

FSI – Sant'Anna

The role of finance in a sustainable transition

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Final research report

Abstract

Nowadays, Corporate social responsibility (CSR) efforts in the daily corporate life are subject to intense scrutiny by firms and investors. Despite a growing body of research examined several dimensions of corporate CSR, many angles remain underexplored, including the association of different types of financing with distinct levels of ESG performance. This research investigates the phenomenon from two different perspectives. A first analysis provides evidence that higher degrees of leverage are associated with a worse ESG performance. The second analysis investigates the changes of the ESG performance in M&A target firms' and shows that relevant equity stakes and a decrease in financial leverage are associated with a better performance after the deal. In addition, the results suggest that a better ESG performance is also associated with a domestic acquiror rather than a foreign investor.

Abstract - Italian

L'adozione di buone pratiche di Corporate Social Responsibility (CSR) è oggi tra i temi più importanti per asset manager e investitori. Anche se una ampia letteratura ha analizzato i fattori che determinano il profilo ESG delle imprese, restano ancora diverse prospettive meritevoli di approfondimento. Questo studio esplora, tramite due analisi indipendenti, la relazione tra differenti tipologie di finanziamento e relativi livelli di performance ESG. Il primo approfondimento evidenzia che alti livelli di leva sono associati con una peggiore performance; il secondo si concentra sulla performance ESG di imprese che sono state target di operazioni di M&A, ed evidenzia che il miglioramento successivo al deal è superiore quando l'operazione coinvolge quote rilevanti di equity e complessivamente si riduce il grado di leverage dell'impresa. Inoltre, sono state rilevate nuove evidenze, meritevoli di ulteriori approfondimenti, in merito ad una migliore performance ESG correlata ad acquirenti operanti nello stesso paese.

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1. Introduction

The relevance of sustainability issues in the modern economy is well illustrated by the finding that in 2020 roughly one out of three dollars invested in the US — or \$17.1tn — has a sustainable mandate¹. The trend in sustainable investing has reached a significant dimension also in Europe, with Luxembourg housing half of the world's listed Green Bonds and €467 billion of environmental, social and governance funds domiciled in the continent². The European Union has taken a stand with the recent European Green Deal, which will mobilise at least €1 trillion in sustainable investments during the next decade³.

In this context, asset managers are pushed to actively select investments that are in line with sustainability practices, and simultaneously they should provide interesting returns to their investors. To continue attracting capital, money managers need therefore to deliver good economic returns and a positive impact on society. Several players, such as FSI (www.fondofsi.it, the largest private equity fund entirely dedicated to Italy with Eur 1.4 bn commitments), are already implementing financing strategies aimed at maximizing both financial and sustainable performance. However, we lack large-scale studies that generalize the feasibility and successfulness of the strategies.

The aim of this research is to provide a better understanding of the correlation between financing strategies and corporate sustainability, providing empirical evidence that could help practitioners in their investment process. To offer a complete and diversified perspective on this phenomenon, we adopt two different angles. At first, we focus on the role of debt and explore how different levels of leverage are associated with financial and ESG performance. In a second and independent analysis, we analyse a sample of M&A investments with a relevant equity stake and we explore how the ESG and financial performance variables change after the M&A operation.

The following sections are divided as follows: section 2 reports the common ground between the two research; section 3 investigates deeper the relationship between leverage and ESG and financial performance; section 4 analyses the consequences of M&A operations on firm's ESG performance and profitability; section 4 summarises and concludes the research report.

2. Environmental, social, governance and financial indicators, and leverage ratio

This section will introduce the variables that will be analysed in this research. Whereas the measurement of financial performance is based on widely accepted indicators, such as EBITDA ratios and turnover growth, the measurement of corporate social responsibility (CSR) activities started only in recent years and there are no universally accepted standards. However, the standard practice is to use environmental, social and governance ratings which are calculated by data providers such as Refinitiv. These are commonly used in academic and industry studies as a proxy of a firm's corporate social responsibility activities and are used also in this research. These ESG indicators can also proxy how firms are contributing to the sustainable development goals (SDG) agenda 2030, as will be outlined in the table below.

The data used for this analysis are gathered from Refinitiv's Asset4. Refinitiv is one of the most important in providing sustainability-related data⁴, in addition to financial and market data. We use the Asset4 database,

¹ US Sustainable Investment Forum foundation (2020) Report on US Sustainable and Impact Investing Trends.

² State Street (2018) The future of Sustainable Investing in Europe and Beyond.

³ https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_24.

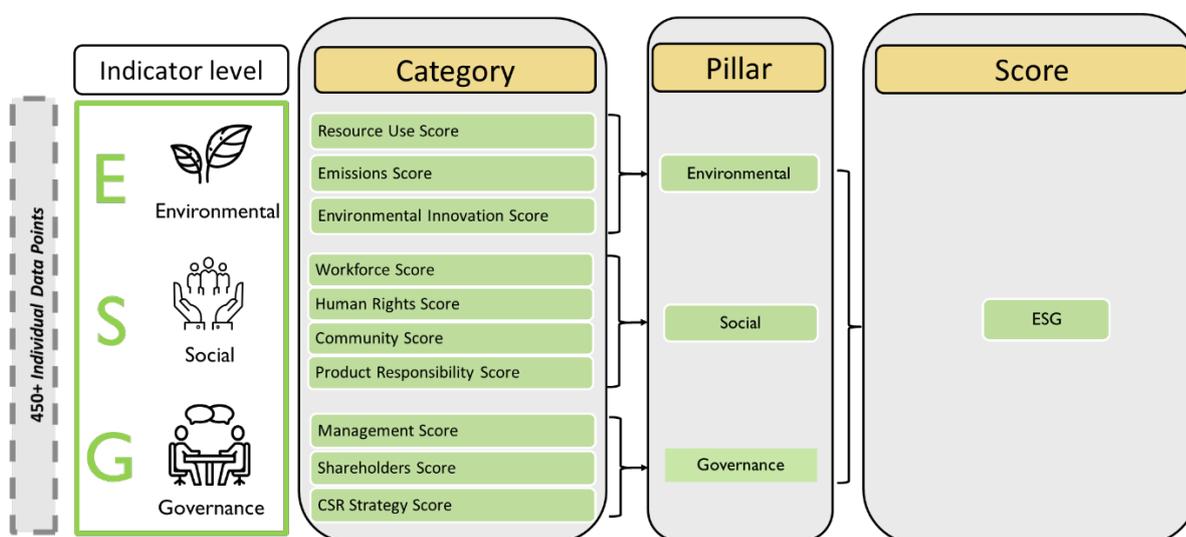
⁴ Refinitiv is the owner of the Thomson Reuters data platform.

which is integrated in the EIKON-Datastream platform and covers around 8500 firms globally, representing 70% of the global market capitalization.

The framework of Refinitiv’s ESG ratings is summarised in Figure 1. For each of the firms included in the database, Asset4’s content research analysts gather documental proofs to justify more than 450 datapoints. Among these datapoints, 186 comparable measures are used in the ESG scoring process. These data are grouped in 10 category scores, which represent several dimensions of the environmental, social and governance concepts. To calculate the category scores, a percentile ranking methodology is adopted, which aims to assign scores which are based on the performance of other firms in the same industry.

The category scores are then rolled up into three pillar scores, which correspond to the main ESG dimensions. To consider the importance of the ESG themes in different industries, the Refinitiv ESG Magnitude Matrix is implemented in form of category weights. Similarly, the pillar scores are summed to originate the aggregated ESG score which provides a general indication of the CSR performance of the firm⁵.

Figure 1 Structure of the ESG indicators



The financial variables that we analysed as a proxy of performance are Ebitda on Total Assets, Ebit on Revenues, Sales Growth, Market to Book Value. All these variables are commonly used as indicators of financial performance.⁶

In Table 1 we provide the definition for each of the dependent variables that we analyse in this study.

Table 1 Dependent variables definition

Dependent Variables	Definition	SDG contribution (if applicable)
ESG Score	Overall company score based on the self-reported information in the environmental, social, and corporate governance pillars.	
Environment Pillar	Weighted average relative rating of a company based on the reported environmental information and the resulting three environmental category scores.	
Emission	A company's commitment and effectiveness towards reducing environmental emission in the production and operational processes.	SDG 13 (Climate Action)

⁵ For additional information on the Refinitiv ESG methodology see: Refinitiv (2020) Environmental, Social and Governance (ESG) scores from Refinitiv.

⁶ All financial dependent variables have been winsorized at 2% and 98%, to cope with extreme values in their distribution.

Eco-Innovation	Company's capacity to reduce the environmental costs and burdens for its customers, and thereby creating new market opportunities through new environmental technologies and processes or eco-designed products.	SDG 12 (Responsible consumption and production) SDG 13 (Climate Action)
Eco-Efficiency	A company's performance and capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management.	SDG 6 (Clean Water and Sanitation) SDG 7 (Affordable and clean energy)
Climate Change*	CO ² /Revenue ratio, indicating the contribution of the firms to the climate change process	SDG 13 (Climate Action)
Social Pillar	Weighted average relative rating of a company based on the reported social information and the resulting four social category scores.	
Community	The company's commitment towards being a good citizen, protecting public health and respecting business ethics.	SDG 3 (Good Health and Well Being) SDG 16 (Peace, justice, and strong institutions)
Human Rights	A company's effectiveness towards respecting the fundamental human rights conventions.	SDG 16 (Peace, justice, and strong institutions)
Product Responsibility	A company's capacity to produce quality goods and services integrating the customer's health and safety, integrity and data privacy.	
Workforce	Company's effectiveness towards job satisfaction, healthy and safe workplace, maintaining diversity and equal opportunities, and development opportunities for its workforce.	SDG 3 (Good Health and Well Being) SDG 5 (Gender Equality)
Governance Pillar	Weighted average relative rating of a company based on the reported governance information and the resulting three governance category scores.	
Management	Measures a company's commitment and effectiveness towards following best practice corporate governance principles.	SDG 8 (Decent work and economic growth) SDG 16 (Peace, justice and strong institutions)
Shareholders	A company's effectiveness towards equal treatment of shareholders and the use of anti-takeover devices.	
CSR Strategy	A company's practices to communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes.	
Financial Indicators		
Ebitda on Total Assets	Earnings before interest, taxes, depreciation, and amortization divided total asset	
Ebit on Revenues	Earnings before interest, taxes divided annual turnover	
Sales Growth	Year-on-year turnover growth	
Market to book value	Market value of the ordinary (common) equity divided by the balance sheet value of the ordinary (common) equity in the company.	

*Climate change has been implemented only in the first research model

3. Financial leverage and ESG performance.

The aim of this section of the research is to investigate the association between the degree of financial leverage and several measures of sustainable and financial performance. The performance indicators that are considered belong to the framework introduced in the previous section. The aim is to understand if different levels of debt are associated with a different performance in the financial and sustainable dimension, and therefore to provide an overview of the relationship between leverage ratio and sustainable and financial performance.

To perform the analysis, we downloaded the full set of ESG scores, pillars and category scores for all firms included in the Asset4 database. When the data were downloaded (May 2020), the entire database included 8512 firms. After excluding firms belonging to the financial services sector, we created a panel dataset for 6638 firms for 15 years (2003-2018).

We analyse two groups of dependent variables: financial and ESG, as described in the previous section. As independent variable, we include the leverage ratio defined as a firm's Net financial position (Net Debt) divided the firm's EBITDA. As an alternative, we also use firms' Total Debt divided by its Total Equity. When included in the analysis, both variables support the same conclusions; however, we only report statistical analysis where leverage is proxied by Net Financial Position divided EBITDA⁷.

The statistical methodology applied is a pooled OLS regression. Each regression on financial variables includes control variables for firm size (logarithm of total asset), year, sector, and country. In addition to these, the regressions on ESG performance indicators include controls for firms' sales growth and profitability.

Relevant differences exist on the financing strategies on a sectoral level; for instance, it is reasonable to assume that capital intensive activities have a different approach towards debt usage compared to high-tech companies. Therefore, is important to include sectoral control variables in order to measure a coefficient that is independent of sectoral specificities. In the following tables, for the sake of simplicity, we show only partial results, estimated for the main independent variables of interest; the full tables are available on request.

Table 2 presents the results for the regression on ESG indicators and on the ESG specific pillars. The ESG aggregated scores and the pillar scores are negatively associated with leverage and this association is statistically significant in all cases. This suggests that higher leverage ratios are associated with a lower score in all ESG areas.

⁷ In both variables, the occurrence of a negative denominator (either negative equity or negative EBITDA) resulted in extreme values where firms that were extremely leveraged exhibited a negative leverage. To correct for these deviations, we applied the following procedure: first, we calculated the leverage proxy; then we removed from the sample firms for which the denominator was negative; subsequently, we calculated a measure of the variation around the median value as median +/- 2*interquartile range of the leverage indicator, obtaining an upper and lower bound of the distribution. We then winsorized the extreme values within the upper and lower bounds of the distribution. At last, we reintroduced the firms with negative value assigning the upper bound as default value for the leverage ratio.

Table 2 OLS Pooled Regression on the ESG aggregated score and on the ESG pillars, selected results.

	ESG Score	Environmental Pillar	Social Pillar	Governance Pillar
NFP/Ebitda	–	–	–	–
<i>Significance</i>	Strong ***	Strong ***	Strong ***	Strong ***
Sample size	43917	43848	43848	43929

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The regressions include controls for: firm size, sales growth, profitability. In addition, dummy variables are included to control for year, sector and country.

In Table 3 we focus on the environmental pillar and its components. The selected results suggest that the high debt levels are associated with a worse environmental performance. Specifically, it seems that firms with higher debt ratios are significant emitters of pollutants in the atmosphere and have a lower efficiency in the use of natural resources. The coefficient for the efforts in the development of eco-innovation is negative, but it is not statistically significant. At last, we use a datapoint to analyse the performance on the climate change contribution, proxied by CO²/Revenue ratio. The positive relationship between leverage and the climate change proxy suggest that heavily indebted firms are more involved in the climate change process than their less indebted peers.

Table 3 OLS Pooled Regression on the environmental pillar and its subcomponent, selected results.

	Environmental Pillar	Emissions	Eco-innovation	Eco-efficiency	Climate Change
NFP/Ebitda	–	–	–	–	+
<i>Significance</i>	Strong ***	Strong ***	Not significant	Strong ***	Strong ***
Sample size	43848	43845	43845	43845	21223

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The regressions include controls for: firm size, sales growth, profitability. In addition, dummy variables are included to control for year, sector and country.

Table 4 shows the econometric results on the Social pillar and its sub-components. A negative relationship between higher debt levels and the commitment of firms towards protecting public health and respecting business ethics. Similarly, firms with higher debt levels seem less likely to implement policies to safeguard human rights. A negative, but not statistically significant, coefficient is observed for the relationship between increased debt and the efforts in implementing product health and safety measures and data privacy protection. At last, the negative and significant coefficient for the workforce score suggest that more indebted firms make poorer efforts in securing diversity and equal opportunities on the workplace, and development opportunities for their employees.

Table 4 OLS Pooled Regression on the social pillar and its subcomponent, selected results.

	Social Pillar	Community	Human Rights	Product Responsibility	Workforce
NFP/Ebitda	–	–	–	–	–
<i>Significance</i>	Strong ***	Medium ***	Strong ***	Not significant	Strong ***
Sample size	43848	43845	43845	43845	43845

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The regressions include controls for: firm size, sales growth, profitability. In addition, dummy variables are included to control for year, sector and country.

The results reported in Table 5 explore the last of the ESG dimension, which is Governance. In addition to the negative result for the main pillar, we observe that a negative and statistically significant relationship is observed for the management category score. This suggest that firms with a higher leverage score worse in

the implementation of governance best practices, and this negative relationship seem to persist regarding the attitude to adopt a CSR strategy. The coefficient for shareholders score is negative, but not significant, suggesting the absence of a clear relationship between leverage ratio and the implementation of shareholder protection mechanisms and the use of antitakeover devices.

Table 5 OLS Pooled Regression on the ESG aggregated score and on the ESG pillars, selected results.

	Governance Pillar	Management	Shareholder	CSR Strategy
NFP/Ebitda	—	—	—	—
Significance	Strong ***	Strong **	Not significant	Strong ***
Sample size	43929	43930	43972	43972

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The regressions include controls for: firm size, sales growth, profitability. In addition, dummy variables are included to control for year, sector and country.

At last, in Table 6 are shown all the financial performance indicators that we selected. For all indicators we find a strong and statistically significant negative relationship between higher leverage ratios and the performance measure.

Table 6 OLS Pooled Regression on the ESG aggregated score and on the ESG pillars, selected results.

	EBITDA / Total Assets	EBIT / Revenues	Sales Growth	Market Value / Book Value
NFP/Ebitda	—	—	—	—
Significance	Strong ***	Strong ***	Strong ***	Strong ***
Sample size	78691	77914	78725	73485

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The regressions include controls for: firm size, sales growth, profitability. In addition, dummy variables are included to control for year, sector and country.

Summing up, the results obtained suggest that high levels of financial debt are often associated with a lower overall ESG and financial performance. From the environmental perspective, firms with higher leverage seem to emit more pollutants in the atmosphere, to be less efficient in using natural resources and seem to have a major responsibility for the climate change issue. The results on the social dimension suggest a similar trend, highlighting that heavily leveraged firms tend to have a lower commitment towards the community, human rights, and their workforce wellbeing. The governance scores are lower for indebted firms, suggesting that they score poorly on implementing good governance practices and on adopting CSR policies. As expected, a negative relationship between debt and financial performance proxies is confirmed.

As mentioned previously, we investigated if the relationship that we found holds in different sectors; indeed, the opportunity to rely on debt capital is more often exploited in capital intensive sectors. Therefore, we explored the existence of a significant relationship in two subsamples, specifically the software sector and the telecommunication sector. Leverage ratio in high tech firms does not seem to be more significant than in the overall sample. However, for telecommunication firms (which we identify as capital intensive) a higher leverage ratio is associated with a more substantial reduction of sustainable performance.

Despite this methodology does not allow us to claim a causal relationship between higher leverage ratios and a worse sustainable and financial performance, we can observe that a negative relationship exists between these variables. There are several issues that must be highlighted.

The negative relationship between debt and sustainable performance has been explored also in previous studies. Recent studies have found that operating at a lower leverage is associated with a better score in

employee treatment⁸ and that socially responsible firms are inclined to use equity rather than debt financing⁹. This study's results support the view that less indebted firms are performing better from a CSR perspective.

The relationship between leverage and financial performance has been the subject of a long debate inside (and outside) academia. While discussion from an academic perspective is beyond the scope of this work, we must point out that several forces are at play in this relationship. On one hand, an (excessive) increase in the amount of debt relative to the amount of equity would be very expensive for the firms. Indeed, financial distress can incentivize managers to make decisions that are at the expenses of creditors. On the other hand, debt has been identified as a disciplining tool which forces managers to take value-maximizing decisions. In addition, the threat of bankruptcy helps in making the firms more efficient, and its magnitude is in turn affected by the institutional and legal environment. Hence, the net effect of debt on performance depends on which of these two opposite effects is stronger. However, in this sample we find a clear indication that an increase in leverage is associated with a worse financial performance, indicating that debt should be taken on cautiously by managers.

4. Profitability and ESG performance of M&A target firms

The second section of the research is focused on the changes in performance variables after an M&A operation. Specifically, we explore what happens to performance indicators after a relevant equity stake is acquired in a M&A operation. Indeed, we argue that new finance might affect firm performance on multiple dimensions. In addition to financial performance, environmental and social practices can be influenced by the availability of new financial resources, and governance practices could be affected by changes in firm ownership structure as well.

The aim of this section of the research is to isolate the effect of a change in ownership on firm performance and find some variables that moderate the relationship. The first step is to select the M&A deals that are more relevant in this context. We started from all firms included Asset4 database, for which ESG data are available. Then, we selected all M&A deal in which a firm included in Asset4 was the target firm and it was listed, obtaining 19.496 deals¹⁰. We dropped from the sample the deals according to the following rules:

- The target firm belongs to the financial sector
- The operation was classified as a recapitalization, a spin-off or a carve-out
- The operation was classified as intragroup
- The equity stake involved was less than 5% of the target's equity

Applying these prerequisites, we obtained 3.661 deals, for a total of 1561 firms. In case a firm was targeted more than once, we choose the first deal to avoid simultaneity issues¹¹.

The sectoral distribution and geographical distributions of the sample are exhibited respectively in Figure 2 and Figure 3. Most of the bidders comes from the financial services sectors, while the remaining share is

⁸ Bae, K.H., Kang, J.K. and Wang, J. (2011), "Employee treatment and firm leverage: A test of the stakeholder theory of capital structure", *Journal of Financial Economics*, Vol. 100 No. 1, pp. 130–153.

⁹ Pijourlet, Guillaume. (2013) "Corporate Social Responsibility and Financing Decisions" European Financial Management Association Conference.

¹⁰ M&A deals were downloaded from the Screener Tool in Refinitiv.

¹¹ When observing the effect of a certain occurrence on a longitudinal perspective (such as the M&A event), we might be observing the effects related to other similar events that happened previously in time. To limit this risk, in the occurrences where there was more than one deal, our choice was to take the first deal as the most relevant and as the object of analysis.

extremely fragmented. Regarding target firms, the Manufacturing and the Services sectors represent about half of the total.

Figure 2 Sectoral distribution of acquiror and target firms

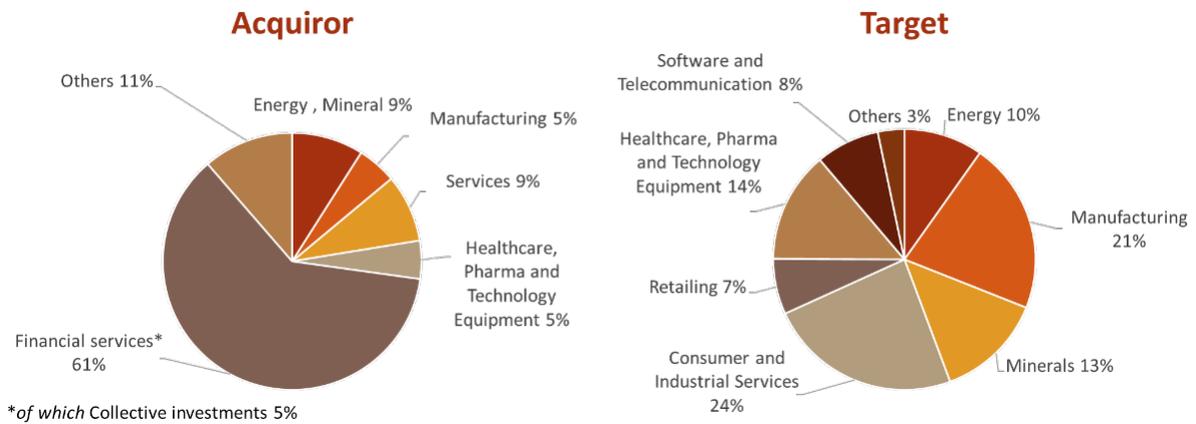


Figure 3 Geographical distribution of acquiror and target firms

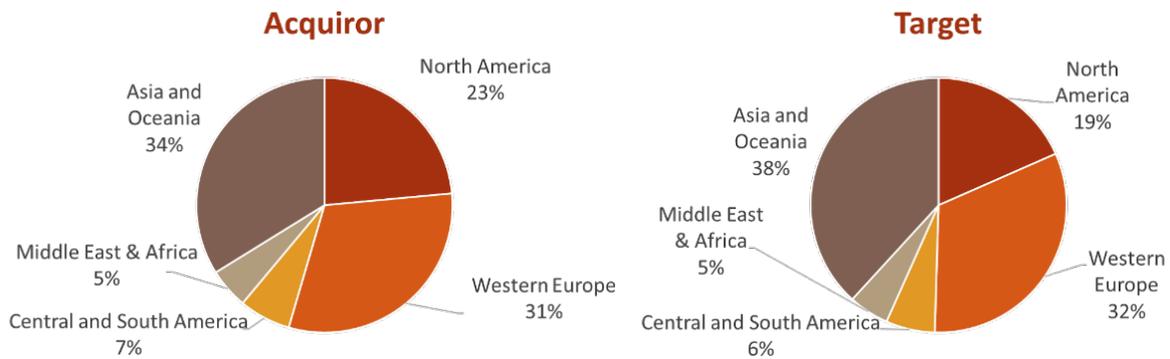


Table 7 Equity stake distribution of the deals selected.

% Acquired	N	%
5<x<10	691	44
10<x<15	306	19
15≤x<30	334	21
30≤x≤50	99	6
X>50	131	8
Tot	1561	100

Table 7 exhibits the equity stake distribution of the selected deals and Table 8 show the average dimension and leverage levels. We observe that the firms are generally large, with a median annual turnover of € 0.8 billion and a median total asset of € 1.1 billion. From the huge difference between median and mean values, we argue that several deals involve very large firms.

Table 8 Average dimension and leverage

Year of the investment	Average	Median
Revenues (Bln €)	2.6	0.8
Total Asset (Bln €)	3.6	1.1
NFP/Ebitda	2.45	1.69

As a first exploratory analysis, we analyse the changes of the performance variables after the M&A event. The results in Table 9 show the percentage change on the base value (2 years before M&A) after 2, 4 and 6 years from the equity acquisition. A clear picture emerges where almost all the scores related to the environmental and social pillars improve after the M&A event.

Table 9 Changes in performance variable after the M&A event

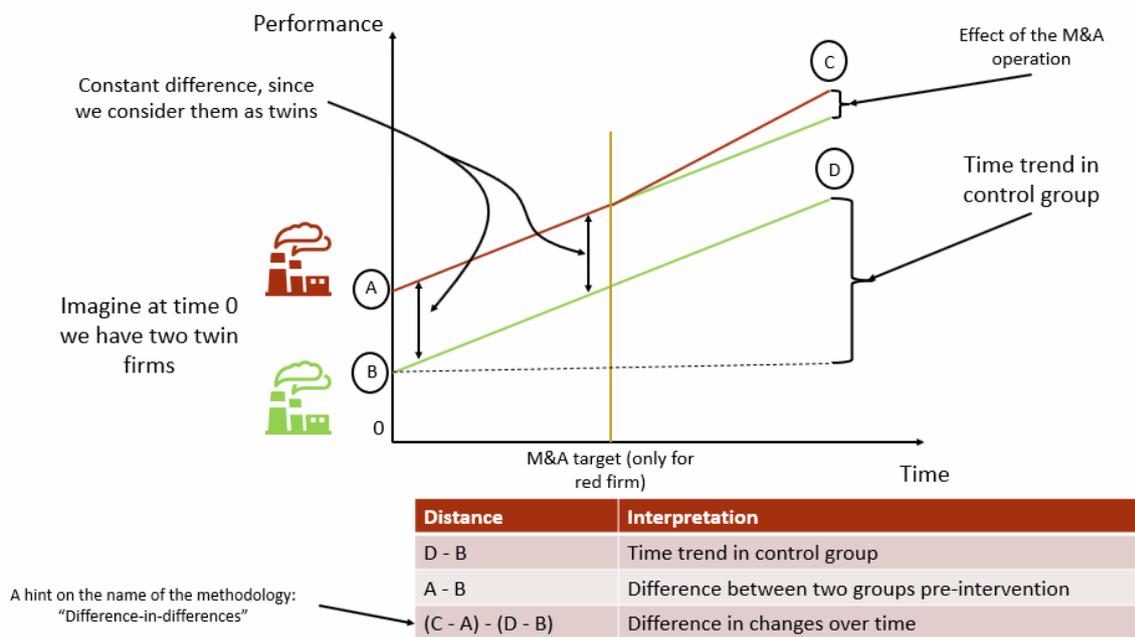
Variables/Years before/after to M&A (%change)	-2 (base value)	2	4	6
ESG Score	38.0	4.5%	6.1%	7.4%
Environment Pillar	29.4	10.4%	13.2%	16.0%
Emission	33.4	9.3%	12.0%	14.4%
Eco-Innovation	16.5	13.1%	19.1%	23.7%
Eco-Efficiency	34.4	9.1%	10.4%	13.5%
Social Pillar	36.4	8.7%	9.7%	10.8%
Community	46.3	1.7%	1.8%	2.5%
Human Rights	16.1	35.3%	30.4%	31.8%
Product Responsibility	33.5	11.6%	15.2%	15.7%
Workforce	51.3	2.4%	2.3%	3.5%
Governance Pillar	48.3	-2.9%	-2.7%	-2.1%
Management	51.4	-6.8%	-6.5%	-6.3%
Shareholders	51.0	3.6%	2.2%	2.7%
CSR Strategy	29.1	13.0%	14.0%	18.0%
Variables/Years before/after to M&A	-2	2	4	6
Financial Indicators				
Ebitda on Total Assets	0.100	0.096	0.098	0.097
Ebit on Revenues	0.061	0.054	0.054	0.062
Sales Growth (Year-on-year)	0.161	0.163	0.107	0.068
Market to book value	2.69	2.761	2.748	2.503
Legend				
Change			Positive	Negative
Not significant				
*				
**				

On the other hand, we observe that the governance score shows a decline led by the management score. This change might be related to the changes in the governance structure that follows the deal and might reflect temporary imbalances in board independence and gender balance and remuneration structure.

Financial indicators do not provide a clear picture; the evolution of performance indicators is generally not positive, suggesting a decline in sales and profitability.

However, these results can provide only a partial view of the phenomenon. Indeed, looking only at the firms' evolution over time does not allow us to fully understand the dynamics that are in place in the whole financial market, due for example to financial crises and regulatory changes. Therefore, we implement a research methodology called "counterfactual evaluation" (see Figure 4). This methodology is based on a difference-in-differences analysis, which aims at comparing two firms, which we can think of as twins, that differ only because one of the two was a target of the M&A deal. Therefore, the difference in time would only be related to the effect of the relevant changes in the equity stakes, net from the effect of other confounding factors.

Figure 4 Logic of counterfactual evaluation

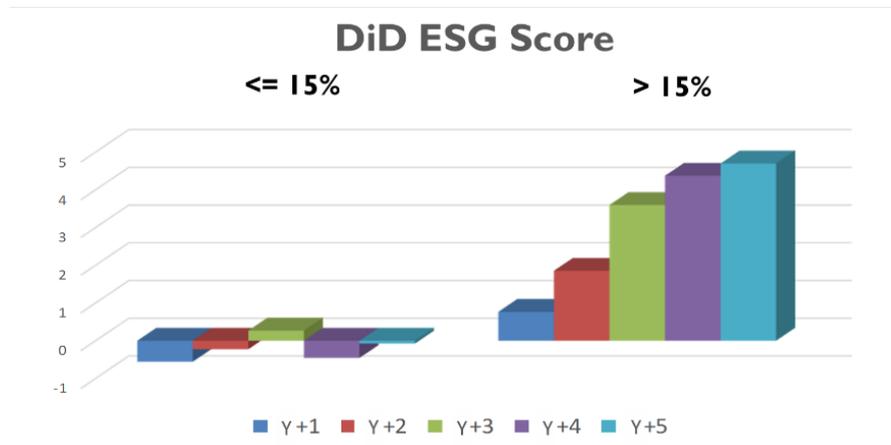


To estimate the "pure" effect of the M&A operation it is important to select a good sample of "twin" firms (also called "control firms") to compare the firms that were targets in M&As (also called "treated firms"). Therefore, we adopt a methodology to select only the firms that are very similar to the treated sample i.e., the propensity score matching. This process allows us to match each treated firm with a control firm, minimizing the differences between specific variables. Starting from a sample of control firms operating in the same sector and in the same nation, and with financial data in the same year of the M&A deals, a comparable firm has been identified taking into account firm size, turnover, and leverage at the time of the M&A event of the treated firm. The post-matching statistics are presented in the appendix.

We identify 1170 good matches for the treated firms, then we calculate the differences in performance between each treated firm and its specific control firm and investigate which are the main determinants of these variations. We then implement an OLS regression where our dependent variable are the differences in the performance between the treated and control firms. Therefore, we investigate how these value changes are explained by several deal and acquiror's characteristics.

As a first step, we investigate what happens in occurrences where the ownership acquisition reaches a substantial stake i.e., 15% of equity capital. The graph in Figure 5 shows that firms which were the target of a relevant equity acquisition clearly outperform the firms that were involved in lower stake acquisitions.

Figure 5 DiD on the ESG Score, difference between higher and lower stakes



The larger impact for the target of M&A deals that involve a significant equity stake is also very evident in each ESG dimension (Figure 6 – 8): the changes in the environmental, social and governance profiles are more pronounced when the stake acquired is higher. In addition, we observe that firms that were targets in deals involving the exchange of a less significant ownership stake exhibit a substantially worse performance compared to the control sample (figure 6), whereas this negative performance is less pronounced for Social (Figure 7) and Governance (Figure 8) scores.

Figure 6 Differences in environmental performance between stakes acquired

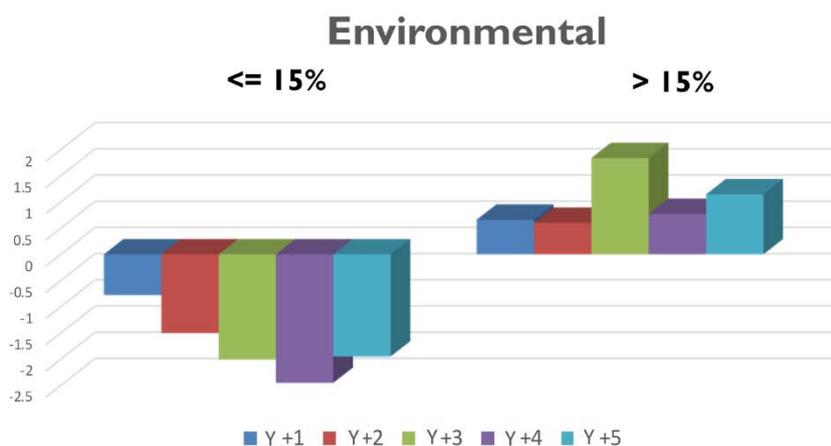


Figure 7 Differences in social performance between stakes acquired

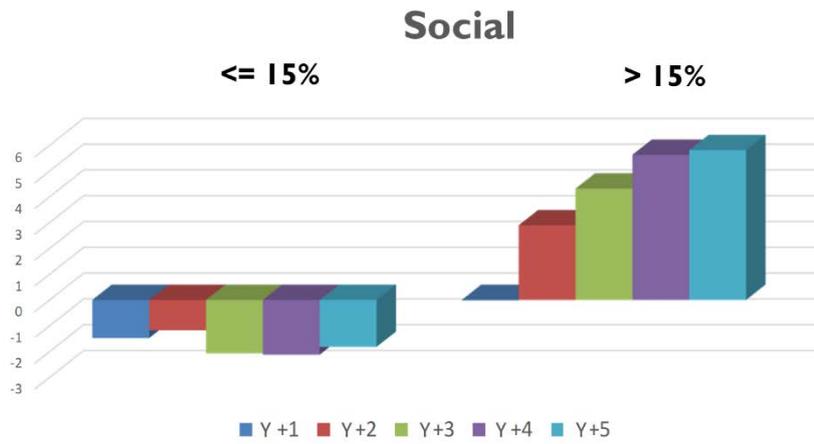
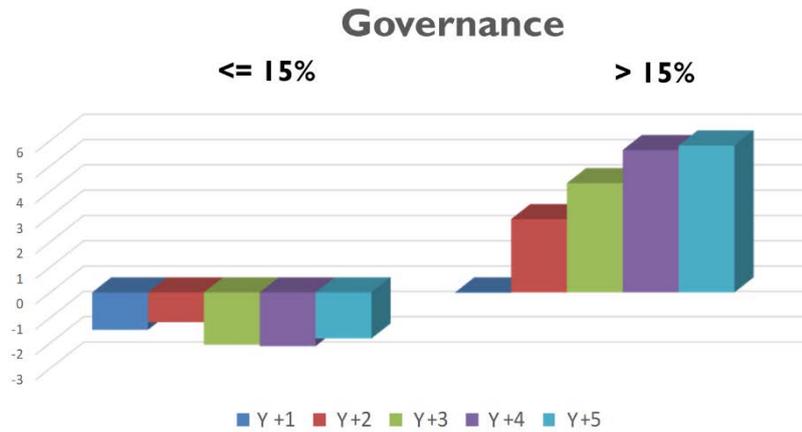
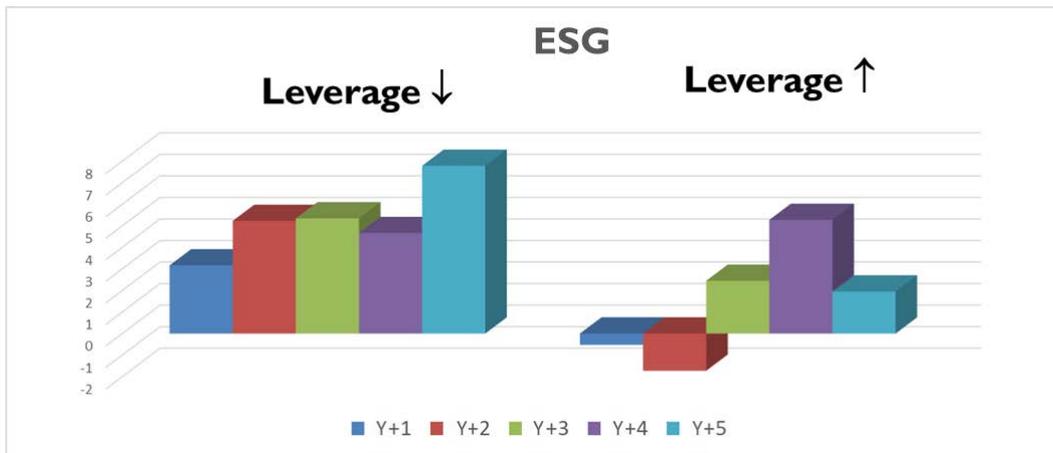


Figure 8 Differences in governance performance between stakes acquired



We move on to explore the dynamics of leverage changes in the subsample of deals where the stake acquired was more than 15%. Indeed, our aim is to provide more evidence on how the changes in leverage are associated to financial and sustainable performance in “equity intensive” operations. The trend reported in Figure 9 suggests that a decrease in leverage after an M&A operation is strongly associated with an increase in the aggregated ESG score, suggesting that target firms of M&A operations that decrease their leverage ratios make a significant effort towards improving their impact on environment and society.

Figure 9 Changes in ESG performance and Leverage



A similar result on a more granular level is observed in Figure 10 -12. Figure 10 shows that the changes in Environmental score of target firms that reduce their leverage are significantly better than for firms whose leverage increased. Figure 11 suggests that a similar result is observable for changes in the Social performance indicator. In general, all these analyses suggest that firms that are targeted in an M&A operation where a relevant portion of equity is exchanged and leverage is decreasing, exhibit better changes over time of sustainable performance. Conversely, Figure 12 shows that Governance score does not follow the same dynamics of the other ESG dimensions. A possible explanation is that an increase in debt could be associated with an increase in the “disciplining role” of creditors, which could exert pressure to improve governance practices.

Figure 10 Changes in Environmental Score and leverage

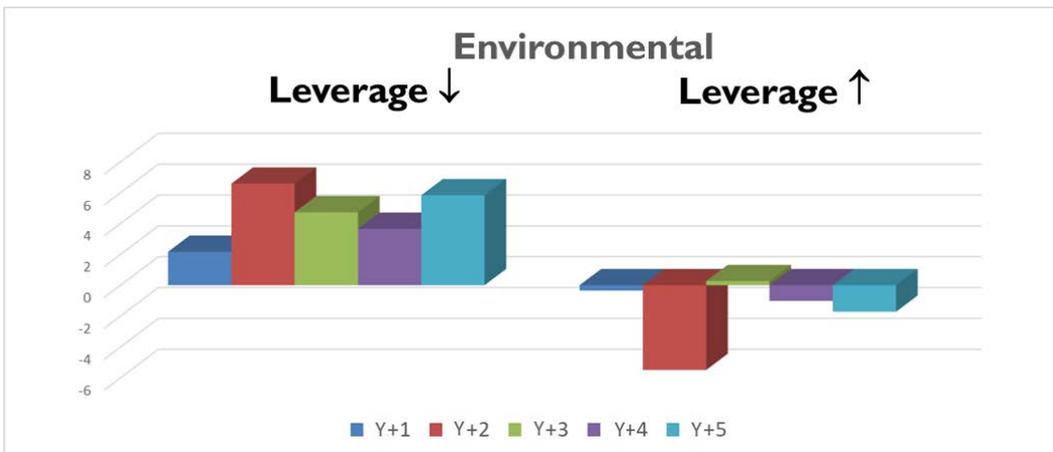


Figure 11 Changes in Social Score and Leverage

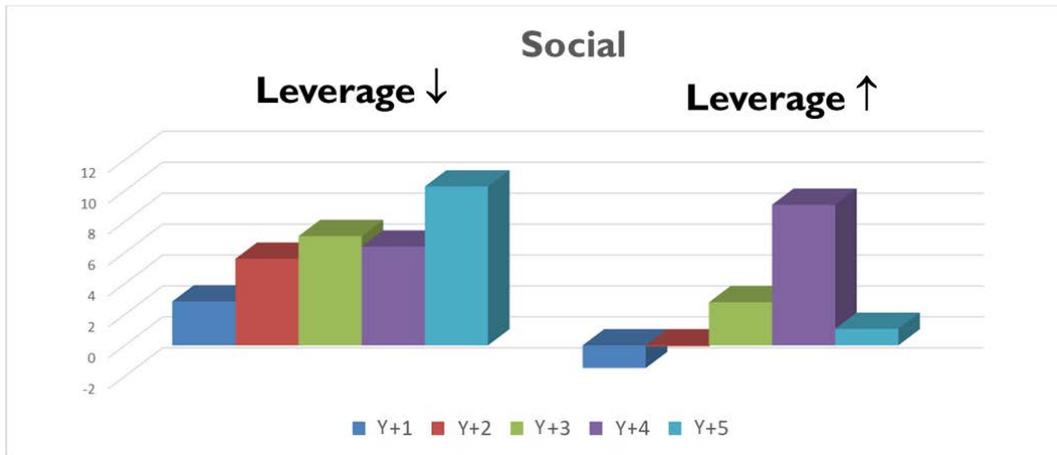
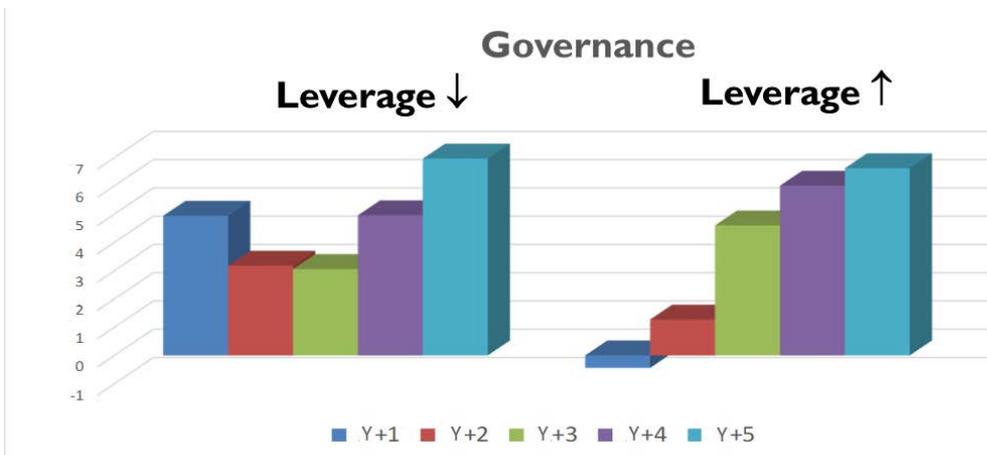


Figure 12 Changes in Governance Score and Leverage



The improvement in the Environmental and Social profile of the firms that experienced a reduction in the leverage ratio after a relevant M&A operation can also be detected by looking at more specific items, such as the efficiency in the eco-efficiency (Figure 13) and to eco-innovation (Figure 14). The picture that emerges is consistent with the idea that the cash outflow determined to financial debt significantly reduces the investment potential in projects aimed at improving the environmental strategy of the firm. On the other hand, a possible explanation of the results observed for firms reducing leverage might be that investors acquiring relevant stakes are able to put pressure on managers to unload debt and direct part of those resources towards efficient ESG practices.

Figure 13 Changes in Eco-efficiency and Leverage

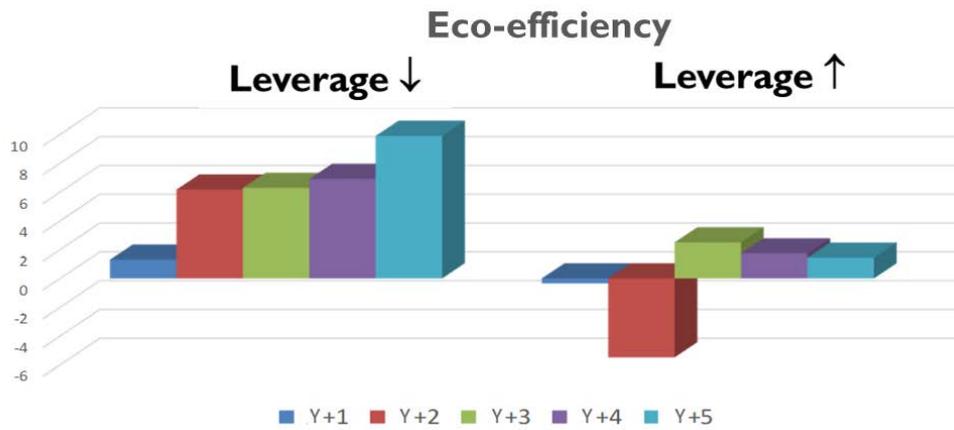
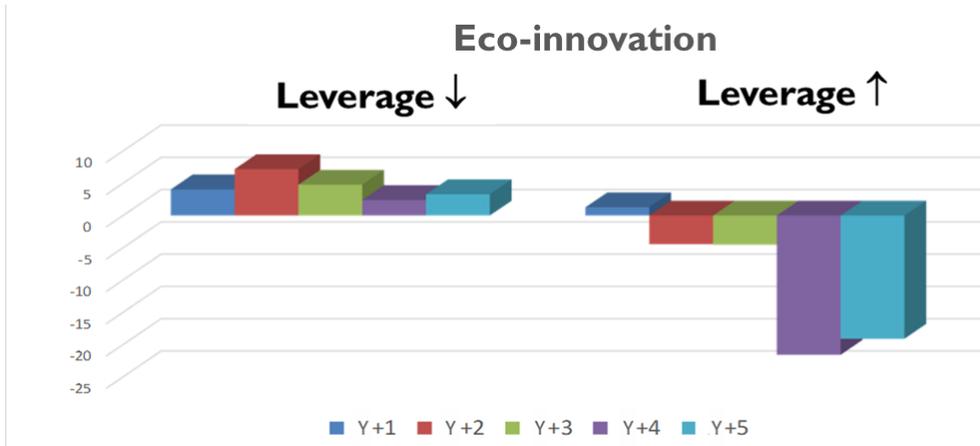
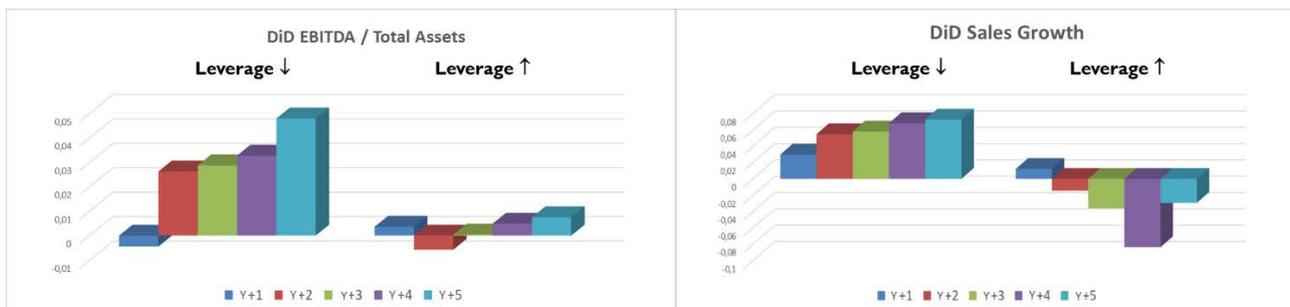


Figure 14 Changes in Eco-innovation and Leverage



We also observe that a leverage decrease after an M&A operation is followed by a substantial improvement of profitability and turnover growth (Figure 15), coherently with the results that we observed in the first analysis presented in this research.

Figure 15 Financial Performance indicators and changes in leverage



Many other perspectives could be explored to assess the correlation between the M&A activity and the ESG firm dynamics. We perform two additional analyses on the ESG performance of financial vs non-financial investors and on cross-border deals. Figure 16 shows that, on average, target firms that are backed by a financial investor achieve a higher ESG performance after acquiring their stake; however, this difference is not statistically significant, and we can only suppose that financial investors have a better grasp of ESG issues and are more careful in taking those issues into account.

Figure 16 ESG score DiD analysis

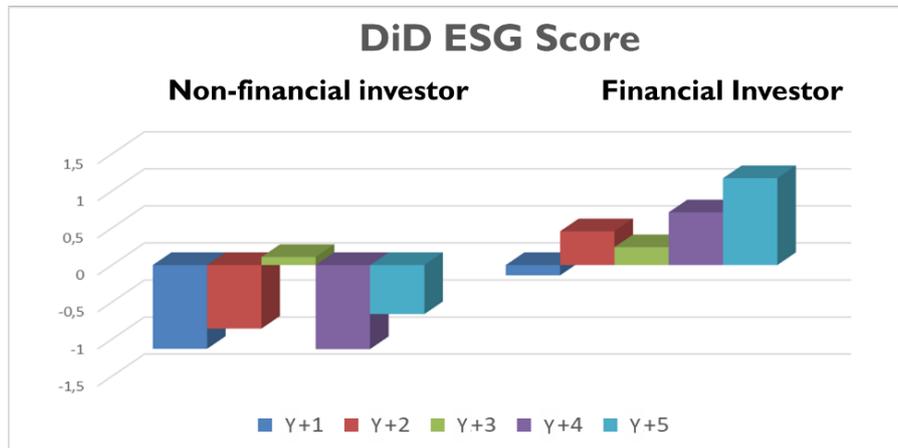
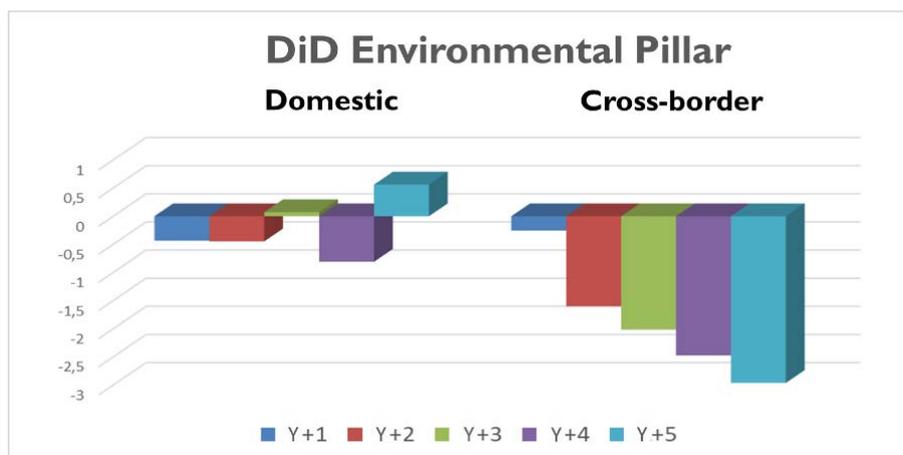


Figure 17 exhibits the differences in environmental performance between firms that were involved in a cross-border acquisition and firms that were acquired by a domestic entity. The graph shows a clear downward trajectory for environmental performance in firms that were acquired by a foreign entity. These results imply that foreign buyers are associated with a decrease in environmental standards in target firms, suggesting a disinterest of those buyers in the environment issues of countries where their targets are headquartered.

Figure 17 Environmental Pillar, domestic vs. cross-border



5. Conclusions

This research tries to shed light in the effect of certain financing strategies on financial and sustainable performance. Empirical evidence on this relationship is needed to guide the investment strategies of asset

managers and private equity operators. A few financial investors – as Fondo FSI, the sponsor of this research – adopt a forward-looking investment philosophy, with low leverage ratios and relevant equity stakes, following an investment strategy aimed at the long-term growth and firm sustainability. This research investigates, working on a large sample of firms listed on the world’s most important financial markets, how investment strategies are associated with sustainable and financial performance metrics.

Our results (summarised in Table 10) are rather encouraging in supporting low-leverage investment strategies. Firstly, our analysis suggests that sustainable and financial performance are negatively related with firm leverage, therefore implying that firms issuing less debt accomplish better results on both dimensions. Secondly, we look at changes in performance after a relevant ownership stake is exchanged in an M&A operation, working on a robust counterfactual analysis. Results show that the investments where the equity stake acquired through an M&A operation is significant (higher than 15%) are linked to a better performance in terms of environmental, social, and aggregated ESG score.

Furthermore, we find out that firms that reduce their leverage obtain a significant improvement in the Environmental and Social scores after the M&A operation, and show better results both for a few financial profitability metrics, and for several specific “ESG related” characteristics (eco-efficiency and eco-innovation)

We also perform some additional analyses, suggesting that financial sponsors are associated with better ESG results and that domestic acquirors pay more attention to the environmental impact of the target firms.

Summing up, this evidence supports the idea that low-leverage acquisition strategies affecting a significant equity stake can make a difference in terms of financial and sustainable performance. Hopefully, these results will contribute to sharpen the tools of managers and policy makers in the global efforts for a green, inclusive, and sustainable economy.

Table 10 Research questions and results

A higher leverage is generally associated with a lower...	
Environmental performance	✓
Social Performance	✓
Governance Performance	✓
Financial Performance	✓
In an M&A context where relevant stakes are acquired, is a leverage reduction associated to better ...	
Overall ESG performance	✓
Environmental performance	✓
Eco-innovation performance	✓
Eco-efficiency performance	✓
Social performance	✓
Do domestic investors pay more attention to environmental factors than foreign ones?	✓
Are higher stakes (>15%) associated with a better overall ESG performance?	✓