UNIVERSITA' DEGLI STUDI DI PADOVA

DIPARTIMENTO DI SCIENZE ECONOMICHE ED AZIENDALI "M.FANNO"

CORSO DI LAUREA MAGISTRALE / SPECIALISTICA IN BUSINESS ADMINISTRATION

TESI DI LAUREA

"THE FINANCIAL EFFECTS OF CORPORATE SOCIAL RESPONSIBILITY IN THE EXTRACTIVE INDUSTRY"

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ANNO ACCADEMICO 2017– 2018

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1. Introduction

The main purpose of this work is to analyse the effect of Corporate Social Responsibility (CSR) on the financial performances of the companies in the extractive sector, including all those entities operating in the mining and in the oil & gas industries (from which derives the acronym *MOG*).

The awareness of the need to regulate the impact that firms generate on the environment in which they operate is something that foreruns the mere definition of corporate social responsibility. In fact, since the businesses have started to become a wealthy and relevant institution in society, there has been a strong expectation that companies could and should take care of the weakest and poorest levels of the society itself. Despite the first documents regarding CSR come from the first half of the twentieth century, it's possible to find some modern "calls for responsibility" even in the works of intellectuals of the previous century, such as Mark Twain and Charles Dickens, who strongly commented the social and environmental effects of the Industrial Revolution on the American and British cities, with London described as "miles of close wells and pits of houses, where the inhabitants gasped for air, stretched far away towards every point of the compass. Through the heart of the town a deadly sewer ebbed and flowed, in the place of a fine fresh river"[1]. In any case, these descriptions don't have value in terms of economical and strategical analysis of the phenomenon and mainly represent material for literary critics. Moreover, the approach of the 19th century could still be seen as a call for paternalistic and philanthropic behaviours and not as an analysis of the advantages and the drawbacks coming from those behaviours.

Coming to a definition of CSR, two of the first pioneers of the subject were probably Oliver Sheldon (1924), who considered CSR as a voluntary engagement in social and environmental programmes, and Bowen (1953), who shifted the focus towards considering CSR as mandatory to answer the expectations of society. On the other hand, CSR started to gain also many critiques, with Milton Friedman leading the group: in an article on the New York Times he wrote "there is one and only one social responsibility of business--to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud.", a sentence that became the guiding light for those who were standing against this upcoming doctrine.

[1] extract from *Little Dorrit*, by Charles Dickens (see references)

A more comprehensive definition for corporate social responsibility can be found in Crifo and Forget (2015), who treat CSR as a process of integration of different concerns (environmental, social, ethical, human rights, consumer-oriented) into business operations and strategy, with the objective of creating value for the stakeholders and the shareholders of the company, but, at the same time, with the focus on avoiding possible adverse impacts, through the analytical phases of identification, prevention and mitigation of emerging threats. The representation of CSR as a multilateral discipline is also supported by Vintró and Comajuncosa (2010), who, taking inspiration by Carroll (1979), incorporated into this "multi-faced composition" four areas of responsibility: economic, legal, ethical and philanthropic. Still in line with this approach is Elkington, who proposed in 1980 a *Triple Bottom Line Model* (Figure 1.1), through which a company can be likely to fulfil its responsibilities: the idea at the basis is that, by paying attention to the expectations of shareholders and by measuring how the business affects the surrounding environment, a firm can reach a balance between economic, social and environmental responsibilities. With regards to the paper, this theory represents the starting point for an analysis of the relationship between social responsibilities activities and company financial performance, to understand how better financial results can be reached for example by improving corporate reputation and its visibility, two simple paths leading to a higher level of governmental support and to lower business risk. A further development of the *Triple Bottom Line Model* was proposed in 2002 by Wempe and Kaptein, who shaped a model based on the balance of three Ps: people, planet and profit (Figure 1.2); this way, a company should be responsible towards his employees, towards the environment and the ecosystem in which it operates and towards the shareholders and the business continuity.

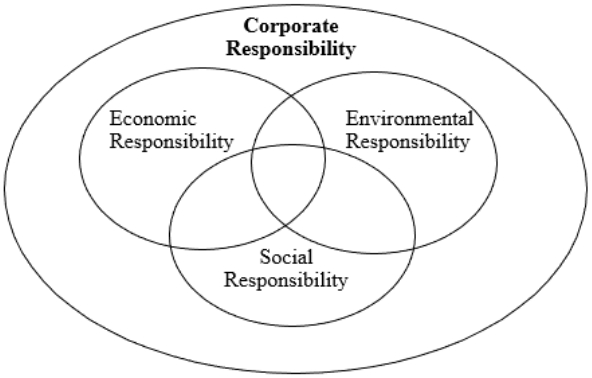

Figure 1.1 The Triple Bottom Line Model
Source: Linnanen L. & Panapanaan V., Helsinki University of Technologies

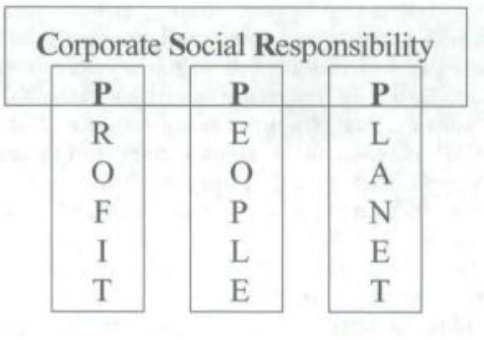

Figure 1.2 3P Model
Source: Erasmus University, Wempe & Kaptein

2. The role of CSR in the extractive industry

After introducing the wide concept of Corporate Social Responsibility, it's now time to get in touch with the industry that is going to be analysed, in order to understand the role of the discipline in the lives and in the strategic decisions of the firms competing every day in the sector, so that a wider view of its possible impacts on the financial performance can be reached. With the term *extractive industry*[2] we intend to comprise all the companies taking part into the supply chain of the mining, oil and gas sector, starting from firms who base their business on the exploration and preparatory routines (such as drilling and digging), through the ones providing productive equipment and services (refining, mills etc.), to end with companies selling post-production services (marketing, transportation, distribution). The choice of including all the stages of the supply chain into the analysis comes from the fact that many companies operating in the MOG market are large enough to cover the whole process by themselves or, at least, to cover most of it and to outsource some elements, according to what best fits the strategy of the firm.

Concerns on the impact of corporate activities are particularly relevant in the mining, oil and gas industry, with strong consequences on macroeconomic policies (Haalboom, 2012), on the environment (Mutti et al., 2011) and on the affected communities, in terms of both indigenous rights and employment market (Hamann, 2004; Sharma & Bhatnagar, 2015). These effects aren't visible only during the period in which companies are operative on the field, but they rather affect the habitat already in the moments anticipating the mere extraction (like during the exploration phase) and they continue long after the end of the operations (one example is the burst of the unemployment rate as soon as the material reserves start decreasing). As a result, a win-win result is possible only with the complete cooperation of the companies involved, with the inclusion of all stakeholders and with the help of legislative figures, such as governments, local authorities, NGOs, pressure groups and any other spokesman with the role and power of balancing the business results and the community interest, getting to reach what is called a *tri-sector partnership* (Business Partners for Development, 2002; Figure 2.1). At the end of the day, most of the participants of this three-side game only have the power to influence the decision process of the two main actors: the

Figure 2.1 Tri-Sector partnership
Source: Singapore Management University, School of Social Sciences

[2] Chapter 5 gives a deeper and more specific definition of the model and the sample of companies analysed.

company, who needs to protect its brand image and its revenues, and the legislative power (usually represented by the government, by local authorities or by supranational authorities), who has the duty to defend the economic dynamics of the country, the social interests of the population and the environmental safety. In this sense, CSR represents especially for contradictory sectors like the MOG a sine qua non for the achievement of a win-win outcome, heading to the creation of a double two-way influence relationship: on one hand, between CSR and the strategy of the companies and, on the other hand, between CSR and the institutions, a structured dynamic that will be explained later in this paper.

Going back to the sectorial analysis, the choice of integrating the mining and the oil & gas industries derives from the number of affinities between the two businesses when it comes to the social responsibility of the enterprises, the impact that the activity has on the interested communities and (very often) the threat to the socio-economic balance of the country in which the operations take place. The alignment between the two sectors can be summed up in four points:

- the dimension of the company,
- the hybrid regulation,
- the impact on communities,
- the so-called "resource curse".

The first point is referred to the fact that, when we think about a firm active in the MOG sector, we usually think about an international or multinational enterprises (MNEs), with strong investment and bargaining power, while the second point recalls the relationship between CSR and who embodies the legislative power; as said before, both of the points will be treated more deeply in the upcoming chapters. Instead, the next lines are going to talk about the remaining affinities: the impact on communities, with regards to the environmental issues and to the local population, and (less predictable and probably more interesting) the "resource curse", a series of problematic topics that countries with big amounts of available natural resources have to face.

2.1 MOG impact on communities

Before talking about the impact of MOG firms on communities, it's important to understand which communities we consider. A report by the Mining, Minerals and Sustainable Development (*Breaking New Ground*, 2002) describes three types of mining communities, an approach that can be easily extended even to the Oil & Gas sector. The paper differentiates between:

- occupational communities, composed by households and families who completely or mostly derive their income from extractive activity;
- residential communities, people living in the extractive area from prior to the start of operations or people who live there because of these operations;
- indigenous communities, with ancient or cultural attachment to the land impacted by the extractive activities.

In line with the triple bottom line theory, the MOG industry affects communities under social, economic and environmental terms. Moreover, what makes the case of extractive companies almost unique is the duality between the scope of the firms, usually multinational entities present in different countries, and their need to operate at a highly local level, a singularity from which derives the necessity of being able to manage local communities and the strong impact that company's activity has on them; in this sense, the objective of the implementation of the triple bottom line criterion is to reach what is called "sustainable development". Sustainable development can be defined as an attempt to combine socio-economic issues with the growing concerns on environmental issues (Hopwood et al., 2005) and it represents a necessity that only came up in the last decades: in fact, after the huge improvements in production timings and quality provided by the Industrial Revolution, the idea that human interests and Nature needs had to be kept separated became more and more popular; this belief led to what Dryzeck defines as a "Promethean view" (1997) of a science that can help human knowledge in destroying every barrier on the path to the future. Many scientists and philosophers supported the Promethean approach (Francis Bacon himself in the 17th century clarified his view of a world created for the man and not vice versa), but the belief started to weaken as people realised that natural resources were drastically reducing and that maybe the time for a management of their exploitation had to come. Anyway, the consciousness of the need to conserve what nature was giving to human kind wasn't enough to change the minds of critics and philosophers, whose main focus was on the reach of economic growth and better living conditions all over the world: a goal achievable only through the combination of knowledge and the resources that Planet Earth was giving to human race. Finally, the failure of the process of an all-over-the-world development and the first calls for concern coming from the scientific community rapidly moved the world idea about the relationship with nature on a more conservative position, symbolized by the famous Brundtland Report (actually called *Our Common Future*) that the World Commission on Environment and Development published in 1987, warning the whole humanity against the ongoing exploitation of the planet and introducing the idea of sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their needs".

The employment of a sustainable way of doing things does not represent a gift that companies freely give to communities, but rather it links with Corporate Social Responsibility on the path to get what each single entity needs from local communities in the surroundings: a social license to operate (SLO). Securing a license can reduce social risk, increase legitimacy and credibility, and give a sustainable competitive advantage to the company (Joyce & Thompson, 2000; Parker et al., 2008). Recent years gave many examples of companies that completely failed to gain license to operate and that suffered big troubles in continuing their business activity due to protests and media pressuring activities, such as Corriente Resources, a mining firm facing the obstructionism of local communities in Ecuador fed up with broken promises (Warnaars, 2011), but at the same time it's possible to find many positive cases, like the one of Goldcorp, who is managing to get acceptance by the Canadian natives. In an interview to a Forbes contributor, the CEO of Goldberg explained his three ways of getting a SLO: 1) being a purpose social leader, who understands which are the biggest socio-environmental needs of the community and who is able to embrace them and to help the community; 2) giving more control to local communities and stakeholders, with collaboration agreement or with the employment of members of the community to represent the local interests, so that stakeholders can develop their own idea of how the company should behave; 3) create partnerships with right and wrong NGOs, a hint that can help in enhancing the relationship with organisations showing positive approach towards the firm and in softening the comments coming from the ones criticizing the company.

Under a theoretical point of view, Chen & Roberts (2010), Hoque (2006) and Pfeffer & Salancik (2003) provide some theories that can explain the process of obtaining a social license, or at least they can help to understand why some companies are able to get acceptance and others aren't. The relationship between organisation and society lays at the bases of all these theories, so that the starting point is represented by the Legitimacy Theory (Figure 2.2), which suggests that legitimacy is possible only when the value system of a company is congruent with the value system of the society in which it operates, but without providing a good way to reach this congruence. In order to understand how to get a SLO, it's important to specify that there are two different types of legitimacy: the institutional legitimacy, the case in which the value systems are similar and they only need to be reinforced, and the strategic legitimacy, necessary when a change in the value system has to occur. Institutional legitimacy is the topic of interest of the Institutional Theory, which asks organisations to incorporate norms and rules that have been institutionalised by the society. Instead, if a change in one of the value systems is requested, the Resource Dependence Theory and the Stakeholder Theory takes their places on the stage: in particular, the former wants to solve the cases in which the community holds

resources that are vital for the company and it underlines, in these situations, the necessity of the ability and the will to negotiate the enterprise position in order to get aligned with the constraints of the society; on the other hand, stakeholder theory declares that satisfying the desires of each stakeholder is utopian, so the objective of the company is the creation of a balance between the conflicting expectations, keeping in memory which stakeholders can be considered as more important.

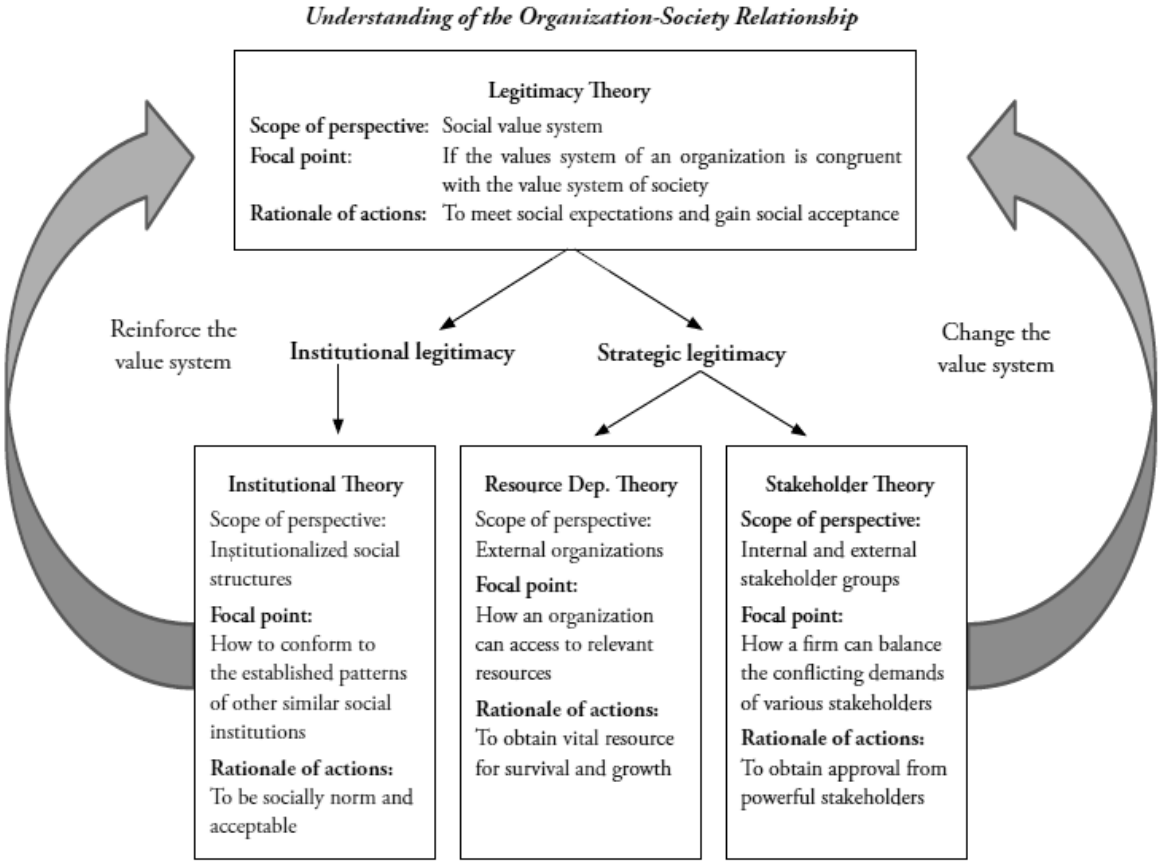

Figure 2.2 Scheme on the relationship between theories and Legitimacy Theory.
Source: Chen & Roberts (2010)

2.2 The resource curse

Juan Pablo Pérez Alfonso, Venezuelan Minister of Development in the 40s and cofounder of OPEC, during an interview said: «Ten years from now, twenty years from now, you will see: oil will bring us ruin». This quotation brings us through the description of a trend studied by many researchers during the last decade of the 20th century. Analysing data starting from 1970, Sachs & Warner (2001) discovered a dreadful relationship between richness of natural resources and economic development slowness. In fact, their studies underlined how countries having natural resources as leading export sector were more likely to have negative rates of GDP growth (Figure 2.3). This trend can be intuitively explained: the discover of easily exportable natural resources in less-developed countries encourages unbalanced economical

investments in the extractive sector, with the results of weakening the rest of the (already fragile) economy of the country.

Moreover, the desire for easy richness pushes communities affected by extractive activities to accept resources as a repayment for social and environmental damage, developing a "dependency mentality" (Sharma & Bhatnagar, 2015) that worsen the economic status.

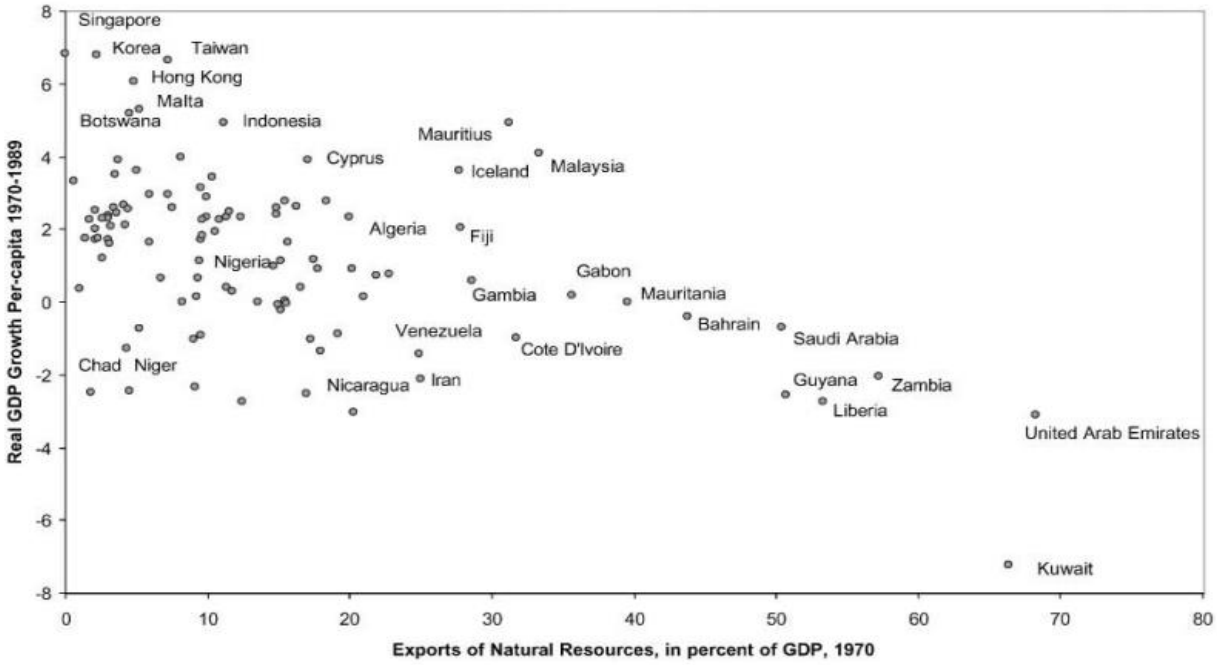

Figure 2.3 Relationship between natural resources export in 1970 and Real GDP growth 1970-1989.
Source: Sachs & Warner (2001)

Last but not least, the exploitation of natural resources takes out lands and territories from other primary sector activities, such as agriculture and livelihood, but it also creates a misbalance between the two genders, as women are much less likely to work in the extractive industry than men. More in general, it's possible to individuate (Frynas, 2010) three main negative effects coming from natural resources export, which constitute the so-called "resource curse":

- Impact on the economy: large investments coming from abroad are counterbalanced by an appreciation of the local currency, making export of other products harder and drowning capitals, labour and entrepreneurial activity from non-resource sectors.
- Impact on governance: in resource-rich countries, governments are more likely to focus only on resource-rich sectors and to dedicate less incentives to other sectors. Moreover, it's been proven that richness of resources leads to a higher level of corruption and to a decrease in the educated people rate.
- Impact on conflict: multinational companies usually bring higher security levels to the country in which they operate, but they usually rely little on local linkages. This way, governments aren't encouraged to invest in security and to create a socio-economic

stability. Crisis in resource-rich countries can easily thus lead to political chaos and to (armed or non-armed) conflicts between groups who want to have the control of the resources

With regards to the last point, if we consider the ten countries who have been exported more oil & gas in percentage of the total export in the period 2000-2004, we discover that eight of them have suffered from episodes of civil war since 1990[3], with more than 150 episodes in total, which caused almost 1200 deaths (Table 2.1).

COUNTRY	% OF TOTAL EXPORTS	PRODUCT DESCRIPTION	CIVIL WAR (SINCE 1990)[3]
Algeria	97,8	Oil & Gas	x
Nigeria	97,8	Oil	x
Libya	96,9	Oil	x
Yemen	93,3	Oil & Gas	x
Kuwait	92,9	Oil	x
Angola	92,2	Oil	x
Qatar	89,1	Oil, petrochemicals	
Saudi Arabia	88,9	Oil	x
Brunei	88,3	Oil	
Azerbaijan	86,6	Oil	x

Table 2.1 Relationship between dependence on oil & gas exports (% on total exports in period 2000-2004, 5-year avg) and presence of civil war episodes since 1990.
Sources: union of data from PRIO (civil war) and from United Nations Conference on Trade and Development 2007 p.87 (remaining data)

As both developed countries and developing countries suffered from the resource curse, it's necessary to understand what can help a state in avoiding falling into the trap. According to many scholars, the main tool to be successful in the challenge is definitely represented by the quality of the governance, which can be defined as an ensemble of different processes standing behind the management of a country. Rosser (2006) tries to partly sum up the elements

[3] For this analysis we have considered a database provided by the Peace Research Institute of Oslo (PRIO) which includes reports on Urban Social disorders. With "civil war" we mean that at least one of the following events (definition source: PRIO) has occurred since 1990:

- General Warfare: Distinct event related to a protracted, interactive, and violent conflict involving at least one, organized, non-state actor group fighting with government authorities. Can be either over ethnic, political or economic issues.
- Armed Battle/Clash: Distinct, continuous, and coordinated interaction involving opposing, organized armed forces representing government and/or group interests
- Armed Attack: Distinct, continuous, and coordinated action staged by a singular, militant political or identity group against government authorities or institutions representing an "other" group.

composing a "quality governance" by individuating which solutions have often led to positive outcomes:

- macroeconomic policies: avoid large domestic and foreign debts, control inflation, reach budget surpluses, redistribute natural resources revenues to citizens to activate the Keynesian multiplier, use stabilisation funds to reduce the impact of changes in commodity prices and (in particular) diversify in terms of economies and sectors of investments;
- socio-political changes: reduce corruption, reinforce democratisation, reduce bureaucracy, improve local governance, strengthen the economic role of state, maintain the view of resources abundance as a temporary phenomenon, develop long-term policies and objectives, look for consensus and social stability;
- privatise the natural resources sector: this point has been an element of huge discussion with regards to whether is better to sell to domestic or foreign interests. In fact, domestic investors have a greater bargaining power than foreigners, but at the same time the state can impose a higher taxation and try to develop a long-term relationship, as both parties are interested in maintaining it. On the other hand, foreign investors have lower power when facing the state, but they are at the same time more volatile and more eager to leave the country if they don't like the conditions anymore. This trade-off can be partly solved by analysing past experiences, with the policies of domestic selling of Russia and Indonesia that have seemed to be more successful than the foreign selling one implemented by Kazakhstan (Weinthal & Jones Luong, 2001; Ross, 2001).
- international diplomacy: sign international agreements, collaborate with international organisations (such as IMF and OECD). This seems to be the weakest solution, with many scholars considering it as mainly ineffective in avoiding the resource curse.

Together with the previous techniques, scholars are more and more supporting a new policy that can help to fight against the resource curse: transparency. Transparency has rapidly grown together with the Extractive Industry's Transparency Initiative (EITI), a program launched by the UK government in 2003 that embodies the necessity of giving higher visibility to the financial exchanges between MOG companies and host countries, in order to control the revenues made by firms and limit corruption linked with these revenues. The EITI created a set of criteria covering the operations of MOG companies (from exploration to revenues collection and allocation) and established groups of independent audits who produce a yearly report for every country. At the same time, EITI provided guidelines for companies interested in

participating to the transparency initiative. In its lifetime, EITI has produced more than two hundred reports and is nowadays supported by fifty-one countries (Figure 2.4), more than fifty international MOG companies and more than twenty-five organisations (including World Bank, G20, IMF, OECD, European Commission and African Union).

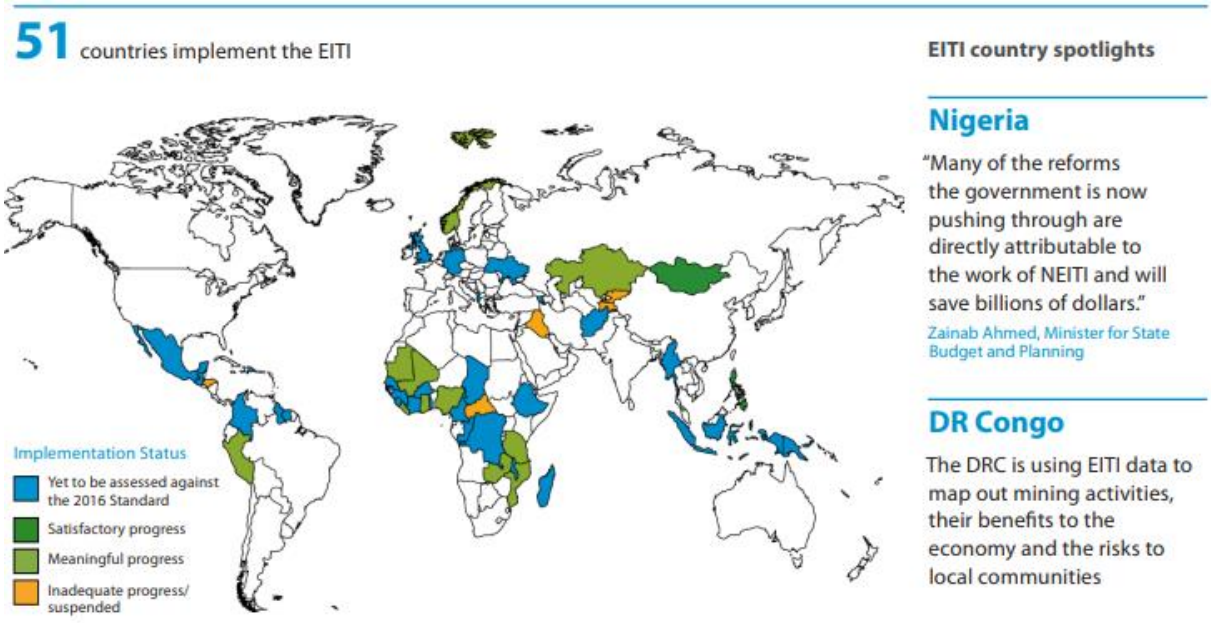

Figure 2.4 Countries implementing EITI in February 2018.
Source: EITI Factsheet, February 2018

Extensive quantitative studies have shown the positive effects of transparency, which can be grouped into political, social and economic effects:

- political effects: transparency leads to a greater and better exchange of information between governments and people, with reports on financial flows accessible to a wider audience. Political leaders are pushed to embrace better and more effective spending. On the other hand, leaders benefit in terms of credibility and reputation, leading to stronger public institutions and deeper international relationships.
- economic effects: transparency leads to higher credibility among investors and banks, generating lower costs of sovereign debt and larger investments in the country.
- social effects: economic and political effects derived from transparency also produce a better overall social status, with poverty reduction and better and more effective public services.

On the other hand, EITI has suffered criticism on some focal points on its activity, producing greater difficulties in the process of recognition as a relevant program by the international community. In particular, the most common critique is linked with EITI approach, which is completely focused on government spending, without considering the impact of transparency

of government revenues. This topic actually represents a pivotal point also for academics, who often proved the relation between spending prudence and economic success, with countries such as Botswana, Malaysia and Indonesia which have been able to avoid the resource curse, but rarely focused their activity on analysing whether a form of transparency in government revenues can contribute in obtaining a final positive outcome or not. Moreover, blamers of EITI also underlined how this initiative only focuses on countries institution, without emphasising the contribution that MOG companies can (and should) give. Together with these shortcomings, EITI also saw the uprise of similar programs implemented by World Bank and IMF, institutions with stronger power in the relationship with governments and with higher possibility of success.

3. The role of institutions in the development of CSR policies

In the previous chapter, we highlighted how the availability of natural resources can be a source of troubles for governments, due even to the bargaining power that corporates obtain by providing jobs, money and infrastructures to the host country. The importance that foreign companies can gain in the everyday life of a government leaves us with the need to consider the relationship between firms and institutions as bidirectional, with the two parties influencing each other in, on one side, the creation of laws and principles affecting companies life and, on the other side, the implementation of CSR activities that can be requested by institutions or can be used by the corporate to substitute inefficient standards. In fact, in this chapter we are going to analyse how companies sometimes need to work with non-governmental institutions to fill the lack of regulation regarding certain CSR topics.

At first, a specification is required on what we mean when we say "institution": with this term we include both governmental entities and nongovernmental organisations, which can be defined as "self-governing, private, not-for profit organisations that are geared to improving the quality of life of disadvantaged people" (Vakil, 1997).

It's possible to individuate three main sources of CSR initiatives (Raufflet et al., 2014), which can be considered as influencing and implementing each other:

- governments, who can enforce formal policies regarding a topic and who defines which requirements are necessary for a company. In this case, governments can develop different types of relationship with the corporates (Gond et al., 2011): a facilitating approach, with the provision of incentives to encourage CSR; a partnership approach, which consists of a combination of resources and objectives; a controlling approach, where the government shapes the CSR legislation in complete autonomy from the influence of corporates.
- the so-called "infrastructure for CSR" (Waddock, 2008), which includes voluntary and non-government-led CSR initiatives and actions. This infrastructure intervenes when there is an absence of governmental policies, through the contribution of organisations, associations, activists and other actors who negotiate CSR frameworks and try to push firms to follow them.
- self-regulations, implemented by the company itself in case of absence of both governmental policies and non-governmental activities. The company decides which are the best practices to be applied to optimize its own interests. Together with the one of "infrastructure for CSR", this case represents an excellent field for

strategies that may lead to a sustainable competitive advantage based on socio-environmental projects.

Overall, the three sources of corporate social responsibility policies have always been strongly interconnected, creating a tendency that gave birth to a system of hybrid regulation (Figure 3.1), where business-related, infrastructure-related and government-related activities interact with each other, by representing the different actors involved in the whole implementation process: (respectively) corporates, the civil society and governments, with the latter element that is nowadays being replaced by international agreements, due to the higher efficiency that supranational standards have demonstrated facing companies operating in different countries.

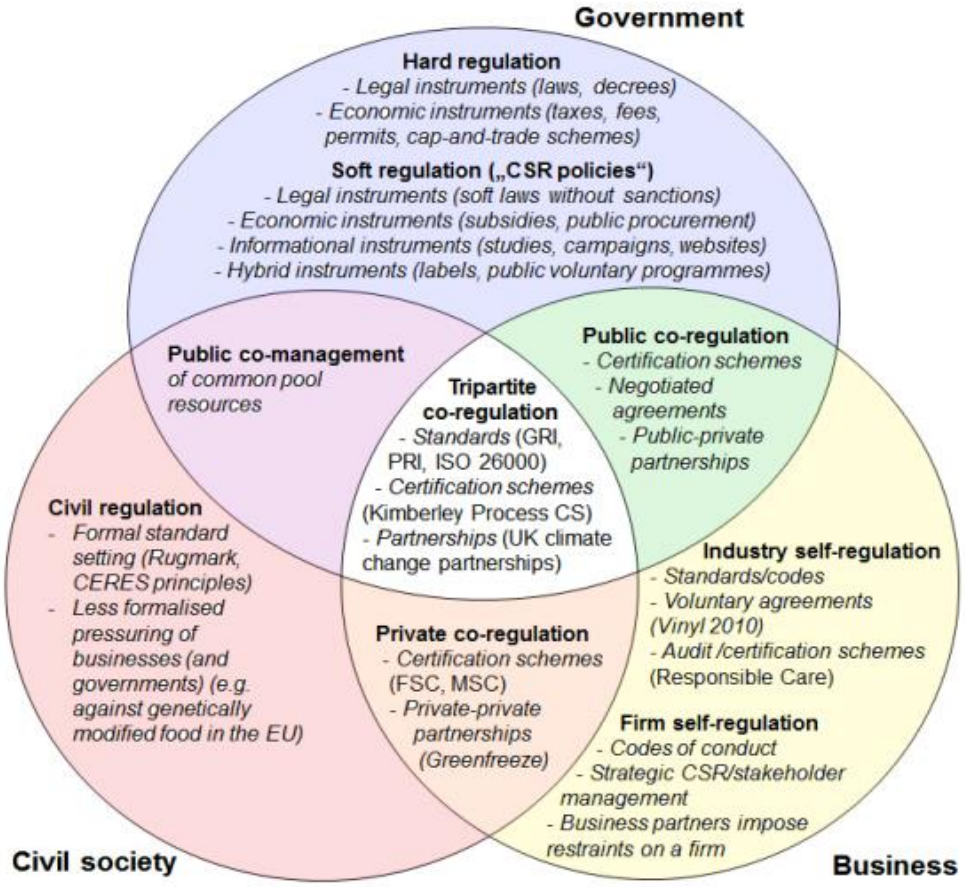

Figure 3.1 A visual representation of the hybrid regulation system regarding CSR practices.
Source: re-elaboration of Steurer (2013)

In particular, when considering the MOG industry, we are dealing with a sector where the hybrid regulation is very common: in fact, the corporates competing in the sector need to operate in less-developed or developing countries, where the creation of a solid institution system is often a utopia. In this sense, firms tend to maintain the global-local dualism by integrating the adhesion to international standards with the collaboration in the development of local government policies, in order - on one hand - to create a standardized global behavioural

code that reduces bureaucracy costs and – on the other hand – to obtain a social license to operate from the local communities.

The rapid proliferation of international standards in the last decades pushed scholars to try to understand why firms tend to align their practices with the expectations of such non-governmental institutions; the next section of this chapter introduces two theories that emerged in the explanation of the phenomenon: the new institutional theory and the market imperfections theory.

3.1 Theories on the proliferation of international standards

The first way scholars used to interpret the grade of diffusion of international CSR frameworks is the new institutional theory, which considers the institutional pressure as the main cause of the homogeneity of behaviours visible among organisations. In this sense, firms are believed to adopt international standards as a result of three types of pressure (Figure 3.2): coercive isomorphism, normative isomorphism and mimetic isomorphism (DiMaggio & Powell, 1991). It must be clarified that the three different pressures are often hard to be distinctively observed and identified, as most of the times they tend to intermingle; what is strongly different is the origin and the possible outcome of each type of force.

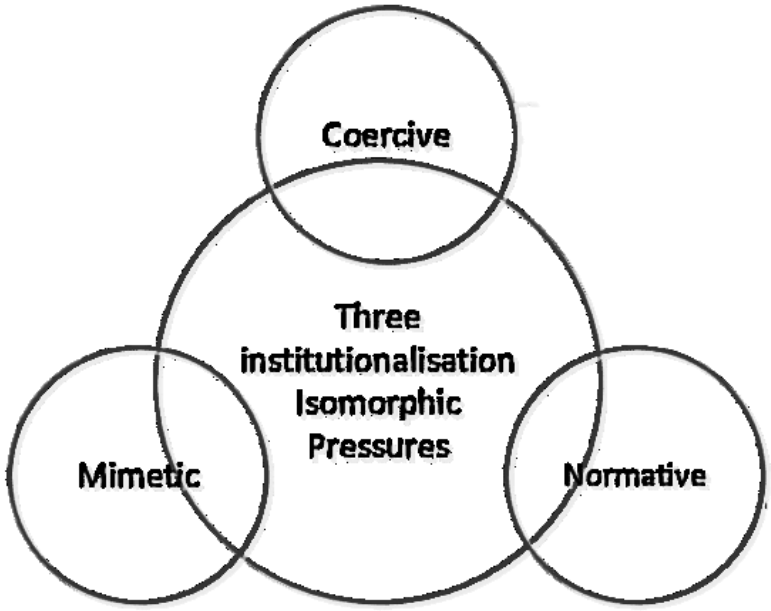

Figure 3.2 The three types of isomorphic pressures.
Source: Saman (2014)

Coercive isomorphism has its source in the regulative pressure coming from international CSR frameworks that usually follow a common path: they are created as voluntary, they get little by little endorsed by international institutions and finally they become mandatory in most of the countries where the corporates operate. Firms are motivated to align themselves with the new frameworks, implementing both standards of practice and methods of control, sometimes even by collaborating with similar firms in a shared research path. The final result is obviously a high level of similarities between the businesses operating on a supranational level, which has a negative effect in the seek for a competitive advantage, but also a more subtle effects on local government, which are stimulated

as well in the alignment process and consequently lose a part of their legislative power: this outcome can become dangerous when the international and the national interests are not perfectly in line, so that governments get trapped by companies adopting internationally accepted frameworks that negatively affect local communities.

Normative isomorphism is instead related to practices historically well-established in a sector, that don't even require the presence of international CSR frameworks to be implemented.

These principles are so deeply-rooted in the industry that they work as prerequisites for whoever wants to join it, with the result that new entrants are socially and economically forced to get aligned with the existing framework. Normative isomorphism is believed to be mainly originated by the people working in a firm, who represent internal stakeholders with strong influence on the corporate behaviour; DiMaggio & Powell introduced in this perspective the topic of "professionalization", a concept previously defined by Larson (1979) that gathers all the efforts made by the members of an organisation to define the conditions and methods of their work and that embodies a source of isomorphism. In particular, it's possible to identify two aspects of professionalization which heavily influence isomorphism: the educational background of employees and the growth of professional network: A similar academic or professional background can develop similar attitudes towards specific topics, with groups of workers (even in different entities) who prefer to focus on precise norms. On the other hand, network of employees can help a rapid diffusion of new models.

Mimetic isomorphism derives from situations of uncertainty, in which corporate strategy and goals aren't defined, market conditions are unclear, or firm's competitive power still have to be understood. In all these enigmatic cases, the solution for the company can be a modelling behaviour, through which the organisation tries to align its principles to the ones of a firm perceived as more legitimate or more successful. Modelling represents a good answer for firms afraid of uncertainty and its negative effects on human resources, but it also has big drawbacks if excessively exploited: in fact, companies that immoderately adopt modelling soon will find themselves without an identity and without the possibility of exploiting their processes as a competitive advantage, as they are excessively aligned with other companies in the market. On the other hand, modelling can be a powerful technique for large firms, which feel the need to periodically renovate some of their principles and may track the practices of smaller successful firms. Finally, it must be considered that despite most of the organisations intentionally use a modelling behaviour with the help of consultants and industry trade associations, sometimes homogeneity is reached involuntarily through innovation or through employee transfer or turnover.

A second theory on international CSR frameworks proliferation has its base in market imperfections: companies are motivated to adopt international standards in response to market faults in order to satisfy the interests of its different stakeholders. In particular, Crifo & Forget (2015) individuated three types of market imperfections: those affecting regulation, those affecting competition and those having their source in contract incompleteness.

Imperfections on regulation arise from the presence of externalities, public goods or altruism, which means that in this case CSR strategy is driven by incentives or by external pressure coming from regulators, altruists and activists. Regulators influence company's CSR principles if the existing frameworks are too strict – in this case organisations need to adapt to avoid present or future fines – or too soft – here instead organisations need to integrate or substitute it with international standards and self-regulation. The second type of pressure can be defined as "socio-economical", as it's coming mainly from activists (citizens and NGOs) contesting the company's social license to operate and competitors criticizing the economic behaviour of the firm. If the latter is easier to understand, as it's mainly due to the industry in which the criticized company operates or to the fact that the corporation represents a leader (or a strong innovator) of the market, social pressure can be subtler and harder to fight. In fact, activists protests are usually biased by the visibility that each company has (more visibility brings more contestation), by the industry in which a firm is involved (for example MOG sector is far more under inspections than the IT one) and by the behaviour that companies have in response to criticism (paradoxically, activists tend to pressure more the organisations that show themselves as collaborative than the ones that seem less open to contestation). Finally, altruism comes from the desire of internal managers to take part into philanthropic activities, in order to satisfy personal burdens towards the society or to give social prestige to the company. If lighten own consciences might even be possible, social prestige often represents a zero-sum game, as many corporates have been accused of "greenwashing", a communication technique that consists in constantly presenting a company as more eco-friendly than it actually is, to distort the citizens' perception.

Imperfect competition is linked with the topics of product differentiation, competitive strategy and market contestability. The alignment with international frameworks regarding product certification and labelling can become a sustainable competitive advantage, as it is happening with bio or gluten-free products. At the same time, CSR principles can soften price competition - reducing costs through unethical behaviours becomes much less profitable -, raise entry barriers hard to overcome and encourage R&D investments that can lead to innovation. Market contestability regards instead the use of CSR as a tool to protect firm reputation and to improve

its public image, a strategic intangible asset that - as said before - must also be defended from the negative effect of an exaggerated propaganda.

Incomplete contracts give life to a third category of market imperfection. Bounded rationality and imperfect information have always created a trade-off in the stipulation of contracts: on a side there is the completeness of the document, on the other side its adaptability to the changing conditions of the market. The trade-off has historically been solved by looking for a balance between the two elements, with the result that contracts cannot be considered as complete.

In particular, the main danger coming from this gap is the agency problem, that arises when directors, who possess discretionary power due to contract incompleteness, choose to advantage specific stakeholders, providing detriment to the rest of the stakeholders. CSR provides a partial solution to the issue, as it represents a way to limit directors' power through the intervention of shareholders, employees or directors themselves.

Shareholders may demand the firm they legally own to engage in CSR: nowadays, the so-called "socially responsible investments" (SRI) represent a growing reality, that is manifested by the implicit or explicit request of respecting sustainability and ethical indices. Despite being a good weapon for the limitation of discretionary power, SRI can become a penalizing lever for those companies with insufficient CSR, at least in the short-time.

Another category of stakeholders that can have an influence on fighting contractual incompleteness is embodied by employees. Beyond being the stakeholders most affected by company's norms and principles in everyday life, workers represent the mean through which a firm gets its profits. In this sense, employees' satisfaction is crucial for the life of a company and CSR practices are a good way for improving it: adhesion to international standards may increase the employer branding and may help it in increasing employees' level of satisfaction and, as a natural consequence, employees' productivity.

Finally, directors themselves can use CSR frameworks to reduce the problems coming from contractual incompleteness, especially in organisations with a CEO and a Board of Directors in its hierarchy. Apart from the situations in which the CEO himself has a philanthropic attitude, directors can use CSR as a strategy to control both executives' power and shareholders' power: having a board engaged in social responsibility represents a pressure for the highest managers of the company and, at the same time, it gives a sense of board independence, which is a proved source of better governance and good financial results.

3.2 International standards on Corporate Social Responsibility

The presence of a mainly hybrid form of regulation makes any effort to represent a complete scenario of the CSR frameworks currently into effect useless. That's why the goal of these lines is the introduction to the five main international standards available: the ISO 26000, the ILO Conventions, the OECD *Guidelines for Multinational Enterprises*, the Principles for Responsible Investment (PRIs), the Global Reporting Initiative (GRI).

ISO 26000 represents the third work by International Organisation for Standardization regarding corporate social responsibility, after ISO 9000 (1987, updated in 2015) and ISO 14000 (1999), and strongly differs from the previous ones thanks to a new approach, no longer focused on providing management system standards, but rather intended as a support in the interpretation of the previous frameworks and in the integration of social responsibility into company's strategy. In particular, Section 7 of the document tries to represent a guideline throughout the process of assimilation of the new doctrine inside the corporation, by providing a series of steps that a company should follow: at first, it explains what CSR is and why a firm should be interested in respecting its due diligence principles. Secondly, ISO 26000 gives suggestion on the analysis necessary for understanding which the sphere of influence of the organisation is, which the impact on the surroundings and which the issues and themes that a company should consider as priorities. Successively, the core question of the whole document is treated: "how should CSR be integrated?". The key for the success stands in few fundamental practices: its inclusion in organisational strategy, in the development of core values, in employees' training and rewards, in systems and processes and in a form of management that considers sustainability as a first-class objective. Finally, the conclusive topic covers the methods for communicating, reviewing and improving the chosen form of corporate responsibility.

International Labour Organization (ILO) is a UN-linked agency that regulates labour standards by developing international treaties between governments, employers and workers. Since its foundation in 1919, ILO has covered work-related themes such as women and child labour, gender equality, social protection, health and on-the-job security, wage systems and protection from transmissible diseases. In particular, ILO published in 1998 (and immediately adopted) the Declaration on Fundamental Principles and Rights at Work, which contains eight conventions regarding four topics: freedom to join a union, to bargain collectively and to take actions; abolition of child labour before the end of compulsory school; abolition of forced labour; elimination of on-the-job discrimination. ILO Conventions are nowadays adopted by 187 states.

The *Guidelines for Multinational Enterprises* are a "set of recommendations on responsible business conduct addressed by governments to MNEs operating in or from adhering countries". They were born as a part of the *Declaration on International Investment and Multinational Enterprises*, published in 1976 by the Organization for Economic Co-operation and Development (OECD), and they represent a corporate social agreement that adhering government have promised to promote at a global level. The main difference between these guidelines and the rest of the prevailing international frameworks is that, beyond proposing principles covering most of the major business areas, they also actively include the implementation of an instrument, called National Contact Points (NCPs), designed to take care of the promotion of social-related activities and to act as a mediator and a conciliator in case of non-observance of the guidelines. Moreover, OECD encourages companies not to be limited to positive behaviour in accordance with the principles, but to act as leverage (together with government) to limit the adverse impact of similar companies operating in the same industry (Figure 3.3).

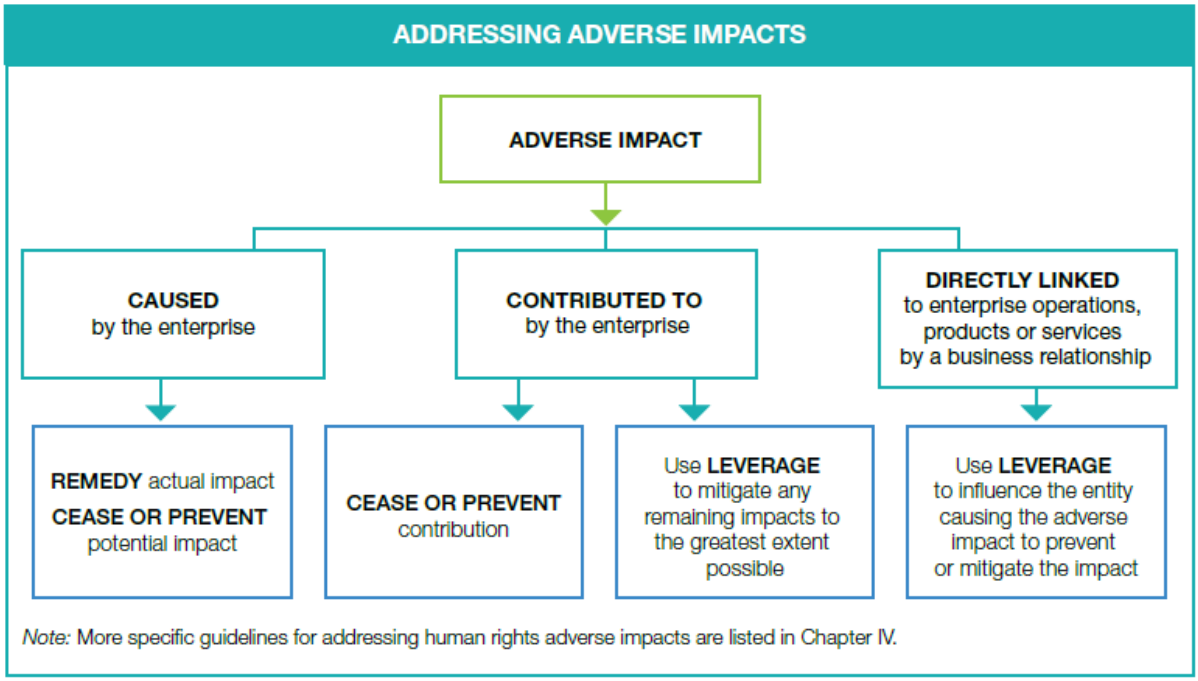

Figure 3.3 The different ways to reduce the adverse impacts of companies
Source: OECD Guidelines for Multinational Enterprises (2014).

With regards to NCPs, the document provides four criteria that national governance must respect in the implementation of the instrument:

- visibility: governments should inform communities, NGOs and other parties about the presence of NCPs and should take an active role in promoting NCPs activities.

- accessibility: access to NCPs should be easily available for everyone. NCPs should respond quickly and effectively both to requests of general information and to more specific demands.
- transparency: NCPs activities should be transparent, in order to gain the confidence of the general public. In some cases, confidentiality in the proceedings can be requested, but the outcome must be transparent.
- accountability: annual reports and regular NCPs meetings give the opportunity for sharing experiences, views and best practices.

Nowadays, OECD Guidelines are adopted by a large number of countries (Figure 3.4) and they represent a milestone for social-engaged companies, but a huge drawback affects their effectiveness: in fact, one of the main principles for the implementation of these guidelines is the avoidance of conflict with government rules, which means that national regulation prevails on the framework, with the consequence that in some cases guidelines cannot completely influence corporate behaviour.

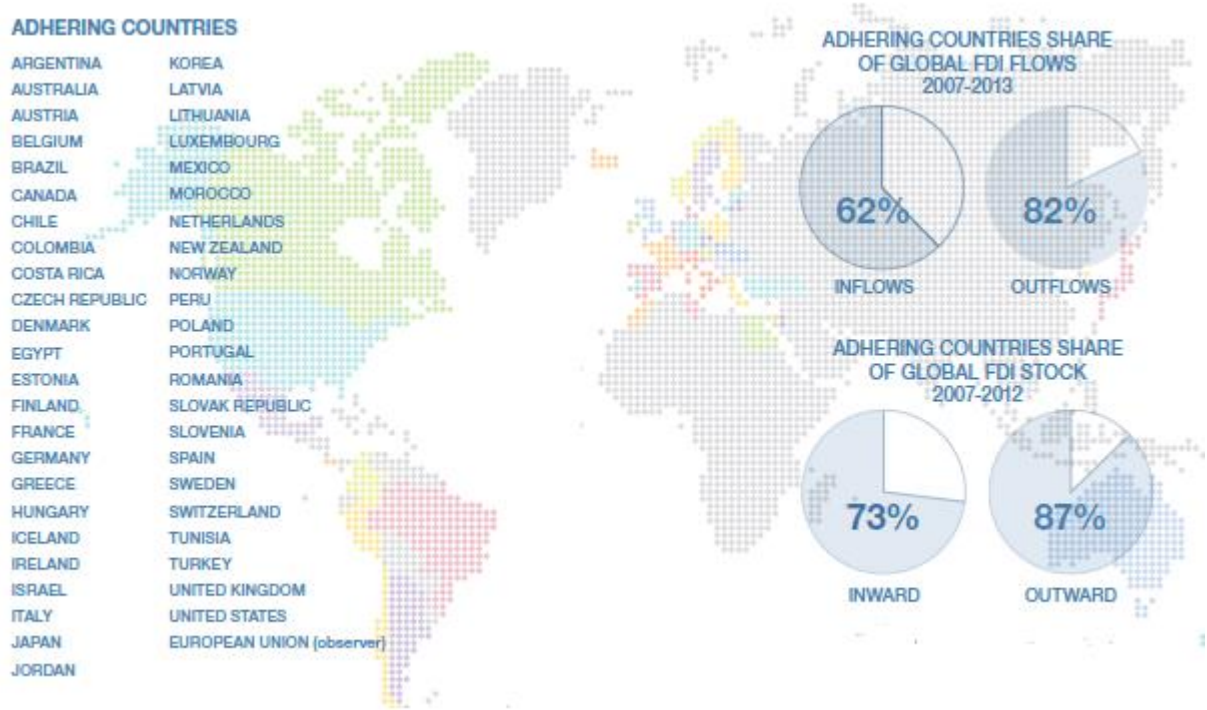

Figure 3.4 Countries adopting OECD Guidelines and their contribution to the total global flow of foreign direct investments. Source: OECD Guidelines for Multinational Enterprises (2014)

The Principle for Responsible Investment (PRI) are a voluntary and aspirational set of investments principle launched in 2006, result of a summit between the UN Secretary-General Kofi Annan and a group of the world's largest institutional investors. The main goal of PRI is understanding how economic, social and governance (ESG) factors influence investments, in order to help investors to incorporate these factors into their decisions.

In the long run, a more responsible financial market brings benefits to the economies in which it operates and, consequently, to the community and to the society as a whole.

PRI is composed by six principles, which concern: the incorporation of economic, social and governance issues into the strategical analysis, into the decisional processes, into the ownership policies and into the company's practices; the promotion of the principles into the investment industry; the effort for a more effective implementation of PRI; the reporting and sharing of experiences, supported by the creation of a PRI academy and by the organisation of annual investors meetings.

Global Reporting Initiative (GRI) is an independent international organisation interested in sustainability reporting since its foundation in 1997. GRI main objective is helping firms and governments in understanding and communicating their impacts on ESG issues, through the diffusion of continuously updated standards. GRI has identified four areas in which to focus: the creation of standards that can lead to a more sustainable development; the harmonization of the sustainability landscape, with GRI acting as a central hub and collaborating with strategic partners; the continuous improvement the quality of sustainability reporting; the collaboration with regulators, investors and stakeholders to increase the reports' efficiency and transparency levels. Nowadays, according to a survey by KPMG, GRI standards are adopted by the 93% of the world's largest 250 companies.

4. The integration of CSR strategy into company's strategy

Since the mid-80s, a large number of multinational corporations started to consider the importance of Corporate Social Responsibility in the process of defining the strategic outlook of the company. The change of mind was very sudden if we consider that many researches aging back to the 70s and the early 80s show a completely different approach, with managers clearly declaring a lack of interest towards a proactive behaviour on environmental topics (Ostlund, 1977; Clark, 1975) and admitting that decisions regarding this topic were taken exclusively by considering the size of penalties (Landbein & Kerwin, 1985).

Here comes an obvious: what has led the change?

Actually, giving the credit to a single phenomenon would be wrong, so it's better to attribute the leading spot to different catalysts: the spreading discontent with the traditional philanthropic form of CSR, the persistent need of a win-win solution in the long run in the company-environment relationship, the lack of efficiency coming from traditional CSR – "a hodgepodge of unfocused, unlinked and unrelated strategies in search of an overarching goal" (McElhaney, 2009) – and, in particular, the realisation that a large amount of resources, opportunity and value could have been better exploited.

In order to analyse the integration of corporate social responsibility inside the overall company strategy, we must start from the differentiation between Strategic CSR and Non-Strategic CSR. Non-Strategic CSR can be defined as a set of activities aimed at obtaining positive outcomes for the whole society (intended as ensemble of company's stakeholders), implemented without providing added value to the organisation.

On the other hand, Strategic CSR proposes an incorporation of CSR activities into company's strategy, resulting in an intersection between financial performance and responsibilities towards stakeholders. In this sense, corporate social responsibility has to be treated and managed as a core business strategy and it should reflect the mission, vision and values of the company. McElhaney defines strategic CSR as "a business strategy that is integrated with core business objectives and core competencies of the firm, […] designed to create business value and positive social change". The final result is the possibility of exploiting the positive impact of the company on stakeholders as a form of competitive advantage or as an instrument for employee attraction and retention.

Porter & Kramer (2006) individuated two forms of interdependence between firm and society: inside-out linkages and outside-in linkages. Inside-out linkages deals with the impact of company's activity on society and can be evaluated through the value chain analysis, while

outside-in linkages refer to the impact of society and stakeholders on the company and can be appraised through the diamond framework analysis.

The value chain model (Figure 4.1) was firstly developed by Porter himself in 1985, aiming to the subdivision of company's activities into primary activities (inbound logistics, operations, outbound logistics, marketing, after sales service) and supporting activities (procurement, R&D human resources management, firm infrastructure). By associating also CSR activities to this model, we obtain a final value chain providing even more benefits to the company.

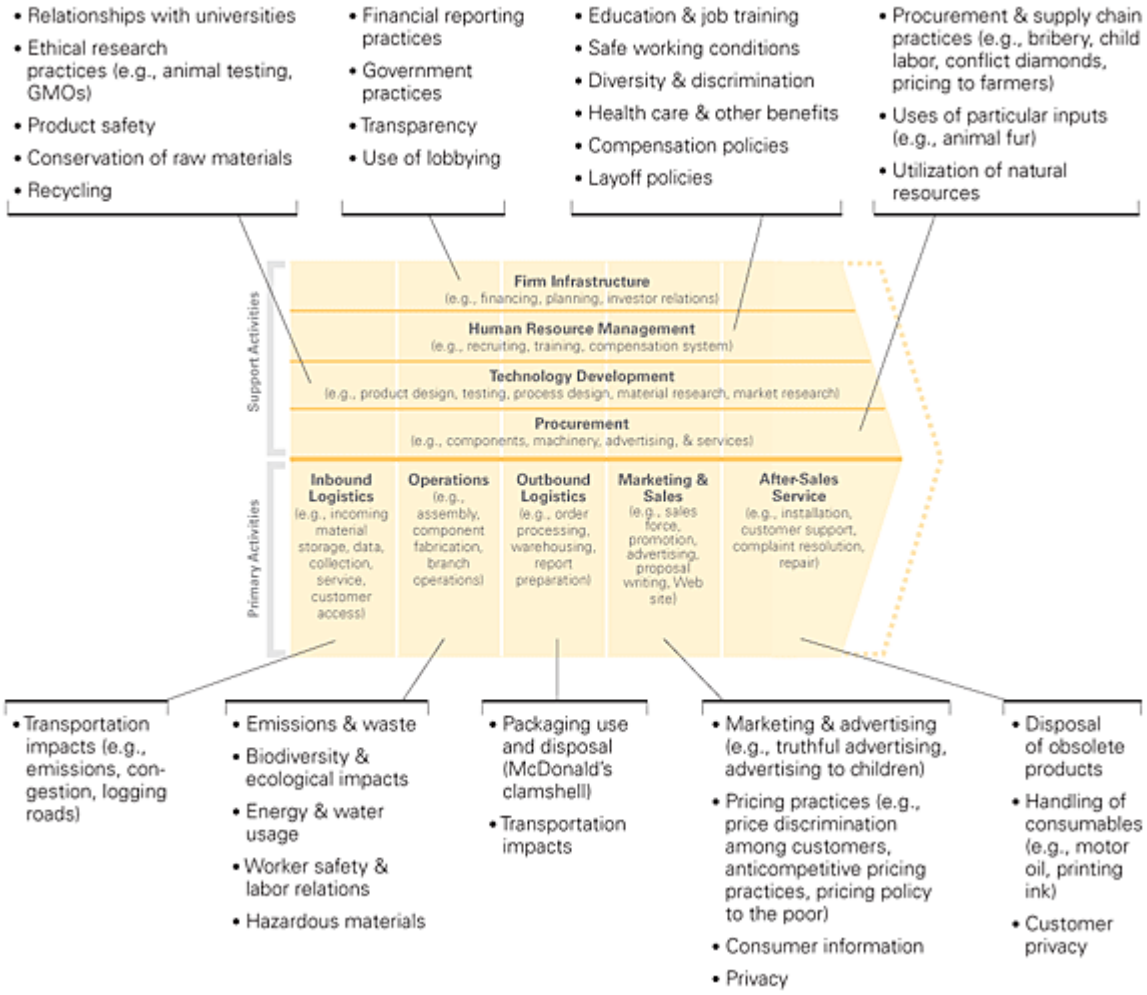

Figure 4.1 Value Chain Analysis and inside-out linkages.
Source: Porter & Kramer (2006)

On the other hand, diamond framework (Figure 4.2) was developed with the aim of adding to the analysis of the social ramification of the value chain also an understanding of the competitive dynamics surrounding the company, to take into consideration how outside-in linkages can affect firm's ability to improve productivity and implement strategy. Porter's diamond framework (1990) was conceived in order to explain how certain conditions available to certain nations or groups can represent catalysts for competitive advantage. The diamond provides four main categories of influencing elements: factor conditions, context for firm strategy and rivalry, local demand conditions, related and supporting industries.

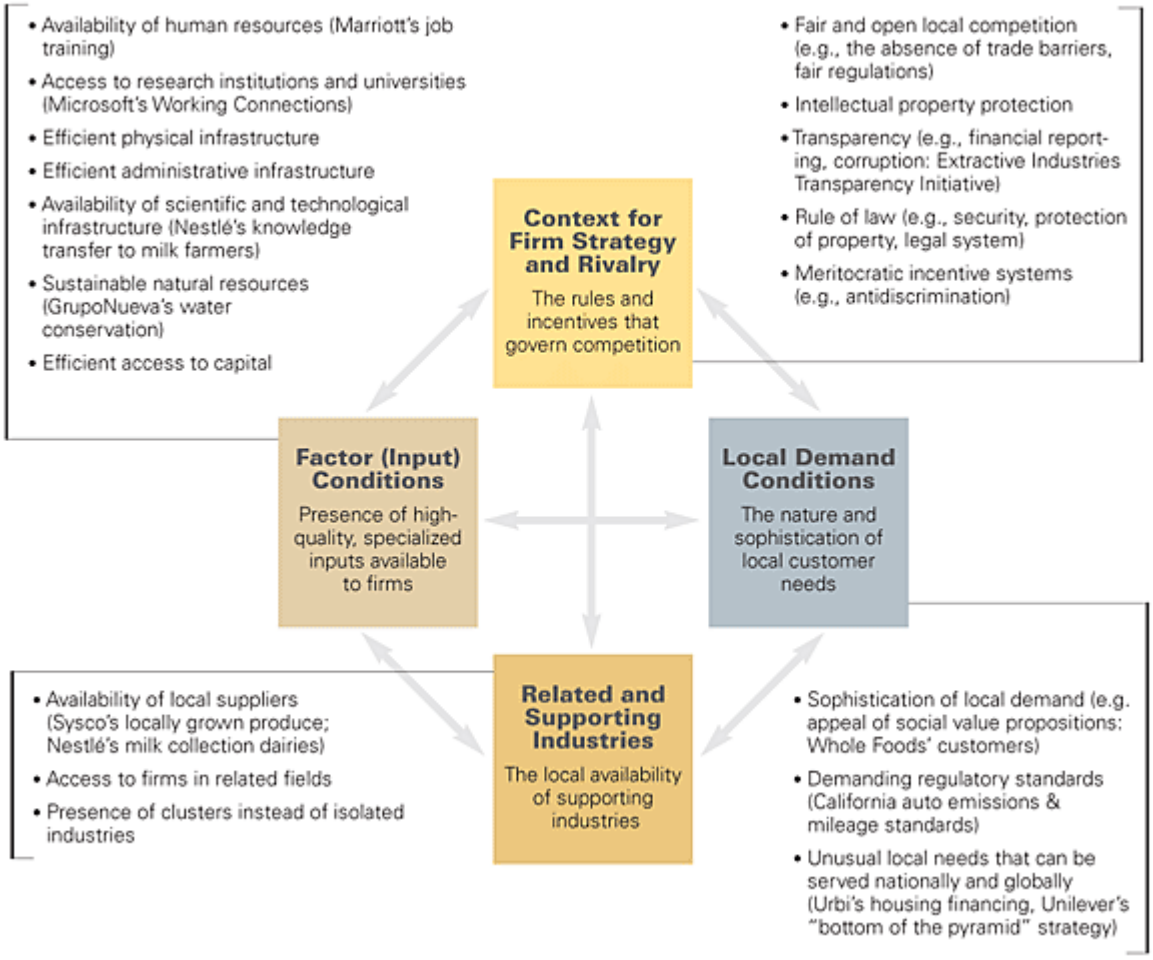

Figure 4.2 Diamond Framework model and outside-in linkages
Source: Porter (1990)

The introduction of the previous models gives us the possibility of redefining the difference between strategic and non-strategic CSR (Sayekti, 2015): strategic CSR is a set of CSR activities in compliance with the inside-out and the outside-in linkages approach; non-strategic CSR is a set of activities not in compliance with them.

The alignment between company's CSR strategy and its overall strategy creates the need to establish key performance indicators (KPIs) that can provide an idea of the corporate behavior under a social point of view, so that even the firm's contribution at a more local dimension could represent an evaluation perspective, with all the consequences that this new mindset may provoke. In this sense, Slack (2012) proposes a very radical approach, according to which the lack of accountability for CSR practices can be filled by compensating managers on equal basis for both economic and CSR-related performances. Despite representing a very good objective in the process of implementation between the two strategies, at the moment this technique should be considered as excessively drastic, as it could strongly affect the ability of attracting valid human capital, due to the fact that the best managers available on the market wouldn't probably accept the new incentives structure. On the other hand, if the levelling of CSR-related

and economic performances was implemented at an industry level, it could become a strong element of differentiation and, consequently, of competitive advantage: for example, it could be effective for Western companies when facing competition from firms coming from developing countries and (in general) lacking such commitment for social-related topics.

The same type of "peer pressure" can be applied in the relationship with smaller companies: in fact, in the MOG industry is very common for larger corporations to outsource some steps of the value creation chain to smaller and more specialized entities, which usually don't have the financial resources and the long-term view necessary for implementing valid CSR activities. This means that bigger companies sometimes find themselves in social troubles for the misbehaviors of the juniors they outsource to. A higher level of pressure on smaller entities would cause a strong shift of the overall industry business practices, ensuring consistency across all the components of the sector: at the same time, larger companies could dedicate more time and resources to CSR-related efforts, while juniors would be encouraged – or better indirectly obliged – to respect specific behavioral standards and may even transform the upcoming change into a form of network-based competitive advantage, by sharing resources and efforts with other similar entities facing the same need for business model transformation.

Coming back to CSR-related KPIs, Vintró & Comajuncosa (2010) propose three types of connections between social practices and management systems, which can help in establishing synergies between the two:

- CSR and environmental management: this is one of the milestone of CSR, dealing with the management of natural resources used by companies as sources of energy or, more directly, as raw materials. Decrease of resource consumption, adaptation to standards and reduction of emissions can all represent good practices in this sense.
- CSR and occupational safety management: safety in the workplace is internationally considered as a field in which companies can show their socially responsible conducts, with concerns as investing in the training and the empowerment of human resources and, therefore, contributing in providing a higher level of security, in terms of both occupational stability and on-the-job safety.
- CSR and quality management: consumers purchasing decisions are more and more responsible on themes such as products and services quality expectations and respect of standards in operations.

For each type of connections, it's possible to establish specific objective and action plans, creating sorts of balances and scorecards to keep them under constant analysis and to grant the possibility of evaluating the improvements achieved (Figure 4.3). For example, environmental management system is aimed at reducing the negative effects on natural surroundings; on the

other hand, occupational safety management tries to ensure an integrity for workers, under a physical, mental and social point of view; finally, quality management has product and service quality as main goal.

CSR criteria
A. Sustainability
A.1. Rational exploitation of natural resources
A.2. Clean extraction technologies
A.3. Mine closure and recovery programs
A.4. Emergency management
A.5. Quality of production
B. Ethics
B.1. Promotion of local community economy and social work
B.2. Fair funds administration
B.3. Job security and dignity
C. Human resources
C.1. Secure working methods
C.2. Training and capability development
C.3. Employee – Manager relations
C.4. Respect for people

Management system:	Related CSR criteria:
Environment	
Environmental policy	A.1
Environmental action plan	A.1; A.2.; A.3; A.4.
Evaluation of environmental impacts. Annual environmental declaration.	A.2
Occupational health and safety	
Health and safety policy	B.3
Safety evaluation and risk assessment	C.1
Preventive action plan and continuous improvement	A.4; C.2; C.3; C.4
Accident and illness investigation	C.3
Quality	
Quality policy	A.5
Quality assurance programme	A.5
Continuous improvement	A.2; C.1; C.2
Total Quality perspective ⇒ stakeholder satisfaction	
Consumers: quality and low cost	A.5
Workers: work and health	B.3; C3
Society: responsible administration	A.1; A.3; B.1; B.2; C.4
Shareholders: economic results	+ all previous CSR guidelines

Figure 4.3 Scorecards for the evaluation of the connection between social activities and management systems.
Source: Vintró and Comajuncosa (2010)

Mutti et al. (2011) present a survey made about communities' expectations from mining companies in Argentina which embodies the connections previously proposed. In fact, according to the scholars there are five main areas of concern: job creation (strictly linked with occupational security), timeliness and significance of royalties (environment), responsiveness to community needs (quality/occupational), reduction of water shortages (environment), reduction of pollution (environment). In the same paper, the authors also provide a set of CSR strategies that companies can implement to answer to these expectations:

- ethical CSR ("Doing No Harm"): it consists in trying to avoid disturbing or breaching ethical values and norms. In this sense, the company only follows the standards, rather than fulfilling its social responsibility duty
- distributional CSR ("Doing Good"): it implies that the firm contributes to local communities' well-being by providing a set of physical benefits to the people leaving nearby the extractive area. Despite creating social improvement, this strategy is often ineffective, due to the fact that – on a side – the welfare provided is

usually considered as too little in relation to the damages caused and that – on the other side - it's hard for companies to include everyone in the provision of benefits, so the excluded groups increase the level of opposition to the mining projects.

- developmental CSR: it indicates an engagement of the company in social-related efforts which contribute to the sustainability of its activity. This strategy may include the promotion of economic diversification of the geographic area or the support to local businesses, through the partnership with the government or the civil society.

Clearly, the more the focus will move from ethical CSR towards developmental CSR the more it will be easy for the company to align it to its overall strategy, as developmental CSR represents the most oriented to the satisfaction of stakeholders.

Another theory referring to the accountability of company's efforts on social-related themes can be found in Burritt & Schaltegger (2010) and in Tanaka Nakasone (2015), where three approaches in the KPIs evaluation are described, in opposition to the idea proposed by Gray & Milne (2002), who described sustainability practices as something that will disappear with time. In particular, the scholars standing on accountability side, individuated the following three ways towards corporate sustainability accounting:

- inside-out approach: sustainability accounting is here described as a solution to environmental and social business problems, as these issues are integrated into sustainability KPIs. In particular, according to Burritt (2002), decision-making is strongly influenced by some characteristics of the data (monetary or physical terms, short run or long run horizon, past or future scope, regular or ad hoc collection) and, in this sense, the data provided by sustainability accounting represents a valid and solid starting point for the decision-making process.
- outside-in approach: sustainability accounting development is started as an answer to pressures coming from a single shareholder, a single stakeholder or from groups of them. At the same level, the source of inspiration could be another company able to satisfy external expectations. If the firm is enough enlightened to understand the importance of shareholders' and stakeholders' engagement, this approach can help to improve corporate performance by exploiting this engagement.
- twin-track approach: it represents the merge of inside-out and outside-in approaches, with the influence of management control systems used as a pivot on both environmental management and economic performance of the company. In this approach, data are used for four main activities: to monitor compliance with standards, to motivate improvement, to provide bases for internal decision-making and to provide data for external reporting (Henri & Journeault, 2010).

4.1 Defining a Corporate Social Responsibility strategy

The best way for the definition of a CSR strategy could be easily summed up in the words of McElhaney (2009): "Determine the top-three business objectives and priorities of the company, and develop a CSR strategy that will contribute to the achievement of those business objectives". In this sentence it is possible to find the two main topics to be covered in the process: the integration of CSR strategy with company's strategy and the need for the former to reflect the core values, mission and vision of the latter.

Despite being a process that is possible to sum up in a single quotation, the definition of the CSR strategy can be effective only if it follows some specific steps, which are described in detail by Bhattacharyya et al. (2008).

The starting point of the whole plot consists in recognizing which is the essence of each organization, i.e. the network of relationships with different stakeholders: a clarification that entails the need to start from stakeholders every time we want to talk about strategy.

The role of stakeholders has represented the centre of gravity of a big part of the literature coming from the end of the twentieth century, so that a complete framework of the topic would require too much time and space to be described. As this paper is focused on a completely different theme, the delineation of the figure of the stakeholders only represents a functional element that can be condensed in the definitions provided by Freeman (1984) and Clarkson (1995), who described them as all the parties who can affect or be affected by past, present or future firm activities.

If recognizing the stakeholders of a company can be rather straightforward (Freeman himself gathers all the possible stakeholders in eight categories: owners, managers, employees, customers, suppliers, government, special interest groups and competitors), understanding which of them has to be considered strategically relevant is usually a harsher dynamic. In this sense, the criterion introduced by Mitchell et al. (1997) could be helpful: the scholars identified the possibility of identifying relevant stakeholders based on their so-called salience, which they considered as a function of three different attributes: power, legitimacy and urgency (Figure 4.4).

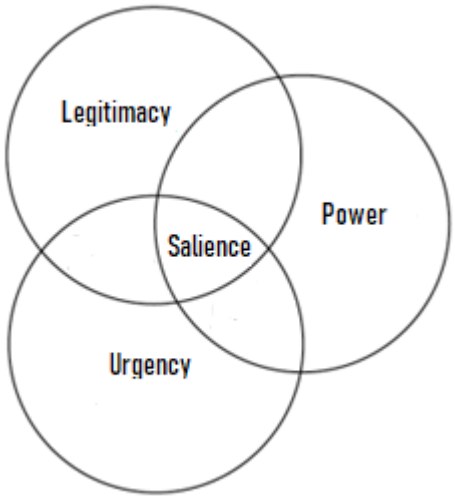

Figure 4.4 Stakeholders' salience components.
Source: personal revisiting from Mitchell et al. (1997)

Stakeholders' power refers to their ability to harm, hurt and damage the assets of the company and its functioning, for example by exploiting their political influence and their prominence; legitimacy deals with stakeholders' possibility of being hurt by company's activity, or with the fact that the firm considers this plausible, viewing stakeholders' claims as appropriate: in few words, legitimacy strongly depends on the values, norms and beliefs of an organisation; lastly, urgency represents how fast the company must be in satisfying the needs and claims of a specific stakeholder, which gives a sight of the so-called "time sensitivity" of the relationship.
As we said, salience works as a combination of the previous three factors, so that at this point comes the ability the company of developing and deepening its relationship with stakeholders, in order to better and more profoundly understand the needs of each of them and, cosequently, to determine their degree of salience. In fact, it's very rare that the latter only depends on a single attribute, while it's more common to see salience as resulting from a combination of two (or three) characteristics, which entails a difficulty in its evaluation. Moreover, Peloza & Papania (2008) observed how salient stakeholders can vary according to many factors, such as the volume of regulations regarding the industry, the cultural insight of the country in which the company is operating and the environmental position of the company (Henriques & Sadorsky, 1999). For example, Maignan (2001) and Miles (1987) demonstrated, respectively, how German and French customers are more influenced in purchasing decisions by philantropic activities of the firm than Americans and how external stakeholders (governments, regulatory bodies, international organizations) are more salient for companies in highly regulated industries, while customers are more salient for firms producing consumer goods.
The inability of providing swift and rapid solutions to the demands of salient stakeholders could implicate the risk of seriously harming the profitability of the company: in this sense, the ability of satisfying stakeholders' needs and requests is an efficient appraisal of how good a company is and, consistently, of how big its possibilities of success are. On the other hand, the inability of filtering and distinguishing salient stakeholders from the entire set available may provoke an ineffiency in the implementation of CSR strategies and a loss of efforts and resources.
If a company wants to correctly identify salient stakeholders (Figure 4.5), the process should be done by consolidating internal and external sources, in order to have feedbacks and opinions not only from managers and emploeeys (internal), but even from institutions and community-based associations (external), who usually have a better perspective on concerns coming from special interest groups and communities.

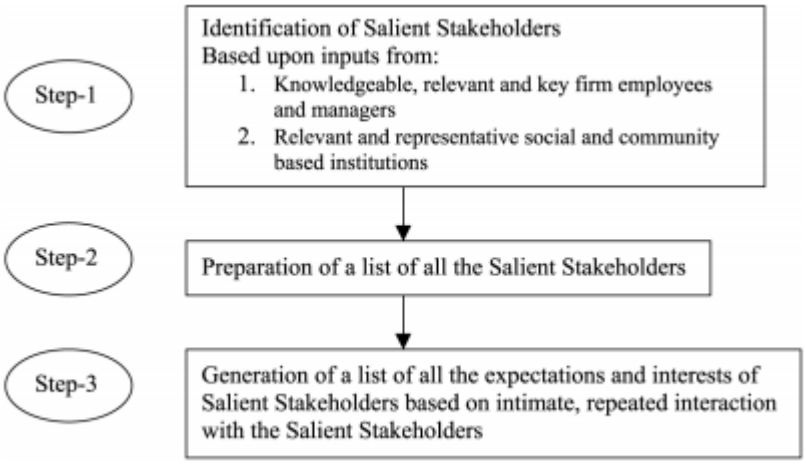

Figure 4.5 The process of identification of salient stakeholders
Source: Bhattacharyya et al. (2008)

After the identification of salient stakeholders has been successful, the company is finally able to align its best strategic interests with possible CSR activities and the strategic integration process can start. As we previously said, the aims identified by Porter are the consolidation of CSR practices into company's value chain, leading to higher margins coming from the increase in the profitability of primary and support activities, and the consolidation of CSR practices into its competitive context, strengthening the competitive position of the firm. In particular, by undertaking CSR initiatives, a company can increase its tangible and intangible resources, which represent the main source of competitive advantage.

A further profitable source of competitive advantage was introduced by Drucker (2001), who went beyond the mere form of CSR activities and started thinking of societal problems as a form of business opportunities. The scholar underlined how a company able of developing market-based solutions to socio-environmental dilemmas would certainly get a double benefit: contributing to a better welfare for the society and, at the same time, creating wealth for the shareholders. In particular, Drucker identified two big topics that nowadays affect society, poverty and environmental degradation, and analysed how some companies have been able to transform them into business opportunity. On a side, the scholar underlined the effort (especially coming from bank institutions, or from entities strictly related to bank institutions) of fighting poverty by serving the poorest levels of society, through techniques such as microcredit and support to small enterprises; on the other side, environmental degradation is currently challenged by those firms dealing with the disposal of waste or its conversion in industry-related resources, such as power or construction material. Brugmann & Prahalad (2007) contributed to Drucker's side by considering how BP had been able to furtherly go beyond the limit, when it successfully exploited both the environmental and the poverty themes by providing low-emission stoves to rural Indian communities.

Once both the needs of salient stakeholders and the strategic interests of the company are finally defined, the management has all the instruments to evaluate whether it's possible to identify common areas, which represent the best target for strategic CSR activities; on the other hand, if salient stakeholders' and firm's interests don't meet, managers have the duty to decide whether to satisfy stakeholders and reduce the scope of CSR activities or to ignore their requests to give higher importance to social responsibility.

At this point, not only the company has to efficiently address its CSR efforts to the correct recipients and with the correct timing but – and this often represents the biggest obstacle – the firm also needs to efficiently communicate its activities to salient stakeholders and, more specifically, to customers. In fact, communication nowadays represents a tool that can no long be disregarded, especially in CSR, as it enables the influencing power of social responsibility to burst in consumer's mind at the moment of making a purchase. It's clear that, like the lack of communication entails losing an opportunity, also its presence can represent a double-edged sword if the communicative strategy is not effective or if the CSR content still has to be integrated into business strategy, two events that could result in worsened public image and weakened competitive position.

If instead an effective communication is fully integrated into company's strategy, the outcome is likely to be the creation or the reinforcement of the relationship with customers, a competitive advantage that is harder and harder to build through other means nowadays. In order to obtain such scenario, the communication linked with CSR must respect a criterion of consistency with the core branding strategy of the company, both when it is directed internally to employees and when it is driven outside to other stakeholders (customers, institutions, communities and so on).

The final step to be covered is the ex-post evaluation of the impact of CSR strategies, through a set of KPIs that, according to McElhaney (2009), should be consolidated into the recognition and performance appraisal system for the whole company. As discussed before, the main KPIs should cover the improvements regarding internal factors such as employee satisfaction, competitive status and brand image, but also the betterment concerning environment and society.

5. Evaluating the relationship between CSR and financial performance[4]

Among the many benefits that firms can obtain by implementing an effective strategic form of CSR, positive effects on company financial performance (CFP) are without a doubt the matter of highest interest for shareholders. The evidence of a relationship between these two phenomena has represented a challenging study also for scholars, who have frequently found discordant results, even in the analysis of companies coming from the same buckets.

For example, if we consider the 70s, we can find three different studies regarding the effects of CSR activities on the variation of the stock price of a bucket of firms belonging to Dow Jones - Moskowitz (1972), Vance (1975) and Alexander & Buchholz (1978) – showing three completely different results, with Moskowitz obtaining strongly positive outcomes, Vance observing a negative relationship and Alexander & Buchholz capturing a lack of correlation, which thereby repudiates both the previous results.

At the same time, other scholars tried to theorize this relationship, to give a logical chain of consequences between CSR activities and financial performance; in particular, Peloza & Papania (2008) outlined a model (Figure 5.1) based on how salient stakeholders judge the social behaviour of the company. The authors underlined how the evaluation of a firm as socially responsible or irresponsible pushes stakeholders to respectively "identify" or "disidentify" themselves with the firm and, consequently, to reward the company by providing support to its activity or, in the opposite case, to punish it through boycotts and strikes; this way, stakeholders can strongly influence and affect the profitability of the company both in the short and in the long term.

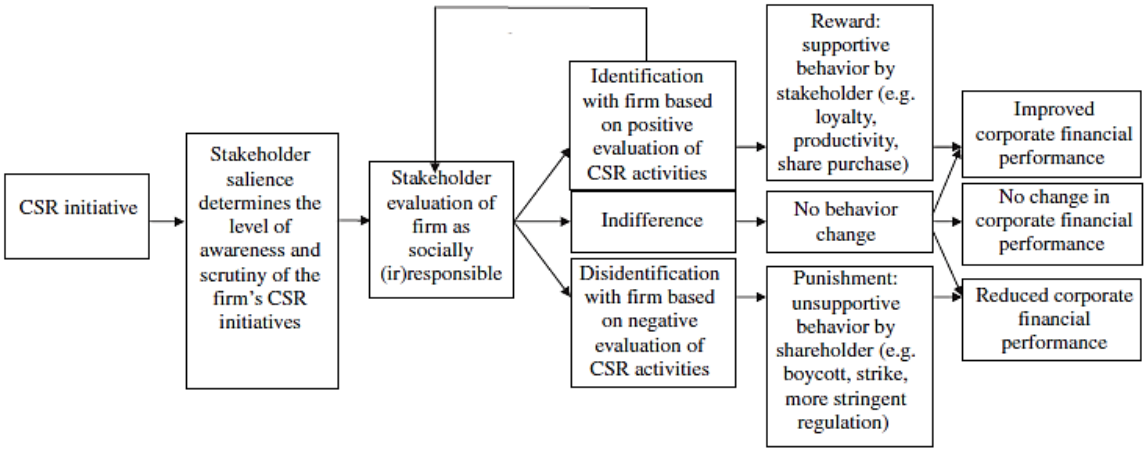

Figure 5.1 A theoretical explanation to the relationship between CSR initiatives and corporate financial performance
Source: Peloza & Papania (2008)

[4] This chapter has been developed with the support of R software

An interesting approach has been provided by Jianwei (2015), who combined financial performance indicators (ROA and ROE) and market indicators (Tobin Q) to give an all-around perspective of how CSR can influence the strategy of a company. The result was a positive correlation between the responsibility towards the government (described by the tax rate) and financial measures, but a lack of correlation between the remaining CSR variables (responsibility towards creditors, towards suppliers, towards customers and towards employees) and CFP. Regarding the market indicator, Jianwei observed a positive relationship with the responsibility towards creditors and towards suppliers. Sayekti (2015) worked on Indonesian listed companies to shift the focus on the different effects of Strategic and Non-Strategic CSR on corporate performance, showing how strategically aligned activities have a positive influence on ROA, while Non-Strategic CSR can negatively affect price-to-book value (PBV).

When dealing with companies in the MOG sector, studies get more geographically-limited, such as the demonstration made by Pan et al. (2014) of the presence of a correlation between CFP and responsibility towards shareholders, customers and suppliers in a sample of Chinese companies operating in the above-mentioned industry.

5.1 Building up the model

The purpose of this study is to understand whether a similar correlation can be found also in a set of enterprises quoted at the New York Stock Exchange.

In this sense, we used Thomson Reuters' EIKON database to create a sample of 96 firms, operating in the MOG industry, which divided into five categories: 1) oil & gas exploration, drilling and production (EDP); 2) oil & gas refining, transportation and marketing (RTM); 3) oil & gas related equipment and services; 4) mining and primary production; 5) mining related activities. The division was made according to two main criteria: the product each company deals with (oil & gas vs. minerals) and the step that each entity represents in the value production chain. With regards to the latter, the ratio of categorizing the sample is, in line with Porter's value chain, to separate companies directly operating on the field from the ones simply providing supportive services or equipment. Moreover, the sample of directly operating oil & gas firms was furtherly divided following a more technical criterion. In fact, Tordo (2011) highlights three phases composing the oil and gas value chain: upstream, midstream and downstream. Upstream relates to the set of activities starting from the initial exploration and evaluation of possible sources, passing through the drilling of the land and the exploitation of the source and ending with the production of a first raw outcome. Midstream deals with

transportation and storage of the product, both from production to processing and from processing to customers. Downstream finally embodies the phase of refining and marketing of the final product. For the purpose of this study, we developed a category containing companies which operate in the upstream phase and a different category for those taking part into the midstream and the downstream phase. The separation was inspired by Adner & Helfat (2003), who divided their sample into two categories, one for the downstream phase and one for the upstream phase, and split the companies belonging to the midstream based on whether they filled the distances between production and processing or the ones between processing and final customers. As the database used for this study represents midstream as a whole category without highlighting the different types of transportation at its inside, we decide to unite midstream and downstream into the same group, considering that their activities have similar magnitude in terms of impact on communities (strongly different from the upstream phase) and that midstream and downstream companies are in general more sensible to market price changes than upstream ones. In few words, the category "Oil & Gas Exploration, Drilling and Production" represents the upstream phase, while the category "Oil & Gas Refining, Transportation and Marketing" comprises the midstream and the downstream phases.
Appendix A contains the categorization of the companies composing the sample.
Table 5.1 contains the number of firms composing each category.

Categories	No. Companies
MINING & PRIMARY PRODUCTION	17
MINING RELATED ACTIVITIES	6
OIL & GAS EXPLORATION, DRILLING & PRODUCTION	32
OIL & GAS REFINING, TRANSPORTATION & MARKETING	17
OIL & GAS RELATED SERVICES AND EQUIPMENT	24
Total	**96**

Table 5.1 Classification of the companies belonging to the sample into five categories

With regards to the indicators used in the analysis, the decision was to represent corporate financial performance through the two most-commonly adopted indices, Return on Equity (ROE) and Return on Assets (ROA), while corporate social responsibility has been embodied by a set of indicators available in the MSCI's ESG KLD STAT 2011-2015 dataset. Before describing more in detail how data were collected, it's important to specify that the two groups of indicators cover different time horizons. In fact, the CSR-related information is relative to the years 2011, 2012, 2013, 2014 and 2015, while financial data cover the years going from 2011 to 2017; this difference gave us the possibility of dividing the CFP dataset in three smaller sets (the first one regarding the period 2011-2015, the second one for the years from 2012 to 2016, the third one covering the timeline 2013-2017), in order to consider the possibility that

CSR activities may not influence immediately the financial performance of a company, but may do it with a delay of one or two years: in this sense, the three datasets represent the effects in the periods *t* (2011-2015, contemporary to CSR activities), *t+1* (2012-2016, with a one-year delay) and *t+2* (2013-2017, with a two-year delay).

Another important specification regards the panel of data referring to the mining related services sector. As the number of available observations is limited, this set of data will only be considered as part of the overall mining industry and not as a standing alone panel, meaning that the inferential analysis is not going to cover mining related services as a separate subsector.

5.1.1 Corporate Financial Performance Indicators

Financial indicators were obtained from Thomson Reuters' EIKON database, where ROE is described as a "profitability ratio calculated by dividing a company's net income by total equity of common shares" and ROA is described as "income after taxes divided by the average total assets", with both indices expressed as percentage. The two formulas for calculating ROE and ROA are the following (preference shares, non-voting shares and other non-ordinary shares are excluded from Total Equity calculation in ROE):

$$ROE = \frac{(Net\ Income\ in\ fiscal\ year\ Y)}{(Total\ Equity\ (ordinary\ shares) in\ fiscal\ year\ Y)}$$

$$ROA = \frac{(Net\ Income\ in\ fiscal\ year\ Y)}{(Average\ Total\ Assets in\ fiscal\ year\ Y)}$$

Appendix B contains the descriptive statistics for the two CFP indicators.

5.1.2 Corporate Social Responsibility Indicators

Indicators regarding corporate social responsibility were instead derived from the KLD STAT data set, referring to seven main categories of activities:

- Environment-related activities (ENV)
- Community-related activities (COM)
- Activities related with human rights (HUM)
- Employees-related activities (EMP)
- Diversity-related activities (DIV)
- Product-related activities (PRO)
- Activities related with corporate governance (CGOV)

In particular, KLD STAT considers for each category a set of variables, which can be positive (strengths) or negative (concerns), and expresses the presence or the absence of each variable using the binary system, i.e. 1 in case of presence and 0 in case of absence. The adoption of the binary system for the variables entailed the need of creating a criterion for normalizing the data, which otherwise couldn't have been properly evaluated. In this sense, we followed the technique present in Blasi et al. (2018), dividing the score for each category by the maximum possible score for that category and then subtracting negative aspects from positive ones:

$$normX_{i,t}^{STR} = \frac{\sum_{j=1}^{z} X_{i,t,j}^{STR}}{Z(X,t,STR)} \quad \text{(for strengths)},$$

$$normX_{i,t}^{CON} = \frac{\sum_{j=1}^{z} X_{i,t,j}^{CON}}{Z(X,t,CON)} \quad \text{(for concerns)},$$

$$normdifX_{i,t} = normX_{i,t}^{STR} - normX_{i,t}^{CON} \quad \text{(for normalised category)},$$

where: *i* represents the company index, *t* represents the year, *STR* stands for strengths, *CON* for concerns, *X* represents the CSR categories and *z* is the number of variables for each CSR category for the company *i* in the year *t* of type *STR* or *CON*; for construction:

$$-1 \leq normdifX_{i,t} \leq 1$$

Further information on the variables composing each category is available in the Appendix C, while information on the collection of data, the creation and the development of KLD STAT is available on the website of MSCI.

Appendix D contains the descriptive statistics for the seven CSR indicators:

5.1.3 Analysis through Inferential Statistics

For the purpose of this study, we firstly tried to analyse the impact of each CSR indicator on financial performance indicators by using an ordinary least square (OLS) regression model, in order to evaluate how changes in each social responsibility category tend to affect ROA and ROE.

The panels of data were created without analysing possible effects internal (differences between individuals belonging to the panel) or external (different conditions in year *y* and year *y+1* for example) to the panel. In this sense, the datasets were built simply by employing the succession of data for each considered variable, for each considered company and for each considered year.

Appendix E contains the correlation matrices for the analysed datasets.

The result of this first attempt was rather unsatisfactory, as it produced very high residuals, thereby highlighting the presence of outliers. Outliers represent a great danger for the descriptive capacity of a model, as they can provoke the breakdown of the estimators, a risk that led us to the decision of employing the same sets of data, but a more robust regression model, which could guarantee a better management of outliers.

In particular, the upcoming analysis will be based on the least trimmed squares (LTS) model described by Rousseeuw & van Zomeren (1990) and by Rousseeuw & van Driessen (2000). In a panel of *n* observations, the goal of the LTS approach is the minimization of the sum of the *h* smallest square residuals, being *h* a value between *n/2* and *n*. This means that, being $(r^2)_{1:n} \leq \cdots \leq (r^2)_{n:n}$ the ordered squared residuals, the minimization of $\sum_{i=1}^{h}(r^2)_{i:n}$ is obtained by finding the *h*-subset with smallest squares objective function.

As it could be possible to find more than one subset producing the same outcome, we protected the will of exploiting the highest possible number of observations by considering in this case the subset with the highest *h*.

The new model displayed a greater ability of dealing with outliers, thereby guaranteeing a higher significance to the overall analysis. The following examples show how LTS demonstrated to overcome OLS:

1) when analysing the relationship between ROA and CSR indicators for the Oil & Gas sample in *t*, we can see how LTS is able to reduce the gap between the maximum and the minimum residuals from more than 96 to 28,5. This result is obtained by taking away from the panel 24 observations out of 365 (≈6,5%). The effect of such reduction is a huge decrease of the p-value (≈-83%) and a fast increase of the R^2 (≈+36,5%), giving much more significance to the overall model.

ROA - Oil & Gas Sample (t) - OLS		**ROA - Oil & Gas Sample (t) - LTS**	
R^2	0,04471	**R^2**	0,06107
Min. Residual	-74,327	**Min. Residual**	-14,432
Max. Residual	21,996	**Max. Residual**	14,102
Residual Standard Error (degrees of freedom)	10,08 (333)	**Residual Standard Error (degrees of freedom)**	5,525 (316)
Observations	365	**Observations (H)**	365 (341)
F-Statistic (degrees of freedom)	2,227 (7;333)	**F-Statistic (degrees of freedom)**	2,936 (7;316)
p-value	0,03181	**p-value**	0,005422

Table 5.2 OLS vs LTS for ROA (oil & gas sample, *t*)

2) In the same way, when studying the relationship between ROE and CSR activities in the total sample for *t*, we can see how a reduction of the panel from 480 to 404 observations (15,8%) produced a decrease of the p-value of almost 98,7% and an increase of the R^2 of 70,4%, meaning even here a higher significance level for the model.

ROE - Total Sample (t) - OLS		**ROE - Total Sample (t) - LTS**	
R^2	0,04261	**R^2**	0,0726
Min. Residual	-29,227	**Min. Residual**	-18,363
Max. Residual	57,72	**Max. Residual**	17,668
Residual Standard Error (degrees of freedom)	9,746 (396)	**Residual Standard Error (degrees of freedom)**	7,016 (372)
Observations	480	**Observations (H)**	480 (404)
F-Statistic (degrees of freedom)	2,518 (7;396)	**F-Statistic (degrees of freedom)**	4,16 (7;372)
p-value	0,01525	**p-value**	0,0002

Table 5.3 OLS vs LTS for ROE (total sample, *t*)

Thereby, we used LTS to create the following models:

$$ROE_t = \beta_0 + \beta_1 ENV_t + \beta_2 COM_t + \beta_3 DIV_t + \beta_4 EMP_t + \beta_5 HUM_t + \beta_6 PRO_t + \beta_7 CGOV_t + \varepsilon$$
$$ROE_{t+1} = \beta_0 + \beta_1 ENV_t + \beta_2 COM_t + \beta_3 DIV_t + \beta_4 EMP_t + \beta_5 HUM_t + \beta_6 PRO_t + \beta_7 CGOV_t + \varepsilon$$
$$ROE_{t+2} = \beta_0 + \beta_1 ENV_t + \beta_2 COM_t + \beta_3 DIV_t + \beta_4 EMP_t + \beta_5 HUM_t + \beta_6 PRO_t + \beta_7 CGOV_t + \varepsilon$$
$$ROA_t = \beta_0 + \beta_1 ENV_t + \beta_2 COM_t + \beta_3 DIV_t + \beta_4 EMP_t + \beta_5 HUM_t + \beta_6 PRO_t + \beta_7 CGOV_t + \varepsilon$$
$$ROA_{t+1} = \beta_0 + \beta_1 ENV_t + \beta_2 COM_t + \beta_3 DIV_t + \beta_4 EMP_t + \beta_5 HUM_t + \beta_6 PRO_t + \beta_7 CGOV_t + \varepsilon$$
$$ROA_{t+2} = \beta_0 + \beta_1 ENV_t + \beta_2 COM_t + \beta_3 DIV_t + \beta_4 EMP_t + \beta_5 HUM_t + \beta_6 PRO_t + \beta_7 CGOV_t + \varepsilon$$

where β_0 represents the value of the intercept, the elements from β_1 to β_7 are the coefficients for each independent variable and ε is the standard error term.

Before the next step in the model, we need to clarify some conditions:

- for the generic element i of the sample, we observe: $ROA=ROA_i$, $ROE=ROE_i$ and ENV_i, COM_i, …, $CGOV_i$.
- The errors are independent and normally distributed, with mean equal to zero and unknown variance σ^2.

The estimated models are then:

$$\widehat{ROE_{t_i}} = b_0 + b_1 ENV_t + b_2 COM_t + b_3 DIV_t + b_4 EMP_t + b_5 HUM_t + b_6 PRO_t + b_7 CGOV_t$$
$$\widehat{ROA_{t_i}} = b_0 + b_1 ENV_t + b_2 COM_t + b_3 DIV_t + b_4 EMP_t + b_5 HUM_t + b_6 PRO_t + b_7 CGOV_t$$

with $e_{ROE} = ROE_{t_i} - \widehat{ROE_{t_i}}$ and $e_{ROA} = ROA_{t_i} - \widehat{ROA_{t_i}}$ being the residuals of the models and t_i representing *t*, *t+1* and *t+2*.

In order to evaluate the goodness of fit of the two models, we can decompose their total variation, embodied by the total standard deviation[5] SST_Q - where Q is the finance performance indicator (ROA or ROE) -, and obtain the equation:

$$\sum_{i=1}^{n}(Q_i - \bar{Q})^2 = \sum_{i=1}^{n}(\hat{Q}_i - \bar{Q})^2 + \sum_{i=1}^{n}(Q_i - \hat{Q}_i)^2$$

This way it's possible to define the two elements composing the total variability: the part of variability described by the model (SSR_Q) and the part of variability that remains unexplained (SSE_Q).[6] Moreover, we can represent the residual standard error as:

$$RSE_Q = \sqrt{\frac{\sum_{i=1}^{n}(Q_i - \hat{Q}_i)^2}{n-k-1}} = \sqrt{\frac{SSE}{n-k-1}}$$

where n is the total number of observations, k is the number of independent variables and the expression (n-k-1) represents the degrees of freedom of the system. The residual standard error can also be defined as the square root of the mean squared-error of the residuals (MSE).

The goodness of fit of the model is going to be evaluated with three different methods: the R^2 the t-test and the F-statistics. The coefficient R^2 indicates how much of the total variation is described by the model and is obtained dividing the SSR_Q by the SST_Q, which provides the percentage of explanation of the total variation. The t-test verifies that a coefficient is significantly different from zero by testing the null hypothesis H_0: β_i=0 on it; the null hypothesis is considered rejected (and consequently the coefficient is significantly different from zero) if the value obtained from the t-test is greater than $t_{\alpha/2}$, which represents the quantile (1- α/2) of a Student t distribution with (n-2) degrees of freedom at the confidence level α. Finally, the F-statistics verifies that at least one of the coefficients of the model is significantly different from zero, testing the null hypothesis H_0: $\beta_1 = \beta_2 = \ldots = \beta_k = 0$ by using the ratio:

$$F = \frac{SSR}{k} \Big/ \frac{SSE}{n-k-1}$$

where k is the number of independent variables and n is the number of observations. The value of F should be greater than F_α, which represents the quantile (1-α) of a Fisher-Snedecor F with k and (n-k-1) degrees of freedom at the confidence level α. The F-statistics test is going to be combined with a p-value test, that demonstrates the significance of the model for values lower than 0,05.

[5] $SST_Q = \sum_{i=1}^{n}(Q_i - \bar{Q})^2$

[6] $SSR_Q = \sum_{i=1}^{n}(\hat{Q}_i - \bar{Q})^2$ and $SSE_Q = \sum_{i=1}^{n}(Q_i - \hat{Q}_i)^2$

Tables from to 5.4 to 5.10 contain the multiple linear regression analysis between ROE and CSR variables for the overall sample, for each product category and for each sub-sector (mining related services excluded).

Total Sample (t)		**Variable**	**Coefficient**	**Pr(>|t|)**	**Significance**
		(intercept)	10,7456	2,00E-16	***
R^2	0,0726	ENV	5,995	0,0172	*
Min. Residual	-18,363	COM	-1,0528	0,229	
Max. Residual	17,668	DIV	-0,043	0,9711	
Residual Standard Error (degrees of freedom)	7,016 (372)	EMP	-1,3188	0,5288	
Observations (h; complete pairs)	480 (404;380)	HUM	-2,4888	0,0369	*
F-Statistic (degrees of freedom)	4,16 (7;372)	PRO	4,8696	0,0667	°
p-value	0,0002	CGOV	-2,4953	0,0158	*

Total Sample (t+1)		**Variable**	**Coefficient**	**Pr(>|t|)**	**Significance**
		(intercept)	8,3571	2,00E-16	***
R^2	0,1009	ENV	5,5429	0,0545	°
Min. Residual	-20,506	COM	-0,4007	0,694	
Max. Residual	20,224	DIV	-0,2955	0,8233	
Residual Standard Error (degrees of freedom)	8,189 (378)	EMP	-0,096	0,9685	
Observations (H; complete pairs)	480 (405;386)	HUM	-3,7381	0,0074	**
F-Statistic (degrees of freedom)	6,058 (7;378)	PRO	-3,1735	0,2779	
p-value	1,03E-06	CGOV	-4,6551	0,0001	***

Total Sample (t+2)		**Variable**	**Coefficient**	**Pr(>|t|)**	**Significance**
		(intercept)	8,5589	3,09E-06	***
R^2	0,09411	ENV	3,9802	0,1952	
Min. Residual	-21,711	COM	0,7039	0,5041	
Max. Residual	21,503	DIV	2,7501	0,0448	*
Residual Standard Error (degrees of freedom)	8,365 (375)	EMP	-4,9643	0,0427	*
Observations (H; complete pairs)	480 (402;383)	HUM	-3,5323	0,0126	*
F-Statistic (degrees of freedom)	5,565 (7;375)	PRO	-0,1836	0,9505	
p-value	4,10E-06	CGOV	-4,5607	0,0003	***

Table 5.4 Inferential statistics for the relationship between ROE and CSR variables for the total sample
Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis shows that the null hypothesis is rejected in *t*, *t+1* and *t+2*, highlighting the presence of a significant link between ROE and the variables regarding environment, diversity, corporate governance, employee relations and respect of human rights. In particular, EMP, HUM and CGOV seem to have negative effect on financial results in all the three considered periods, while ENV and DIV appear to positively affect ROE respectively in *t* and *t+2*.

Mining Sample (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	6,1762	1,33E-08	***
R^2	0,0769	ENV	10,9317	0,0879	°
Min. Residual	-16,2653	COM	-1,0825	0,7203	
Max. Residual	15,7291	DIV	0,6626	0,7975	
Residual Standard Error (degrees of freedom)	7,101 (84)	EMP	1,1254	0,7692	
Observations (H; complete pairs)	115 (94;92)	HUM	-3,3024	0,3094	
F-Statistic (degrees of freedom)	0,9996 (7;84)	PRO	8,2083	0,1068	
p-value	0,4375	CGOV	-3,8869	0,2479	

Mining Sample (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	5,9701	2,93E-07	***
R^2	0,0587	ENV	9,4364	0,129	
Min. Residual	-16,607	COM	2,1195	0,479	
Max. Residual	17,566	DIV	0,6834	0,798	
Residual Standard Error (degrees of freedom)	7,537 (84)	EMP	-2,65	0,508	
Observations (H; complete pairs)	115 (96;92)	HUM	-4,6173	0,177	
F-Statistic (degrees of freedom)	0,7479 (7;84)	PRO	5,4167	0,258	
p-value	0,6322	CGOV	-1,7801	0,566	

Mining Sample (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	5,85	1,00E-06	***
R^2	0,1411	ENV	13,909	0,034	*
Min. Residual	-16,5451	COM	-4,53	0,1612	
Max. Residual	18,8305	DIV	3,09	0,2771	
Residual Standard Error (degrees of freedom)	7,8922 (83)	EMP	1,237	0,7677	
Observations (H; complete pairs)	115 (96;91)	HUM	-7,725	0,0333	*
F-Statistic (degrees of freedom)	1,947 (7;83)	PRO	-8,305	0,1334	
p-value	0,0723	CGOV	5,275	0,1444	

Table 5.5 Inferential statistics for the relationship between ROE and CSR variables for the mining sample
Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis shows that the models for *t* and *t+1* cannot be considered significant, as the p-value is greater than 0,05; regarding *t+2*, the null hypothesis cannot be rejected for the overall model, but the t-tests for ENV and HUM show a good level of significance for those variables.

Oil & Gas Sample (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	12,9534	2,00E-16	***
R^2	0,1162	ENV	5,5636	0,072	°
Min. Residual	-18,05	COM	-1,2201	0,1933	
Max. Residual	18,209	DIV	2,3208	0,0885	°
Residual Standard Error (degrees of freedom)	7,04 (286)	EMP	-3,414	0,2061	
Observations (H; complete pairs)	365 (310;294)	HUM	-3,3466	0,0119	*
F-Statistic (degrees of freedom)	5,37 (7;286)	PRO	4,6429	0,1489	
p-value	8,54E-06	CGOV	-2,8067	0,0117	*

Oil & Gas Sample (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	9,5496	2,00E-16	***
R^2	0,1366	ENV	5,1995	0,1195	
Min. Residual	-20,8452	COM	-1,1216	0,3214	
Max. Residual	21,2349	DIV	0,1132	0,9426	
Residual Standard Error (degrees of freedom)	8,462 (288)	EMP	0,525	0,8684	
Observations (H; complete pairs)	365 (309;296)	HUM	-3,8742	0,0161	*
F-Statistic (degrees of freedom)	6,51 (7;288)	PRO	3,2035	0,4066	
p-value	3,87E-07	CGOV	-5,5436	4,86E-05	***

Oil & Gas Sample (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	8,2985	2,00E-16	***
R^2	0,1331	ENV	2,723	0,4491	
Min. Residual	-21,492	COM	0,4889	0,6778	
Max. Residual	21,855	DIV	3,2712	0,0428	*
Residual Standard Error (degrees of freedom)	8,58 (285)	EMP	-5,985	0,0599	°
Observations (H; complete pairs)	364 (306;293)	HUM	-3,0652	0,0581	°
F-Statistic (degrees of freedom)	6,249 (285)	PRO	2,0956	0,5761	
p-value	7,93E-07	CGOV	-5,7456	4,40E-05	***

Table 5.6 Inferential statistics for the relationship between ROE and CSR variables for the oil & gas sample
Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis produces p-values and F-values that demonstrate the significance of the model in *t*, in *t+1* and in *t+2*. In particular, the model shows the presence of negative relationships between ROE and the CSR variables HUM and CGOV in all the considered periods and positive correlation between the financial performance indicator and DIV in *t* and *t+2* and with ENV in *t*.

Mining & Primary Production (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	4,8523	2,62E-05	***
R^2	0,1213	ENV	13,7363	0,0273	*
Min. Residual	-13,8974	COM	-1,8489	0,5268	
Max. Residual	13,7862	DIV	-0,0464	0,9856	
Residual Standard Error (degrees of freedom)	6,405 (62)	EMP	2,4728	0,5544	
Observations (H; complete pairs)	85 (72;70)	HUM	-1,2671	0,6844	
F-Statistic (degrees of freedom)	1,223 (7;62)	PRO	7,9647	0,1392	
p-value	0,3041	CGOV	-4,9527	0,1879	

Mining & Primary Production (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	4,904	2,21E-05	***
R^2	0,1514	ENV	13,341	0,0179	*
Min. Residual	-13,149	COM	1,125	0,694	
Max. Residual	13,282	DIV	1,37	0,5788	
Residual Standard Error (degrees of freedom)	6,319 (63)	EMP	-4,139	0,311	
Observations (H; complete pairs)	85 (73;71)	HUM	-1,543	0,6128	
F-Statistic (degrees of freedom)	1,606 (7;63)	PRO	5,833	0,217	
p-value	0,1503	CGOV	-8,782	0,0131	*

Mining & Primary Production (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	5,1038	8,95e-05	***
R^2	0,1354	ENV	12,9874	0,0182	*
Min. Residual	-13,3663	COM	-2,5772	0,35	
Max. Residual	12,2216	DIV	2,0368	0,3969	
Residual Standard Error (degrees of freedom)	6,063 (60)	EMP	0,6262	0,8728	
Observations (H; complete pairs)	85 (72;68)	HUM	-4,1413	0,1665	
F-Statistic (degrees of freedom)	1,342 (7;60)	PRO	-2,456	0,5889	
p-value	0,2468	CGOV	-2,415	0,4811	

Table 5.7 Inferential statistics for the relationship between ROE and CSR variables for the mining and primary production sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis shows that the model lacks validity in *t*, in *t+1* and *t+2*, as the null hypothesis cannot be rejected. By the way, the model produces a constant good level of positive correlation between ROE and the CSR indicator relative to the environmental activities. The relation seems to keep on being positive even in *t+1* and *t+2*, but the too high p-values reduce the validity of the last two periods.

Exploration, Drilling & Production (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	10,7403	2,00E-16	***
R^2	0,225	ENV	3,2016	0,2235	
Min. Residual	-13,08	COM	-2,8421	0,0026	**
Max. Residual	10,427	DIV	-1,8511	0,2105	
Residual Standard Error (degrees of freedom)	5,24 (130)	EMP	-1,562	0,5486	
Observations (H; complete pairs)	160 (145;138)	HUM	-3,269	0,0133	*
F-Statistic (degrees of freedom)	5,39 (7;130)	PRO	4,3654	0,1539	
p-value	1,92E-05	CGOV	0,1783	0,884	

Exploration, Drilling & Production (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	8,7097	2,00E-16	***
R^2	0,1904	ENV	3,2072	0,3597	
Min. Residual	-16,558	COM	-3,3402	0,0093	**
Max. Residual	15,859	DIV	-0,0881	0,9644	
Residual Standard Error (degrees of freedom)	6,999 (129)	EMP	1,7122	0,6212	
Observations (H; complete pairs)	160 (141;137)	HUM	-5,3615	0,0026	**
F-Statistic (degrees of freedom)	4,333 (7;129)	PRO	1,2379	0,7613	
p-value	0,00024	CGOV	-0,5441	0,7413	

Exploration, Drilling & Production (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	7,7488	2,39E-12	***
R^2	0,1456	ENV	2,3957	0,5486	
Min. Residual	-15,535	COM	0,6861	0,6162	
Max. Residual	17,737	DIV	0,9021	0,6705	
Residual Standard Error (degrees of freedom)	7,344 (124)	EMP	-5,5308	0,1297	
Observations (H; complete pairs)	160 (140;132)	HUM	-5,8129	0,0022	**
F-Statistic (degrees of freedom)	3,018 (7;124)	PRO	3,5915	0,4023	
p-value	0,0058	CGOV	-0,1655	0,9254	

Table 5.8 Inferential statistics for the relationship between ROE and CSR variables for the exploration, drilling and production sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis of the relationship between ROE and the CSR variables in the EDP sample gives significance to the model in *t*, *t+1* and *t+2*. In particular, it is possible to highlight a good level of negative of correlation with the COM in *t*, which continues to be evident in *t+1*. A negative correlation is present even with the variable relative to human rights-related activities in *t*, *t+1* and *t+2*.

Refining, Transportation and Marketing (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	15,826	1,87E-13	***
R^2	0,1795	ENV	-4,962	0,6238	
Min. Residual	-25,268	COM	2,708	0,3503	
Max. Residual	25,178	DIV	10,064	0,0172	*
Residual Standard Error (degrees of freedom)	10,34 (59)	EMP	-4,689	0,5974	
Observations (H; complete pairs)	85 (72;67)	HUM	-1,749	0,7433	
F-Statistic (degrees of freedom)	1,843 (7;59)	PRO	-25,559	0,0858	°
p-value	0,09575	CGOV	-8,838	0,1046	

Refining, Transportation and Marketing (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	14,084	7,97E-10	***
R^2	0,2024	ENV	-6,258	0,5778	
Min. Residual	-29,629	COM	4,145	0,2145	
Max. Residual	28,244	DIV	2,819	0,5326	
Residual Standard Error (degrees of freedom)	11,86 (58)	EMP	-1,978	0,8501	
Observations (H; complete pairs)	85 (70;67)	HUM	-4,71	0,4467	
F-Statistic (degrees of freedom)	2,103 (7;58)	PRO	-44,289	0,0156	*
p-value	0,05742	CGOV	-5,129	0,3912	

Refining, Transportation and Marketing (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	9,6922	1,71E-06	***
R^2	0,0969	ENV	5,7896	0,608	
Min. Residual	-25,257	COM	0,545	0,869	
Max. Residual	27,83	DIV	0,0487	0,991	
Residual Standard Error (degrees of freedom)	11,06 (56)	EMP	-4,918	0,613	
Observations (H; complete pairs)	85 (68;64)	HUM	-0,9507	0,862	
F-Statistic (degrees of freedom)	0,8588 (7;56)	PRO	-11,5462	0,511	
p-value	0,5445	CGOV	-8,1914	0,138	

Table 5.9 Inferential statistics for the relationship between ROE and CSR variables for the refining, transportation and marketing sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis produces an impossibility of rejecting the null hypothesis, meaning that in the RTM sample there is a lack of correlation between ROE and the CSR variables, which is proven both by the p-value and the F-statistic. In *t+1* the former is really near to the 0,05 border, meaning that the negative correlation with product-related activities may be considered as relevant.

Oil & Gas Related Products and Services (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	13,2862	6,96E-16	***
R^2	0,2008	ENV	19,6483	0,0049	**
Min. Residual	-16,331	COM	-0,7677	0,7827	
Max. Residual	15,359	DIV	2,6042	0,368	
Residual Standard Error (degrees of freedom)	6,399 (79)	EMP	-9,5354	0,0755	°
Observations (H; complete pairs)	120 (93;87)	HUM	-0,2969	0,9321	
F-Statistic (degrees of freedom)	2,835 (7;79)	PRO	3,569	0,5069	
p-value	0,0109	CGOV	-5,079	0,0052	**

Oil & Gas Related Products and Services (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	9,3347	1,04E-07	***
R^2	0,2966	ENV	22,0495	0,0143	*
Min. Residual	-16,404	COM	-0,1991	0,956	
Max. Residual	20,12	DIV	-1,4122	0,6876	
Residual Standard Error (degrees of freedom)	8,216 (85)	EMP	-2,5362	0,7143	
Observations (H; complete pairs)	120 (98;93)	HUM	1,2825	0,7776	
F-Statistic (degrees of freedom)	5,119 (7;85)	PRO	5,5605	0,414	
p-value	6,92E-05	CGOV	-12,0394	7,54E-07	***

Oil & Gas Related Products and Services (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	8,5589	3,09E-06	***
R^2	0,345	ENV	6,8154	0,456	
Min. Residual	-18,511	COM	4,6712	0,265	
Max. Residual	18,15	DIV	0,781	0,126	
Residual Standard Error (degrees of freedom)	8,514 (87)	EMP	3,26	0,661	
Observations (H; complete pairs)	120 (98;95)	HUM	-0,4224	0,932	
F-Statistic (degrees of freedom)	6,547 (7;87)	PRO	11,3627	0,116	
p-value	3,27E-06	CGOV	-15,0396	2,65E-08	***

Table 5.10 Inferential statistics for the relationship between ROE and CSR variables for the refining, transportation and marketing sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis produces in *t*, *t+1* and *t+2* p-values that provide significance to the model. In particular, the relationship between ROE and CGOV seems to be extremely high, with the CSR variable being negatively correlated to financial performance. Moreover, the indicator measuring environment-related activities appears to be positively linked with ROE in *t* and *t+1*.

Tables from to 5.11 to 5.17 contain the multiple linear regression analysis between ROA and CSR variables for the overall sample, for each product category and for each sub-sector.

Total Sample (t)		**Variable**	**Coefficient**	**Pr(>|t|)**	**Significance**
		(intercept)	3,6163	2,00E-16	***
R^2	0,04432	ENV	1,8037	0,3315	
Min. Residual	-14,253	COM	-0,3222	0,6243	
Max. Residual	14,131	DIV	-1,4914	0,0731	°
Residual Standard Error (degrees of freedom)	5,382 (416)	EMP	-1,6008	0,294	
Observations (H; complete pairs)	480 (449;424)	HUM	-1,1766	0,1932	
F-Statistic (degrees of freedom)	2,756 (7;416)	PRO	4,0709	0,0186	*
p-value	0,008277	CGOV	-0,89	0,2653	

Total Sample (t+1)		**Variable**	**Coefficient**	**Pr(>|t|)**	**Significance**
		(intercept)	2,1507	3,95E-07	***
R^2	0,09434	ENV	2,4252	0,2518	
Min. Residual	-16,43	COM	-0,7585	0,3264	
Max. Residual	16,001	DIV	-0,965	0,3092	
Residual Standard Error (degrees of freedom)	6,131 (414)	EMP	0,6311	0,7178	
Observations (H; complete pairs)	480 (450;422)	HUM	-1,5187	0,149	
F-Statistic (degrees of freedom)	6,161 (7;414)	PRO	3,7946	0,0612	°
p-value	7,19E-07	CGOV	-3,9713	2,11E-05	***

Total Sample (t+2)		**Variable**	**Coefficient**	**Pr(>|t|)**	**Significance**
		(intercept)	2,0293	1,02E-06	***
R^2	0,107	ENV	-1,0481	0,613	
Min. Residual	-16,1024	COM	0,4608	0,5279	
Max. Residual	14,4381	DIV	2,1092	0,0256	*
Residual Standard Error (degrees of freedom)	5,955 (415)	EMP	-2,2166	0,1899	
Observations (H; complete pairs)	480 (449;423)	HUM	-1,3828	0,1761	
F-Statistic (degrees of freedom)	7,102 (7;415)	PRO	3,7721	0,0585	°
p-value	5,03E-08	CGOV	-4,2979	1,93E-06	***

Table 5.11 Inferential statistics for the relationship between ROA and CSR variables for the total sample.
Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis permits to reject the null hypothesis in *t*, *t+1* and *t+2*. In particular, PRO variable seems to be positively correlated with ROA in *t* (and more slightly in *t+1* and *t+2*). A different behaviour is evident for CGOV, which increases in *t+1* and *t+2*, while DIV appears positively correlated in *t+2*.

Mining Sample (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	1,1902	0,0589	°
R^2	0,1031	ENV	6,6151	0,0829	°
Min. Residual	-11,8255	COM	-1,4362	0,4391	
Max. Residual	9,9332	DIV	-1,5976	0,3194	
Residual Standard Error (degrees of freedom)	4,706 (92)	EMP	0,3233	0,8916	
Observations (H; complete pairs)	115 (108;100)	HUM	-0,5285	0,80992	
F-Statistic (degrees of freedom)	1,511 (7;92)	PRO	5,7193	0,0524	°
p-value	0,1732	CGOV	-4,3106	0,0457	*

Mining Sample (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	0,1435	0,8467	
R^2	0,1129	ENV	10,6781	0,02	*
Min. Residual	-14,87122	COM	0,4452	0,8398	
Max. Residual	14,3028	DIV	-1,5946	0,4014	
Residual Standard Error (degrees of freedom)	5,575 (93)	EMP	-3,4732	0,2154	
Observations (H; complete pairs)	115 (108;101)	HUM	-2,8736	0,2747	
F-Statistic (degrees of freedom)	1,69 (7;93)	PRO	7,3404	0,0356	*
p-value	0,1209	CGOV	-3,9052	0,1264	

Mining Sample (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	0,812	0,2634	
R^2	0,06764	ENV	2,7351	0,5316	
Min. Residual	-13,879	COM	-3,8488	0,0749	°
Max. Residual	12,812	DIV	1,7433	0,3635	
Residual Standard Error (degrees of freedom)	5,369 (93)	EMP	1,4101	0,6093	
Observations (H; complete pairs)	115 (107;101)	HUM	-4,4009	0,0869	°
F-Statistic (degrees of freedom)	0,9639 (7;93)	PRO	0,9802	0,7942	
p-value	0,4623	CGOV	2,1174	0,3852	

Table 5.12 Inferential statistics for the relationship between ROA and CSR variables for the mining sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis produces F-statistic values and p-values which cannot help in rejecting the null hypothesis. Therefore, it's impossible to say that there is a signal of correlation between CSR variables and ROA in the overall mining sample in all the period taken into consideration.

Oil & Gas Sample (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	4,7431	2,00E-16	***
R^2	0,06107	ENV	2,0019	0,3522	
Min. Residual	-14,432	COM	-0,5709	0,4355	
Max. Residual	14,102	DIV	-0,415	0,6721	
Residual Standard Error (degrees of freedom)	5,525 (316)	EMP	-2,8056	0,1521	
Observations (H; complete pairs)	365 (341;324)	HUM	-1,8188	0,0762	°
F-Statistic (degrees of freedom)	2,936 (7;316)	PRO	4,9418	0,024	*
p-value	0,005422	CGOV	-0,7926	0,3676	

Oil & Gas Sample (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	3,1696	2,85E-09	***
R^2	0,1328	ENV	0,1787	0,6353	
Min. Residual	-17,067	COM	-1,2974	0,136	
Max. Residual	17,089	DIV	0,1236	0,9136	
Residual Standard Error (degrees of freedom)	6,433 (315)	EMP	2,0513	0,375	
Observations (H; complete pairs)	365 (342;323)	HUM	-2,80669	0,0212	*
F-Statistic (degrees of freedom)	6,893 (7;315)	PRO	3,5685	0,1782	
p-value	1,23E-07	CGOV	-4,1661	6,17E-05	***

Oil & Gas Sample (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	2,6338	2,46E-07	***
R^2	0,1408	ENV	-1,1451	0,6351	
Min. Residual	-15,506	COM	0,5922	0,4656	
Max. Residual	15,928	DIV	2,6647	0,0169	*
Residual Standard Error (degrees of freedom)	6,139 (313)	EMP	-3,8803	0,0745	°
Observations (H; complete pairs)	365 (342;321)	HUM	-0,0998	0,346	
F-Statistic (degrees of freedom)	7,328 (7;313)	PRO	3,529	0,1464	
p-value	3,77E-08	CGOV	-4,7605	2,14E-06	***

Table 5.13 Inferential statistics for the relationship between ROA and CSR variables for the oil & gas sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis enables to reject the null hypothesis and to consider the model significant in all the three periods considered. In particular, if in *t* it's visible only a positive correlation between PRO and ROA, in *t+1* it's possible to highlight the negative correlations between HUM and the financial performance indicator and between CGOV and the same performance indicator. The corporate governance variable appears to be negatively correlated even in *t+2*, together with EMP, while DIV seems to positively affect financial performance in this period.

Mining & Primary Production (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	1,2408	0,0795	°
R^2	0,1387	ENV	8,8013	0,0265	*
Min. Residual	-10,276	COM	-3,0204	0,1493	
Max. Residual	10,354	DIV	-2,3322	0,1742	
Residual Standard Error (degrees of freedom)	4,622 (72)	EMP	2,4858	0,3529	
Observations (H; complete pairs)	85 (84;80)	HUM	-2,7283	0,2262	
F-Statistic (degrees of freedom)	1,657 (7;72)	PRO	2,359	0,4841	
p-value	0,1336	CGOV	-1,7451	0,4437	

Mining & Primary Production (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	0,2917	0,6989	
R^2	0,1665	ENV	11,5165	0,0062	**
Min. Residual	-12,75381	COM	-0,0959	0,9645	
Max. Residual	13,61332	DIV	-1,2762	0,4892	
Residual Standard Error (degrees of freedom)	4,791 (69)	EMP	-3,7034	0,1941	
Observations (H; complete pairs)	85 (83;77)	HUM	-4,547	0,0602	°
F-Statistic (degrees of freedom)	1,97 (7;69)	PRO	5,1934	0,1402	
p-value	0,07179	CGOV	-1,8653	0,43	

Mining & Primary Production (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	0,5421	0,5321	
R^2	0,1135	ENV	3,4443	0,4549	
Min. Residual	-13,5314	COM	-4,7494	0,0597	°
Max. Residual	11,1641	DIV	0,4322	0,8394	
Residual Standard Error (degrees of freedom)	5,399 (70)	EMP	2,2628	0,4865	
Observations (H; complete pairs)	85 (82;78)	HUM	-2,9676	0,2763	
F-Statistic (degrees of freedom)	1,281 (7;70)	PRO	-10,863	0,0222	*
p-value	0,2725	CGOV	4,1446	0,1257	

Table 5.14 Inferential statistics for the relationship between ROA and CSR variables for the mining and primary production sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

According to the p-values and F-statistic values of this analysis, it's not possible to reject the null hypothesis regarding the relationship between CSR variables and ROA. Despite the lack of significance of the overall, the negative relationship between ENV and the financial performance variable appears as significant in *t+1* and, in this sense (even considering the low total p-value), it can be considered as relevant.

Exploration, Drilling and Production (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	3,6322	6,10E-06	***
R^2	0,1284	ENV	0,0738	0,9808	
Min. Residual	-16,28971	COM	-1,1267	0,2666	
Max. Residual	13,37712	DIV	-2,8893	0,0815	°
Residual Standard Error (degrees of freedom)	6,077 (138)	EMP	-1,9722	0,5113	
Observations (H; complete pairs)	160 (155;146)	HUM	-3,3017	0,0261	*
F-Statistic (degrees of freedom)	2,905 (7;138)	PRO	3,5124	0,2519	
p-value	0,007271	CGOV	0,1135	0,9336	

Exploration, Drilling and Production (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	1,9987	0,041	*
R^2	0,1241	ENV	0,7207	0,8481	
Min. Residual	-20,243	COM	-3,0702	0,0295	*
Max. Residual	14,566	DIV	-0,8716	0,6764	
Residual Standard Error (degrees of freedom)	7,622 (136)	EMP	6,1167	0,1044	
Observations (H; complete pairs)	160 (157;144)	HUM	-4,6401	0,0162	*
F-Statistic (degrees of freedom)	2,752 (7;136)	PRO	2,5975	0,4987	
p-value	0,01051	CGOV	-1,2034	0,4475	

Exploration, Drilling and Production (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	1,7588	0,0965	°
R^2	0,08053	ENV	-1,5587	0,705	
Min. Residual	-23,6469	COM	2,3773	0,1015	
Max. Residual	22,2876	DIV	3,4481	0,1306	
Residual Standard Error (degrees of freedom)	8,133 (137)	EMP	-2,9066	0,4763	
Observations (H; complete pairs)	160 (158;145)	HUM	-4,8465	0,0206	*
F-Statistic (degrees of freedom)	1,714 (7;137)	PRO	2,3015	0,5737	
p-value	0,1105	CGOV	-0,3287	0,852	

Table 5.15 Inferential statistics for the relationship between ROA and CSR variables for the exploration, drilling and production sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis produces p-values and F-statistic values which can reject the null hypothesis in *t* and *t+1*, thereby giving significance to the model, entailing the presence of correlation between CSR variables and ROA. In particular, HUM seems constantly negatively correlated in all three periods, while the relationship with COM appears as significantly negative only in *t+1*.

Refining, Transportation and Marketing (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	5,0363	9,80E-07	***
R^2	0,03488	ENV	-4,2982	0,448	
Min. Residual	-14,645	COM	0,2374	0,892	
Max. Residual	12,716	DIV	0,3567	0,876	
Residual Standard Error (degrees of freedom)	6,28 (68)	EMP	-3,2048	0,523	
Observations (H; complete pairs)	85 (79;76)	HUM	-1,937	0,5022	
F-Statistic (degrees of freedom)	0,3511 (7;68)	PRO	3,1778	0,699	
p-value	0,927	CGOV	0,6756	0,822	

Refining, Transportation and Marketing (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	3,8292	4,59E-05	***
R^2	0,1135	ENV	-6,1102	0,262	
Min. Residual	-13	COM	-0,3062	0,853	
Max. Residual	12,8	DIV	2,0296	0,355	
Residual Standard Error (degrees of freedom)	5,961 (67)	EMP	-4,0082	0,413	
Observations (H; complete pairs)	85 (78;75)	HUM	-1,5465	0,572	
F-Statistic (degrees of freedom)	1,226 (7;67)	PRO	-2,0903	0,795	
p-value	0,3012	CGOV	-4,0294	0,177	

Refining, Transportation and Marketing (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	2,7223	0,0003	***
R^2	0,1563	ENV	-2,0612	0,6375	
Min. Residual	-10,276	COM	-0,8739	0,5131	
Max. Residual	8,056	DIV	1,3927	0,4345	
Residual Standard Error (degrees of freedom)	4,792 (66)	EMP	-2,5699	0,4955	
Observations (H; complete pairs)	85 (77;74)	HUM	-1,6348	0,4619	
F-Statistic (degrees of freedom)	1,746 (7;66)	PRO	4,1777	0,5164	
p-value	0,1135	CGOV	-5,8326	0,0211	*

Table 5.16 Inferential statistics for the relationship between ROA and CSR variables for the refining, transportation and marketing sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis shows the impossibility of rejecting the null hypothesis in all the periods, entailing that the models cannot be considered significantly different from zero.

Oil & Gas Related Products and Services (t)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	6,48	1,86E-10	***
R^2	0,2126	ENV	11,497	0,013	*
Min. Residual	-11,86	COM	-3,634	0,0719	*
Max. Residual	11,393	DIV	1,924	0,3256	
Residual Standard Error (degrees of freedom)	4,532 (92)	EMP	-4,322	0,2153	
Observations (H; complete pairs)	120 (107;100)	HUM	3,458	0,1696	
F-Statistic (degrees of freedom)	3,548 (7;92)	PRO	7,693	0,0422	*
p-value	0,002026	CGOV	-3,848	0,0063	**

Oil & Gas Related Products and Services (t+1)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	4,682	3,16E-05	***
R^2	0,3734	ENV	16,747	0,003	**
Min. Residual	-13,4866	COM	-2,637	0,2886	
Max. Residual	13,3804	DIV	1,688	0,471	
Residual Standard Error (degrees of freedom)	5,49 (94)	EMP	1,279	0,7612	
Observations (H; complete pairs)	120 (107;102)	HUM	2,004	0,5154	
F-Statistic (degrees of freedom)	8,002 (7;94)	PRO	11,014	0,0167	*
p-value	1,34E-07	CGOV	-10,258	2,41E-08	***

Oil & Gas Related Products and Services (t+2)		Variable	Coefficient	Pr(>|t|)	Significance
		(intercept)	4,1598	5,82E-05	***
R^2	0,3572	ENV	1,2137	0,8132	
Min. Residual	-12,5953	COM	1,1036	0,6489	
Max. Residual	11,8221	DIV	4,9567	0,024	*
Residual Standard Error (degrees of freedom)	5,078 (92)	EMP	-0,5566	0,8861	
Observations (H; complete pairs)	120 (107;100)	HUM	0,0617	0,8325	
F-Statistic (degrees of freedom)	7,303 (7;92)	PRO	10,40667	0,0148	*
p-value	5,92E-07	CGOV	-8,9704	2,16E-07	***

Table 5.17 Inferential statistics for the relationship between ROA and CSR variables for the oil & gas related products and services sample. Significance codes: 0: ***, 0,001: **, 0,01: *, 0,05: °

The analysis produces p-values and F-statistic values which enable to reject the null hypothesis. In particular, the ENV indicator seems to be positively correlated with ROA in *t* and *t+1*, while the CGOV results extremely correlated in negative terms with the financial indicator in all the considered periods. Moreover, it's possible to identify a positive relationship between PRO and ROA in *t*, *t+1* and *t+2*, while DIV and COM appear, respectively, positively correlated in *t+2* and negatively correlated in *t*.

5.2 Considerations on the Analysis Outcome

The results of the set of analyses can be summed up in order to have a more complete view on the overall study, to better understand whether the relationship between the CSR variables and the financial performance indicator follows a specific path. More specifically, the following tables contain the outcome of each analysis organised per CSR variables (in rows) and per sample (in vertical); the sign "+" indicating the presence of a positive correlation between the dependent and the independent variables, while, on the other hand, the sign "-" underlines a negative relationship. A relation is considered significant if the probability of observing values equal or greater than t (Pr(>|t|) is lower than 0,1. Cells in light grey indicate the cases in which the null hypothesis cannot be rejected.

ROE		TOT	O&G	MIN	MIN&PP	EDP	RTM	OILREL
ENV	t	+	+	+	+			+
	t+1				+			+
	t+2			+	+			
COM	t					-		
	t+1					-		
	t+2							
DIV	t		+				+	
	t+1							
	t+2	+	+					
EMP	t					-		
	t+1							
	t+2	-	-					
HUM	t	-	-			-		
	t+1	-	-			-		
	t+2	-	-	-		-		
PRO	t						-	
	t+1						-	
	t+2							
CGOV	t	-	-					-
	t+1	-	-					-
	t+2	-	-		-			-

Table 5.18 Summary of the results of the inferential analyses of the relationship between ROE and CSR variables.

The table shows different paths followed by each CSR variable. In particular, the CGOV indicator and the HUM indicator appears to be negatively correlated especially for oil & gas industry, while environment-related activities positively affect corporate performance in the mining sector. Other variables, such as PRO and EMP seems to be unlinked to ROE, with positive and negative effects which are probably balanced in financial terms.

ROA		TOT	O&G	MIN	MIN&PP	EDP	RTM	OILREL
ENV	t			+	+			+
	t+1			+	+			+
	t+2							
COM	t							-
	t+1					-		
	t+2			-	-			
DIV	t	-				-		
	t+1							
	t+2	+	+					+
EMP	t							
	t+1							
	t+2		-					
HUM	t		-			-		
	t+1		-		-	-		
	t+2			-		-		
PRO	t	+	+	+				+
	t+1	+		+				+
	t+2	+			-			+
CGOV	t			-				-
	t+1	-	-					-
	t+2	-	-				-	-

Table 5.19 Summary of the results of the inferential analyses of the relationship between ROA and CSR variables.

The table shows that also the relationship between the CSR variables and ROA seems to follow a pattern, with some indicators tending to be positively correlated and other indicators more commonly negatively linked. In particular, CGOV, HUM and EMP seem to reduce the profitability of the companies belonging to both the oil & gas and the mining industries, while other variables - such as PRO, ENV and DIV - positively affect ROA. Finally, COM appears to be ineffective on financial performance. Moreover, the correlation between ROA and the CSR variables apparently follow also a time pattern. In fact, it's visible how ENV tends to have effect on the short-term, affecting the corporate profitability immediately in *t* and *t+1*, while CGOV, DIV and EMP have higher impact in the long-term, creating a correlation in in *t+1* and *t*+2.

Therefore, we can build up some final considerations on the impact that each CSR variable have resulted to create on financial performance:

- Environment: the ENV indicator produces positive effects on corporate financial performance, in particular in the mining sector and in a short-term perspective. In fact, environment-linked initiatives are probably the most effective in rapidly

capturing the favour of the market, especially in a high natural resources exploitation sector as the extractive industry.

- Community engagement: practices regarding the engagement of the communities residing nearby the operation site seem to be generally ineffective on corporate profitability.
- Diversity: initiatives related with workforce and management diversity appear to positively affect financial performance in the long-term, especially in the oil & gas industry. The positive result could be due to the fact that a higher level of heterogeneity in the company can improve the decision-making process and, therefore, it can produce better results in a long-term horizon.
- Employees: practices on employee relations seem to produce no effect on ROE and negative long-term effects on ROA, meaning that costs related to this topic are probably higher than the outcoming benefits.
- Human rights: CSR initiatives linked with human rights negatively affect company profitability, in particular in the oil & gas industry. In this sense, it's possible that the outcome derives from the low credibility that extractive industry has in terms of respect of indigenous rights, with many actions considered by the audience as a form of greenwashing.
- Product: practices regarding product safety and quality don't appear to affect financial performance in terms of ROE, while they probably provoke positive outcomes when analysing ROA in the both the mining and oil & gas industries.
- Corporate governance: the activities embracing corporate governance are visibly affecting corporate profitability in negative terms. More specifically, it seems that the CGOV variable tends to have negative effects on the financial indicators in a long-term perspective.

The evidence that some categories of activities have negative influence on corporate profitability doesn't involve that companies should suddenly stop the implementation of such initiatives, but it wants to suggest a different approach when dealing with corporate social responsibility. For example, a better integration of human rights concerns into the strategy of the company may help in overcoming the audience doubts about greenwashing techniques. On the other hand, the necessity of respecting the regulation in force entails that companies may be obliged to implement specific activities in order to stay in the market, even if these activities are not profitable for the firm. In this sense, nowadays companies still need to keep the social license to operate as the first goal of their CSR strategy, with a consequent reduction of

flexibility, making the integration of social activities into the overall corporate strategy harder. Besides the importance of aligning the two strategies, some scholar are presenting new and different methods which may help a company in concurring for both profitability and social responsibility: in particular, Nahon-Serfaty & Pedraza Díaz (2017) proposed a non-strategic approach to corporate social responsibility, which (despite the disruptive name) aims at overtaking the classical form of CSR, by going beyond traditional concepts in favour of a total integration of the firm into the community in which it operates. Abandoning pre-established goals (such as the license to operate) may comport for a company difficulties in understanding where to direct its efforts but, at the same time, it may provide a better view of the actual market situation and a higher level of flexibility, with the results of enabling the firm to "become tactical" and to exploit opportunities which weren't visible before. At the same time, the full integration of the company into the community produces what the authors call "transformational conversation", a deeper level of engagement between the two actors, which can lead to the alignment between the company objectives and the community interests, so that, rather than creating a compromise point, the two parties starts to operate together for creating and reaching common goals. Nevertheless, the non-strategic approach is still to be fully developed and proven, therefore it only represents a possible solution for the future, which cannot be considered as fully relevant at the moment. In this sense, the integration of corporate strategy and corporate CSR strategy still embodies the best way for efficiently exploiting the company's resources and efforts.

6. Conclusion and future directions

The initial aim of this paper was the evaluation of the effect that CSR activities have on the financial performance of companies belonging to the extractive sector. The different types of CSR activities that were considered and the division of the sample into sub-sectors gives a good sight of how the relationship hugely varies according to the CSR indicator and to the chosen sub-sector. Moreover, the analysis was developed with three different time horizons, which provides a further possibility of interpretation of the models, to evaluate the delay that some activities may undergo. In general, there has been evidence of specific tendencies followed by some social responsibility variables in terms of effect on corporate profitability, with environment, diversity and product quality efforts positively affecting CFP and, on the other hand, human rights and corporate governance seeming to provoke worse financial results. The most important outcome of the research probably deals with the need of better integration between CSR strategy and corporate strategy, a topic that still has to be employed in a large part of the MOG sector, where companies are still struggling among the needs of obtaining a social license to operate, of reducing the operations impact and of avoiding accuses of greenwashing. In this sense, we showed how small fundamental changes in the way of doing business may serve as catalysts for the corporate competitive advantage and, therefore, to its profitability, as shown by the case of pro-diversity activities in the oil & gas sector.

Some directions for future researches on the same topic may be the analysis of how corporate social responsibility influences financial indicators different from ROA and ROE, in particular those regarding the competitive performance (such as the Tobin Q) and the financial markets reaction to CSR activities. Moreover, an interesting development could be the study of delays which are higher than two years, in order to understand whether some phenomena are out of the range of this paper. Finally, two further paths could derive from the works of Sayekti (2015) and of Nahon-Serfaty & Pedraza Díaz (2017), to finally solve the dualism between strategic CSR and contemporary theories going against the grain.

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Appendix A: List of companies belonging to the sample

Company's Name	Sub-sector
AK STEEL HOLDING CORPORATION	MINING RELATED ACTIVITIES
ALLEGHENY TECHNOLOGIES INCORPORATED	MINING & PRIMARY PRODUCTION
ANADARKO PETROLEUM CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
APACHE CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
BAKER HUGHES INCORPORATED	OIL RELATED SERVICES AND EQUIPMENT
BRISTOW GROUP INC.	OIL RELATED SERVICES AND EQUIPMENT
CABOT OIL & GAS CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
CARBO CERAMICS INC.	OIL RELATED SERVICES AND EQUIPMENT
CARPENTER TECHNOLOGY CORPORATION	MINING & PRIMARY PRODUCTION
CARRIZO OIL & GAS, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
CENTURY ALUMINUM COMPANY	MINING & PRIMARY PRODUCTION
CHENIERE ENERGY, INC.	OIL & GAS REFINING, TRANSPORTATION & MARKETING
CHESAPEAKE ENERGY CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
CHEVRON CORPORATION	OIL & GAS REFINING, TRANSPORTATION & MARKETING
CIMAREX ENERGY CO.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
CIRCOR INTERNATIONAL, INC.	OIL RELATED SERVICES AND EQUIPMENT
CLEAN ENERGY FUELS CORP.	OIL & GAS REFINING, TRANSPORTATION & MARKETING
COEUR MINING, INC.	MINING & PRIMARY PRODUCTION
COMMERCIAL METALS COMPANY	MINING & PRIMARY PRODUCTION
CONCHO RESOURCES INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
CONOCOPHILLIPS	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
CONTINENTAL RESOURCES, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
CVR ENERGY, INC.	OIL & GAS REFINING, TRANSPORTATION & MARKETING
DENBURY RESOURCES INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
DEVON ENERGY CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
DIAMOND OFFSHORE DRILLING, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
DRIL-QUIP, INC.	OIL RELATED SERVICES AND EQUIPMENT
ENBRIDGE ENERGY MANAGEMENT, L.L.C.	OIL & GAS REFINING, TRANSPORTATION & MARKETING
ENERGEN CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
EOG RESOURCES, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
EQT CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
EXXON MOBIL CORPORATION	OIL & GAS REFINING, TRANSPORTATION & MARKETING
FLOTEK INDUSTRIES, INC.	OIL RELATED SERVICES AND EQUIPMENT
FREEPORT-MCMORAN INC.	MINING & PRIMARY PRODUCTION
GEOSPACE TECHNOLOGIES CORPORATION	OIL RELATED SERVICES AND EQUIPMENT
GIBRALTAR INDUSTRIES, INC.	MINING & PRIMARY PRODUCTION
GULFPORT ENERGY CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
HALLIBURTON COMPANY	OIL RELATED SERVICES AND EQUIPMENT
HARSCO CORPORATION	MINING RELATED ACTIVITIES
HAYNES INTERNATIONAL, INC.	MINING RELATED ACTIVITIES
HECLA MINING COMPANY	MINING & PRIMARY PRODUCTION
HELIX ENERGY SOLUTIONS GROUP, INC.	OIL RELATED SERVICES AND EQUIPMENT
HELMERICH & PAYNE, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION

Company's Name (continues)	Sub-sector (continues)
HESS CORPORATION	OIL & GAS REFINING, TRANSPORTATION & MARKETING
HOLLYFRONTIER CORPORATION	OIL & GAS REFINING, TRANSPORTATION & MARKETING
KAISER ALUMINUM CORPORATION	MINING & PRIMARY PRODUCTION
KINDER MORGAN, INC.	OIL & GAS REFINING, TRANSPORTATION & MARKETING
MARATHON OIL CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
MARATHON PETROLEUM CORPORATION	OIL & GAS REFINING, TRANSPORTATION & MARKETING
MATERION CORPORATION	MINING & PRIMARY PRODUCTION
MATRIX SERVICE COMPANY	OIL RELATED SERVICES AND EQUIPMENT
MURPHY OIL CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
MURPHY USA INC. *	OIL RELATED SERVICES AND EQUIPMENT
NACCO INDUSTRIES, INC.	MINING & PRIMARY PRODUCTION
NATIONAL OILWELL VARCO, INC.	OIL RELATED SERVICES AND EQUIPMENT
NATURAL GAS SERVICES GROUP, INC.	OIL RELATED SERVICES AND EQUIPMENT
NEWFIELD EXPLORATION COMPANY	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
NEWMONT MINING CORPORATION	MINING & PRIMARY PRODUCTION
NEWPARK RESOURCES, INC.	OIL RELATED SERVICES AND EQUIPMENT
NOBLE ENERGY, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
NORTHERN OIL AND GAS, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
NUCOR CORPORATION	MINING & PRIMARY PRODUCTION
OASIS PETROLEUM INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
OCCIDENTAL PETROLEUM CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
OCEANEERING INTERNATIONAL, INC.	OIL RELATED SERVICES AND EQUIPMENT
OIL STATES INTERNATIONAL, INC.	OIL RELATED SERVICES AND EQUIPMENT
ONEOK, INC.	OIL & GAS REFINING, TRANSPORTATION & MARKETING
PARKER DRILLING COMPANY	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
PATTERSON-UTI ENERGY, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
PHI, INC.	OIL RELATED SERVICES AND EQUIPMENT
PHILLIPS 66	OIL & GAS REFINING, TRANSPORTATION & MARKETING
PIONEER NATURAL RESOURCES COMPANY	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
QEP RESOURCES, INC.	OIL RELATED SERVICES AND EQUIPMENT
RANGE RESOURCES CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
RELIANCE STEEL & ALUMINUM CO.	MINING & PRIMARY PRODUCTION
RIGNET, INC.	OIL RELATED SERVICES AND EQUIPMENT
ROYAL GOLD, INC.	MINING & PRIMARY PRODUCTION
RPC, INC.	OIL RELATED SERVICES AND EQUIPMENT
SCHLUMBERGER N.V.	OIL RELATED SERVICES AND EQUIPMENT
SCHNITZER STEEL INDUSTRIES, INC.	MINING RELATED ACTIVITIES
SEACOR HOLDINGS INC.	OIL RELATED SERVICES AND EQUIPMENT
SEMGROUP CORPORATION	OIL & GAS REFINING, TRANSPORTATION & MARKETING
SM ENERGY COMPANY	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
SOUTHWESTERN ENERGY COMPANY	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
STEEL DYNAMICS, INC.	MINING & PRIMARY PRODUCTION
SUPERIOR ENERGY SERVICES, INC.	OIL RELATED SERVICES AND EQUIPMENT
TARGA RESOURCES CORP.	OIL & GAS REFINING, TRANSPORTATION & MARKETING
TETRA TECHNOLOGIES, INC.	OIL RELATED SERVICES AND EQUIPMENT
THE WILLIAMS COMPANIES, INC.	OIL & GAS REFINING, TRANSPORTATION & MARKETING

Company's Name (continues)	Sub-sector (continues)
TIMKENSTEEL CORPORATION	MINING RELATED ACTIVITIES
UNIT CORPORATION	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
UNITED STATES STEEL CORPORATION	MINING & PRIMARY PRODUCTION
VALERO ENERGY CORPORATION	OIL & GAS REFINING, TRANSPORTATION & MARKETING
W&T OFFSHORE, INC.	OIL & GAS EXPLORATION, DRILLING AND PRODUCTION
WORLD FUEL SERVICES CORPORATION	OIL & GAS REFINING, TRANSPORTATION & MARKETING
WORTHINGTON INDUSTRIES, INC.	MINING RELATED ACTIVITIES

Appendix B: Descriptive statistics of CFP indicators

(ROE)	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE
Observations	566	432	134
Average	8,12	8,82	5,88
Median	8,51	9,18	6,18
StDev	13,87	14,79	10,05
(ROA)	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE
Observations	630	480	150
Average	1,20	1,32	0,80
Median	3,01	3,26	2,41
StDev	9,80	10,34	7,81

Table B.1 Descriptive statistics of the indicators for the analysis of CFP
(overall sample and divided per business sector)

(ROE)	O&G EDP	O&G RTM	OIL RELATED
Observations	200	99	133
Average	7,52	12,91	7,74
Median	8,84	11,36	8,85
StDev	10,15	23,73	10,97
(ROE)	MINING & PP	MINING RELATED	
Observations	100	34	
Average	5,52	6,93	
Median	5,99	8,96	
StDev	7,63	15,24	

Table B.2 Descriptive statistics for ROE indicator, with sample divided into categories:
- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

(ROA)	O&G EDP	O&G RTM	OIL RELATED
Observations	219	109	152
Average	-0,73	3,41	2,79
Median	2,60	4,05	3,83
StDev	12,64	6,67	8,02
(ROA)	MINING & PP	MINING RELATED	
Observations	85	30	
Average	2,08	2,98	
Median	3,04	4,56	
StDev	6,43	8,17	

Table B.3 Descriptive statistics for ROA indicator, with sample divided into categories:
- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

Appendix C: CSR variables in the KLD STAT dataset

The KLD STAT dataset is organised in seven categories of CSR-related activities, each one containing positive variables (indicated by *str*) and negative variables (indicated by *con*). The following tables contain the lists of the variables belonging to each category.

ENVIRONMENT			
POSITIVE	ENV-str-A	Environmental Opportunities: Opportunities in Clean Tech	How companies are taking advantages of opportunity in the market for environmental technologies. Scoring based on innovation capacity, strategic development initiatives and revenues from clean technologies.
	ENV-str-B	Pollution & Waste: Toxic Emissions and Waste	How companies manage the risk of liabilities associated with pollution, contamination and emission of toxic or cancer-causing substances. Scoring based on well-defined strategies (ambitious programs or targets to reduce toxic emissions) and disclosed performance metrics.
	ENV-str-C	Pollution & Waste: Packaging Materials and Waste	How companies face the risk of added costs or loss of access to markets coming from new regulations regarding product packaging, end-of-life recycling or disposal of packaging. Scoring based on proactive reduction of the environmental impact due to packaging.
	ENV-str-D	Climate Change: Carbon Emissions	How companies manage the risk of higher costs linked to carbon pricing or regulatory caps. Scoring based on programs for the reduction and the mitigation of carbon intensity.
	ENV-str-G	Environmental Management Systems	Scoring based on the presence of an Environmental Management System (EMS) and whether it is certified by third party standards (ISO standards for example)
	ENV-str-H	Natural Capital: Water Stress	How companies face the risk of water shortages, lost access to markets or higher costs related to water supply. Scoring based on water management strategy or targets and water usage over time.
	ENV-str-I	Natural Capital: Biodiversity and Land Use	How company face the risk of lost markets access or higher costs due to operations that damage fragile ecosystems. Scoring based on policies and programs regarding biodiversity, land use and community impact.

ENVIRONMENT (continues)			
POSITIVE	ENV-str-J	Natural Capital: Raw Material Sourcing	How companies face the reputational risks related with usage of raw materials with high environmental impacts. Scoring based on management metrics related to sourcing raw materials of concern.
	ENV-str-K	Climate Change: Financing Environmental Impact	How companies face the reputational risks related with exposure to environmental concerns facing borrowers. Scoring based on environmental due diligence and "green" financing.
	ENV-str-L	Environmental Opportunities: Opportunities in Green Building	How companies are taking advantage of opportunities to develop/refurbish eco-friendly buildings. Scoring based on green property initiatives, tenant engagement and urban site criteria.
	ENV-str-M	Environmental Opportunities: Opportunities in Renewable Energy	How companies are taking advantage of opportunities linked to the development of renewable power production. Scoring based on exposure to preferential policies, on strategic investments in renewable power generation and renewable capacity as % of total.
	ENV-str-N	Pollution & Waste: Electronic Waste	How companies producing or selling electronic products face the regulatory risks associated with recycling and disposal of end-of-life electronic products. Scoring based on exposure to e-waste regulations and on target and programs to collect and recycle electronic waste.
	ENV-str-O	Climate Change: Energy Efficiency	How companies face volatile or increased energy costs across their operations. Scoring based on exposure to energy intensive businesses and efforts to reduce energy consumption.
	ENV-str-P	Climate Change: Product Carbon Footprint	How companies face higher input or production costs for carbon-intensive products due to volatile energy costs in a carbon-constrained world. Scoring based on companies' reliance on carbon intensive products and efforts to reduce the carbon footprint of their supply chain.
	ENV-str-Q	Climate Change: Climate Change Vulnerability	How companies face the risks to insured assets or individuals related to the physical effects of climate change. Scoring based on integration of climate change risks into business strategy and risk management processes.
	ENV-str-X	Environment: Other Strengths	Firm's environmental management policies, programs and initiatives not covered by any other MSCI ESG environmental metric.

ENVIRONMENT (continues)			
NEGATIVE	ENV-con-D	Toxic Emissions and Waste	Measure of the severity of controversies related to a firm's operational non-GHG emission or releases to land, water and/or air. This indicator is not influenced by impacts on local communities (as there is another indicator dedicated to it).
	ENV-con-F	Energy & Climate Change	Measure of the severity of controversies related to a firm's climate change and energy-related impacts.
	ENV-con-H	Biodiversity and Land Use	Measure of the severity of controversies related to a company's use or management of natural resources where there is an alleged or anticipated negative impact on the environment, especially in ecologically sensitive areas.
	ENV-con-I	Operational Waste (non-hazardous)	Measure of the severity of controversies related to a firm's non-hazardous, non-toxic operational waste, i.e. waste emissions or effluents produced during normal operations and/or part of the production of a product.
	ENV-con-J	Supply Chain Management	Measure of controversies related to the sourcing raw materials or other inputs that have a substantially negative environmental impact.
	ENV-con-K	Water Stress	Measure of the severity of controversies related to a firm's water management practices. This indicator does not capture water pollution cases.
	ENV-con-X	Environment: Other Concerns	Measure of any environmental issue that falls outside of the other indicators.

COMMUNITY			
POSITIVE	COM-str-H	Community Engagement	Identifies that have notable community engagement programs concerning local communities in which the firm has major operations. Scoring based on community assessments and support for local economic and social infrastructure development.
NEGATIVE	COM-con-B	Impact on Local Communities	Measure of the severity of controversies related to a firm's interactions with communities in which it does business.

HUMAN RIGHTS			
POSITIVE	HUM-str-D	Indigenous People's Relations	Identifies companies that have established relations with indigenous people near its proposed or current operations that respect the sovereignty, land, culture human rights and intellectual property.
	HUM-str-X	Human Rights Policies and Initiatives	Identifies companies that have undertaken exceptional human rights initiatives or have otherwise shown industry leadership on human right issues not covered by other indicators.
NEGATIVE	HUM-con-J	Civil Liberties	Measure of the severity of controversies related to the impact of a firm's operations on civil liberties.
	HUM-con-K	Human Rights Concerns	Measure of the severity of controversies related to the impact of a firm's operations on human rights.
	HUM-con-X	Human Rights: Other Concerns	Measure of any human rights issue that fall outside of the other more targeted indicators.

EMPLOYEE RELATIONS			
POSITIVE	EMP-str-A	Union Relations	Identifies companies with high union density.
	EMP-str-C	Cash Profit Sharing	Identifies companies that have a cash profit-sharing program through which they have recently made distributions to a significant proportion of the workforce.
	EMP-str-D	Involvement	Identifies companies that encourage workers involvement via employee stock ownership or purchase plans.
	EMP-str-G	Health & Safety	Identifies companies that have strong employee health and safety programs.
	EMP-str-H	Supply Chain Labour Standards	How companies face the risks of production disruptions and brand value damage due to sub-standard treatment of workers in the company's supply chain. Scoring based on policies meeting international norms, programs to verify compliance with policies and incentives for the compliance.
	EMP-str-L	Human Capital Development	How companies can attract, retain and develop human capital based on their provision of benefits, training and development programs and employee engagement; how companies avoid reduced productivity due to poor job satisfaction. Scoring based on a proactive management of human capital.

EMPLOYEE RELATIONS (continues)			
POSITIVE	EMP-str-M	Labour Management	How companies manage their workforce to minimize the risk of workflow disruption due to labour unrest or reduced productivity due to poor job satisfaction. Scoring based on the provision of strong employee benefits and performance incentives and on the offer to employee of engagement and professional development programs.
	EMP-str-N	Stakeholder Opposition: Controversial Sourcing	How companies manage their risks of incurring regulatory compliance costs, reputational damage or supply chain disruptions resulting from reliance on raw materials that originate in areas associated with severe human rights and labour rights abuses. Scoring based on tracing of raw materials and certification of obtaining with minimized social harm.
	EMP-str-X	Human Capital: Other Strengths	Identifies best-in-class management performance in areas of human capital not covered by other more specific indicators
NEGATIVE	EMP-con-A	Collective Bargain & Unions	Measure of the severity of controversies related to a firm's union relations practices. Organized strikes by non-unionized employees are also captured here.
	EMP-con-B	Health & Safety	Measure of the severity of controversies related to the health and safety of a firm's employees, temps, contractors and franchise employees.
	EMP-con-F	Supply Chain Labour Standards	Measure of the severity of controversies related to workers in a firm's supply chain.
	EMP-con-G	Child Labour	Measure of the severity of child labour controversies in a firm's own operations or its supply chain.
	EMP-con-H	Labour Management Relations	Measure of the severity of controversies related to a firm's labour-management relations. Mistreatment of workers and controversies on working hours and wages are included here.
	EMP-con-X	Labour Rights & Supply Chain: Other Concerns	Identifies companies involved in employee relations controversies not covered by other more specific indicators.

DIVERSITY			
POSITIVE	DIV-str-B	Representation	Identifies companies with at least one woman among the executive management team.
	DIV-str-C	Board Diversity: Gender	Identifies companies with strong gender diversity on their board of directors.
NEGATIVE	DIV-con-A	Discrimination & Workforce Diversity	Measure of the severity of controversies related to a firm's workforce diversity., including its own employees, contractors and franchise employees.
	DIV-con-C	Board Diversity: Gender	Identifies companies with no women on their board of directors.

PRODUCT			
POSITIVE	PRO-str-A	Product Safety & Quality	How companies manage the risk of facing major product recalls or loss of customer trust due to major product quality concern. Scoring based on proactive management of product quality.
	PRO-str-C	Social Opportunities: Access to Healthcare	How companies are taking advantage of opportunities for long term growth and how they are protecting their license to operate through efforts to improve access to healthcare in developing countries or for under-served populations in developed countries.
	PRO-str-D	Social Opportunities: Access to Finance	How companies are providing lending, financing or products to under-represented or under-banked communities. Scoring based on the offer of products and services to communities with limited or no access to financial products.
	PRO-str-E	Social Opportunities: Access to Communication	How companies are taking advantage of opportunities for growing in historically underserved markets, including developing countries and underserved populations in developed countries. Scoring based on presence of considerable operations in developing countries or activities focused on expanding access through philanthropic initiatives.
	PRO-str-F	Social Opportunities: Opportunities in Nutrition & Health	How companies are taking advantage of growth opportunities in the market for healthier products. Scoring based on the offer of products with improved nutritional profile.

PRODUCT (continues)			
POSITIVE	PRO-str-K	Product Safety: Chemical Safety	How companies manage the risk of losing access to markets or higher costs related to need for reformulating their products due to the presence of chemicals of concern. Scoring based on proactive elimination of concern from their products ahead of regulatory changes.
	PRO-str-H	Product Safety: Financial Product Safety	How companies manage the risk of incurring costs associated with credit losses, litigation and regulatory changes brought by offering products with lack of transparency or likely to be financially unsustainable to end-user. Scoring based on offer of financial products based on borrower's ability to repay.
	PRO-str-I	Product Safety: Privacy & Data Security	How companies manage the risk of incurring reputational damage or legal liability due to data security breach or controversial use of personal data. Scoring based on comprehensive privacy policies and data security management systems.
	PRO-str-J	Product Safety: Responsible Investment	How companies avoid ESG-related risks in their investment portfolios. Scoring based on mitigation of ESG risks and on integration of ESG risks analysis into due diligence.
	PRO-str-K	Product Safety: Insuring Health & Demographic Risk	How companies manage emerging insurance risks associated with public health trends and demographic change. Scoring based on presence of systems to identify and model emerging risks associated with health and demographic changes.
NEGATIVE	PRO-con-A	Product Safety & Quality	Measure of the severity of controversies related to the quality and/or safety of a firm's products and services.
	PRO-con-D	Marketing & Advertising	Measure of the severity of controversies related to a firm's marketing and advertising practices.
	PRO-con-E	Anticompetitive Practices	Measure of the severity of controversies related to a firm's anticompetitive business practices (B2C relations).
	PRO-con-F	Customer Relations	Measure of the severity of controversies related to how a firm treats its customers or potential customers.
	PRO-con-G	Privacy & Data Security	Measure of the severity of controversies related to a firm's privacy and data security practices.
	PRO-con-X	Customers: Other Concerns	Measure of the severity of customer-related controversies not covered by other more specific indicators.

CORPORATE GOVERNANCE			
POSITIVE	CGOV-str-G	Corruption & Instability	How companies face regulatory risks or lost market access due to corruption scandals or political and social instability. Scoring based on the reliance on government contracts, on operations in regions facing political instability or high perceived corruption levels and on presence of transparency and anti-bribery programs.
	CGOV-str-H	Financial System Risk	How companies face enhanced regulatory scrutiny as result of their contributions to systemic risk in financial markets. Scoring based on commitment to ethical standards and on presence of governance structures that integrates long-term performance and risk measures in incentives (avoidance of insider trading, front-running and similar practices).
NEGATIVE	CGOV-con-K	Governance Structures	Measure of the severity of controversies related to a firm's corporate governance practices. This indicator includes opposition to shareholders or unethical behavior of directors and/or senior executives.
	CGOV-con-L	Controversial Investments	Measure of the severity of controversies related to the social and environmental impact of a firm's lending, underwriting and financing activities.
	CGOV-con-M	Bribery & Fraud	Measure of the severity of controversies related to a firm's business ethics practices.
	CGOV-con-X	Governance: Other Concerns	Measure of the severity of governance-related controversies not covered by other more specific indicators.

Appendix D: Descriptive statistics of CSR indicators

ENV	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE	O&G EDP
Observations	478	363	115	160
Average	0,01	0,00	0,02	0,00
Median	0,00	0,00	0,00	0,00
StDev	0,14	0,15	0,13	0,17
	O&G RTM	OIL RELATED	MINING&PP	MINING RELATED
Observations	85	118	85	30
Average	-0,01	0,01	0,03	0,02
Median	0,00	0,00	0,00	0,00
StDev	0,14	0,12	0,14	0,11

Table D.1 Descriptive statistics for ENV indicator, with sample divided into categories:
- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

COM	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE	O&G EDP
Observations	478	363	115	160
Average	0,04	0,07	-0,04	0,09
Median	0,00	0,00	0,00	0,00
StDev	0,41	0,44	0,28	0,49
	O&G RTM	OIL RELATED	MINING&PP	MINING RELATED
Observations	85	118	85	30
Average	-0,04	0,12	-0,05	-0,03
Median	0,00	0,00	0,00	0,00
StDev	0,43	0,35	0,31	0,19

Table D.2 Descriptive statistics for COM indicator, with sample divided into categories:
- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

DIV	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE	O&G EDP
Observations	478	363	115	160
Average	-0,19	-0,20	-0,14	-0,19
Median	0,00	-0,33	0,00	0,00
StDev	0,33	0,33	0,32	0,32
	O&G RTM	OIL RELATED	MINING&PP	MINING RELATED
Observations	85	118	85	30
Average	-0,07	-0,32	-0,14	-0,13
Median	0,00	-0,33	0,00	0,00
StDev	0,37	0,27	0,33	0,28

Table D.3 Descriptive statistics for DIV indicator, with sample divided into categories:
- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

EMP	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE	O&G EDP
Observations	478	363	115	160
Average	0,03	0,03	0,01	0,04
Median	0,00	0,00	0,00	0,00
StDev	0,18	0,16	0,21	0,18
	O&G RTM	OIL RELATED	MINING&PP	MINING RELATED
Observations	85	118	85	30
Average	0,04	0,03	0,02	0,01
Median	0,00	0,00	0,00	0,00
StDev	0,16	0,14	0,20	0,22

Table D.4 Descriptive statistics for EMP indicator, with sample divided into categories:
- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

HUM	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE	O&G EDP
Observations	478	363	115	160
Average	0,19	0,22	0,11	0,32
Median	0,00	0,00	0,00	0,00
StDev	0,35	0,37	0,25	0,42
	O&G RTM	OIL RELATED	MINING&PP	MINING RELATED
Observations	85	118	85	30
Average	0,18	0,11	0,14	0,03
Median	0,00	0,00	0,00	0,00
StDev	0,33	0,28	0,27	0,12

Table D.5 Descriptive statistics for HUM indicator, with sample divided into categories:
- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

PRO	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE	O&G EDP
Observations	478	363	115	160
Average	0,03	0,02	0,04	0,03
Median	0,00	0,00	0,00	0,00
StDev	0,15	0,14	0,18	0,16
	O&G RTM	OIL RELATED	MINING&PP	MINING RELATED
Observations	85	118	85	30
Average	0,01	0,02	0,04	0,04
Median	0,00	0,00	0,00	0,00
StDev	0,11	0,12	0,19	0,14

Table D.6 Descriptive statistics for PRO indicator, with sample divided into categories:
- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

CGOV	TOTAL SAMPLE	OIL & GAS SAMPLE	MINING SAMPLE	O&G EDP
Observations	478	363	115	160
Average	0,10	0,12	0,04	0,16
Median	0,00	0,00	0,00	0,00
StDev	0,38	0,41	0,27	0,43
	O&G RTM	OIL RELATED	MINING&PP	MINING RELATED
Observations	85	118	85	30
Average	0,00	0,15	0,04	0,04
Median	0,00	0,00	0,00	0,00
StDev	0,29	0,44	0,26	0,30

Table D.7 Descriptive statistics for CGOV indicator, with sample divided into categories:

- Oil & Gas Exploration, Drilling & Production (O&G EDP);
- Oil & Gas Refining, Transportation & Marketing (O&G RTM);
- Oil related Services and Equipment (OIL RELATED);
- Mining and Primary Production (MINING & PP);
- Mining Related Activities (MINING RELATED)

Appendix E: Matrices of Correlation

The following matrices contain the correlation indices between the variables of each model. All the correlation matrices in this section have been built using the R software.

- ROE:

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.00	-0.08	-0.17	-0.07	-0.02	0.02	-0.15
ENV	0.00	1.00	0.11	0.12	0.19	0.07	-0.13	0.21
COM	-0.08	0.11	1.00	0.31	0.18	0.10	-0.05	0.14
HUM	-0.17	0.12	0.31	1.00	0.21	0.28	0.07	0.43
EMP	-0.07	0.19	0.18	0.21	1.00	0.14	-0.07	0.16
DIV	-0.02	0.07	0.10	0.28	0.14	1.00	0.15	0.18
PRO	0.02	-0.13	-0.05	0.07	-0.07	0.15	1.00	0.07
CGOV	-0.15	0.21	0.14	0.43	0.16	0.18	0.07	1.00

Figure E.1 Correlation matrix for the total sample in *t*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.01	-0.09	-0.19	-0.05	-0.04	-0.03	-0.21
ENV	-0.01	1.00	0.11	0.12	0.19	0.07	-0.13	0.21
COM	-0.09	0.11	1.00	0.31	0.18	0.10	-0.05	0.14
HUM	-0.19	0.12	0.31	1.00	0.21	0.28	0.07	0.43
EMP	-0.05	0.19	0.18	0.21	1.00	0.14	-0.07	0.16
DIV	-0.04	0.07	0.10	0.28	0.14	1.00	0.15	0.18
PRO	-0.03	-0.13	-0.05	0.07	-0.07	0.15	1.00	0.07
CGOV	-0.21	0.21	0.14	0.43	0.16	0.18	0.07	1.00

Figure E.2 Correlation matrix for the total sample in *t+1*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.03	-0.04	-0.17	-0.10	0.03	-0.01	-0.17
ENV	-0.03	1.00	0.11	0.12	0.19	0.07	-0.13	0.21
COM	-0.04	0.11	1.00	0.31	0.18	0.10	-0.05	0.14
HUM	-0.17	0.12	0.31	1.00	0.21	0.28	0.07	0.43
EMP	-0.10	0.19	0.18	0.21	1.00	0.14	-0.07	0.16
DIV	0.03	0.07	0.10	0.28	0.14	1.00	0.15	0.18
PRO	-0.01	-0.13	-0.05	0.07	-0.07	0.15	1.00	0.07
CGOV	-0.17	0.21	0.14	0.43	0.16	0.18	0.07	1.00

Figure E.3 Correlation matrix for the total sample in *t+2*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.20	-0.03	-0.15	0.06	-0.06	0.12	-0.11
ENV	0.20	1.00	0.32	0.14	0.19	0.11	-0.23	0.15
COM	-0.03	0.32	1.00	-0.10	0.25	-0.01	-0.41	-0.05
HUM	-0.15	0.14	-0.10	1.00	-0.11	0.37	0.19	0.28
EMP	0.06	0.19	0.25	-0.11	1.00	-0.05	-0.11	-0.10
DIV	-0.06	0.11	-0.01	0.37	-0.05	1.00	0.17	0.27
PRO	0.12	-0.23	-0.41	0.19	-0.11	0.17	1.00	0.24
CGOV	-0.11	0.15	-0.05	0.28	-0.10	0.27	0.24	1.00

Figure E.4 Correlation matrix for the mining sample in *t*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.11	0.06	-0.11	-0.01	-0.04	0.05	-0.01
ENV	0.11	1.00	0.32	0.14	0.19	0.11	-0.23	0.15
COM	0.06	0.32	1.00	-0.10	0.25	-0.01	-0.41	-0.05
HUM	-0.11	0.14	-0.10	1.00	-0.11	0.37	0.19	0.28
EMP	-0.01	0.19	0.25	-0.11	1.00	-0.05	-0.11	-0.10
DIV	-0.04	0.11	-0.01	0.37	-0.05	1.00	0.17	0.27
PRO	0.05	-0.23	-0.41	0.19	-0.11	0.17	1.00	0.24
CGOV	-0.01	0.15	-0.05	0.28	-0.10	0.27	0.24	1.00

Figure E.5 Correlation matrix for the mining sample in *t+1*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.14	0.01	-0.09	-0.04	0.03	-0.09	0.23
ENV	0.14	1.00	0.32	0.14	0.19	0.11	-0.23	0.15
COM	0.01	0.32	1.00	-0.10	0.25	-0.01	-0.41	-0.05
HUM	-0.09	0.14	-0.10	1.00	-0.11	0.37	0.19	0.28
EMP	-0.04	0.19	0.25	-0.11	1.00	-0.05	-0.11	-0.10
DIV	0.03	0.11	-0.01	0.37	-0.05	1.00	0.17	0.27
PRO	-0.09	-0.23	-0.41	0.19	-0.11	0.17	1.00	0.24
CGOV	0.23	0.15	-0.05	0.28	-0.10	0.27	0.24	1.00

Figure E.6 Correlation matrix for the mining sample in *t+2*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.03	-0.13	-0.23	-0.07	-0.03	-0.05	-0.25
ENV	-0.03	1.00	0.08	0.13	0.20	0.06	-0.10	0.23
COM	-0.13	0.08	1.00	0.35	0.17	0.14	0.05	0.16
HUM	-0.23	0.13	0.35	1.00	0.30	0.29	0.05	0.45
EMP	-0.07	0.20	0.17	0.30	1.00	0.22	-0.04	0.23
DIV	-0.03	0.06	0.14	0.29	0.22	1.00	0.14	0.18
PRO	-0.05	-0.10	0.05	0.05	-0.04	0.14	1.00	0.03
CGOV	-0.25	0.23	0.16	0.45	0.23	0.18	0.03	1.00

Figure E.7 Correlation matrix for the oil & gas sample in *t*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.01	-0.12	-0.22	-0.12	0.01	0.01	-0.20
ENV	-0.01	1.00	0.08	0.13	0.20	0.06	-0.10	0.23
COM	-0.12	0.08	1.00	0.35	0.17	0.14	0.05	0.16
HUM	-0.22	0.13	0.35	1.00	0.30	0.29	0.05	0.45
EMP	-0.12	0.20	0.17	0.30	1.00	0.22	-0.04	0.23
DIV	0.01	0.06	0.14	0.29	0.22	1.00	0.14	0.18
PRO	0.01	-0.10	0.05	0.05	-0.04	0.14	1.00	0.03
CGOV	-0.20	0.23	0.16	0.45	0.23	0.18	0.03	1.00

Figure E.8 Correlation matrix for the oil & gas sample in *t+1*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.06	-0.06	-0.20	-0.12	0.04	0.02	-0.24
ENV	-0.06	1.00	0.08	0.13	0.20	0.06	-0.10	0.23
COM	-0.06	0.08	1.00	0.35	0.17	0.14	0.05	0.16
HUM	-0.20	0.13	0.35	1.00	0.30	0.29	0.05	0.45
EMP	-0.12	0.20	0.17	0.30	1.00	0.22	-0.04	0.23
DIV	0.04	0.06	0.14	0.29	0.22	1.00	0.14	0.18
PRO	0.02	-0.10	0.05	0.05	-0.04	0.14	1.00	0.03
CGOV	-0.24	0.23	0.16	0.45	0.23	0.18	0.03	1.00

Figure E.9 Correlation matrix for the oil & gas sample in *t+2*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.29	-0.04	-0.12	0.09	-0.06	0.11	-0.12
ENV	0.29	1.00	0.30	0.18	0.03	0.13	-0.20	0.16
COM	-0.04	0.30	1.00	-0.11	0.30	-0.08	-0.49	-0.09
HUM	-0.12	0.18	-0.11	1.00	-0.13	0.38	0.16	0.35
EMP	0.09	0.03	0.30	-0.13	1.00	0.00	-0.05	-0.16
DIV	-0.06	0.13	-0.08	0.38	0.00	1.00	0.22	0.29
PRO	0.11	-0.20	-0.49	0.16	-0.05	0.22	1.00	0.36
CGOV	-0.12	0.16	-0.09	0.35	-0.16	0.29	0.36	1.00

Figure E.10 Correlation matrix for the mining & primary production sample in *t*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.19	0.04	-0.10	0.04	-0.01	0.01	-0.18
ENV	0.19	1.00	0.30	0.18	0.03	0.13	-0.20	0.16
COM	0.04	0.30	1.00	-0.11	0.30	-0.08	-0.49	-0.09
HUM	-0.10	0.18	-0.11	1.00	-0.13	0.38	0.16	0.35
EMP	0.04	0.03	0.30	-0.13	1.00	0.00	-0.05	-0.16
DIV	-0.01	0.13	-0.08	0.38	0.00	1.00	0.22	0.29
PRO	0.01	-0.20	-0.49	0.16	-0.05	0.22	1.00	0.36
CGOV	-0.18	0.16	-0.09	0.35	-0.16	0.29	0.36	1.00

Figure E.11 Correlation matrix for the mining & primary production sample in *t+1*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.30	0.02	-0.09	0.03	0.07	-0.09	0.02
ENV	0.30	1.00	0.30	0.18	0.03	0.13	-0.20	0.16
COM	0.02	0.30	1.00	-0.11	0.30	-0.08	-0.49	-0.09
HUM	-0.09	0.18	-0.11	1.00	-0.13	0.38	0.16	0.35
EMP	0.03	0.03	0.30	-0.13	1.00	0.00	-0.05	-0.16
DIV	0.07	0.13	-0.08	0.38	0.00	1.00	0.22	0.29
PRO	-0.09	-0.20	-0.49	0.16	-0.05	0.22	1.00	0.36
CGOV	0.02	0.16	-0.09	0.35	-0.16	0.29	0.36	1.00

Figure E.12 Correlation matrix for the mining & primary production sample in *t+2*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.06	-0.30	-0.32	-0.18	-0.19	0.06	-0.16
ENV	0.06	1.00	-0.05	-0.02	0.11	-0.06	-0.08	0.10
COM	-0.30	-0.05	1.00	0.31	0.19	0.06	0.00	0.01
HUM	-0.32	-0.02	0.31	1.00	0.36	0.27	-0.01	0.42
EMP	-0.18	0.11	0.19	0.36	1.00	0.19	-0.05	0.19
DIV	-0.19	-0.06	0.06	0.27	0.19	1.00	0.12	0.20
PRO	0.06	-0.08	0.00	-0.01	-0.05	0.12	1.00	0.02
CGOV	-0.16	0.10	0.01	0.42	0.19	0.20	0.02	1.00

Figure E.13 Correlation matrix for the exploration, drilling & production sample in *t*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.04	-0.24	-0.33	-0.11	-0.09	0.01	-0.21
ENV	0.04	1.00	-0.05	-0.02	0.11	-0.06	-0.08	0.10
COM	-0.24	-0.05	1.00	0.31	0.19	0.06	0.00	0.01
HUM	-0.33	-0.02	0.31	1.00	0.36	0.27	-0.01	0.42
EMP	-0.11	0.11	0.19	0.36	1.00	0.19	-0.05	0.19
DIV	-0.09	-0.06	0.06	0.27	0.19	1.00	0.12	0.20
PRO	0.01	-0.08	0.00	-0.01	-0.05	0.12	1.00	0.02
CGOV	-0.21	0.10	0.01	0.42	0.19	0.20	0.02	1.00

Figure E.14 Correlation matrix for the exploration, drilling & production sample in *t+1*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.07	-0.05	-0.27	-0.19	-0.02	0.05	-0.15
ENV	-0.07	1.00	-0.05	-0.02	0.11	-0.06	-0.08	0.10
COM	-0.05	-0.05	1.00	0.31	0.19	0.06	0.00	0.01
HUM	-0.27	-0.02	0.31	1.00	0.36	0.27	-0.01	0.42
EMP	-0.19	0.11	0.19	0.36	1.00	0.19	-0.05	0.19
DIV	-0.02	-0.06	0.06	0.27	0.19	1.00	0.12	0.20
PRO	0.05	-0.08	0.00	-0.01	-0.05	0.12	1.00	0.02
CGOV	-0.15	0.10	0.01	0.42	0.19	0.20	0.02	1.00

Figure E.15 Correlation matrix for the exploration, drilling & production sample in *t+2*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.11	0.08	-0.18	-0.06	0.10	-0.11	-0.16
ENV	-0.11	1.00	0.12	0.27	0.23	0.20	-0.12	0.28
COM	0.08	0.12	1.00	0.17	0.06	0.21	0.29	0.00
HUM	-0.18	0.27	0.17	1.00	0.18	0.28	0.27	0.56
EMP	-0.06	0.23	0.06	0.18	1.00	0.34	0.33	0.18
DIV	0.10	0.20	0.21	0.28	0.34	1.00	0.36	0.28
PRO	-0.11	-0.12	0.29	0.27	0.33	0.36	1.00	0.13
CGOV	-0.16	0.28	0.00	0.56	0.18	0.28	0.13	1.00

Figure E.16 Correlation matrix for the refining, transportation & marketing sample in *t*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.08	0.03	-0.23	-0.03	-0.06	-0.21	-0.15
ENV	-0.08	1.00	0.12	0.27	0.23	0.20	-0.12	0.28
COM	0.03	0.12	1.00	0.17	0.06	0.21	0.29	0.00
HUM	-0.23	0.27	0.17	1.00	0.18	0.28	0.27	0.56
EMP	-0.03	0.23	0.06	0.18	1.00	0.34	0.33	0.18
DIV	-0.06	0.20	0.21	0.28	0.34	1.00	0.36	0.28
PRO	-0.21	-0.12	0.29	0.27	0.33	0.36	1.00	0.13
CGOV	-0.15	0.28	0.00	0.56	0.18	0.28	0.13	1.00

Figure E.17 Correlation matrix for the refining, transportation & marketing sample in *t+1*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.01	0.05	-0.19	-0.04	-0.04	-0.10	-0.14
ENV	-0.01	1.00	0.12	0.27	0.23	0.20	-0.12	0.28
COM	0.05	0.12	1.00	0.17	0.06	0.21	0.29	0.00
HUM	-0.19	0.27	0.17	1.00	0.18	0.28	0.27	0.56
EMP	-0.04	0.23	0.06	0.18	1.00	0.34	0.33	0.18
DIV	-0.04	0.20	0.21	0.28	0.34	1.00	0.36	0.28
PRO	-0.10	-0.12	0.29	0.27	0.33	0.36	1.00	0.13
CGOV	-0.14	0.28	0.00	0.56	0.18	0.28	0.13	1.00

Figure E.18 Correlation matrix for the refining, transportation & marketing sample in *t+2*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.07	-0.07	-0.07	-0.16	0.01	0.08	-0.24
ENV	0.07	1.00	0.37	0.45	0.38	0.22	-0.13	0.43
COM	-0.07	0.37	1.00	0.75	0.23	0.42	-0.05	0.47
HUM	-0.07	0.45	0.75	1.00	0.30	0.31	0.00	0.50
EMP	-0.16	0.38	0.23	0.30	1.00	0.15	-0.31	0.35
DIV	0.01	0.22	0.42	0.31	0.15	1.00	0.03	0.26
PRO	0.08	-0.13	-0.05	0.00	-0.31	0.03	1.00	0.00
CGOV	-0.24	0.43	0.47	0.50	0.35	0.26	0.00	1.00

Figure E.19 Correlation matrix for the oil & gas related products & services sample in *t*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	0.00	-0.14	-0.11	-0.11	-0.13	0.06	-0.40
ENV	0.00	1.00	0.37	0.45	0.38	0.22	-0.13	0.43
COM	-0.14	0.37	1.00	0.75	0.23	0.42	-0.05	0.47
HUM	-0.11	0.45	0.75	1.00	0.30	0.31	0.00	0.50
EMP	-0.11	0.38	0.23	0.30	1.00	0.15	-0.31	0.35
DIV	-0.13	0.22	0.42	0.31	0.15	1.00	0.03	0.26
PRO	0.06	-0.13	-0.05	0.00	-0.31	0.03	1.00	0.00
CGOV	-0.40	0.43	0.47	0.50	0.35	0.26	0.00	1.00

Figure E.20 Correlation matrix for the oil & gas related products & services sample in *t+1*

	ROE	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROE	1.00	-0.10	-0.05	-0.11	-0.16	0.04	0.13	-0.44
ENV	-0.10	1.00	0.37	0.45	0.38	0.22	-0.13	0.43
COM	-0.05	0.37	1.00	0.75	0.23	0.42	-0.05	0.47
HUM	-0.11	0.45	0.75	1.00	0.30	0.31	0.00	0.50
EMP	-0.16	0.38	0.23	0.30	1.00	0.15	-0.31	0.35
DIV	0.04	0.22	0.42	0.31	0.15	1.00	0.03	0.26
PRO	0.13	-0.13	-0.05	0.00	-0.31	0.03	1.00	0.00
CGOV	-0.44	0.43	0.47	0.50	0.35	0.26	0.00	1.00

Figure E.21 Correlation matrix for the oil & gas related products & services sample in *t+2*

- ROA:

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.01	-0.08	-0.13	-0.05	-0.09	0.08	-0.11
ENV	0.01	1.00	0.11	0.12	0.19	0.07	-0.13	0.21
COM	-0.08	0.11	1.00	0.31	0.18	0.10	-0.05	0.14
HUM	-0.13	0.12	0.31	1.00	0.21	0.28	0.07	0.43
EMP	-0.05	0.19	0.18	0.21	1.00	0.14	-0.07	0.16
DIV	-0.09	0.07	0.10	0.28	0.14	1.00	0.15	0.18
PRO	0.08	-0.13	-0.05	0.07	-0.07	0.15	1.00	0.07
CGOV	-0.11	0.21	0.14	0.43	0.16	0.18	0.07	1.00

Figure E.22 Correlation matrix for the total sample in *t*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.03	-0.01	-0.12	-0.11	0.07	0.04	-0.13
ENV	-0.03	1.00	0.11	0.12	0.19	0.07	-0.13	0.21
COM	-0.01	0.11	1.00	0.31	0.18	0.10	-0.05	0.14
HUM	-0.12	0.12	0.31	1.00	0.21	0.28	0.07	0.43
EMP	-0.11	0.19	0.18	0.21	1.00	0.14	-0.07	0.16
DIV	0.07	0.07	0.10	0.28	0.14	1.00	0.15	0.18
PRO	0.04	-0.13	-0.05	0.07	-0.07	0.15	1.00	0.07
CGOV	-0.13	0.21	0.14	0.43	0.16	0.18	0.07	1.00

Figure E.23 Correlation matrix for the total sample in *t+1*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.03	-0.01	-0.12	-0.11	0.07	0.04	-0.13
ENV	-0.03	1.00	0.11	0.12	0.19	0.07	-0.13	0.21
COM	-0.01	0.11	1.00	0.31	0.18	0.10	-0.05	0.14
HUM	-0.12	0.12	0.31	1.00	0.21	0.28	0.07	0.43
EMP	-0.11	0.19	0.18	0.21	1.00	0.14	-0.07	0.16
DIV	0.07	0.07	0.10	0.28	0.14	1.00	0.15	0.18
PRO	0.04	-0.13	-0.05	0.07	-0.07	0.15	1.00	0.07
CGOV	-0.13	0.21	0.14	0.43	0.16	0.18	0.07	1.00

Figure E.24 Correlation matrix for the total sample in *t+2*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.05	-0.07	-0.16	0.07	-0.09	0.10	-0.08
ENV	0.05	1.00	0.32	0.14	0.19	0.11	-0.23	0.15
COM	-0.07	0.32	1.00	-0.10	0.25	-0.01	-0.41	-0.05
HUM	-0.16	0.14	-0.10	1.00	-0.11	0.37	0.19	0.28
EMP	0.07	0.19	0.25	-0.11	1.00	-0.05	-0.11	-0.10
DIV	-0.09	0.11	-0.01	0.37	-0.05	1.00	0.17	0.27
PRO	0.10	-0.23	-0.41	0.19	-0.11	0.17	1.00	0.24
CGOV	-0.08	0.15	-0.05	0.28	-0.10	0.27	0.24	1.00

Figure E.25 Correlation matrix for the mining sample in *t*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.08	-0.04	-0.16	-0.01	-0.05	0.08	-0.12
ENV	0.08	1.00	0.32	0.14	0.19	0.11	-0.23	0.15
COM	-0.04	0.32	1.00	-0.10	0.25	-0.01	-0.41	-0.05
HUM	-0.16	0.14	-0.10	1.00	-0.11	0.37	0.19	0.28
EMP	-0.01	0.19	0.25	-0.11	1.00	-0.05	-0.11	-0.10
DIV	-0.05	0.11	-0.01	0.37	-0.05	1.00	0.17	0.27
PRO	0.08	-0.23	-0.41	0.19	-0.11	0.17	1.00	0.24
CGOV	-0.12	0.15	-0.05	0.28	-0.10	0.27	0.24	1.00

Figure E.26 Correlation matrix for the mining sample in *t+1*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.09	-0.05	-0.14	-0.03	0.01	-0.08	0.03
ENV	0.09	1.00	0.32	0.14	0.19	0.11	-0.23	0.15
COM	-0.05	0.32	1.00	-0.10	0.25	-0.01	-0.41	-0.05
HUM	-0.14	0.14	-0.10	1.00	-0.11	0.37	0.19	0.28
EMP	-0.03	0.19	0.25	-0.11	1.00	-0.05	-0.11	-0.10
DIV	0.01	0.11	-0.01	0.37	-0.05	1.00	0.17	0.27
PRO	-0.08	-0.23	-0.41	0.19	-0.11	0.17	1.00	0.24
CGOV	0.03	0.15	-0.05	0.28	-0.10	0.27	0.24	1.00

Figure E.27 Correlation matrix for the mining sample in *t+2*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.00	-0.09	-0.15	-0.10	-0.09	0.08	-0.13
ENV	0.00	1.00	0.08	0.13	0.20	0.06	-0.10	0.23
COM	-0.09	0.08	1.00	0.35	0.17	0.14	0.05	0.16
HUM	-0.15	0.13	0.35	1.00	0.30	0.29	0.05	0.45
EMP	-0.10	0.20	0.17	0.30	1.00	0.22	-0.04	0.23
DIV	-0.09	0.06	0.14	0.29	0.22	1.00	0.14	0.18
PRO	0.08	-0.10	0.05	0.05	-0.04	0.14	1.00	0.03
CGOV	-0.13	0.23	0.16	0.45	0.23	0.18	0.03	1.00

Figure E.28 Correlation matrix for the oil & gas sample in *t*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.02	-0.12	-0.19	-0.03	-0.05	0.05	-0.18
ENV	-0.02	1.00	0.08	0.13	0.20	0.06	-0.10	0.23
COM	-0.12	0.08	1.00	0.35	0.17	0.14	0.05	0.16
HUM	-0.19	0.13	0.35	1.00	0.30	0.29	0.05	0.45
EMP	-0.03	0.20	0.17	0.30	1.00	0.22	-0.04	0.23
DIV	-0.05	0.06	0.14	0.29	0.22	1.00	0.14	0.18
PRO	0.05	-0.10	0.05	0.05	-0.04	0.14	1.00	0.03
CGOV	-0.18	0.23	0.16	0.45	0.23	0.18	0.03	1.00

Figure E.29 Correlation matrix for the oil & gas sample in *t+1*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.05	0.00	-0.11	-0.13	0.08	0.08	-0.15
ENV	-0.05	1.00	0.08	0.13	0.20	0.06	-0.10	0.23
COM	0.00	0.08	1.00	0.35	0.17	0.14	0.05	0.16
HUM	-0.11	0.13	0.35	1.00	0.30	0.29	0.05	0.45
EMP	-0.13	0.20	0.17	0.30	1.00	0.22	-0.04	0.23
DIV	0.08	0.06	0.14	0.29	0.22	1.00	0.14	0.18
PRO	0.08	-0.10	0.05	0.05	-0.04	0.14	1.00	0.03
CGOV	-0.15	0.23	0.16	0.45	0.23	0.18	0.03	1.00

Figure E.30 Correlation matrix for the oil & gas sample in *t+2*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.09	-0.07	-0.25	0.06	-0.12	0.04	-0.05
ENV	0.09	1.00	0.30	0.18	0.03	0.13	-0.20	0.16
COM	-0.07	0.30	1.00	-0.11	0.30	-0.08	-0.49	-0.09
HUM	-0.25	0.18	-0.11	1.00	-0.13	0.38	0.16	0.35
EMP	0.06	0.03	0.30	-0.13	1.00	0.00	-0.05	-0.16
DIV	-0.12	0.13	-0.08	0.38	0.00	1.00	0.22	0.29
PRO	0.04	-0.20	-0.49	0.16	-0.05	0.22	1.00	0.36
CGOV	-0.05	0.16	-0.09	0.35	-0.16	0.29	0.36	1.00

Figure E.31 Correlation matrix for the mining & primary production sample in *t*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.14	-0.02	-0.22	-0.06	-0.03	0.04	-0.03
ENV	0.14	1.00	0.30	0.18	0.03	0.13	-0.20	0.16
COM	-0.02	0.30	1.00	-0.11	0.30	-0.08	-0.49	-0.09
HUM	-0.22	0.18	-0.11	1.00	-0.13	0.38	0.16	0.35
EMP	-0.06	0.03	0.30	-0.13	1.00	0.00	-0.05	-0.16
DIV	-0.03	0.13	-0.08	0.38	0.00	1.00	0.22	0.29
PRO	0.04	-0.20	-0.49	0.16	-0.05	0.22	1.00	0.36
CGOV	-0.03	0.16	-0.09	0.35	-0.16	0.29	0.36	1.00

Figure E.32 Correlation matrix for the mining & primary production sample in *t+1*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.14	-0.03	-0.16	-0.06	0.03	-0.12	0.04
ENV	0.14	1.00	0.30	0.18	0.03	0.13	-0.20	0.16
COM	-0.03	0.30	1.00	-0.11	0.30	-0.08	-0.49	-0.09
HUM	-0.16	0.18	-0.11	1.00	-0.13	0.38	0.16	0.35
EMP	-0.06	0.03	0.30	-0.13	1.00	0.00	-0.05	-0.16
DIV	0.03	0.13	-0.08	0.38	0.00	1.00	0.22	0.29
PRO	-0.12	-0.20	-0.49	0.16	-0.05	0.22	1.00	0.36
CGOV	0.04	0.16	-0.09	0.35	-0.16	0.29	0.36	1.00

Figure E.33 Correlation matrix for the mining & primary production sample in *t+2*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.02	-0.11	-0.13	-0.09	-0.17	0.07	-0.09
ENV	0.02	1.00	-0.05	-0.02	0.11	-0.06	-0.08	0.10
COM	-0.11	-0.05	1.00	0.31	0.19	0.06	0.00	0.01
HUM	-0.13	-0.02	0.31	1.00	0.36	0.27	-0.01	0.42
EMP	-0.09	0.11	0.19	0.36	1.00	0.19	-0.05	0.19
DIV	-0.17	-0.06	0.06	0.27	0.19	1.00	0.12	0.20
PRO	0.07	-0.08	0.00	-0.01	-0.05	0.12	1.00	0.02
CGOV	-0.09	0.10	0.01	0.42	0.19	0.20	0.02	1.00

Figure E.34 Correlation matrix for the exploration, drilling & production sample in *t*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.04	-0.10	-0.12	0.04	-0.05	0.06	-0.04
ENV	0.04	1.00	-0.05	-0.02	0.11	-0.06	-0.08	0.10
COM	-0.10	-0.05	1.00	0.31	0.19	0.06	0.00	0.01
HUM	-0.12	-0.02	0.31	1.00	0.36	0.27	-0.01	0.42
EMP	0.04	0.11	0.19	0.36	1.00	0.19	-0.05	0.19
DIV	-0.05	-0.06	0.06	0.27	0.19	1.00	0.12	0.20
PRO	0.06	-0.08	0.00	-0.01	-0.05	0.12	1.00	0.02
CGOV	-0.04	0.10	0.01	0.42	0.19	0.20	0.02	1.00

Figure E.35 Correlation matrix for the exploration, drilling & production sample in *t+1*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.00	0.07	-0.03	-0.13	0.11	0.07	0.02
ENV	0.00	1.00	-0.05	-0.02	0.11	-0.06	-0.08	0.10
COM	0.07	-0.05	1.00	0.31	0.19	0.06	0.00	0.01
HUM	-0.03	-0.02	0.31	1.00	0.36	0.27	-0.01	0.42
EMP	-0.13	0.11	0.19	0.36	1.00	0.19	-0.05	0.19
DIV	0.11	-0.06	0.06	0.27	0.19	1.00	0.12	0.20
PRO	0.07	-0.08	0.00	-0.01	-0.05	0.12	1.00	0.02
CGOV	0.02	0.10	0.01	0.42	0.19	0.20	0.02	1.00

Figure E.36 Correlation matrix for the exploration, drilling & production sample in *t+2*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.14	0.00	-0.02	-0.05	0.09	0.09	-0.03
ENV	-0.14	1.00	0.12	0.27	0.23	0.20	-0.12	0.28
COM	0.00	0.12	1.00	0.17	0.06	0.21	0.29	0.00
HUM	-0.02	0.27	0.17	1.00	0.18	0.28	0.27	0.56
EMP	-0.05	0.23	0.06	0.18	1.00	0.34	0.33	0.18
DIV	0.09	0.20	0.21	0.28	0.34	1.00	0.36	0.28
PRO	0.09	-0.12	0.29	0.27	0.33	0.36	1.00	0.13
CGOV	-0.03	0.28	0.00	0.56	0.18	0.28	0.13	1.00

Figure E.37 Correlation matrix for the refining, transportation & marketing sample in *t*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.26	-0.04	-0.22	-0.15	-0.02	-0.06	-0.29
ENV	-0.26	1.00	0.12	0.27	0.23	0.20	-0.12	0.28
COM	-0.04	0.12	1.00	0.17	0.06	0.21	0.29	0.00
HUM	-0.22	0.27	0.17	1.00	0.18	0.28	0.27	0.56
EMP	-0.15	0.23	0.06	0.18	1.00	0.34	0.33	0.18
DIV	-0.02	0.20	0.21	0.28	0.34	1.00	0.36	0.28
PRO	-0.06	-0.12	0.29	0.27	0.33	0.36	1.00	0.13
CGOV	-0.29	0.28	0.00	0.56	0.18	0.28	0.13	1.00

Figure E.38 Correlation matrix for the refining, transportation & marketing sample in *t+1*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.19	-0.08	-0.26	-0.07	0.04	0.01	-0.36
ENV	-0.19	1.00	0.12	0.27	0.23	0.20	-0.12	0.28
COM	-0.08	0.12	1.00	0.17	0.06	0.21	0.29	0.00
HUM	-0.26	0.27	0.17	1.00	0.18	0.28	0.27	0.56
EMP	-0.07	0.23	0.06	0.18	1.00	0.34	0.33	0.18
DIV	0.04	0.20	0.21	0.28	0.34	1.00	0.36	0.28
PRO	0.01	-0.12	0.29	0.27	0.33	0.36	1.00	0.13
CGOV	-0.36	0.28	0.00	0.56	0.18	0.28	0.13	1.00

Figure E.39 Correlation matrix for the refining, transportation & marketing sample in *t+2*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	0.04	-0.10	-0.09	-0.22	0.02	0.17	-0.27
ENV	0.04	1.00	0.37	0.45	0.38	0.22	-0.13	0.43
COM	-0.10	0.37	1.00	0.75	0.23	0.42	-0.05	0.47
HUM	-0.09	0.45	0.75	1.00	0.30	0.31	0.00	0.50
EMP	-0.22	0.38	0.23	0.30	1.00	0.15	-0.31	0.35
DIV	0.02	0.22	0.42	0.31	0.15	1.00	0.03	0.26
PRO	0.17	-0.13	-0.05	0.00	-0.31	0.03	1.00	0.00
CGOV	-0.27	0.43	0.47	0.50	0.35	0.26	0.00	1.00

Figure E.40 Correlation matrix for the oil & gas related products & services sample in *t*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.09	-0.22	-0.22	-0.17	-0.09	0.16	-0.46
ENV	-0.09	1.00	0.37	0.45	0.38	0.22	-0.13	0.43
COM	-0.22	0.37	1.00	0.75	0.23	0.42	-0.05	0.47
HUM	-0.22	0.45	0.75	1.00	0.30	0.31	0.00	0.50
EMP	-0.17	0.38	0.23	0.30	1.00	0.15	-0.31	0.35
DIV	-0.09	0.22	0.42	0.31	0.15	1.00	0.03	0.26
PRO	0.16	-0.13	-0.05	0.00	-0.31	0.03	1.00	0.00
CGOV	-0.46	0.43	0.47	0.50	0.35	0.26	0.00	1.00

Figure E.41 Correlation matrix for the oil & gas related products & services sample in *t+1*

	ROA	ENV	COM	HUM	EMP	DIV	PRO	CGOV
ROA	1.00	-0.19	-0.14	-0.14	-0.22	0.08	0.18	-0.45
ENV	-0.19	1.00	0.37	0.45	0.38	0.22	-0.13	0.43
COM	-0.14	0.37	1.00	0.75	0.23	0.42	-0.05	0.47
HUM	-0.14	0.45	0.75	1.00	0.30	0.31	0.00	0.50
EMP	-0.22	0.38	0.23	0.30	1.00	0.15	-0.31	0.35
DIV	0.08	0.22	0.42	0.31	0.15	1.00	0.03	0.26
PRO	0.18	-0.13	-0.05	0.00	-0.31	0.03	1.00	0.00
CGOV	-0.45	0.43	0.47	0.50	0.35	0.26	0.00	1.00

Figure E.42 Correlation matrix for the oil & gas related products & services sample in *t+2*

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