, S., Iftikhar, I., Butt, A. H. (2018). Impact of dividend policy on firm performance: (evidence from the manufacturing firms in Pakistan). *International Journal of Advanced Study and Research Work*, 1(4), 2581-5997. DOI: 10.5281/zenodo.1312180.

<sup>28</sup> Kahn, K., Lamrani, H. C., Khalid, S. (2019). The impact of dividend policy on firm performance: a case study of the industrial sector. *Risk Governance & Control: Financial Markets & Institutions*. 9(3), 23-31. DOI: 10.22495/rgcv9i3p2.

An interesting point of view was taken in Korea, which analyzed how the dividend policy, of KOSPI-listed firms, related to the K-IFRS (Korean International Financial Reporting Standards) changes. Their research shows that firms tend to decrease the propensity and the level of dividend payments after the mandatory K-IFRS adoption (Park and Park, 2022). Moreover, family-controlled firms have a significantly positive association with dividend payouts after the K-IFRS adoption. Their evidence can be shared with other emerging markets, where prevailing family firms have the characteristics of concentrated ownership and strong control power in an immature market with weak legal protection for outside shareholders (Park and Park, 2022).<sup>29</sup>

Studies on the dividend policy and the effects on the performance or firm profitability have been conducted even in a very specific key, both for geography and industry (Ajanthan, 2013). This is the case of the research carried out with the purpose of investigating the relationship between dividends and firm profitability among the listed hotels and restaurant companies in Sri Lanka.<sup>30</sup>

Still in the Asian context, analyzing the Indonesian stock exchange firms, empirical proof was found on the impact of dividend policy on the firm value, (Margono, and Gantino, 2021).<sup>31</sup>

---

<sup>29</sup> Park, Seun Young, Park, Soo Yeon. (2022). Information shock and dividend policy in family-controlled firms: evidence from Korea. *Emerging Markets Finance & Trade*. 58(6), 1771-1793. <https://doi.org/10.1080/1540496X.2021.1926234>.

<sup>30</sup> Ajanthan, A. (2013). The relationship between dividend payout and firm profitability: a study of listed hotels and restaurant companies in Sri Lanka. *International Journal of Scientific and Research Publications*, 3(6).

<sup>31</sup> Margono, F. P., Gantino, R. (2021). The influence of firm size, leverage, profitability, and dividend policy on firm value of companies in Indonesian stock exchange. *Copernical Journal of Finance & Accounting*. 10(2), 45-61. <http://dx.doi.org/10.12775/CJFA.2021.007>.

### 1.3 The firm's performance

Adopting a general and broad approach, the firm's performance can be seen as the result achieved by the corporate using its assets. Nevertheless, the meaning of the term "performance" has many outlets depending on the lens through which we observe it. Taouab et al. affirm that nowadays, although it is a very common notion in the academic literature, there is hardly a consensus about its definition and measurement (Taouab, Issor, 2019).<sup>32</sup>

Several definitions have been used over the years. In the 50s, it was considered under the efficiency lens, in other words, the ability of the company of achieving its goals using the least effort and resources possible (Georgopoulos and Tannenbaum, 1957).<sup>33</sup> Porter (1986), saw the performance as the ability to create value for its clients. Cohen (1994) put the focus on the relationship between performance and efficiency, following the results obtained by the entity concerning resources used.<sup>34</sup> Lebens and Euske (2006) provided a set of definitions to illustrate what performance means. Firstly, it is a set of financial and non-financial indicators that offer information on the level of accomplishment of results, and to report a firm's performance, it is necessary to be able to quantify the results (Lebens and Euske, 2006).<sup>35</sup>

In conclusion, I can affirm that the concept of performance is very variable and adaptable to the situations we are involved in, and it is hard to give a precise meaning to it.

Despite the hardness to identify a definition, in this research I would like to keep the attention on the financial meaning of the term, which I consider the most objective among all. In particular, I will explain the main indicators that can help us to understand how a company is performing, and furthermore, the most used and accepted in the financial analysis.

---

<sup>32</sup> Taouab, O., Issor, Z. (2019). Firm Performance: Definition and Measurement Models. *European Scientific Journal*. 15(1), 93-106. Doi:10.19044/esj.2019.v15n1p93.

<sup>33</sup> Georgopoulos, B.S., Tannenbaum, A.S. (1957). A study of organizational effectiveness. *American Sociological Review*, 534-540.

<sup>34</sup> Cohen, E. (1994). *Analyse financière*. Economica, Paris.

<sup>35</sup> Lebens, M., Euske, K. (2006). *A conceptual and operational delineation of performance*. Business Performance Measurement. Cambridge University Press.



## **1.4 Performance measurement**

When we take into consideration the performance, we can refer to the profitability of the company in a specific period of its life, generally related to the financial year, or a section of it (month, quarter, semester).

To allow a better comprehension of the meaning of the performance, a more specific reading lens is required.

In this section, I will explain which indicators I will use for the analysis of this research project. The indices or ratios available are many and touch different aspects of the performance of a firm, from the financial to the strategy efficiency passing through the productivity and so on.

Given the aim of this study, as previously affirmed, I decided to keep the eye on those which concern the financial value of a company, that should better explain the overall value performance, that in my opinion are the Enterprise Value and the Return on Equity.

The choice of taking into consideration these indices for the analysis derives from the high information that they give. Other ratios can be considered on the same level of information given, nevertheless, I deemed them too specific or lacking in some side of the overall meaning. Due to the purpose of this study, I preferred to keep the path of the general performance value and not access specific insights.

### **1.4.1 Enterprise Value**

Briefly, the enterprise value (EV) is the measure of the value of a specific company.<sup>36</sup> This can be interpreted as the purchase cost of equity of the company, with all the liquidity and after the repayment of the debts, therefore, the unlevered value of the business (Borsa Italiana, 2022). Hence, this indicator can be thought of as the theoretical price at which a company can be bought. It is totally accepted and used among the financial analysis worldwide and it can apparently be related directly to the performance of the company given that the higher the performance the higher the value should be.

---

<sup>36</sup> Definition by "Glossario Finanziario" di Borsa Italiana.  
<https://www.borsaitaliana.it/borsa/glossario/enterprise-value>.

Following the Discounted Cash Flow model<sup>37</sup> the enterprise value is calculated as follows:

$$EV = \text{Market Capitalization} + \text{Total Debt} - \text{Cash and Cash equivalents}$$

Where Market Capitalization is the total market value of a company's shares, that is to say the value of all the shares spread on the market. This is equal to the current stock price multiplied by the number of outstanding stock shares. The total debt indicates the sum of the short and long-term debt. While the cash and cash equivalents are the liquid assets owned and those which are supposed to be easily converted into cash.

### 1.4.2 Return on Equity

Among the various profitability and performance indicators, one overall is the most significant in the financial analysis and for this reason, one of the most used. Indeed, if the purpose of the analysis is to understand how profitable a company is, the first element we focus on is the profit, and from the profit takes the basis the Return on Equity ratio.

From the investors' point of view, the Return on Equity (ROE) is with no doubt the best and moreover the fastest indicator to decide if invest or not in a firm. The ROE is an economic index that shows the profitability of equity, simply obtained by dividing profit by equity. The indicator can be considered as a summary of the overall economy, evaluating how management has managed its assets to increase company profits (Borsa Italiana, 2022).<sup>38</sup>

The formula of the Return on Equity is the following:

$$ROE = \frac{\text{Profit}}{\text{Equity}} \times 100$$

The profit can be taken by the Income Statement before or after the taxes, determining respectively the Net ROE or the Gross ROE. Generally, the gross one is used to better compare companies from different areas, which are subjected to different tax percentages, this is because a company with the same profitability could appear less performing than another if the tax

---

<sup>37</sup> The Discounted Cash Flow model (DCF) is a method used for valuing securities, companies or assets following the concept of the time value of money. (Wikipedia).

<sup>38</sup> Definition by "Glossario Finanziario" di Borsa Italiana.

percentage is higher compared to another country and tax regulation. Of course, the value of the index can be negative in the eventuality of the company pursues a loss instead of a profit.

### 1.5 The listed Italian companies

The Italian Stock Exchange takes its origin in 1808 with a decree signed by the Viceroy Eugène Napoléon who formed the Milan Merchandise Exchange (Borsa Italiana, 2022).<sup>39</sup> It has been an institutional organization until 1996 after the privatization of the Italian Stock market that led to the birth of the actual Borsa Italiana S.p.A. which has the aim to manage the stock exchange. The ownership change see first the London Stock Exchange bought it in 2007 and then the Euronext group in 2020 acquiring the Borsa for 4,3 Billion euros.<sup>40</sup>

The Stock Exchange managed by Borsa Italiana is divided into different market segments depending on the products traded:

- Derivatives: trading of financial contracts, set between two or more parties, that derive their value from an underlying asset, group of assets, or benchmark.<sup>41</sup>
- ETFs: are baskets of securities that track an underlying index.<sup>42</sup>
- Obligations: any outstanding debts or regular payments that a party must make.<sup>43</sup>
- Shares: units of equity ownership in a corporation. This market segment allows the trading of stocks, which are a type of security that gives stockholders a share of ownership in a company.<sup>44</sup>

The latter market is the most flourishing among all, with the largest number of transactions counting 1.168.878 contracts stipulated during the 5 days from 2022, May 30<sup>th</sup> to 2022 to June 3<sup>rd</sup> corresponding to more than 9 billion euros in value (Borsa Italiana, 2022).<sup>45</sup>

---

<sup>39</sup> Borsa Italiana website. <https://www.borsaitaliana.it/borsaitaliana/storia/storia/nascita-della-borsa-italiana>.

<sup>40</sup> Wikipedia. [https://it.wikipedia.org/wiki/Borsa\\_Italiana](https://it.wikipedia.org/wiki/Borsa_Italiana).

<sup>41</sup> U.S. Securities and Exchange Commission. 2022. <https://www.sec.gov/answers/forcurr.htm>.

<sup>42</sup> Madhavan, A. 2018. Exchange-Traded Funds, Market Structure, and the Flash Crash. *Financial Analysts Journal*. 68(4), 20-35. Doi: <https://doi.org/10.2469/faj.v68.n4.6>.

<sup>43</sup> Federal Reserve Bank of St. Louis. (2022). "Household Financial Obligations as a Percent of Disposable Income."

<sup>44</sup> Invesort.gov. (2022). <https://www.investor.gov/introduction-investing/investing-basics/investment-products/stocks>.

<sup>45</sup> Borsa Italiana Statistics. (2022). <https://www.borsaitaliana.it/borsa/indici/scambi-mercato-diurno-ultimi-giorni>.

The share markets where the securities are exchanged are the MTA (Mercato Telematico Azionario); the MTF (Multilateral Trading Facility); the MIV (Mercato degli Investment Vehicles); and the Borsa Italiana Equity MTF, divided into the GEM and the TAH, respectively the Global Equity Market and the Trading After Hours.

The MTA is reserved for the medium-large capitalization companies, and it is settled by different indices which are: FTSE Italian All-Share; FTSE MIB; FTSE Mid Cap; FTSE Italian Small Cap. For the aim of this work, to focus the attention on the most important segment of the stock exchange, only the firms that make up the FTSE MIB index are taken into consideration for the analysis.

As just explained, the FTSE MIB is the most significant stock index of the Italian Stock Exchange. It is a basket that contains the shares of the Italian companies with greater capitalization, representing over 80% of the total capitalization and almost 90% of the turnover. The FTSE MIB Index measures the performance of 40 Italian equities (list of companies in Exhibit 1) and seeks to replicate the broad sector weights of the Italian stock market (Borsa Italiana, 2022).<sup>46</sup>

---

<sup>46</sup> Borsa Italiana Website. (2022). <https://www.borsaitaliana.it/borsa/indici/indici-in-continua/dettaglio>.

## **2. The data**

The purpose of this elaborate is to try to analyze and understand what is the effect that dividend policies and buyback programs have on the value performance of the Italian companies listed on the Italian Stock Exchange.

In the previous paragraph, I explained the reasons why I chose the FTSE MIB index as the benchmark of the research, in this one I want to make clear the method used to pursue the objective of the work. I will show at first the way I collected the data, with a brief insight of descriptive statistics, secondly, how I elaborated the data collected, and lastly, the empirical method on which I based the analysis.

### **2.1 Data collection and database construction**

Collecting data can seem easy and one could think that simply searching on browsers and the web is enough to get what a research project needs. Nevertheless, the actual picture of this process is much more complicated, especially if, as in this case, the researcher tries to give the work a scientific foundation based on processes accepted from the research world. To reach this goal I had to deeply analyze all the sources used, to be sure that the data used for the analysis were safe and reliable. Perhaps, for the literature review paragraph, I used many papers and works from other students, researchers, and professors, that I can trust given that I took them only from official scientific journals or research associations properly reviewed.<sup>47</sup>

To get the analytical information useful to build a model and to pull out the results, I sought for historical data of the FTSE MIB companies from 2015 to 2019. I decided to use a 5-year period because it is a reasonable term that allows getting an acceptable number of observations. Furthermore, I avoid getting the data from 2020 and 2021 given that companies have been highly affected by the global pandemic situation due to Coronavirus. The reason I avoided the Covid-19 effects is that the aim of this work is to look for the correlation between the dividends and the shares repurchases, and the performance with no extraordinary facts that with no doubt influenced the performance on its own.

---

<sup>47</sup> See the reference paragraph at the bottom of this thesis and in the footnotes.

In the first chapter, in the performance measurement part, I showed the meaning of the variables that can better describe the performance of a firm, that are the enterprise value and the return on equity. Besides these indices, I sought for the dividend yield and the shares owned year per year. I also collected the data regarding other indices and the price close as I show in Exhibit 2, representing all the data collected and used for the work.

The data have been taken from different databases and websites such as Refinitiv<sup>48</sup> which is one of the world's largest providers of financial markets data and infrastructure; Orbis, which is the largest database available with data on 400 million global companies, and it is the most comprehensive source of comparable data on listed and unlisted companies around the world<sup>49</sup>; while AIDA<sup>50</sup> contains comprehensive information on companies in Italy. In addition, I used data from the Borsa Italiana website, the official website of the Italian Stock Exchange, and lastly, the financials published directly from the companies given the mandatory transparency of listed companies provided for by the regulations. The latter especially regarding the buyback programs due to the lack of information needed in the databases I mentioned before.

For each company from 2015 to 2019 I extracted the value of enterprise value (EV), market capitalization (Markt Cap), dividend yield (DY), price close, return on equity (ROE), return on assets (ROA), and the own shares booked in the balance sheet.

Among the 40 companies composing the FTSE MIB index, I had to eliminate 5 companies due to a lack of data that would have brought to not clear results. Even for other companies, in particular, Italgas and Ferrari, there are some data missing in 2015, but in this case, I could have estimated them by the software used for the analysis.

All the data hereby reported have been collected in raw format and saved on Microsoft Excel software, where they have been personally elaborated.

## **2.2 Descriptive statistics**

To better understand the Italian listed companies' environment, it could be useful to report some descriptive facts and statistics about the firms I have analyzed.

First, as I mentioned in the previous paragraph, the statistics that I hereby report are referred to the representative sample of the FTSE MIB index net of the companies for which it was not

---

<sup>48</sup> <https://www.refinitiv.com/en/products/refinitiv-workspace>.

<sup>49</sup> <https://www.bvdinfo.com/it-it/le-nostre-soluzioni/dati/internazionali/orbis>.

<sup>50</sup> <https://www.bvdinfo.com/en-gb/our-products/data/national/aida>.

possible to obtain data. The total sample is composed of 35 out of 40 firms that correspond to 87,5% of the total.

The index is heterogeneous both in the size and in the type of the firms and industries to which they belong, despite this, it is possible to identify some interesting facts that describe the Italian scenario.

To evaluate the concentration of the index I exploited two indices that I have learnt during the class of Industrial Dynamics held by Professor Valentina Meliciani, these are the K-firm concentration ratio and the Herfindahl-Hirschman Index (HHI).

The K-firm concentration ratio ( $CR_k$ ) is usually calculated as the sum of the market share percentage held by the largest specified number of firms ( $k$ ) in an industry. In this work, I computed it to evaluate the composition of an index instead of an industry to understand the percentage of the largest firms on the index. The most commonly used number of this ratio is 4, so I run it on the 4 largest firms by market capitalization, computing a 5-year average of it, from 2015 to 2019.

The Herfindahl-Hirschman Index (HHI) is an alternative indicator of firm size, calculated by squaring the percentage share of each firm in an industry, then summing these squared market shares to derive an HHI (Kenton, 2020)<sup>51</sup>.

The respective formulas of the indices are shown below:

$$CR_k = \sum_{i=1}^k S_i$$

$$HHI = \sum_{i=1}^N S_i^2$$

Where:

- $K$  is the number of firms taken into consideration, in this case, is 4.
- $S_i$  is the weight of the single firm's market capitalization during the period.
- $N$  is the total number of firms in the index, in this sample is 35.

The result of this analysis shows that the  $CR_k$  has a value of almost 40%, while the HHI is roughly 6% (see Exhibit 3). This means that the FTSE MIB index is heterogeneous but there are the 4 largest companies that hold 40% of the total market capitalization. To make it clear

---

<sup>51</sup> Kenton, W. 2020. Investopedia. <https://www.investopedia.com/terms/c/concentrationratio.asp>.

how the composition of the index is, see Exhibit 4 which represents a graphical representation of what was just explained.

Prosecuting in the descriptive analysis of the sample I divided the companies among the industries they belong to, identifying which are the most common sectors in the index.

The analysis shows that Banking Services is the main industry with 8 firms belonging to it, followed by Energy with 5 frequencies and, Oil & Gas as likely as Machinery and Heavy industry. The results of this analysis are shown in Exhibit 5 in the Appendix paragraph at the end of the paper.

In the same framework data on the size of the industries composing the index are reported in Exhibit 6. This view shows that the biggest industry in the FTSE MIB is the Freight & Logistics Services with an average Enterprise Value in the period considered of 64,45 Billion Euro, followed by Transport Infrastructure and Banking Services respectively with 48,6 and 46,31 Billion Euro.

Another perspective has been taken to realize how many firms have used the instruments of dividend and share repurchase as a financial strategy during the period taken into observation. The results of this perspective confirm what has been said in the literature review chapter, that is the high attention from the companies to these types of policies<sup>52</sup>.

Indeed, the number of listed Italian companies which have used both the buyback and the distribution of dividends has grown over the years. (The corresponding results are summarized in Exhibit 7 and the relative graphs).

In particular, data show that 24 firms booked their own shares in their financial statements in 2015, representing thus 69% of the total, while in 2019 this observation grew to 30 companies out of the total sample, showing a year-on-year growth of almost 6% on average.

Instead, on the hand of the dividend policy, the yearly growth of enterprises that adopted dividends is less marked and the variability is higher. In fact, from 2015 the percentage of dividends' users has grown at first, gradually decreasing in the following 2 years reaching a minimum in 2018, and then has strongly resumed (+13,79%) in 2019 getting 33 companies out of 35, almost 95% of the total. Overall, this pattern shows the strong feeling of the companies with buyback programs and the distributions of dividends.

---

<sup>52</sup> Many works show that on average, a great number of companies use the dividend and the buyback in their financial strategy with different purposes. See the first chapter about previous studies carried on these subjects.



### **3. Empirical analysis**

So far, I reported the theory and the past studies done about the topic, and how I collected and elaborated the data needed for this study. In this paragraph I will come out with the core analysis of the research, I will explain the research question found and the empirical model I used to examine it.

The literature review section shows many past and recent studies about the correlation between performance and dividend policy, and that one between performance and share buyback. I have synthesized the results of these in Exhibit 8, which clearly represents the findings. The table shows us that for the buyback topic, researchers found out a positive correlation with the performance in the 50% of the cases, on the other hand, 20% of the studies show a negative one, and in addition, a 30% of these bring to the conclusion that share repurchase does not affect the firms' performance. Overall, it is true that the majority tends to a positive conclusion, nevertheless, it is not a one-way road, and this leaves space to further analysis.

On the dividend side instead, the table indicates that roughly 57% of the research show off a positive effect of the dividend policy on the enterprises' performance, then almost 29% a negative one, and the remaining demonstrate that there is no effect of dividends on the value of a company. Again, as in the share repurchase case, the positive conclusion appears most often but at the same time it is not undiscussable given that is just slightly above the majority.

#### **3.1 Research question and Hypotheses developing**

Besides the results given by the works, that lead to a not univocal conclusion, I observed a strong lack of official analysis of this topic in the Italian context. Thus, the question I would like to try to clarify is if the results shown in the research done in other parts of the globe could be applied to explain the Italian companies' performance behavior. Deeper, what is the effect of the dividend policy and the buyback programs on the Italian listed companies' performance?

From this research question I developed the Hypotheses of the model:

**H<sub>0</sub>**: There is no correlation between Buyback and Dividend policy, and the firms' performance.

**H<sub>1</sub>**: Buyback and Dividend policy have a direct effect on the firms' performance.

### 3.2 Correlation Analysis: model and results

In statistics, a correlation is a relationship between two variables such that each value of the first corresponds to a value of the second, following a certain regularity. Correlation does not depend on a cause-and-effect relationship but on the tendency of one variable to change as a function of another (Enriques, Bottazzi, Mortara, 1931).<sup>53</sup>

To understand the value of the correlation we can call into question the Pearson's correlation index, which indicates the correlation degrees between 2 variables as the ratio between the covariance<sup>54</sup> of the variables and the product of their standard errors.<sup>55</sup> If the correlation put in a relationship only 2 phenomena, that identifies a simple correlation, that is the one I used for the work.

Given 2 variables  $x$  and  $y$ , the correlation between these can be expressed as:

$$\rho_{xy} = \frac{\sigma_{xy}}{\sigma_x \sigma_y}$$
$$= \frac{\sum_{i=1}^n (x_i - \mu_x)(y_i - \mu_y)}{\sqrt{\sum_{i=1}^n (x_i - \mu_x)^2} \sqrt{\sum_{i=1}^n (y_i - \mu_y)^2}}$$

Where:

- $n$ : is the number of variables per each variable  $x$  and  $y$ .
- $\sigma_{xy}$ : is the covariance between  $x$  and  $y$ .
- $\sigma_x$  and  $\sigma_y$  are respectively the standard deviation of  $x$  and the standard deviation of  $y$ .

The correlation index  $\rho_{xy}$  assumes a value between -1 and +1. Given this, a correlation is:

- Positive: when the  $\rho_{xy}$  is greater than 0, meaning that a variation of one element directly affects the other as well in a positive way.
- Negative: when the  $\rho_{xy}$  is less than 0, meaning that a variation of one element negatively affects the other's variation.
- No correlation: when  $\rho_{xy}$  is equal to 0 (or even very close to).

---

<sup>53</sup> Enriques, P., Bottazzi, F., Mortara, G. (1931). Treccani.it. <https://www.treccani.it/enciclopedia/correlazione>.

<sup>54</sup> The covariance of two random variables  $X$  and  $Y$  is the expected value of the products of their distances from the mean:  $\text{Cov}(X, Y) = \mathbb{E}[(X - \mathbb{E}[X])(Y - \mathbb{E}[Y])]$ .

<sup>55</sup> [https://it.wikipedia.org/wiki/Correlazione\\_\(statistica\)](https://it.wikipedia.org/wiki/Correlazione_(statistica)).

In the model used for the analysis, per each of the companies making up the sample, I computed the correlation to identify 4 different indices, seeking them between the enterprise value and the dividend yield; the enterprise value and the buyback; the ROE and the dividend yield, and at last the ROE and buyback. In this way, I tried to understand and make clear if, based on a simple linear relation, there was a correlation between the variables and what was the meaning of it.

In Exhibit 9 in the appendix paragraph, I report the results of this analysis, and I summarize it in the related table at the bottom. The table shows off that for the correlation between enterprise value and dividend yield there are 11 companies that demonstrate a positive correlation, 2 companies (Enel and Poste Italiane) with a value close to 0, hence considered independent<sup>56</sup>, and the remaining 22 that have a negative one, thus, for this relation the overall effect can be taken as negative. Similarly, with 13 positive correlations, 20 negatives, and 2 independents (Ferrari and Terna), the dividend yield effect on the ROE can be taken as negative as the previous.

On the side of the buyback instead, the association is less marked, indeed it can be seen in the table that the positive correlations appear 13 times, against the 15 of the negative, and there are 8 companies (Terna, Tenaris, Telecom, Stellantis, Leonardo, Italgas, Azimut, CNH Industrial) showing an independency or a not applicable formula due to the data missing. In this case the overall effect of the share repurchase on the enterprise value is unclear, given that the number of observations between positive and negative is very close to each other. Lastly, the valuation of the effect of the buyback on the ROE is again unclear for the same reasons as the previous. Indeed, there are 15 firms affected positively, 14 negatively, and 6 with data not applicable.

In synthesis, with the results shown in the simple correlation analysis firm by firm, I can conclude that for some companies subsists either a positive or a negative relationship and for some others an independency among the variables. This means that overall, for the purpose of the research that aims to discover a clear pattern in the listed companies' environment, it is not possible to affirm that the effect of the variable called into question is strictly positive or negative, but rather that the performance needs more variable to be explained.

---

<sup>56</sup> I considered independent a value close to 0 in the range (-3,+3).

Nevertheless, to better and deeper assess the research question of this study I have run another model based on the correlation, with the difference that here I have evaluated the data through a non-linear model that is the Multiple Linear Regression Model.

### 3.3 Multiple Linear Regression: model and results

Multiple linear regression is an extension of correlation analysis and simple linear regression.

Like correlation analysis, linear regression makes it possible to analyze the relationship between variables. In fact, it allows to study both its direction and its significance. Furthermore, the regression allows you to quantify how much on average the dependent variable will increase given an independent variable change. In the multiple linear regression model, two or more explanatory variables are included to study the effect of more  $x$  on  $y$  at the same time.

In linear regression, the relationships are modeled using linear predictor functions whose unknown model parameters are estimated from the data. The general model equation is stated as follows for the simple linear regression model:

$$y_i = \beta_0 + \beta_1 x_i + \varepsilon_i$$

With  $i = 1, \dots, N$ .

Where:

- $y_i$ : is the dependent variable, that is the variable the model tries to explain.
- $x_i$ : is the independent variable, that one that describes the model.
- $\beta_0$ : is the first parameter that has to be estimated by the model. This represents the intercept of the line.
- $\beta_1$ : is the other parameter that needs to be estimated by the model. This represents the slope of the line.
- $\varepsilon_i$ : is the error term.

The multiple linear regression model is simply the same equation added by more than one explanatory variable:

$$y_i = \beta_0 + \beta_1 x_{i1} + \dots + \beta_p x_{ip} + \varepsilon_i$$

With the data shown in the previous paragraph of data collection I have constructed a database in Excel and then I have used this to run a Multiple Linear Regression Model through XLSTAT Cloud, which is a free application for statistics and data analysis. This software allows the analysis of the data to estimate the coefficient of the equation to build the line of regression and it gives many insights into the parameters of the model.

Firstly, I have analyzed the combined effect of dividend yield and buyback on the enterprise value, then I have done the same on the Return on Equity variable. Doing this I wanted to evaluate if combining the two independent variables there was a clearer effect on the dependent variable studied separately. I have used this approach in two ways, the first has been carried on evaluating the correlation firm by firm, to understand if the single results found in the simple correlation analysis were statistically significant or not, the second one has been used to evaluate the total effect on the FTSE MIB index, and I have run the model year per year from 2015 to 2019.

Before presenting the result, it is necessary to examine the components of the model that represent the significancy in statistics.

The  $R^2$  is the coefficient of determination, it represents the proportion of the variation in the dependent variable that is predictable from one or more independent variables. Its main purpose is either the prediction of future outcomes or the testing of hypotheses, on the basis of other related information. It provides a measure of how well observed outcomes are replicated by the model, based on the proportion of total variation of outcomes explained by the model. The coefficient of determination  $R^2$  is a measure of the global fit of the model. Specifically,  $R^2$  is an element of  $[0, 1]$  and represents the proportion of variability in  $Y_i$  that may be attributed to some linear combination of the regressors (Glantz, Slinker, 1990).<sup>57</sup>

---

<sup>57</sup> Glantz, S., A., Slinker, B. K. (1990). *Primer of Applied Regression and Analysis of Variance*. McGraw-Hill. ISBN 978-0-07-023407-9.

The basic formula of this coefficient is the following:

$$R^2 = 1 - \frac{SS_{res}}{SS_{tot}}$$

To explain this, it is requested to start from the definition of the mean of the data observed in any analysis. The mean can be computed as follow:

$$\bar{y} = \frac{1}{n} \sum_{i=1}^n y_i$$

Then it is necessary to define two different types of variability that are the sum of squares of residuals ( $SS_{res}$ ), and the total sum of squares ( $SS_{tot}$ ):

$$SS_{res} = \sum_i (y_i - f_i)^2 = \sum_i e_i^2$$

$$SS_{tot} = \sum_i (y_i - \bar{y})^2$$

Thus,  $R^2 = 1$  indicates that the fitted model explains all variability in  $y$ , while  $R^2 = 0$  indicates no linear relationship between the response variable and regressors (Draper, Smith, 1998)<sup>58</sup>.

This is easy to understand give that  $R^2$  is equal to 1 when  $SS_{res}$  is equal to 0, then,  $R^2$  is equal to 0 when  $SS_{res}$  is equal to 1, meaning that the model always predicts the mean, that hence has on itself a prediction value, at last,  $R^2$  is negative when  $SS_{res}$  is greater than 0, in this case the model has the worst predictive value.

The pursue of this study, as stated in the research question paragraph, is understand if the dividend policy and the buyback influence the performance identified as the enterprise value and the Return on Equity among the Italian companies listed in the FTSE MIB index.

In that paragraph, a null hypothesis ( $H_0$ ) and an alternative one ( $H_1$ ) have been developed.

To test the hypothesis, I have built a multiple linear regression model, and to interpret the result of this model it is necessary to introduce a fundamental element that is the p-value.

---

<sup>58</sup> Draper, N. R., Smith, H. (1998). Applied Regression Analysis. Wiley-Interscience. ISBN 978-0-471-17082-2.

Basically, the p-value is the probability of obtaining results at least as extreme as the observed results of a statistical hypothesis test, assuming that the null hypothesis is correct. When a hypothesis test is performed, a null hypothesis and a threshold value  $\alpha$  are fixed, which indicates the level of significance of the test<sup>59</sup>. In this analysis, the  $\alpha$  has been fixed to 0,05 because it is conventionally accepted in the research field.

The p-value is used to accept or reject the null hypothesis, that in this case is that there is no correlation between Buyback and Dividend policy, and the firms' performance.

The p-value's operation is quite simple, and it is summarized below:

- If  $p\text{-value} > \alpha$ : the empirical evidence is not sufficiently contrary to the null hypothesis which therefore cannot be rejected.
- If  $p\text{-value} \leq \alpha$ : the empirical evidence is strongly opposed to the null hypothesis which therefore must be rejected. In this case, the observed data is said to be statistically significant.

The results of the analysis carried out in this paper show off that in most of the cases (see the exhibits from 10 to 19), regarding the correlation between dividend yield and buyback and both the enterprise value and the return on Equity analyzed per every year, the p-value is greater than alpha, that leads to accepting the null hypothesis.

On the other hand, the  $R^2$  value is mostly near to 0, meaning that the model does not explain the dependent variable by the explanatory variables better than a simple mean. Based on this I can affirm that there is no clear correlation between the dividend policy and the buyback, and the value performance in the listed Italian companies' environment. This result is confirmed even by the correlation matrix that demonstrates an independency relationship among the variables in almost all the cases.

The same result comes out analyzing the relationship on the single firm data as shown in Exhibit 20. Indeed, overall, only Diasorin shows a positive relationship with statistically significant p-values both for enterprise value and return on Equity and a  $R^2$  value near to 1.

---

<sup>59</sup> <https://www.investopedia.com/terms/p/p-value>.

#### 4. Conclusion

This paper has investigated the relationship between buyback and dividend policy and the value performance in the Italian companies listed in the FTSE MIB index of the Italian Stock Exchange. In the past and in recent years this topic has been largely discussed by researchers, analysts, and professors all over the world.

Despite the always high interest in the relationship between dividends and performance, and share repurchase and performance, the effect of these variables is still not unambiguous, and the results pointed out so far are sometimes in contrast to each other.

As several times affirmed, this work wants to try to clarify the question of how these financial decisions affect the value of a firm.

In detail, I collected the data from reviewed and trustable financial websites, and from the financials published directly from the companies during the period 2015-2019, creating a sample of a total 35 companies belonging to the FTSE MIB index. For each of these, I extracted the value of different indices to come out with a reliable description of the environment.

The research has been based on 2 different methodologies to test the research question described by the research hypotheses, these are the analysis of the simple correlation and the analysis of the multiple linear regression.

The results shown by the analysis of simple correlation demonstrate that per each company is possible to identify a positive or negative correlation that can explain the enterprise value and the ROE by the dividend yield, but the relationship is not clear, and even less clear is the relationship with the buyback. Similarly, the multiple linear regression model removes further doubts about the independence of the variables investigated. In fact, the model does not explain the dependent variables by the explanatory ones.

The conclusion of this analysis is that overall, there is not a clear and defined correlation, thus I can affirm that the enterprise value and the ROE, taken as indicators of the value performance, are independent of the buyback and dividend policies. This result can be compared with more than one past research.<sup>60</sup>

---

<sup>60</sup> See Exhibit 8 for the summary of the results found in the past research.



Indeed, Chandren, Ahmad, and Ali in 2017 concluded that there was no correlation between the share buyback and the performance of the companies. Bhullar, Bhatnagar, and Gupta in 2018 came to the same conclusion after having analyzed the effects of share repurchase on the firm value of the 180 Indian companies listed on the Bombay Stock Exchange of India from 2006 to 2016. Again, I can report the findings of Mukherjee and Chatterjee in 2019, who found that most of the firms analyzed experienced no change in the value after the buyback programs were announced.

Moving to the dividend policy side, even the remarkable research of Miller and Modigliani in 1961 conducted to affirm that dividends did not affect the performance, and at last, few years later, in 1976, Black showed similar results concluding that there was no correlation between dividend policies and enterprises' performance.

Just with a Black's statement on dividends that could be used for buybacks too, I would like to conclude this paper: "the harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together".

## **Suggestions for future research**

The aim of this paper is to understand the relationship between the buybacks' and dividend policies' effects on the value performance of the listed Italian companies.

Given that I focused the attention only on those listed on the FTSE MIB, a first suggestion could be that of examining this connection even in the other indices belonging to the Italian Stock Market to reach a wider perspective of the environment.

Probably to find a relationship between these variables and the performance of a firm, a future researcher should take into consideration more quantitative variables and even some qualitative ones.

From the time perspective, I only called into question a medium period, taking data from 2015 to 2019 with a total of 5 years of observations. From this point of view, it could be interesting extending the period to better establish a pattern over the years.

On the hand of the empirical analysis, I used only two explanatory variables related to two dependent ones. Given the method based on the correlation and on the multiple linear regression, I hereby suggest analyzing more variables on both sides. This is because exactly intercepting the variable that can summarize what a value performance is, is all but easy, and probably much more quantitative (and qualitative) variables are needed.

## References

- Ajanthan, A. (2013). The relationship between dividend payout and firm profitability: a study of listed hotels and restaurant companies in Sri Lanka. *International Journal of Scientific and Research Publications*, 3(6).
- Allen, F., Michaely, R., (2002). Payout policy. *Handbook of the Economics of Finance: Corporate Finance*. Volume 1A, Chapter 7, Elsevier, Amsterdam, The Netherlands.
- Black, F. (1976). The dividend puzzles. *Journal of Portfolio Management*. 2(2), 5-8. DOI: <https://doi.org/10.3905/jpm.1976.408558>.
- Buhllar, P. S., Bhatnagar, D., Gupta, P., (2018). Impact of buyback of shares on firm value: empirical evidence from India. *Iranian Journal of Management Studies (IJMS)*. 11(3), 425-436. DOI: 10.22059/ijms.2018.246143.672914.
- Chandren, S., Ahmad, Z., Ali, R., (2017). The impact of accretive share buyback on long-term firm performance. *International Journal of Economics and Management*. 11(1), 49-66.
- Cohen, E. (1994). *Analyse financière*. Economica, Paris.
- Dang, N. H., Vu, V. T. T., Ngo, X. T., Hoang, H. T. V. (2020). Impact of dividend policy on corporate value: Experiment in Vietnam. *International Journal of Finance and Economics*, 26, 5815-5825.
- Dawid, H., Harting, P., Van Der Hoog, S., (2019). Manager remuneration, share buybacks, and firm performance. *Industrial and Corporate Change*, Oxford University Press. 28(3), 681-706. doi: 10.1093/icc/dty073.
- Draper, N. R., Smith, H. (1998). *Applied Regression Analysis*. Wiley-Interscience. ISBN 978-0-471-17082-2.
- Enriques, P., Bottazzi, F., Mortara, G. (1931). *Treccani.it*.
- Federal Reserve Bank of St. Louis. (2022). "Household Financial Obligations as a Percent of Disposable Income."
- Frankfurter, G. M., Wood, B. G. Jr. (2002). *International Review of Financial Analysis*. 11(2), 111-138. Doi: [https://doi.org/10.1016/S1057-5219\(02\)00071-6](https://doi.org/10.1016/S1057-5219(02)00071-6)
- Georgopoulos, B.S., Tannenbaum, A.S. (1957). A study of organizational effectiveness. *American Sociological Review*, 534-540.
- Glantz, S., A., Slinker, B. K. (1990). *Primer of Applied Regression and Analysis of Variance*. McGraw-Hill. ISBN 978-0-07-023407-9.

- Gupta, M., (2017). Share buyback and announcement effects: an industry wise analysis. *FIIB Business Review*. 6(2), 43-50.
- Hafeez, M. M., Shahbaz, S., Iftikhar, I., Butt, A. H. (2018). Impact of dividend policy on firm performance: (evidence from the manufacturing firms in Pakistan). *International Journal of Advanced Study and Research Work*, 1(4), 2581-5997. DOI: 10.5281/zenodo.1312180.
- Henning, N., (2019). Stock buybacks and innovation: an analysis of the effects of share repurchases on research & development expenditures. *Economics Student Theses and Capstone Projects*. 140.  
[https://creativematter.skidmore.edu/econ\\_studt\\_schol/140](https://creativematter.skidmore.edu/econ_studt_schol/140).
- Kahn, K., Lamrani, H. C., Khalid, S. (2019). The impact of dividend policy on firm performance: a case study of the industrial sector. *Risk Governance & Control: Financial Markets & Institutions*. 9(3), 23-31. DOI: 10.22495/rgcv9i3p2.
- Kanakriyah, R. (2020). Dividend policy and companies' financial performance. *Journal of Asian Finance, Economics and Business*. 7(10), 531-541. doi: 10.13106/jafeb.2020.vol7.no10.531.
- Kenton, W. 2020. Investopedia.  
<https://www.investopedia.com/terms/c/concentrationratio.asp>.
- Kim, H. J., Jo, H., Yoon, S. S., (2013). Controlling shareholders' opportunistic use of share repurchases. *Review of Quantitative Finance & Accounting, Springer Science & Business Media*. 41, 203-224. DOI 10.1007/s11156-012-0306-z.
- Lease, J.O. (2010) Measuring and analysing the effects of dividend policy in banking profits and growth, *Journal of Policy and Development Studies*, 9(1), 167-178.
- Lebars, M., Euske, K. (2006). A conceptual and operational delineation of performance. *Business Performance Measurement*. Cambridge University Press.
- Li, Zhen, Li, Xiaoyang, (2021). Stock buyback: Toxic cure for the company to get out the dilemma. *Journal of Economics, Business and Management*. 9(1), 9-14. doi: 10.18178/joebm.2021.9.1.647.
- Litzenberger, R. H., Ramaswamy, K. (1982). The Effects of Dividends on Common Stock Prices Tax Effects or Information Effects?. *The Journal of Finance*, 37(2), 429-443.
- Madhavan, A. 2018. Exchange-Traded Funds, Market Structure, and the Flash Crash. *Financial Analysts Journal*. 68(4), 20-35. Doi: <https://doi.org/10.2469/faj.v68.n4.6>.

- Manconi, A., Peyer, U., Vermaelen, T., (2019). Are Buybacks good for long-term shareholder value? Evidence from buybacks around the world. *Journal of Financial and Quantitative Analysis*. 54(5), 1899-1935. doi:10.1017/S0022109018000984.
- Margono, F. P., Gantino, R. (2021). The influence of firm size, leverage, profitability, and dividend policy on firm value of companies in Indonesian stock exchange. *Copernical Journal of Finance & Accounting*. 10(2), 45-61. <http://dx.doi.org/10.12775/CJFA.2021.007>.
- Md. Musharof, H., Afzal, A., (2015). Is buying back of shares a dangerous financial strategy? *Global Journal of Management and Business Research: Economics and Commerce*. 15(7), 32-35.
- Michaely, R., Thaler, R., Womack, K. (1995). Price reactions to dividend Initiations and omissions: overreaction or drift? *Journal of Finance*. 50(2), 573-608.
- Miller, M. H., Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *The Journal of Business*. 34(4), 411-433.
- Mukherjee, P., Chatterjee, C., (2019). Does share repurchase announcement lead to rise in share price? Evidence from India. *Global Business Review*, Sage. 20(2), 420-433. DOI: 10.1177/0972150918825327.
- Ogbuago, N. M. (2020). Effect of dividend policy on firms' performance. *Journal of accounting, business and social science*. 3(2), 36-53.
- Park, Seun Young, Park, Soo Yeon. (2022). Information shock and dividend policy in family-controlled firms: evidence from Korea. *Emerging Markets Finance & Trade*. 58(6), 1771-1793. <https://doi.org/10.1080/1540496X.2021.1926234>.
- Taouab, O., Issor, Z. (2019). Firm Performance: Definition and Measurement Models. *European Scientific Journal*. 15(1), 93-106. Doi:10.19044/esj.2019.v15n1p93.
- U.S. Securities and Exchange Commission. 2022.

### **Journal Articles**

- Condina, C. (2021, October 28). Atlantia scalda i motori per lanciare un piano di buyback da 2 miliardi. *Il Sole 24 Ore*, p.34.
- Condina, C. (2021, October 28). Atlantia scalda i motori per lanciare un piano di buyback da 2 miliardi. *Il Sole 24 Ore*, p.34.

## Websites

- [https://it.wikipedia.org/wiki/Analisi\\_della\\_regressione](https://it.wikipedia.org/wiki/Analisi_della_regressione)
- [https://it.wikipedia.org/wiki/Borsa\\_Italiana](https://it.wikipedia.org/wiki/Borsa_Italiana).
- [https://it.wikipedia.org/wiki/Correlazione\\_\(statistica\)](https://it.wikipedia.org/wiki/Correlazione_(statistica)).
- <https://www.borsaitaliana.it/borsa/glossario/dividendo.html?lang=it>.
- <https://www.borsaitaliana.it/borsa/glossario/enterprise-value>.
- <https://www.borsaitaliana.it/borsa/indici/indici-in-continua/dettaglio>.
- <https://www.borsaitaliana.it/borsa/indici/scambi-mercato-diurno-ultimi-giorni>.
- <https://www.borsaitaliana.it/borsaitaliana/storia/storia/nascita-della-borsa-italiana>.
- <https://www.bvdinfo.com/en-gb/our-products/data/national/aida>.
- <https://www.bvdinfo.com/it-it/le-nostre-soluzioni/dati/internazionali/orbis>.
- <https://www.investopedia.com/terms/p/p-value>.
- <https://www.investopedia.com/terms/s/sharepurchase>.
- <https://www.refinitiv.com/en/products/refinitiv-workspace>
- <https://www.sec.gov/answers/forcurr.htm>.
- <https://www.treccani.it/enciclopedia/correlazione>.
- Invesort.gov.(2022).<https://www.investor.gov/introduction-investing/investing-basics/investment-products/stocks>.

## **Appendix**

Exhibit 1: FTSE MIB index composition.

Exhibit 2: Total collected data

Exhibit 3: Descriptive Statistics, HHI and K-firm ratio.

Exhibit 4: Graphical representation of the weight of the FSTE MIB index.

Exhibit 5: Industry frequency in the FTSE MIB index. And related graph.

Exhibit 6: Industry size based on the 5-year average of the Enterprise Value. And related graph.

Exhibit 7: Companies adopting Dividends and Buyback from 2015 to 2019.

Exhibit 8: Tables of past studies on Dividend Policy and Buyback, related to performance.

Exhibit 9: Simple Correlation Analysis.

Exhibit 10: Multiple Linear Regression Model (enterprise value 2019).

Exhibit 11: Multiple Linear Regression Model (ROE 2019).

Exhibit 12: Multiple Linear Regression Model (enterprise value 2018).

Exhibit 13: Multiple Linear Regression Model (ROE 2018).

Exhibit 14: Multiple Linear Regression Model (enterprise value 2017).

Exhibit 15: Multiple Linear Regression Model (ROE 2017).

Exhibit 16: Multiple Linear Regression Model (enterprise value 2016).

Exhibit 17: Multiple Linear Regression Model (ROE 2016).

Exhibit 18: Multiple Linear Regression Model (enterprise value 2015).

Exhibit 19: Multiple Linear Regression Model (ROE 2015).

Exhibit 20: Multiple Linear Regression Model per single firm results.

**Exhibit 1: FTSE MIB index composition.**

<b>Company</b>	<b>Index Weight (%)</b>	<b>Country</b>
A2A	0,58	Italy
Amplifon	1,28	Italy
Atlantia	2,28	Italy
Azimut	0,56	Italy
Banca Generali	0,46	Italy
Banca Mediolanum	0,46	Italy
Banco BPM	1	Italy
Bper Banca	0,41	Italy
Campari	1,28	Italy
Cnh Industrial	3,47	Italy
Diasorin	0,78	Italy
Enel	11,56	Italy
Eni	8,07	Italy
Exor NV	1,76	Italy
Ferrari	6,05	Italy
Fineco Bank	2,07	Italy
Generali Assicurazioni	6,61	Italy
Hera	0,64	Italy
Interpump	0,9	Italy
Intesa San Paolo	8,48	Italy
Inwit	0,88	Italy
Italgas	0,7	Italy
Iveco group	0,29	Italy
Leonardo	0,88	Italy
Mediobanca	1,57	Italy
Moncler	2,67	Italy
Nexi	1,91	Italy
Pirelli	0,59	Italy
Poste Italiane	1,15	Italy
Prysmian	2	Italy
Recordati	1,08	Italy
Saipem	0,16	Italy
Snam	2,86	Italy
St Microelectronics	6,31	Italy
Stellantis	7,34	Italy
Telecom Italia SpA	0,88	Italy
Tenaris	1,58	Italy
Terna	2,69	Italy
Unicredit	5,17	Italy
Unipol	0,59	Italy

Source: personal elaboration based on <https://www.ftserussell.com/products/indices/italia> data



## Exhibit 2: Total collected data

Company	EV in 2019 (Millions)	EV in 2018 (Millions)	EV in 2017 (Millions)	EV in 2016 (Millions)	EV in 2015 (Millions)
A2A	8.767,2	8.352,5	8.204,9	7.581,5	7.515,7
Amplifon	7.006,6	4.002,2	3.197,1	2.276,4	2.014,4
Atlantia	63.498,1	64.083,9	35.583,6	34.054,9	33.323,0
Azimut	3.469,1	1.543,6	2.673,1	2.536,5	3.565,7
Banca Generali	3.037,3	999,1	3.515,0	2.306,4	3.557,6
Banca Mediolanum	10.965,3	9.384,6	7.090,6	6.791,9	13.759,8
Banco BPM	21.313,7	30.750,7	22.727,6	22.771,0	28.828,3
Bper Banca	8.831,4	11.792,2	12.903,6	15.542,4	17.020,2
Campani	10.051,9	9.239,0	8.273,9	6.438,1	5.044,4
Cnh Industrial	31.691,6	27.693,5	32.396,0	30.664,2	27.988,5
Diasorin	6.283,6	3.879,7	3.991,4	3.067,6	2.443,0
Enel	136.625,8	112.178,7	109.897,1	100.897,1	96.556,9
Eni	67.791,9	58.496,8	61.325,8	71.430,9	69.341,8
Ferrari	29.875,8	17.948,1	18.106,1	12.112,1	n.a.
Fineco Bank	5.809,2	4.464,9	4.208,1	2.180,5	4.886,6
Generali Assicurazioni	37.673,0	31.731,4	33.240,5	30.760,6	33.826,3
Hera	9.433,9	6.874,6	7.175,2	6.143,8	6.646,0
Interpump	3.451,3	3.121,4	3.133,9	1.954,1	1.819,6
Intesa San Paolo	158.707,6	137.946,7	148.995,0	151.143,0	192.572,1
Inwit	5.950,4	3.627,3	3.765,6	2.675,5	3.072,1
Italgas	9.122,4	7.927,6	7.819,9	6.643,6	n.a.
Leonardo	9.096,7	7.011,3	8.512,0	10.839,5	11.015,1
Mediobanca	31.193,8	29.969,7	28.360,2	28.975,8	32.388,6
Poste Italiane	72.563,8	61.978,2	59.446,8	56.737,0	55.515,4
Prysmian	8.085,4	6.934,6	6.551,4	6.096,0	5.388,8
Recordati	8.769,7	6.924,7	8.129,0	5.841,0	5.139,3
Saipem	5.662,2	4.566,2	5.187,2	6.881,3	8.772,4
Snam	27.834,2	24.796,3	26.182,6	24.757,5	30.688,1
St Microelectronics	21.517,0	10.565,0	16.188,0	9.410,1	5.336,6
Stellantis	17.894,0	21.599,6	28.241,7	17.758,8	23.553,6
Telecom	42.238,0	37.976,3	42.637,4	45.896,1	54.362,8
Tenaris	11.391,2	10.864,2	15.154,2	19.018,8	11.797,1
Terra	20.068,9	17.741,6	17.446,6	16.960,5	18.206,1
Unicredit	161.420,6	153.711,4	124.943,4	183.305,2	221.421,8
Unipol	9.584,9	7.360,8	6.759,6	7.782,7	8.091,3

Source: personal elaboration from Refinitiv Workspace, Orbis, AIDA.

**Exhibit 2 continues**

Company	Mrkt cap 2019 (Millions)	Mrkt cap 2018 (Millions)	Mrkt cap 2017 (Millions)	Mrkt cap 2016 (Millions)	Mrkt cap 2015 (Millions)
AZA	5.238,2	4.926,5	4.830,9	3.853,5	3.928,7
Amplifon	5.804,6	3.180,3	2.906,1	2.047,2	1.802,1
Atlantia	17.168,1	14.921,9	21.734,6	18.382,0	20.231,7
Azimut	3.042,5	1.365,8	2.287,8	2.272,0	3.303,5
Banca Generali	3.384,0	2.117,2	3.241,5	2.638,2	3.387,6
Banca Mediolanum	6.559,3	3.767,9	5.340,0	5.048,7	5.397,7
Banco BPM	3.072,8	2.980,0	3.969,8	1.897,2	4.639,5
Bper Banca	2.334,0	1.619,1	2.026,3	2.435,4	3.388,4
Campani	9.455,4	8.578,4	7.486,5	5.395,6	4.646,4
Cnh Industrial	13.341,9	10.677,1	15.240,4	11.264,5	8.685,6
Diasorin	6.456,4	3.955,5	4.140,2	3.147,1	2.710,7
Enel	71.898,8	51.280,7	52.155,1	42.578,1	36.597,9
Eni	50.318,9	49.962,8	50.151,8	56.220,9	50.151,8
Ferrari	28.681,3	16.813,9	16.948,1	10.724,5	n.a.
Fineco Bank	6.509,3	5.337,3	5.186,8	3.227,2	4.624,7
Generali Assicurazioni	28.876,0	22.851,4	23.739,5	22.025,6	26.342,3
Hera	5.809,2	3.965,2	4.334,6	3.265,1	3.649,4
Interpump	3.074,8	2.829,1	2.854,8	1.693,1	1.559,2
Intesa San Paolo	41.121,6	33.964,7	46.412,0	40.559,0	51.617,1
Inwit	5.238,0	3.579,0	3.720,0	2.641,2	3.024,0
Italgas	4.404,9	4.042,4	4.099,6	3.024,6	n.a.
Leonardo	6.041,7	4.436,3	5.709,0	7.712,5	7.458,1
Mediobanca	8.043,5	7.056,4	7.613,7	4.490,1	7.626,7
Poste Italiane	13.217,8	9.116,2	8.195,8	8.217,0	9.273,4
Pysmian	5.762,4	4.523,6	5.913,4	5.288,0	4.390,8
Recordati	7.856,8	6.334,4	7.750,2	5.629,7	5.037,8
Saipem	4.404,2	3.301,2	3.848,2	5.409,3	3.306,4
Snam	15.908,2	13.248,3	14.282,6	13.701,5	16.908,1
St Microelectronics	21.815,6	11.111,5	16.582,2	9.839,1	5.740,9
Stellantis	20.446,0	19.652,6	22.962,7	11.133,8	16.706,6
Telecom	11.749,0	9.861,3	14.546,4	16.866,1	21.594,8
Tenaris	11.850,6	11.112,3	15.535,9	20.033,7	12.997,1
Terna	11.967,5	9.955,5	9.736,4	8.747,5	9.559,5
Unicredit	29.078,6	22.065,4	34.698,2	16.904,8	30.661,7
Unipol	7.329,0	5.589,5	5.509,5	5.744,3	6.562,0

**Exhibit 2 continues**

Company	Price close 2019	Price close 2018	Price close 2017	Price close 2016	Price close 2015
A2A	1,7	1,6	1,5	1,2	1,3
Amplifon	25,6	14,1	12,8	9,1	8,0
Atlantia	20,8	18,1	26,3	22,3	24,5
Azimut	21,3	9,5	16,0	15,9	23,1
Banca Generali	29,0	18,1	27,7	22,7	29,2
Banca Mediolanum	8,9	5,1	7,2	6,8	7,3
Banco BPM	2,0	2,0	2,6	2,3	9,5
Bper Banca	3,0	2,3	2,9	3,4	4,8
Campari	8,1	7,4	6,5	4,6	4,0
Cnh Industrial	8,5	6,8	9,7	7,2	5,5
Diasorin	115,4	70,7	72,2	54,9	47,3
Enel	7,1	5,0	5,1	4,2	3,9
Eni	13,9	13,8	13,8	15,5	13,8
Ferrari	147,9	86,8	87,5	55,3	n.a.
Fineco Bank	10,7	8,8	8,5	5,3	7,6
Generali Assicurazioni	18,4	14,6	15,2	14,1	16,9
Hera	3,9	2,7	2,9	2,2	2,5
Interpump	28,2	26,0	26,2	15,6	14,3
Intesa San Paolo	2,4	1,9	2,8	2,4	3,1
Inwit	8,2	5,6	5,8	4,1	4,7
Italgas	5,4	5,0	5,1	3,7	n.a.
Leonardo	10,5	7,7	9,9	13,3	12,9
Mediobanca	9,1	8,0	8,6	5,2	8,8
Poste Italiane	10,1	7,0	6,3	6,3	7,1
Prysmian	21,5	16,9	26,3	23,6	19,6
Recordati	37,6	30,3	37,1	26,9	24,1
Saipem	4,4	3,3	3,8	5,4	9,4
Snam	4,7	3,8	4,1	3,9	4,0
St Microelectronics	24,0	12,5	18,2	10,8	6,2
Stellantis	10,6	9,2	10,9	6,3	6,2
Telecom	0,6	0,5	0,7	0,8	1,2
Tenaris	10,1	9,4	13,2	17,0	10,7
Terna	6,0	5,0	4,8	4,4	4,8
Unicredit	13,0	9,9	15,6	13,7	25,7
Unipol	2,6	2,0	2,0	2,0	2,4

**Exhibit 2 continues**

Company	Dividend Yield 2019	Dividend Yield 2018	Dividend Yield 2017	Dividend Yield 2016	Dividend Yield 2015
AZA	4.64%	4.45%	3.75%	7.33%	2.89%
Amplifon	0.55%	0.78%	0.55%	0.48%	0.54%
Atlantia	4.33%	3.60%	4.18%	4.13%	3.45%
Azinut	5.64%	10.49%	6.26%	9.46%	3.38%
Banca Generali	4.32%	6.89%	3.86%	5.30%	3.36%
Banca Mediolanum	4.63%	7.86%	6.10%	4.39%	3.83%
Banco BPM	0.00%	0.00%	2.94%	4.86%	0.00%
Bper Banca	2.90%	3.27%	1.43%	1.98%	0.28%
Campani	0.61%	0.68%	0.70%	0.97%	1.00%
Cnh Industrial	2.11%	2.11%	1.06%	1.90%	3.71%
Diasorin	0.78%	1.20%	1.11%	1.18%	1.27%
Enel	4.64%	5.83%	6.10%	5.97%	3.60%
Eni	6.00%	5.89%	5.87%	5.28%	6.98%
Ferrari	0.01%	0.01%	0.01%	0.01%	0.00%
Fineco Bank	2.83%	3.25%	3.28%	4.78%	2.62%
Generali Assicurazioni	7.61%	5.82%	5.26%	5.10%	3.55%
Hera	2.56%	3.57%	3.09%	4.11%	3.67%
Interpump	0.78%	0.81%	0.76%	1.22%	1.26%
Intesa San Paolo	8.39%	4.12%	3.54%	5.77%	2.27%
Inwit	2.57%	3.38%	2.52%	2.28%	0.00%
Italgas	4.30%	4.16%	0.00%	5.35%	0.00%
Leonardo	1.34%	1.82%	1.41%	0.00%	0.00%
Mediobanca	5.18%	0.00%	7.41%	4.85%	1.71%
Poste Italiane	5.88%	0.00%	6.69%	11.58%	0.00%
Prysmian	2.00%	2.46%	1.58%	1.72%	2.07%
Recordati	5.24%	0.00%	2.37%	5.27%	2.24%
Saipem	0.00%	0.00%	0.00%	0.00%	0.86%
Snam	4.93%	5.76%	7.26%	6.39%	0.00%
St Microelectronics	0.89%	1.73%	1.10%	2.47%	4.50%
Stellantis	6.11%	0.00%	0.00%	0.00%	0.00%
Telecom	5.04%	6.59%	4.61%	4.00%	2.89%
Tenaris	3.64%	3.79%	2.60%	2.41%	3.88%
Terna	4.01%	4.53%	4.30%	4.64%	4.21%
Unicredit	2.07%	3.23%	0.00%	22.01%	0.00%
Unipol	5.60%	7.34%	6.42%	7.39%	7.42%

**Exhibit 2 continues**

Company	ROA 2019	ROA 2018	ROA 2017	ROA 2016	ROA 2015
AZA	5.42%	4.74%	5.79%	3.41%	0.78%
Amplifon	5.27%	6.25%	8.90%	7.64%	6.85%
Atlantia	0.58%	1.93%	5.16%	4.58%	4.20%
Azimut	5.49%	2.21%	3.05%	2.39%	4.01%
Banca Generali	2.77%	2.26%	2.65%	2.21%	3.90%
Banca Mediolanum	1.38%	0.89%	1.03%	1.07%	1.26%
Banco BPM	2.50%	2.71%	1.98%	2.39%	n.a.
Bper Banca	0.53%	0.49%	0.28%	0.02%	0.35%
Campari	7.33%	7.66%	7.40%	5.22%	5.90%
Cnh Industrial	2.46%	3.93%	1.50%	-0.06%	1.34%
Diasorin	20.34%	22.56%	18.90%	19.36%	21.20%
Enel	2.52%	4.96%	4.63%	3.72%	3.28%
Eni	4.66%	8.54%	5.96%	0.72%	-2.95%
Ferrari	16.13%	13.49%	18.52%	14.28%	12.65%
Fineco Bank	2.28%	2.45%	2.63%	2.67%	2.99%
Generali Assicurazioni	0.79%	0.70%	0.64%	0.61%	0.67%
Hera	5.10%	4.59%	4.09%	4.10%	3.73%
Interpump	12.04%	14.53%	12.66%	10.43%	12.86%
Intesa San Paolo	0.70%	0.69%	0.98%	0.44%	0.59%
Inwit	7.54%	10.16%	9.69%	8.10%	5.38%
Italgas	-0.11%	-0.12%	-0.28%	-0.21%	n.a.
Leonardo	3.59%	1.90%	1.59%	2.62%	1.76%
Mediobanca	1.38%	1.52%	1.30%	1.06%	1.07%
Poste Italiane	0.99%	1.15%	1.15%	1.23%	1.41%
Prismian	4.23%	1.95%	4.52%	5.83%	5.07%
Recordati	15.81%	19.32%	18.92%	20.33%	18.07%
Saipem	1.75%	-1.85%	-0.84%	-1.45%	-4.06%
Snam	6.09%	5.76%	5.62%	4.47%	6.85%
St Microelectronics	4.01%	14.93%	3.16%	1.69%	1.52%
Stellantis	8.16%	4.24%	6.40%	2.98%	0.25%
Telecom	2.48%	-1.18%	2.58%	3.97%	0.63%
Tenaris	6.29%	7.74%	2.97%	0.25%	1.14%
Terna	5.98%	5.88%	5.84%	5.82%	5.70%
Unicredit	0.51%	0.47%	0.44%	-1.31%	0.06%
Unipol	1.69%	1.14%	0.07%	0.77%	1.07%

**Exhibit 2 continues**

Company	ROE 2019	ROE 2018	ROE 2017	ROE 2016	ROE 2015
A2A	15,91%	13,91%	19,12%	10,82%	2,33%
Amplifon	21,57%	23,25%	22,15%	19,25%	17,61%
Atlantia	3,16%	9,43%	17,56%	17,74%	16,88%
Azimut	58,69%	25,03%	40,39%	28,66%	38,25%
Banca Generali	35,45%	29,90%	32,41%	28,59%	37,41%
Banca Mediolanum	31,54%	20,45%	20,24%	20,87%	27,11%
Banco BPM	8,62%	-1,68%	25,76%	-21,30%	n.a.
Bper Banca	7,88%	7,06%	3,48%	0,19%	3,78%
Campari	14,85%	16,22%	16,82%	12,46%	14,29%
Cnh Industrial	15,36%	25,62%	11,13%	-0,42%	9,13%
Diasorin	25,49%	29,00%	24,09%	25,35%	25,56%
Enel	9,19%	17,14%	13,83%	10,99%	10,21%
Eni	12,00%	19,79%	14,24%	1,68%	-7,42%
Ferrari	26,05%	20,58%	30,96%	26,92%	25,26%
Fineco Bank	20,92%	23,68%	29,27%	31,09%	30,19%
Generali Assicurazioni	14,32%	15,35%	13,73%	12,85%	14,31%
Hera	17,55%	14,70%	13,28%	13,26%	12,31%
Interpump	23,15%	27,61%	25,13%	21,92%	26,24%
Intesa San Paolo	10,13%	10,04%	13,81%	6,52%	8,18%
Inwit	12,53%	12,68%	11,53%	9,68%	6,43%
Italgas	13,12%	11,57%	10,53%	10,80%	n.a.
Leonardo	18,09%	10,75%	8,85%	15,21%	10,74%
Mediobanca	10,94%	11,26%	9,94%	8,25%	8,54%
Poste Italiane	21,31%	28,83%	27,91%	23,70%	17,02%
Prysmian	17,06%	8,10%	18,21%	21,97%	21,77%
Recordati	37,05%	43,37%	37,88%	35,10%	30,51%
Saipem	5,53%	-5,35%	-2,31%	-33,47%	-18,81%
Snam	23,41%	21,74%	19,81%	13,84%	22,48%
St Microelectronics	7,13%	24,70%	5,89%	2,91%	2,58%
Stellantis	27,89%	16,50%	29,36%	16,05%	1,59%
Telecom	7,69%	-3,57%	7,47%	11,88%	2,10%
Tenaris	7,66%	9,29%	3,69%	0,30%	1,43%
Terna	25,46%	24,86%	25,82%	26,25%	26,34%
Unicredit	7,11%	6,86%	6,14%	-26,04%	0,92%
Unipol	19,25%	17,50%	1,14%	12,50%	17,35%

**Exhibit 2 continues**

Company	Own Shares 2019 (Thousands)	Own Shares 2018 (Thousands)	Own Shares 2017 (Thousands)	Own Shares 2016 (Thousands)	Own Shares 2015 (Thousands)
A2A	54.000,0	54.000,0	54.000,0	54.000,0	61.000,0
Amplifon	29.131,0	50.933,0	60.217,0	48.178,0	39.740,0
Atlantia	166.000,0	167.000,0	106.900,0	107.000,0	39.000,0
Azinut	23.713,0	46.337,0	130.028,0	81.288,0	80.727,0
Banca Generali	37.356,0	22.724,0	13.271,0	2.933,0	2.555,0
Banca Mediolanum	47.808,0	53.682,0	43.749,0	23.815,0	0,0
Banco BPM	11.518,0	12.610,0	14.146,0	1.590,0	1.416,0
Bper Banca	7.259,0	7.258,0	7.258,0	7.258,0	7.258,0
Campani	13.704,0	14.981,0	9.053,0	1.342,0	1.721,0
Cnh Industrial	14.268,0	10.568,0	870,0	1.278,0	0,0
Diasorin	81.849,0	87.784,0	22.183,0	38.025,0	25.459,0
Enel	1.000,0	0,0	0,0	0,0	0,0
Eni	981,0	581,0	581,0	581,0	581,0
Ferrari	8.640,0	6.002,0	4.969,0	5.000,0	0,0
Fineco Bank	7.351,0	13.960,0	365,0	4.338,0	8.555,0
Generali Assicurazioni	7.000,0	7.000,0	8.000,0	7.000,0	7.000,0
Hera	14.100,0	23.100,0	15.300,0	20.800,0	15.000,0
Interpump	54.351,0	71.800,0	19.517,0	28.514,0	13.110,0
Intesa San Paolo	104.000,0	84.000,0	84.000,0	72.000,0	70.000,0
Inwit	222,0	222,0	0,0	0,0	0,0
Italgas	0,0	0,0	0,0	0,0	0,0
Leonardo	0,0	0,0	0,0	0,0	0,0
Mediobanca	141.989,0	109.338,0	197.708,0	197.981,0	161.754,0
Poste Italiane	40.000,0	0,0	0,0	0,0	0,0
Prismian	97.000,0	101.311,0	129.149,0	31.372,0	32.441,0
Recordati	93.480,0	145.608,0	17.029,0	76.761,0	35.060,0
Saipem	95.000,0	95.000,0	96.000,0	69.000,0	43.000,0
Snam	389.000,0	625.000,0	318.000,0	108.000,0	5.000,0
St Microelectronics	328.000,0	141.000,0	132.000,0	242.000,0	289.000,0
Stellantis	0,0	0,0	0,0	0,0	0,0
Telecom	21.000,0	21.000,0	21.000,0	21.000,0	21.000,0
Tenaris	0,0	0,0	0,0	0,0	0,0
Terna	0,0	0,0	0,0	0,0	0,0
Unicredit	20.995,0	20.940,0	2.695,0	4.107,0	8.171,0
Unipol	3.400,0	6.100,0	26.000,0	28.000,0	35.000,0

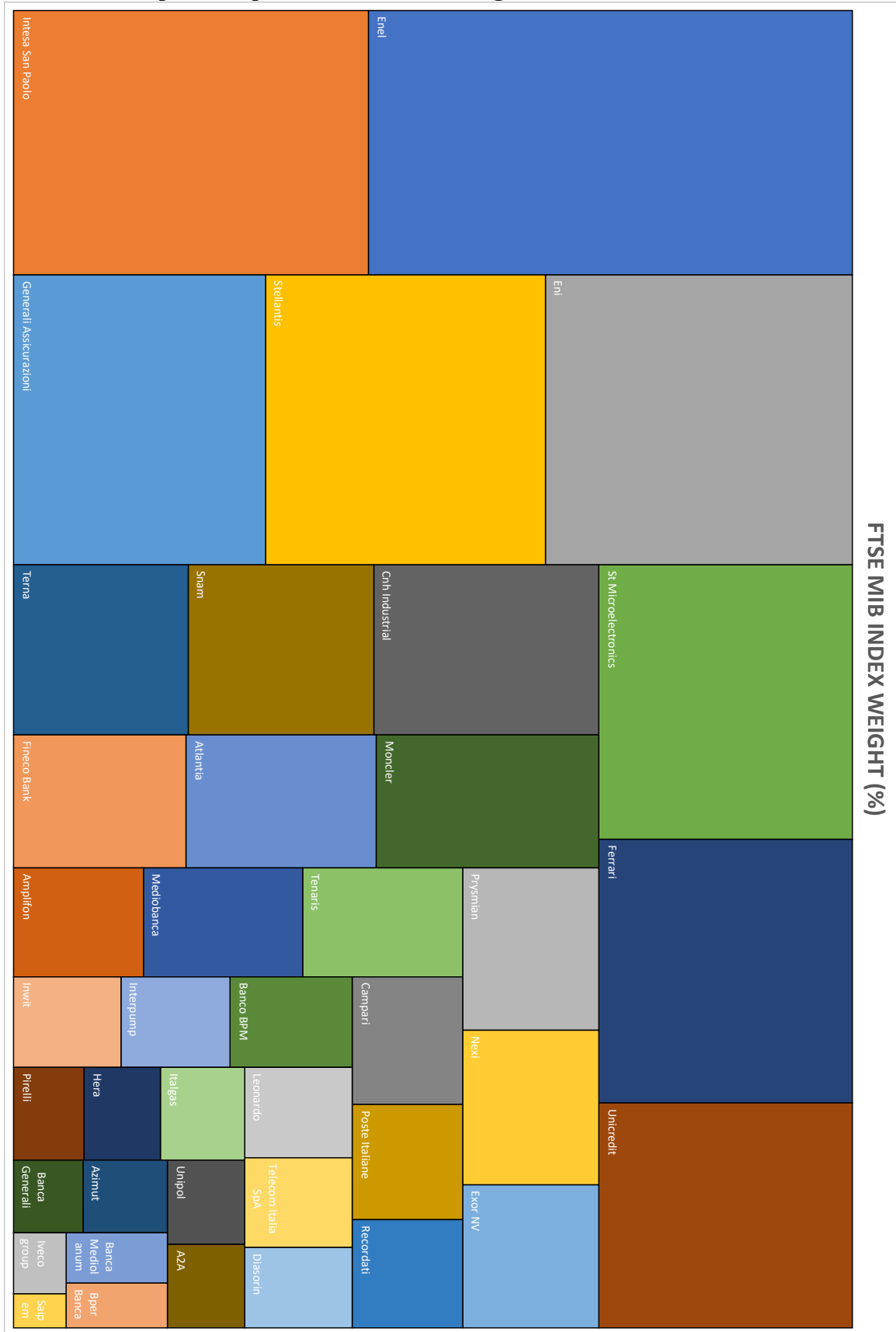
**Exhibit 3: Descriptive Statistics, HHI and K-firm ratio.**

Average Mrkt cap 5 yrs	$S_i$	$CR_{k=4}$	$S_i^2$	HHI
51.361,2	0,1196	39,99%	0,01430978	5,96%
50.902,1	0,1186		0,0140551	
42.734,9	0,0995		0,00990666	
26.681,7	0,0621		0,00386181	
24.766,9	0,0577		0,00332742	
18.487,7	0,0431		0,00185407	
18.291,9	0,0426		0,00181502	
18.180,4	0,0423		0,00179295	
14.923,5	0,0348		0,00120811	
14.809,7	0,0345		0,00118975	
14.305,9	0,0333		0,00111018	
13.017,8	0,0303		0,00091926	
11.841,9	0,0276		0,00076068	
9.993,3	0,0233		0,00054172	
9.604,1	0,0224		0,00050035	
7.112,5	0,0166		0,00027441	
6.966,1	0,0162		0,00026323	
6.521,8	0,0152		0,00023072	
6.271,5	0,0146		0,00021336	
6.146,8	0,0143		0,00020496	
5.222,7	0,0122		0,00014796	
5.175,6	0,0121		0,00014531	
4.977,1	0,0116		0,00013437	
4.555,6	0,0106		0,00011258	
4.204,7	0,0098		9,5902E-05	
4.082,0	0,0095		9,0387E-05	
4.053,9	0,0094		8,9145E-05	
3.892,9	0,0091		8,2206E-05	
3.640,4	0,0085		7,189E-05	
3.311,9	0,0077		5,9499E-05	
3.148,0	0,0073		5,3758E-05	
2.953,7	0,0069	4,7325E-05		
2.454,3	0,0057	3,2675E-05		
2.402,2	0,0056	3,1302E-05		
2.360,6	0,0055	3,0229E-05		
429.357,2	100%			

Source: personal elaboration based on Refinitiv Workspace data.



**Exhibit 4: Graphical representation of the weight of the FSTE MIB index.**

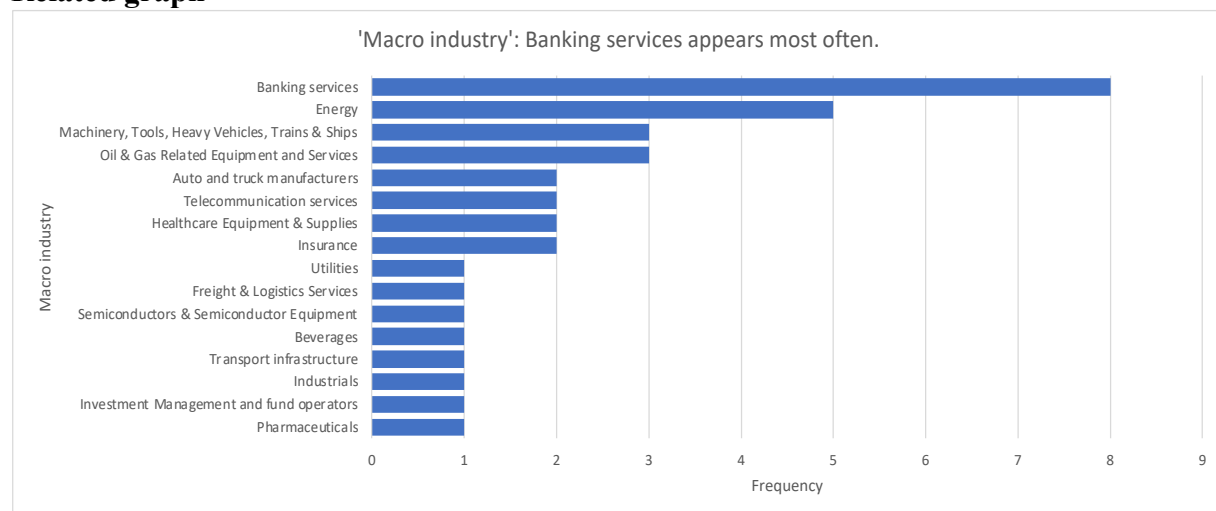


Source: personal elaboration based on <https://www.ftserussell.com/products/indices/italia> data.

**Exhibit 5: Industry frequency in the FTSE MIB index.**

<b>Industry</b>	<b>Number of companies</b>
Banking services	8
Energy	5
Machinery, Tools, Heavy Vehicles, Trains & Ships	3
Oil & Gas Related Equipment and Services	3
Auto and truck manufacturers	2
Telecommunication services	2
Healthcare Equipment & Supplies	2
Insurance	2
Utilities	1
Freight & Logistics Services	1
Semiconductors & Semiconductor Equipment	1
Beverages	1
Transport infrastructure	1
Industrials	1
Investment Management and fund operators	1
Pharmaceuticals	1
<b>Grand Total</b>	<b>35</b>

**Related graph**

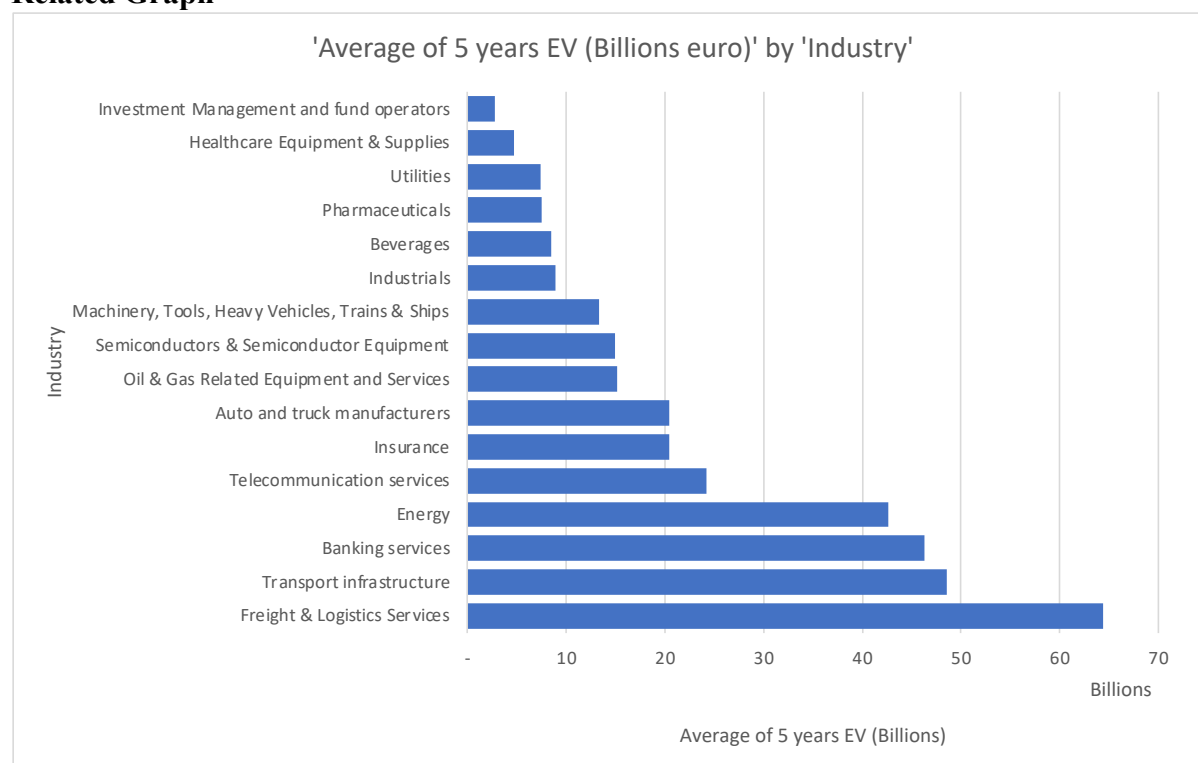


Source: personal elaboration from Refinitiv Workspace data.

**Exhibit 6: Industry size based on the 5-year average of the Enterprise Value.**

<b>Industry</b>	<b>Average of 5 years EV (Millions)</b>
Freight & Logistics Services	64.446,11
Transport infrastructure	48.604,46
Banking services	46.313,87
Energy	42.653,91
Telecommunication services	24.215,62
Insurance	20.403,22
Auto and truck manufacturers	20.400,11
Oil & Gas Related Equipment and Services	15.170,64
Semiconductors & Semiconductor Equipment	14.985,48
Machinery, Tools, Heavy Vehicles, Trains & Ships	13.352,01
Industrials	8.898,91
Beverages	8.481,97
Pharmaceuticals	7.519,91
Utilities	7.379,33
Healthcare Equipment & Supplies	4.674,89
Investment Management and fund operators	2.786,63
<b>Average</b>	<b>21.892,94</b>

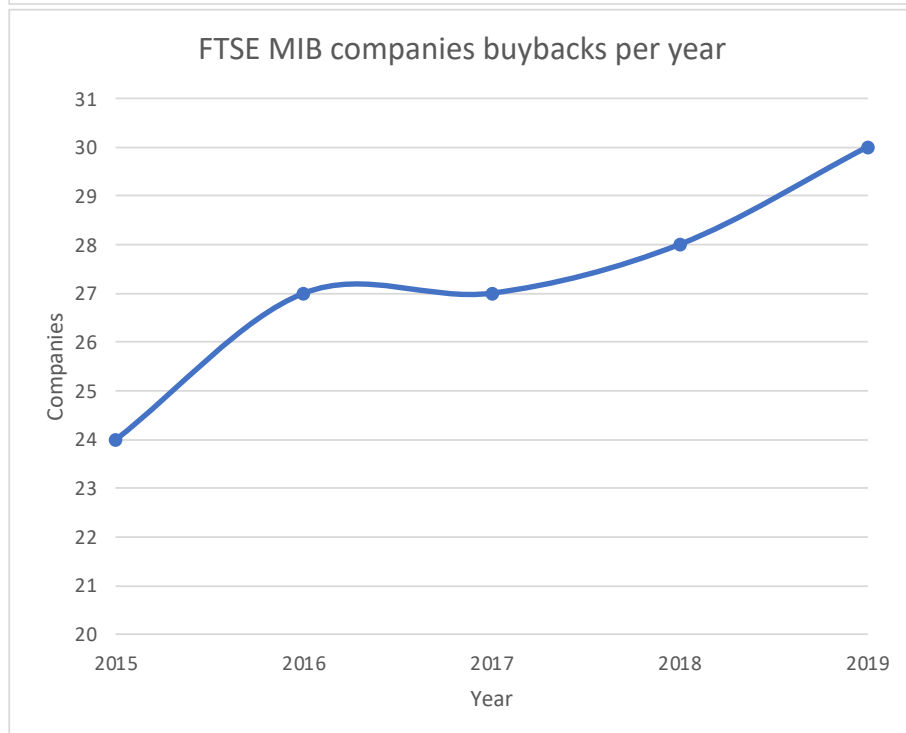
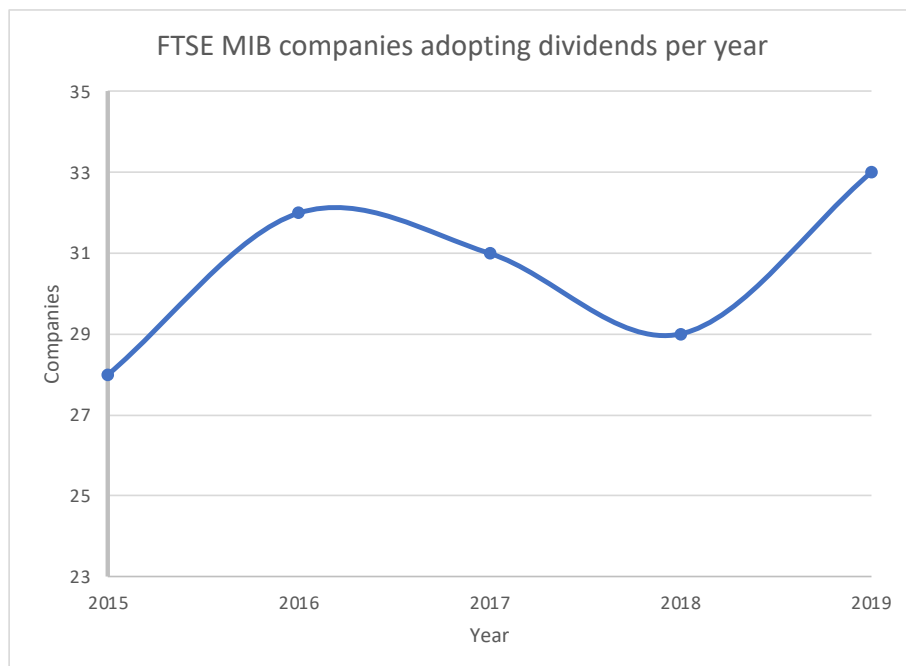
**Related Graph**



Source: personal elaboration from Refinitiv Workspace data.

**Exhibit 7: Companies adopting Dividends and Buyback from 2015 to 2019.**

<b>Buyback</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>
Companies using buyback	30	28	27	27	24
Percentage on total	86%	80%	77%	77%	69%
YoY growth	7,14%	3,70%	0,00%	12,50%	n.d.
<b>Dividend</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>
Companies using dividends	33	29	31	32	28
Percentage on total	94,29%	82,86%	88,57%	91,43%	80,00%
YoY growth	13,79%	-6,45%	-3,13%	14,29%	n.d.



Source: personal elaboration based on Refinitiv Workspace data.

**Exhibit 8: Tables of past research studies on Dividend Policy and Buyback, related to performance.**

Share BB	Researchers	Year	Result opinion
	Kim, Jo, Yoon	2013	Negative
	Musharof and Afzal	2015	Positive
	Chandren, Ahmad, Ali	2017	Not Affected
	Gupta	2017	Positive
	Bhullar, Bhatnagar, Gupta	2018	Not Affected
	Manconi, Peyer, Vermaelen	2019	Positive
	Mukherjee, Chatterjee	2019	Not Affected
	Dawid, Harting, Van Der Hoog	2019	Positive
	Henning	2019	Positive
	Zhen, Xiaoyang Li	2021	Negative

Source: personal elaboration.

Dividend Policy	Researchers	Year	Result opinion
	Miller, Modigliani	1961	Not Affected
	Gordon, Litner	1963	Negative
	Ross, Mitnick	1973	Negative
	Black	1976	Not Affected
	Litzenberger, Ramaswamy	1982	Negative
	Michaely, Thaler, Womack	1995	Positive
	Michaely, Allen	2002	Negative
	Hafeez	2018	Positive
	Kahn, Lamrani, Khalid	2019	Positive
	Kanakriyah	2020	Positive
	Ogbuagu	2020	Positive
	Dang, Vu, Ngo	2020	Positive
	Margono, Gantino	2021	Positive
	Park, Park	2022	Positive

Source: personal elaboration.

Conclusion	Buyback		Dividends	
	Count	Percentage	Count	Percentage
Positive	5	50,0%	8	57,1%
Negative	2	20,0%	4	28,6%
Not affected	3	30,0%	2	14,3%
Total	10	100,0%	14	100,0%

Source: personal elaboration.

### Exhibit 9: Simple Correlation Analysis.

Correlation analysis	EV by Dividend Yield	ROE by Dividend Yield	EV by Buyback	ROE by Buyback
A2A	-14,56%	16,67%	-59,84%	-88,17%
Amplifon	20,04%	66,94%	-57,07%	32,35%
Atlantia	8,45%	-25,19%	87,01%	-77,13%
Azimut	-90,43%	-65,01%	-2,34%	-28,90%
Banca Generali	-99,31%	-76,24%	-20,54%	14,38%
Banca Mediolanum	-37,36%	-57,12%	-48,29%	-17,09%
Banco BPM	-52,09%	-35,53%	-11,13%	87,87%
Bper Banca	-79,34%	55,59%	-76,37%	61,63%
Campari	-97,08%	-71,21%	94,17%	70,21%
Cnh Industrial	-71,76%	-3,09%	0,63%	68,66%
Diasorin	-96,41%	22,93%	64,43%	73,28%
Enel	1,04%	61,15%	91,18%	-53,49%
Eni	5,94%	-47,51%	21,45%	20,28%
Ferrari	73,43%	0,89%	97,28%	-3,69%
Fineco Bank	-94,03%	45,28%	32,75%	-51,14%
Generali Assicurazioni	56,30%	19,61%	-4,33%	-23,18%
Hera	-93,32%	-74,55%	-56,06%	-15,02%
Interpump	-98,38%	-22,03%	63,67%	23,52%
Intesa San Paolo	-33,96%	-12,10%	-34,53%	46,34%
Inwit	32,48%	94,82%	69,79%	71,30%
Italgas	55,63%	41,77%	n.a.	n.a.
Leonardo	-96,59%	-14,42%	n.a.	n.a.
Mediobanca	-53,06%	-15,18%	-47,60%	-72,55%
Poste Italiane	1,68%	13,42%	93,00%	-28,09%
Prysmian	16,96%	-72,61%	63,32%	-59,73%
Recordati	16,64%	-45,22%	11,03%	69,24%
Saipem	86,00%	-28,82%	-97,16%	69,94%
Snam	-88,95%	-46,13%	-54,59%	35,77%
St Microelectronics	-87,61%	-33,71%	10,70%	-53,90%
Stellantis	-50,15%	47,98%	n.a.	n.a.
Telecom	-94,88%	-46,17%	n.a.	n.a.
Tenaris	-93,62%	54,39%	n.a.	n.a.
Terna	-86,84%	-0,59%	n.a.	n.a.
Unicredit	18,62%	-95,62%	-8,40%	52,28%
Unipol	-53,68%	7,34%	-42,54%	-42,21%

Source: personal elaboration. Raw data by Refinitiv.

Summary	Positive Corr.	Negative Corr.	Independent or n.a.	Overall
EV by Dividend Yield	11	22	2	Negative
ROE by Dividend Yield	13	20	2	Negative
EV by Buyback	13	14	8	Unclear
ROE by Buyback	15	14	6	Unclear

Source: summary table from Exhibit 9.

## Exhibit 10: Multiple Linear Regression Model (enterprise value 2019).

Correlation matrix:

	Own Shares 2019 (Thnds)	Dividend Yield 2019	EV in 2019 (Thousands)
Own Shares 2019 (Thnds)	1	0,002	0,026
Dividend Yield 2019	0,002	1	0,348
EV in 2019 (Thousands)	0,026	0,348	1

Regression of variable EV in 2019 (Thousands):

Goodness of fit statistics (EV in 2019 (Thousands)):

Observations	35,000
Sum of weights	35,000
DF	32,000
R <sup>2</sup>	0,122
Adjusted R <sup>2</sup>	0,067
MSE	1640098497591330,000
RMSE	40498129,557

Analysis of variance (EV in 2019 (Thousands)):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	7288530505803080,000	3644265252901540,000	2,222	0,125
Error	32	52483151922922700,000	1640098497591330,000		
Corrected Total	34	59771682428725800,000			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (EV in 2019 (Thousands)):

Source	Value	Standard error	t	Pr >  t	Lower bound (95%)	Upper bound (95%)
Intercept	7861888,376	13430246,434	0,585	<b>0,562</b>	-19494628,396	35.218.405,15
Own Shares 2019 (Thnds)	11,830	79,265	0,149	0,882	-149,628	173,288
Dividend Yield 2019	645939702,197	307233133,117	2,102	0,043	20126289,143	1.271.753.115,25

Equation of the model (EV in 2019 (Thousands)):

EV in 2019 (Thousands) = 7861888.376117836683989+11.83030107038662\*Own Shares 2019 (Thnds)+645939702.197329521179199\*Dividend Yield 2019

Standardized coefficients (EV in 2019 (Thousands)):

Source	Value	Standard error	t	Pr >  t	Lower bound (95%)	Upper bound (95%)
Own Shares 2019 (Thnds)	0,025	0,166	0,149	0,882	-0,313	0,362
Dividend Yield 2019	0,348	0,166	2,102	0,043	0,011	0,686

Source: personal elaboration through XLSTAT Cloud software.

## Exhibit 11: Multiple Linear Regression Model (ROE 2019).

Correlation matrix:

	Own Shares 2019 (Thnds)	Dividend Yield 2019	ROE 2019
Own Shares 2019 (Thnds)	1	0,002	-0,084
Dividend Yield 2019	0,002	1	0,167
ROE 2019	-0,084	0,167	1

### Regression of variable ROE 2019:

Goodness of fit statistics (ROE 2019):

Observations	35,000
Sum of weights	35,000
DF	32,000
R <sup>2</sup>	0,035
Adjusted R <sup>2</sup>	-0,025
MSE	0,013
RMSE	0,113
MAPE	
AIC	-150,029
SBC	-145,363
PC	1,146

Analysis of variance (ROE 2019):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	0,015	0,007	0,578	0,567
Error	32	0,406	0,013		
Corrected Total	34	0,420			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (ROE 2019):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	0,158	0,037	4,236	<b>0,000</b>	0,082	0,234
Own Shares 2019 (Thnds)	0,000	0,000	-0,487	0,630	0,000	0,000
Dividend Yield 2019	0,820	0,854	0,960	0,344	-0,920	2,559

Equation of the model (ROE 2019):

$$\text{ROE 2019} = 0.158126179021283 - 0.000000107239293 * \text{Own Shares 2019 (Thnds)} + 0.819885916080451 * \text{Dividend Yield 2019}$$

Standardized coefficients (ROE 2019):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Own Shares 2019 (Thnds)	-0,085	0,174	-0,487	0,630	-0,438	0,269
Dividend Yield 2019	0,167	0,174	0,960	0,344	-0,187	0,520

Source: personal elaboration through XLSTAT Cloud software.



## Exhibit 12: Multiple Linear Regression Model (enterprise value 2018).

Correlation matrix:

	Own Shares 2018	Dividend Yield 2018	EV in 2018 (Millions)
Own Shares 2018	1	0,043	-0,019
Dividend Yield 2018	0,043	1	0,077
EV in 2018 (Millions)	-0,019	0,077	1

### Regression of variable EV in 2018 (Millions):

Goodness of fit statistics (EV in 2018 (Millions)):

Observations	35,000
Sum of weights	35,000
DF	32,000
R <sup>2</sup>	0,006
Adjusted R <sup>2</sup>	-0,056
MSE	1495987437,682
RMSE	38678

Analysis of variance (EV in 2018 (Millions)):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	312549664,518	156274832,259	0,104	0,901
Error	32	47871598005,823	1495987437,682		
Corrected Total	34	48184147670,341			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (EV in 2018 (Millions)):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	24221,172	10845,075	2,233	<b>0,033</b>	2130,477	46311,867
Own Shares 2018	-0,008	0,060	-0,127	0,900	-0,131	0,116
Dividend Yield 2018	108861,677	245102,071	0,444	0,660	-390394,904	608118,257

Equation of the model (EV in 2018 (Millions)):

EV in 2018 (Millions) = 24221.172043537109857 - 0.00767504854243 \* Own Shares 2018 + 108861.676582720989245 \* Dividend Yield 2018

Standardized coefficients (EV in 2018 (Millions)):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Own Shares 2018	-0,022	0,176	-0,127	0,900	-0,382	0,337
Dividend Yield 2018	0,078	0,176	0,444	0,660	-0,281	0,438

Source: personal elaboration through XLSTAT Cloud software.

### Exhibit 13: Multiple Linear Regression Model (ROE 2018).

Correlation matrix:

	Own Shares 2018	Dividend Yield 2018	ROE 2018
Own Shares 2018	1	0,043	0,129
Dividend Yield 2018	0,043	1	0,006
ROE 2018	0,129	0,006	1

#### Regression of variable ROE 2018:

Goodness of fit statistics (ROE 2018):

Observations	35,000
Sum of weights	35,000
DF	32,000
R <sup>2</sup>	0,017
Adjusted R <sup>2</sup>	-0,045
MSE	0,011
RMSE	0,104

Analysis of variance (ROE 2018):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	0,006	0,003	0,270	0,765
Error	32	0,345	0,011		
Corrected Total	34	0,351			

*Computed against model Y=Mean(Y)*

Model parameters (ROE 2018):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	0,161	0,029	5,513	<0.0001	0,101	0,220
Own Shares 2018	0,000	0,000	0,734	0,468	0,000	0,000
Dividend Yield 2018	0,002	0,658	0,004	0,997	-1,338	1,343

Equation of the model (ROE 2018):

$$\text{ROE 2018} = 0.160571081570216 + 0.000000119258176 * \text{Own Shares 2018} + 0.002482277056685 * \text{Dividend Yield 2018}$$

Standardized coefficients (ROE 2018):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Own Shares 2018	0,129	0,175	0,734	0,468	-0,229	0,486
Dividend Yield 2018	0,001	0,175	0,004	0,997	-0,357	0,358

Source: personal elaboration through XLSTAT Cloud software.

## Exhibit 14: Multiple Linear Regression Model (enterprise value 2017).

Correlation matrix:

	Dividend Yield 2017	Own Shares 2017	EV in 2017 (Millions)
Dividend Yield 2017	<b>1</b>	0,355	0,174
Own Shares 2017	0,355	<b>1</b>	-0,037
EV in 2017 (Millions)	0,174	-0,037	<b>1</b>

Regression of variable EV in 2017 (Millions):

Goodness of fit statistics (EV in 2017 (Millions)):

Observations	35,000
Sum of weights	35,000
DF	32,000
R <sup>2</sup>	0,041
Adjusted R <sup>2</sup>	-0,018
MSE	1268275515,217
RMSE	35613

Analysis of variance (EV in 2017 (Millions)):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	1754842339,731	877421169,866	0,692	0,508
Error	32	40584816486,941	1268275515,217		
Corrected Total	34	42339658826,672			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (EV in 2017 (Millions)):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	19349,694	10007,569	1,934	0,062	-1035,058	39734,446
Dividend Yield 2017	317071,783	274056,660	1,157	0,256	-241163,366	875306,932
Own Shares 2017	-0,057	0,094	-0,609	0,547	-0,249	0,135

Equation of the model (EV in 2017 (Millions)):

EV in 2017 (Millions) = 19349.693759273053729+317071.782784610870294\*Dividend Yield 2017-0.057421440694317\*Own Shares 2017

Standardized coefficients (EV in 2017 (Millions)):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Dividend Yield 2017	0,214	0,185	1,157	0,256	-0,163	0,591
Own Shares 2017	-0,113	0,185	-0,609	0,547	-0,490	0,264

Source: personal elaboration through XLSTAT Cloud software.

## Exhibit 15: Multiple Linear Regression Model (ROE 2017).

Correlation matrix:

	Dividend Yield 2017	Own Shares 2017	ROE 2017
Dividend Yield	1	0,355	0,101
Own Shares	0,355	1	-0,026
ROE 2017	0,101	-0,026	1

Regression of variable ROE 2017:

Goodness of fit statistics (ROE 2017):

Observations	35,000
Sum of weig	35,000
DF	32,000
R <sup>2</sup>	0,015
Adjusted R <sup>2</sup>	-0,047
MSE	0,012
RMSE	0,107

Analysis of variance (ROE 2017):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	0,006	0,003	0,239	0,789
Error	32	0,369	0,012		
Corrected To	34	0,374			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (ROE 2017):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	0,162	0,030	5,355	<0.0001	0,100	0,223
Dividend Yield	0,557	0,826	0,674	0,505	-1,126	2,241
Own Shares	0,000	0,000	-0,379	0,707	0,000	0,000

Equation of the model (ROE 2017):

$$\text{ROE 2017} = 0.161580629487056 + 0.557349834217647 * \text{Dividend Yield 2017} - 0.000000107674866 * \text{Own Shares 2017}$$

Standardized coefficients (ROE 2017):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Dividend Yield	0,127	0,188	0,674	0,505	-0,256	0,509
Own Shares	-0,071	0,188	-0,379	0,707	-0,453	0,311

Source: personal elaboration through XLSTAT Cloud software.

## Exhibit 16: Multiple Linear Regression Model (enterprise value 2016).

Correlation matrix:

	Dividend Yield 2016	Own Shares 2016	EV in 2016 (Millions)
Dividend Yield 2016	<b>1</b>	-0,021	0,650
Own Shares 2016	-0,021	<b>1</b>	-0,066
EV in 2016 (Millions)	0,650	-0,066	<b>1</b>

### Regression of variable EV in 2016 (Millions):

Goodness of fit statistics (EV in 2016 (Millions)):

Observations	35,000
Sum of weights	35,000
DF	32,000
R <sup>2</sup>	0,425
Adjusted R <sup>2</sup>	0,389
MSE	1037567454,216
RMSE	32.211,29

Analysis of variance (EV in 2016 (Millions)):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	24531376809,594	12265688404,797	11,822	<b>0,000</b>
Error	32	33202158534,927	1037567454,216		
Corrected Total	34	57733535344,522			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (EV in 2016 (Millions)):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	135,349	8877,969	0,015	0,988	-17948,482	18219,180
Dividend Yield 2016	650364,957	134452,795	4,837	<b>&lt;0.0001</b>	376493,575	924236,338
Own Shares 2016	-0,039	0,098	-0,395	0,696	-0,239	0,162

Equation of the model (EV in 2016 (Millions)):

EV in 2016 (Millions) = 135.348657075608799+650364.956681258743629\*Dividend Yield 2016-0.038830751352638\*Own Shares 2016

Standardized coefficients (EV in 2016 (Millions)):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Dividend Yield 2016	0,649	0,134	4,837	<b>&lt;0.0001</b>	0,375	0,922
Own Shares 2016	-0,053	0,134	-0,395	0,696	-0,326	0,220

Source: personal elaboration through XLSTAT Cloud software.

## Exhibit 17: Multiple Linear Regression Model (ROE 2016).

Correlation matrix:

	Dividend Yield 2016	Own Shares 2016	ROE 2016
Dividend Yield 2016	1	-0,021	-0,195
Own Shares 2016	-0,021	1	-0,030
ROE 2016	-0,195	-0,030	1

### Regression of variable ROE 2016:

Goodness of fit statistics (ROE 2016):

Observations	35,000
Sum of weights	35,000
DF	32,000
R <sup>2</sup>	0,039
Adjusted R <sup>2</sup>	-0,021
MSE	0,024
RMSE	0,15

Analysis of variance (ROE 2016):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	0,031	0,015	0,653	0,527
Error	32	0,757	0,024		
Corrected Total	34	0,788			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (ROE 2016):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	0,154	0,042	3,641	<b>0,001</b>	0,068	0,241
Dividend Yield 2016	-0,725	0,642	-1,130	0,267	-2,033	0,583
Own Shares 2016	0,000	0,000	-0,196	0,846	0,000	0,000

Equation of the model (ROE 2016):

$$\text{ROE 2016} = 0.154380924810916 - 0.725373836537406 * \text{Dividend Yield 2016} - 0.00000009206483 * \text{Own Shares 2016}$$

Standardized coefficients (ROE 2016):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Dividend Yield 2016	-0,196	0,173	-1,130	0,267	-0,549	0,157
Own Shares 2016	-0,034	0,173	-0,196	0,846	-0,387	0,319

Source: personal elaboration through XLSTAT Cloud software.

## Exhibit 18: Multiple Linear Regression Model (enterprise value 2015).

Correlation matrix:

	Dividend Yield 2015	Own Shares 2015	EV in 2015 (Millions)
Dividend Yield 2015	<b>1</b>	0,210	-0,031
Own Shares 2015	0,210	<b>1</b>	-0,030
EV in 2015 (Millions)	-0,031	-0,030	<b>1</b>

### Regression of variable EV in 2015 (Millions):

Goodness of fit statistics (EV in 2015 (Millions)):

Observations	35,000
Sum of weights	35,000
DF	32,000
R <sup>2</sup>	0,002
Adjusted R <sup>2</sup>	-0,061
MSE	2588585053,636
RMSE	50878,139

Analysis of variance (EV in 2015 (Millions)):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	127637768,529	63818884,264	0,025	0,976
Error	32	82834721716,351	2588585053,636		
Corrected Total	34	82962359484,880			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (EV in 2015 (Millions)):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	31929,258	13223,440	2,415	<b>0,022</b>	4993,992	58864,524
Dividend Yield 2015	-65443,321	449861,758	-0,145	0,885	#####	850895,094
Own Shares 2015	-0,021	0,160	-0,133	0,895	-0,346	0,304

Equation of the model (EV in 2015 (Millions)):

$$\text{EV in 2015 (Millions)} = 31929.257849382087443 - 65443.320929792345851 * \text{Dividend Yield 2015} - 0.021310268168879 * \text{Own Shares 2015}$$

Standardized coefficients (EV in 2015 (Millions)):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Dividend Yield 2015	-0,026	0,181	-0,145	0,885	-0,394	0,342
Own Shares 2015	-0,024	0,181	-0,133	0,895	-0,392	0,344

Source: personal elaboration through XLSTAT Cloud software.

## Exhibit 19: Multiple Linear Regression Model (ROE 2015).

Correlation matrix:

	Dividend Yield 2015	Own Shares 2015	ROE 2015
Dividend Yield	1	0,184	0,019
Own Shares	0,184	1	-0,142
ROE 2015	0,019	-0,142	1

### Regression of variable ROE 2015:

Goodness of fit statistics (ROE 2015):

Observations	33,000
Sum of weig	33,000
DF	30,000
R <sup>2</sup>	0,022
Adjusted R <sup>2</sup>	-0,043
MSE	0,017
RMSE	0,131

Analysis of variance (ROE 2015):

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	0,012	0,006	0,343	0,712
Error	30	0,517	0,017		
Corrected To	32	0,528			

Computed against model  $Y = \text{Mean}(Y)$

Model parameters (ROE 2015):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Intercept	0,143	0,037	3,907	<b>0,000</b>	0,068	0,218
Dividend Yield	0,309	1,202	0,257	0,799	-2,145	2,763
Own Shares	0,000	0,000	-0,821	0,418	0,000	0,000

Equation of the model (ROE 2015):

$$\text{ROE 2015} = 0.143229487358956 + 0.308763899972583 * \text{Dividend Yield 2015} - 0.00000033895719 * \text{Own Shares 2015}$$

Standardized coefficients (ROE 2015):

Source	Value	Standard error	t	Pr >   t	Lower bound (95%)	Upper bound (95%)
Dividend Yield	0,047	0,184	0,257	0,799	-0,328	0,422
Own Shares	-0,151	0,184	-0,821	0,418	-0,526	0,224

Source: personal elaboration through XLSTAT Cloud software.



## Exhibit 20: Multiple Linear Regression Model per single firm results.

<b>A2A</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,720	0,280
ROE	0,953	0,047
EV = 18789.093817554719863-23460.951758126531786*DY-0.173695283799096*BB		
ROE = 1.548185295135168-1.968570812166484*DY-0.000024065140962*BB		
<b>Amplifon</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,430	0,570
ROE	0,485	0,515
EV = 5343.114760642669353+572271.973775502177887*DY-0.108742067417924*BB		
ROE = 0.11792592604202+12.470220123784941*DY+0.000000381614232*BB		
<b>Atlantia</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,866616137	0,133383863
ROE	0,604219168	0,395780832
EV = 69627.489460047378088-1535627.688667775364593*DY+0.315362714795098*BB		
ROE = 0.176368209592782+1.794920988479833*DY-0.000001002800803*BB		
<b>Azimut</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,847	0,153
ROE	0,582	0,418
EV = 4868.424814239860098-26327.342671672187862*DY-0.003532162311807*BB		
ROE = 0.705178441744926-3.234188193128935*DY-0.000001315070184*BB		
<b>Banca Generali</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,987	<b>0,013</b>
ROE	0,691	0,309
EV = 6280.282473022757586-76477.535631550301332*DY+0.0020550341868*BB		
ROE = 0.419752756508164-2.228132516201491*DY+0.000000857850348*BB		
<b>Banca Mediolanum</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,233	0,767
ROE	0,485	0,515
EV = 11867.978699510524166-3552.226951857510358*DY-0.061491721294732*BB		
ROE = 0.365160090848701-3.211729608419747*DY+0.000001404191878*BB		
<b>Banco BPM</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,340	0,660
ROE	0,903	0,312
EV = 28536.779076354057906-111730.149250946444226*DY-0.183567677814837*BB		
ROE = -0.477491262312194+4.168738160050632*DY+0.000042614977743*BB		
<b>Bper Banca</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,846	0,154
ROE	0,482	0,518
EV = 26933433.716171503067017-152987.274653064581798*DY-3708.522614024874656*BB		
ROE = -231.340519943930047+0.917744585188725*DY+0.031876662811814*BB		
<b>Campari</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,946	0,054
ROE	0,513	0,487
EV = 14511.301656780475241-906870.673108245944604*DY+0.058894398940814*BB		
ROE = 0.179023750226087-4.459724614488064*DY+0.000000683962246*BB		

<b>Cnh Industrial</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,521	0,479
ROE	0,474	0,526
EV = 33767.063869303834508-162425.755029762949562*DY-0.026435836932181*BB		
ROE = 0.056334325721909+0.51529145629929*DY+0.0000100208691*BB		
<b>Diasorin</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,968	<b>0,032</b>
ROE	0,995	<b>0,005</b>
EV = 10580.153643185742112-648003.582130543072708*DY+0.010434313490417*BB		
ROE = 0.143527717090022+7.422966196031179*DY+0.000000650329367*BB		
<b>Enel</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,923	0,077
ROE	0,508	0,492
EV = 80321.798751799506135+456942.023222334857564*DY+35.101851370684159*BB		
ROE = 0.051143379982536+1.474634791022584*DY-0.000027696434286*BB		
<b>Eni</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,050	0,950
ROE	0,266	0,734
EV = 58060.670654690162337+54038.764343038092193*DY+6.614611095542862*BB		
ROE = 0.503486439369569-8.387650063009881*DY+0.000122051543742*BB		
<b>Ferrari</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,981	0,139
ROE	0,007	0,993
EV = 32754.504246801705449-454499203.846481204032898*DY+3.38766625357513*BB		
ROE = 0.259444883038619+147.235385572950889*DY-0.000001775426877*BB		
<b>Fineco Bank</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,885	0,115
ROE	0,356	0,644
EV = 9163.054960798081083-146775.872007011988899*DY+0.009655221278741*BB		
ROE = 0.237886773842367+1.715397117150813*DY-0.000003628523418*BB		
<b>Generali Assicurazioni</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,317	0,683
ROE	0,085	0,915
EV = 27801.067005425487878+102152.629353876487585*DY+0.008274336320075*BB		
ROE = 0.167072429480706+0.111819761843249*DY-0.000004454268619*BB		
<b>Hera</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,874	0,126
ROE	0,743	0,257
EV = 14012.740559880759974-210374.451475186069729*DY+0.022347723118662*BB		
ROE = 0.221605715229216-3.831472292346944*DY+0.000002878954853*BB		
<b>Interpump</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,976	<b>0,024</b>
ROE	0,066	0,934
EV = 5232.405684944053974-275583.24822540167952*DY+0.003358458794645*BB		
ROE = 0.253728032159216-1.167456795592319*DY+0.000000150342793*BB		
<b>Intesa San Paolo</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,134	0,866
ROE	0,714	0,286

EV = 192024.9378149380791-162272.939256317302352\*DY-0.318040526588994\*BB  
 ROE = -0.053420112137671-1.228957579167115\*DY+0.000002536344062\*BB

**Inwit** **R<sup>2</sup>** **p-value**

EV 0,747 0,503

ROE 0,739 0,511

EV = 8668.430496302049505-226994.241277847846504\*DY+12.943662980693347\*BB

ROE =

0.087125402880664+0.788524590163935\*DY+0.00006955401154\*BB

**Italgas** **R<sup>2</sup>** **p-value**

EV 0,021 0,853

ROE 0,174 0,582

EV = 8095.336647962924872-6284.551715073859668\*DY

ROE = 0.107948367816023+0.205695356523583\*DY

**Leonardo** **R<sup>2</sup>** **p-value**

EV 0,933 **0,008**

ROE 0,021 0,817

EV = 11025.097393598070994-189297.526651867636247\*DY

ROE = 0.133155046246814-0.641689961358218\*DY

**Mediobanca** **R<sup>2</sup>** **p-value**

EV 0,294 0,706

ROE 0,903 0,097

EV = 32231.385737590302597-22156.895223806750437\*DY-0.007450614207491\*BB

ROE = 0.165093765051301+0.435736043747124\*DY-0.000000518802969\*BB

**Poste Italiane** **R<sup>2</sup>** **p-value**

EV 0,999 **0,034**

ROE 0,927 0,271

EV = 62116.922335215320345-44820.56379663907137\*DY+0.327058920400677\*BB

ROE = 0.294007467131837-0.424862623949151\*DY-0.000001397388621\*BB

**Prysmian** **R<sup>2</sup>** **p-value**

EV 0,433 0,567

ROE 0,896 0,104

EV = 4442.413582173987379+52608.217349266094971\*DY+0.014497995833337\*BB

ROE = 0.473965593782999-12.150270438147688\*DY-0.000000777913081\*BB

**Recordati** **R<sup>2</sup>** **p-value**

EV 0,050 0,950

ROE 0,574 0,426

EV = 6212.336829161007699+13528.870576406410692\*DY+0.004610805687486\*BB

ROE = 0.345497872113043-0.656428594278454\*DY+0.000000573147223\*BB

**Saipem** **R<sup>2</sup>** **p-value**

EV 0,945 0,055

ROE 0,928 0,072

EV = 11431.794248679791053+20771.412542285717791\*DY-0.066000892942871\*BB

ROE = -1.188963154104657+54.4073557815762\*DY+0.000012393951032\*BB

**Snam** **R<sup>2</sup>** **p-value**

EV 0,213 0,887

ROE 0,690 0,557

EV = 30750.535973060043034-73692.773015409111395\*DY-0.001038015930757\*BB

ROE = 0.216782117147937-1.125276110017667\*DY+0.000000135238706\*BB

<b>St</b>		
<b>Microelectronics</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,928	0,072
ROE	0,322	0,678
EV = 15068.025279707400841-436516.719213197822683*DY+0.030335910676108*BB		
ROE = 0.225711056805319-1.18045159297713*DY-0.0000050389135*BB		
<b>Stellantis</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,252	0,389
ROE	0,230	0,413
EV = 22788.44000000002328-80104.746317512253881*DY		
ROE = 0.158735+1.966366612111293*DY		
<b>Telecom</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,900	<b>0,014</b>
ROE	0,213	0,434
EV = 64356.307137676674756-426592.891000360425096*DY		
ROE = 0.144657161565239-2.021814992763487*DY		
<b>Tenaris</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,876	<b>0,019</b>
ROE	0,296	0,343
EV = 28639.932109039902571-459400.370987742149737*DY		
ROE = -0.053766357205293+3.018515845750413*DY		
<b>Terna</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,754	0,056
ROE	0,000	0,992
EV = 36011.364184156511328-413246.338961653236765*DY		
ROE = 0.258069626005997-0.014375887643996*DY		
<b>Unicredit</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,035	0,965
ROE	0,964	<b>0,036</b>
EV = 166420.641376880870666+68395.176018228550674*DY-0.105075023810054*BB		
ROE = 0.020342514034027-1.336809871616676*DY+0.000003748509977*BB		
<b>Unipol</b>	<b>R<sup>2</sup></b>	<b>p-value</b>
EV	0,315	0,685
ROE	0,302	0,698
EV = 12086.847405935241113-56814.678878250990238*DY-0.014633819867795*BB		
ROE = -0.058253398299102+3.806912822640249*DY-0.000003372234721*BB		

Source: personal elaboration through XLSTAT Cloud software.



Dipartimento di Impresa e Management  
Corso di Laurea Magistrale in Gestione d'Impresa  
Cattedra di Analisi Finanziaria

**Buyback and Dividend Policy in the listed Italian Companies:  
The effects on the value performance.**

**(Summary)**

Relatore  
Prof. Fabrizio Di Lazzaro

Candidato  
Leonardo Arzilli  
Matr. 736091

Correlatore  
Prof.ssa Francesca Di Donato

Anno Accademico 2021/2022



## **Table of contents**

<b>Introduction.....</b>	<b>72</b>
<b>Literature Review.....</b>	<b>72</b>
<b>Description of data.....</b>	<b>75</b>
<b>Empirical Methods and results.....</b>	<b>77</b>
<b>Conclusion.....</b>	<b>82</b>

## **Introduction**

Dividend policy and share buyback are highly debated topics in financial analysis, corporate finance, and all the business-related fields and not only, indeed they attract interest even from investors and public opinion.

From a research point of view, many papers evaluated these topics in the past years around the globe, and I have reported the most significant findings and conclusions in the Literature review and theory paragraph.

Reading many of these studies, I understood that the relationship which links these subjects is not as limpid and immediate as I thought. I expected marked declarations and conclusions of how the performance was affected by these financial policies, commonly used by managers and CFO.

Furthermore, I found that most of the works took the focus on dividends and buybacks all over the world, from the most developed countries to the emerging markets, but almost none took into consideration Italy and its companies. Hence, I have tried to analyze these aspects through an empirical approach.

I started this paper evaluating and discussing the literature done on the same subject. At first, I reported theories and studies about dividends, dividend policy, share buyback, firms' performance, and its systems of measurement, and a description of the Italian Stock Exchange with a focus on the FTSE MIB index.

Secondly, I created a dataset in Excel software, through data collected from specific databases, financial websites, and the interested companies' financial statements, officially published. Thus, I could have extracted information regarding the Italian environment, showing off some descriptive statistics. Afterwards, I looked for an empirical model that allowed me to test the hypothesis found on the research question I evaluated. I built two different models for the analysis. The first based on a simple correlation analysis, the second based on a multiple linear regression analysis. The results of these two models are concordant, and the conclusions have been shown in the conclusive part of this paper.

## **Literature review**

This section aims to provide an overview to the reader of the empirical analyses and past studies done about the main components of this research, which are: dividend policy; share buyback; and value performance. In this section, I bring to light the principal findings and conclusions of the research after having endowed some theoretical definitions. By definition,



a share repurchase is a transaction whereby a company buys back its own shares from the marketplace. They can be distinguished by geographical focus, industries, or goals, and the correlation with many other firms' components. Using buyback of shares as a financial strategy leads to an increase in the companies' capital gearing when financing is made for stock repurchase in the form of debt (Musharof and Afzal, 2015). On average, share buybacks around the world are associated with positive announcement returns and are followed by positive long-run excess returns (Manconi, Peyer, and Vermaelen, 2019) examining a sample of 9,000 buyback announcements from 31 countries. Furthermore, the accretive share buyback is an efficient earnings management tool that caused no negative effect on firms and shareholders. And the long-term firm performance is greater in the accretive share buyback rather than in the non-accretive ones (Chandren, Ahmad, and Ali, 2017). Other studies concluded that the firm value differs from pre and post buyback of shares, and the proportion of paid-up equity capital employed by companies for the buyback of shares does not have any significant effect on firm value (Bhullar, Bhatnagar, and Gupta, 2018). Again, regarding the correlation between share repurchase announcements and the share market price, on average, the firms did not experience price improvement after the announcement, and more in detail, 24% of the firms lost and 10% gained, while the rest experienced no change (Mukherjee and Chatterjee, 2019). Overall, the effect of the share repurchases on the performance of the firms examined in the past research is unclear, even if it is possible to determine some positive, negative, and non-effect impacts.

Going ahead, the same reflections can be done on the dividend policy side. Again, after having analyzed the studies, I extracted the conclusions I valued most relevant. By definition, a dividend is an amount of cash distributed by the company to shareholders as a return on invested capital. While a dividend policy is a practice that management follows in making dividend pay-out decisions or, in other words, the size and pattern of cash distributions over time to shareholders (Lease 2010). Following the Neutral Theory of Dividend Policy, business values are not affected by dividend policy but depend on investment decisions (Miller & Modigliani, 1961). On the other hand, when a company starts to pay dividends the market price of its shares gains an average of 3,4%, contrarily, when it stops, the price falls 10% (Michaely, Thaler, and Womack, 1995). In the manufacturing firms in Pakistan, the dividend payout ratio has a positive relationship with the performance factors (Hafeez et al., 2018).

Summing up, there is some research showing a direct and positive impact of the dividend policy on the performance, at the opposite, there are others that affirmed a negative impact, and there are some which showed no effects.

So far, dividend policy, and share buyback have been analyzed, but it is necessary to understand what the performance is. Adopting a general and broad approach, the firm's performance can be seen as the result achieved by the corporate using its assets. Nevertheless, the meaning of the term "performance" has many outlets depending on the lens through which we observe it. Although it is a very common notion in the academic literature, there is hardly a consensus about its definition and measurement (Taouab and Issor, 2019). Despite the hardness to identify a definition, in this research I tried to keep the attention on the financial meaning of the term, which I consider the most objective among all given that it is quantitative.

For the purpose of this study, I identified two indicators that could support the analysis. These are the Enterprise Value (EV) which is the purchase cost of equity of the company, with all the liquidity and after the repayment of the debts, therefore, the unlevered value of the business. This is calculated as follows:

$$EV = \text{Market Capitalization} + \text{Total Debt} - \text{Cash and Cash equivalents}$$

Where Market Capitalization is the total market value of a company's shares, meaning the value of all existing and already outstanding shares. This is equal to the current stock price multiplied by the number of outstanding stock shares. The total debt indicates the sum of the short and long-term debt. While the cash and cash equivalents are the liquid assets owned and those which are supposed to be easily converted into cash.

The other indicator is the Return on Equity. For investors, the Return on Equity (ROE) is the best and the fastest indicator to decide if invest or not in a firm. Indeed, it is an economic index that shows the profitability of equity, simply obtained by dividing profit by equity. The indicator can be considered as a summary of the overall economy, evaluating how management has managed its assets to increase company profits.

The formula of the Return on Equity is the following:

$$ROE = \frac{\text{Profit(Loss)}}{\text{Equity}} \times 100$$

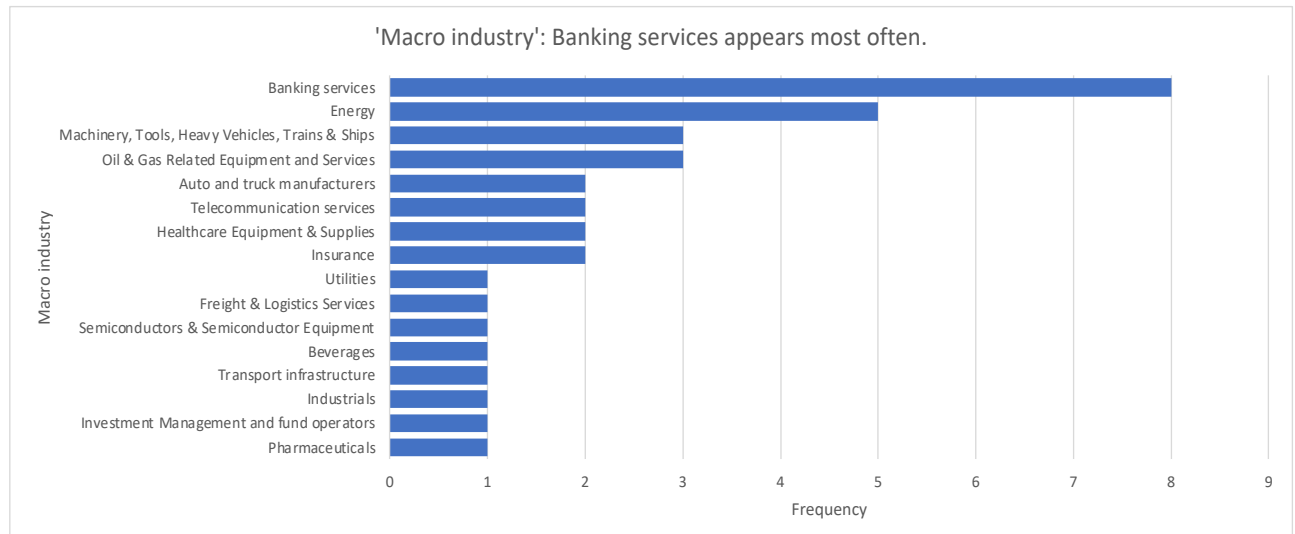
## Description of data

Recalling that the purpose of this elaborate is to try to analyze and understand what is the effect that dividend policies and share buybacks have on the value performance of the Italian companies listed on the Italian Stock Exchange, I collected data from the companies listed on the FTSE MIB index from 2015 to 2019. To do so, I used different reliable databases, and websites about finance and company reports, such as Refinitiv, Orbis, and AIDA. In addition, I used data from the Borsa Italiana website, the official website of the Italian Stock Exchange, and lastly, the financials published directly from the companies given the mandatory transparency of listed companies provided by the regulations. The latter especially regarding the buyback programs due to the lack of information needed in the databases I mentioned before.

I analyzed the FTSE MIB Index extracting some descriptive statistics that I hereby report.

At first, I examined the index composition by industry, finding that the banking and services industry is the most frequent in the FTSE MIB.

Industry frequency in the FTSE MIB index.

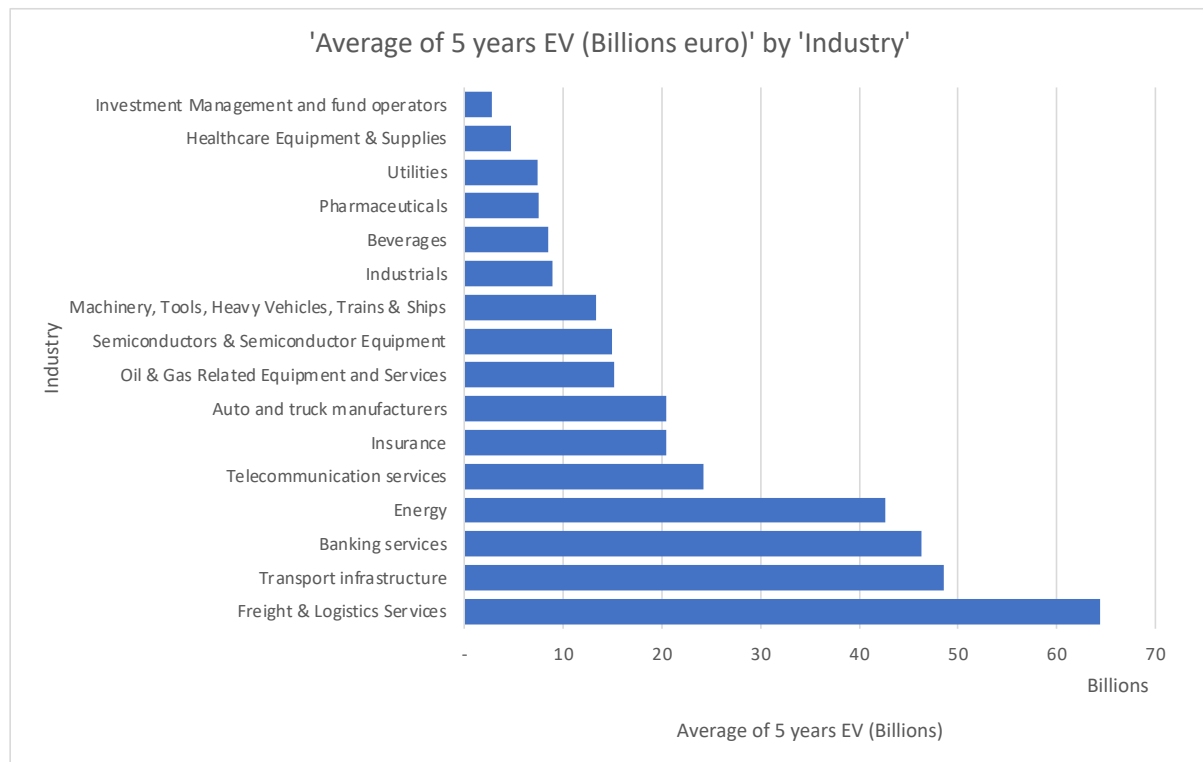


Source: personal elaboration from Refinitiv Workspace data.

I also calculated the K-firm ratio, and the Herfindal-Hirshman Index (HHI) to understand the concentration of the firm in the index, and I concluded that there are some firms that are comparatively much bigger than the others, but overall, there is no high concentration given that the CR<sub>4</sub> is roughly 40% and the HHI is less than 6% (Exhibit 3).

Similarly, I analyzed the size of the firm composing the index, through the enterprise value average over 5 years by industry. The data shows that the industry of freight & logistics services is the biggest thanks to an average of almost 64,5 billion Euro, followed by the industry of transport infrastructure, and the banking services.

Industry size based on the 5-year average of the Enterprise Value.



Source: personal elaboration from Refinitiv Workspace data.

Another perspective has been taken to realize how many firms have used the instruments of dividend and share repurchase as a financial strategy during the period taken into observation. The results of this perspective confirm what has been said in the literature review chapter, that is the high attention from the companies to these types of policies.

Indeed, the number of listed Italian companies which have used both the buyback and the distribution of dividends has grown over the years. In particular, data show that 24 firms booked their own shares in their financial statements in 2015, representing thus 69% of the total, while in 2019 this observation grew to 30 companies out of the total sample, showing a year-on-year growth of almost 6% on average.

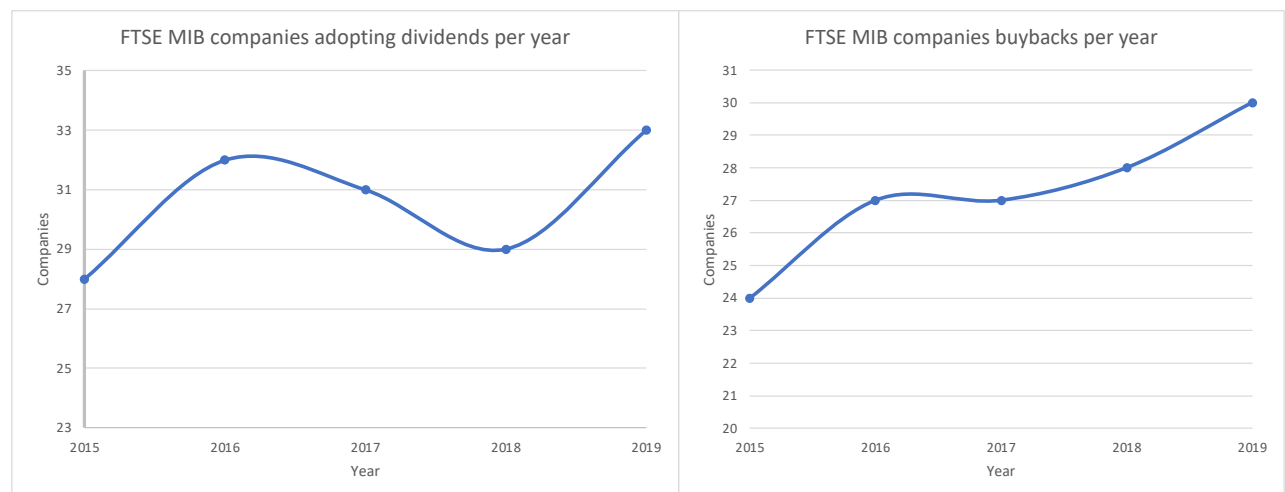
Instead, on the hand of the dividend policy, the yearly growth of enterprises that adopted dividends is less marked and the variability is higher. In fact, from 2015 the percentage of

dividends users has grown at first, gradually decreasing in the following 2 years reaching a minimum in 2018 and then has strongly resumed (+13,79%) in 2019 getting 33 companies out of 35, almost 95% of the total. Overall, this pattern shows the strong feeling of the companies with buyback programs and the distributions of dividends.

Companies adopting Dividends and Buyback from 2015 to 2019.

<b>Buyback</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>
Companies using buyback	30	28	27	27	24
Percentage on total	86%	80%	77%	77%	69%
YoY growth	7,14%	3,70%	0,00%	12,50%	n.d.
<b>Dividend</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>
Companies using dividends	33	29	31	32	28
Percentage on total	94,29%	82,86%	88,57%	91,43%	80,00%
YoY growth	13,79%	-6,45%	-3,13%	14,29%	n.d.

Source: personal elaboration based on Refinitiv Workspace data.



Source: personal elaboration based on Refinitiv Workspace data.

## Empirical Methods and results

The literature review section shows many past and recent studies about the correlation between performance and dividend policy, and that one between performance and share buyback. I have synthesized the results of these in Exhibit 8, which clearly represents the findings. The table shows us that for the buyback topic, researchers found out a positive correlation with the performance in the 50% of the cases, on the other hand, 20% of the studies show a negative one, and in addition, a 30% of these bring to the conclusion that share repurchase does not affect the firms' performance. Overall, it is true that the majority tends to

a positive conclusion, nevertheless, it is not a one-way road, and this leaves space to further analysis.

On the dividend side instead, the table indicates that roughly 57% of the research show off a positive effect of the dividend policy on the enterprises' performance, then almost 29% a negative one, and the remaining demonstrate that there is no effect of dividends on the value of a company. Again, as in the share repurchase case, the positive conclusion appears most often but at the same time it is not undiscussable given that is just slightly above the majority.

Table of past research studies on Dividend Policy and Buyback, related to performance.

Conclusion	Buyback		Dividends	
	Positive	5	50,0%	8
Negative	2	20,0%	4	28,6%
Not affected	3	30,0%	2	14,3%
Total	10	100,0%	14	100,0%

Source: personal elaboration.

Besides the results given by the works, that lead to a not univocal conclusion, I observed a strong lack of official analysis of this topic in the Italian context. Thus, the question I would like to try to clarify is if the results shown in the research done in other parts of the globe could be applied to explain the Italian companies' performance behavior. Deeper, what is the effect of the dividend policy and the buyback programs on the Italian listed companies' performance?

From this research question I developed the Hypotheses of the model:

**H<sub>0</sub>**: There is no correlation between Buyback and Dividend policy, and the firms' performance.

**H<sub>1</sub>**: Buyback and Dividend policy have a direct effect on the firms' performance.

To test these hypotheses, I used first a simple linear correlation analysis, then a multiple linear regression model.

In statistics, a correlation is a relationship between two variables such that each value of the first corresponds to a value of the second, following a certain regularity. Correlation does not depend on a cause-and-effect relationship but on the tendency of one variable to change as a function of another (Enriques, Bottazzi, Mortara, 1931).

Given 2 variables  $x$  and  $y$ , the correlation between these can be expressed as:

$$-1 \leq \rho_{xy} = \frac{\sigma_{xy}}{\sigma_x \sigma_y} = \frac{\sum_{i=1}^n (x_i - \mu_x)(y_i - \mu_y)}{\sqrt{\sum_{i=1}^n (x_i - \mu_x)^2} \sqrt{\sum_{i=1}^n (y_i - \mu_y)^2}} \leq +1$$

The correlation index  $\rho_{xy}$  assumes a value between -1 and +1. Given this, a correlation is:

- Positive: when the  $\rho_{xy}$  is greater than 0, meaning that a variation of one element directly affects the other as well in a positive way.
- Negative: when the  $\rho_{xy}$  is less than 0, meaning that a variation of one element negatively affects the other's variation.
- No correlation: when  $\rho_{xy}$  is equal to 0 (or even very close to).

In the model used for the analysis, per each of the companies making up the sample, I computed the correlation to identify 4 different indices, seeking them between the enterprise value and the dividend yield; the enterprise value and the buyback; the ROE and the dividend yield, and at last the ROE and buyback. In this way, I tried to understand and make clear if, based on a simple linear relation, there was a correlation between the variables and what was the meaning of it.

Summary	Positive Corr.	Negative Corr.	Independent or n.a.	Overall
<b>EV by Dividend Yield</b>	11	22	2	Negative
<b>ROE by Dividend Yield</b>	13	20	2	Negative
<b>EV by Buyback</b>	13	14	8	Unclear
<b>ROE by Buyback</b>	15	14	6	Unclear

Source: personal elaboration.

In synthesis, with the results shown in the simple correlation analysis firm by firm, I can conclude that for some companies subsists either a positive or a negative relationship and for some others an independency among the variables. This means that overall, for the purpose of the research that aims to discover a clear pattern in the listed companies' environment, it is not possible to affirm that the effect of the variable called into question is strictly positive or negative, but rather that the performance needs more variable to be explained.

Nevertheless, to better and deeper assess the research question of this study I have run another model based on the correlation, with the difference that here I have evaluated the data through a non-linear model that is the Multiple Linear Regression Model.

Multiple linear regression is an extension of correlation analysis and simple linear regression. Like correlation analysis, linear regression makes it possible to analyze the relationship between variables. In fact, it allows to study both its direction and its significance. Furthermore, the regression allows you to quantify how much on average the dependent variable will increase given an independent variable change. In the multiple linear regression model, two or more explanatory variables are included to study the effect of more  $x$  on  $y$  at the same time.

The multiple linear regression model is simply the same equation added by more than one explanatory variable:

$$y_i = \beta_0 + \beta_1 x_{i1} + \dots + \beta_p x_{ip} + \varepsilon_i$$

With  $i = 1, \dots, N$ .

Where:

- $y_i$ : is the dependent variable, that is the variable the model tries to explain.
- $x_i$ : is the independent variable, that one that describes the model.
- $\beta_0$ : is the first parameter that has to be estimated by the model. This represents the intercept of the line.
- $\beta_p$ : are the other parameter that needs to be estimated by the model. These represent the slope of the line.
- $\varepsilon_i$ : is the error term.

To run the model, I used the statistical software XLSTAT Cloud, which is used for data analysis. This software allows the analysis of the data to estimate the coefficient of the equation to build the line of regression and it gives many insights into the parameters of the model. Firstly, I analyzed the combined effect of dividend yield and buyback on the enterprise value, then I have done the same on the Return on Equity variable. Doing this I wanted to evaluate if combining the two independent variables there was a clearer effect on the dependent variables studied separately. I have used this approach in two ways, the first, by evaluating the correlation firm by firm, to understand if the single results found in the simple correlation analysis were statistically significant or not, and the second, by examining the total effect on the FTSE MIB



index, and I have run the model year per year from 2015 to 2019. The main aspects, which are important to focus the attention on, are the  $R^2$  and the p-value.

The  $R^2$  is the coefficient of determination, it represents the proportion of the variation in the dependent variable that is predictable from one or more independent variables. Its main purpose is either the prediction of future outcomes or the testing of hypotheses, based on other related information. It provides a measure of how well the observed outcomes are replicated by the model, based on the proportion of total variation of outcomes explained by the model. the coefficient of determination  $R^2$  is a measure of the global fit of the model. Specifically,  $R^2$  is an element of  $[0, 1]$  and represents the proportion of variability in  $Y_i$  that may be attributed to some linear combination of the regressors (Glantz, Slinker, 1990).

The basic formula of this coefficient is the following:

$$R^2 = 1 - \frac{SS_{res}}{SS_{tot}}$$

Where:

$$SS_{res} = \sum_i (y_i - f_i)^2 = \sum_i e_i^2$$

$$SS_{tot} = \sum_i (y_i - \bar{y})^2$$

Thus,  $R^2 = 1$  indicates that the fitted model explains all variability in  $y$ , while  $R^2 = 0$  indicates no linear relationship between the response variable and regressors (Draper, Smith, 1998).

This is easy to understand given that  $R^2$  is equal to 1 when  $SS_{res}$  is equal to 0, then,  $R^2$  is equal to 0 when  $SS_{res}$  is equal to 1, meaning that the model always predicts the mean, that hence has on itself a prediction value, at last,  $R^2$  is negative when  $SS_{res}$  is greater than 0, in this case, the model has the worst predictive value.

The other element called into question is the p-value. Basically, it is the probability of obtaining results at least as extreme as the observed results of a statistical hypothesis test, assuming that the null hypothesis is correct. When a hypothesis test is performed, a null hypothesis and a threshold value  $\alpha$  are fixed, which indicates the level of significance of the test. In this analysis, the  $\alpha$  has been fixed to 0,05 because it is conventionally accepted in the research field.

The p-value is used to accept or reject the null hypothesis, that in this case is that there is no correlation between Buyback and Dividend policy, and the firms' performance.

The p-value's operation is quite simple, and it is summarized below:

- If  $p\text{-value} > \alpha$ : the empirical evidence is not sufficiently contrary to the null hypothesis which therefore cannot be rejected.
- If  $p\text{-value} \leq \alpha$ : the empirical evidence is strongly opposed to the null hypothesis which therefore must be rejected. In this case, the observed data is said to be statistically significant

The results of the analysis carried out in this paper show off that in most of the cases, regarding the correlation between dividend yield and buyback and both the enterprise value and the return on Equity, the p-value is greater than alpha, leading to accepting the null hypothesis.

On the other hand, the  $R^2$  value is mostly near 0, meaning that the model does not explain the dependent variable by the explanatory variables better than a simple mean. Based on this, I can affirm that there is no clear correlation between the dividend policy and the buyback, and the value performance in the listed Italian companies' environment. This result is confirmed also by the correlation matrix that demonstrates an independency relationship among the variables in almost all the cases.

The same result comes out from analyzing the relationship on the single firm data. Indeed, overall, only Diasorin shows a positive relationship with statistically significant p-values both for enterprise value and return on Equity and a  $R^2$  value near to 1.

## **Conclusion**

This paper has investigated the relationship between buyback and dividend policy and the value performance in the Italian companies listed in the FTSE MIB index of the Italian Stock Exchange. In the past and in recent years this topic has been largely discussed by researchers, analysts, and professors all over the world.

Despite the always high interest in the relationship between dividends and performance, and share repurchase and performance, the effect of these variables is still not unambiguous, and the results pointed out so far are sometimes in contrast to each other.

As several times affirmed, this work wants to try to clarify the question of how these financial decisions affect the value of a firm. The results shown by the analysis of simple correlation demonstrate that per each company is possible to identify a positive or negative correlation that

can explain the enterprise value and the ROE by the dividend yield, but the relationship is not clear, and even less clear is the relationship with the buyback. Similarly, the multiple linear regression model removes further doubts about the independence of the variables investigated. In fact, the model does not explain the dependent variables by the explanatory ones.

The conclusion of this analysis is that overall, there is not a clear and defined correlation, thus I can affirm that the enterprise value and the ROE, taken as indicators of the value performance, are independent of the buyback and dividend policies. This result can be compared with more than one past research. Indeed, Chandren, Ahmad, and Ali in 2017 concluded that there was no correlation between the share buyback and the performance of the companies. Bhullar, Bhatnagar, and Gupta in 2018 came to the same conclusion after having analyzed the effects of share repurchase on the firm value of the 180 Indian companies listed on the Bombay Stock Exchange of India from 2006 to 2016. Again, I can report the findings of Mukherjee and Chatterjee in 2019, who found that most of the firms analyzed experienced no change in the value after the buyback programs were announced.

Moving to the dividend policy side, even the remarkable research of Miller and Modigliani in 1961 conducted to affirm that dividends did not affect the performance, and at last, few years later, in 1976, Black showed similar results concluding that there was no correlation between dividend policies and enterprises' performance.

Just with a Black's statement on dividends that could be used for buybacks too, I would like to conclude this paper: "the harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together".

## Selected references

- Buhllar, P. S., Bhatnagar, D., Gupta, P., (2018). Impact of buyback of shares on firm value: empirical evidence from India. *Iranian Journal of Management Studies (IJMS)*. 11(3), 425-436. DOI: 10.22059/ijms.2018.246143.672914.
- Chandren, S., Ahmad, Z., Ali, R., (2017). The impact of accretive share buyback on long-term firm performance. *International Journal of Economics and Management*. 11(1), 49-66.
- Hafeez, M. M., Shahbaz, S., Iftikhar, I., Butt, A. H. (2018). Impact of dividend policy on firm performance: (evidence from the manufacturing firms in Pakistan). *International Journal of Advanced Study and Research Work*, 1(4), 2581-5997. DOI: 10.5281/zenodo.1312180.
- Lease, J.O. (2010) Measuring and analysing the effects of dividend policy in banking profits and growth, *Journal of Policy and Development Studies*, 9(1), 167-178.
- Manconi, A., Peyer, U., Vermaelen, T., (2019). Are Buybacks good for long-term shareholder value? Evidence from buybacks around the world. *Journal of Financial and Quantitative Analysis*. 54(5), 1899-1935. doi:10.1017/S0022109018000984.
- Md. Musharof, H., Afzal, A., (2015). Is buying back of shares a dangerous financial strategy? *Global Journal of Management and Business Research: Economics and Commerce*. 15(7), 32-35.
- Michaely, R., Thaler, R., Womack, K. (1995). Price reactions to dividend Initiations and omissions: overreaction or drift? *Journal of Finance*. 50(2), 573-608.
- Miller, M. H., Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *The Journal of Business*. 34(4), 411-433.
- Mukherjee, P., Chatterjee, C., (2019). Does share repurchase announcement lead to rise in share price? Evidence from India. *Global Business Review*, Sage. 20(2), 420-433. DOI: 10.1177/0972150918825327.

## Selected websites

- <https://www.borsaitaliana.it/borsa/glossario/dividendo.html?lang=it>.
- <https://www.investopedia.com/terms/s/sharerepurchase>.