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The role of institutional investors in the green market

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INTRODUCTION

In recent years, the increasing climate awareness has drawn the socio-economic attention to green themes and sustainable best practices, leading organizations and even governments to advance environmentally friendly policies. In the financial world, markets have introduced similar concepts in their investment mechanisms and day-to-day operations. The practices that have been adopted do not merely entail environmental objectives, but also include social and governance dimensions, intended to ensure a sound and equitable future for the generations to come. Unfortunately, the actual involvement of authorities and firms inside and outside the capital markets is not sufficient to sustain the financial needs required to develop a sustainable low-carbon economy.

In the perspective of establishing a market intended for such transition, a green market, institutional investors have been called out as enabling agents and actors. This particular type of investors, often referred to as asset owners or allocators, present the set of characteristics to definitively fill the financial gap toward a greener world.

The role of institutional investors is multifaceted and extends well beyond the sole funding supplement, in that they contribute to firms through their expertise and guidance. The aim of this thesis is exactly exploring this multifaceted potential contribution considering the previous literature on the subject and assessing it using empirical data on institutional ownership.

The contents of the thesis are divided in 4 chapters. Chapter I discusses the terms and definitions surrounding the green market, in particular it attempts to clarify what green investing and ESG practices are and their implications. Chapter II describes the institutional investors' role and stance in the green market, detailing the features that make them so important in its development. Moreover, it argues that managerial theories failed to account for the scope and spread of this investor type, by tagging it as a short-term financial operator. Chapter III, instead, covers the regulatory framework in place at the European level and in certain European countries to facilitate the centrality of the institutional investors. Chapter IV presents the original contribution to

the literature and is articulated in two models that investigate the role of institutional investors by considering green and ethical firms and their institutional ownership.

I. GREEN INVESTING AND ESG PRACTICES

1.1 GREEN INVESTING DEFINITION AND CHARACTERISTICS

1.1.1 A GREEN OVERVIEW

Long before the stipulation of the most recent international agreements and regulations regarding the environment and climate change, such as the Kyoto Protocol, Cop26, Rio+ convention, the financial world had found the transposition of climate change worries in the practices of green investing¹. Nevertheless, it came to its full recognition and enactment only in the second decade of the 2000s. Despite countless definition, the concept of green investing, generally, relates to the modern idea of investing for blended value. In simplistic words, it is the set of practices that investor pursue to obtain financial returns together with an added benefit that in most cases is societal or environmental. Green investing does not merely refer to those investing in activities that end up creating positive externalities, instead it involves investments that have the expressed intention of creating such benefit for society or the environment. This alignment between the investors' pursuit of a profitable financial outcome and the investors' desire of improving either the society at large or the environment or both is the basic principle behind green investing.

The need of this concept in the financial world arises from the perception of indifference towards the repercussion of financial actors' actions and the unethical behaviour often, mistakenly or not, attributed to them. This has been made evident through the progressive deterioration of the environment but also through some major scandals². It was and still is clear that the transition to a low-carbon economy and a more equitable and healthier future would encompass the inclusion of an ethical and involved Finance.

¹ In the 80s, ARCO solar produced more than one megawatt from photovoltaic modules and the publication of Elkington and Hailes, (1989) clearly put through the recognition of a new emerging market and a new type of consumers.

² The most notable ones are, without doubt, the Deepwater Horizon leakage in the Gulf of Mexico and the Dieseltgate, an emission scandal that forced Volkswagen to pay \$28 billion dollar in fines and related settlements (Parloff R. (2018)).

The international agreements helped to set the global focus on this matter, in fact the discussion on green market and related concepts “...emerged as a central theme at the Rio+ 20 Conference on Sustainable Development in 2012, and featured prominently in the outcome document *The World We Want (UN 2012)*, which called simultaneously for a ‘green economy’ and ‘sustained economic growth’ “(Hickel and Kallis, 2020, p 469).

The instauration of a worldwide green market has since become the most viable response to tackle the increasingly serious warnings about climate change and ecological breakdown.

However, the term green investing per se, other than the basic principle on which it stands, does not reveal much more information. As it is, green investing is justifiably considered a buzzword in the most derogatory sense. This may be due to the fact that the term has been used to refer to a plethora of concepts which evidently signal that green investment is an umbrella word. More specifically, it gathers those notions that consider financial profitability a central theme, but contingent to social and environmental best practices, for example SRI and ESG, but also green market and green growth. For the sake of a clearer discussion, the aim of this chapter is to restrict the scope of the green definition in order to establish a more coherent and less confusing path in which to investigate what it means to invest in “green” and what are the implications of such actions. In order to do so, it comes useful to analyse the words that define the term. Starting from the more financially recognizable one, an investment consists in committing money or financial resources to an endeavour, whose type may vary, between the others, from the funding a business or financing a project, with the expectation of gaining an additional income or profit. Green is, instead, more troubling to deal with for various reasons³. It is a term which is tagged to all levels of investments and can even be attributed to it indirectly referring to the greenness of the underlying technology or activity. Consequently, the first troublesome fact is that green acquires

³ From the proposal for a regulation of the European parliament and of the council on European green bonds 2021/0191 (COD) “...the Commission proposes that the Taxonomy Regulation, and – as they are developed - its Delegated Acts, should define what counts as ‘green’.” But no mention of a definition is found in the subsequent legislative acts.

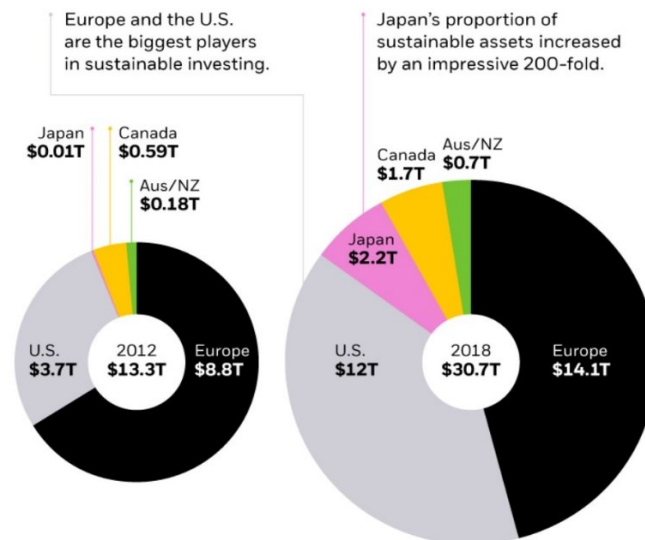
different meanings in different sectors, for example, in commodity markets green refers to the circularity of the raw material while in technological sector green is mainly associated to those technologies that improve energy efficiency. Secondly, there are still some major controversies whether some subject can be labelled as green, as someone may recall the fervent public European discussion over the inclusion of natural gas as green energy in the European green taxonomy. Moreover, the definitions of green might be based upon: ex ante arguments, using a generalised approach relating to green activities, for example any activity in sustainable energy, energy efficiency or water management; or in a more specific approach contingent on defined indicators.

Given this puzzling scenario, I base my reasoning and the following chapters anchoring green to the ESG factors. Rather than being due to the confusion of settling on a specific sector definition of green, the choice of adhering to the ESG best practices to define green is the most coherent. In fact, no industrial or equity sector in particular is meant to be stressed upon in this work and the ESG factors provide a more analytical perspective on the matter, refraining my research to extend beyond its scope.

In practical terms, green investing consists in the augmentation of inputs of the investment decision process, with respect to the traditional financial indicators, specifically relating to the environmental and social behaviour of the firm or the financial product. These extra-financial information can be processed in different ways that shape the approach to the green investment landscape. A literature review by Mercer (2009), distinguishes three types of approaches to green investing: the thematic approach, screening, and engagement. The former, straightforwardly, focuses on the specific sectors thus contributing to specific technology or industry developments such as solar energy, battery disposal, wastewater management. Screening essentially plays out as the inclusion or the exclusion of companies according to their adherence to social and environmental standards. The inclusive approach of screening is called positive screening while the exclusive approach is called negative screening. The engagement approach, instead, builds upon the creation of a long-term relationship between the investor and the investee, in which a discussion of environmental and socially responsible subjects is brought up and eventually adopted by the investee. These three approaches are not mutually exclusive, an investment in a particular industry firm could

also rely on the engagement of the management of said firm to promote ecological values even further. Nevertheless, the three approaches of incorporating extra financial information have different effect on the green market. The thematic approach, focusing on specific sector or subsectors, clearly favours a niche development and therefore, it is the approach that captures the interest of specialized investors and funds that allocate their funds in only those areas of the green market. The practice of screening, both positive and negative, is instead more widespread and easily applicable to traditional equity markets. For example, The Green Century Fund excludes firms whose environmental behaviour, such as misuse of resources or poor waste management, may be ecologically harmful (negative screening) and the FTSE4Good Index Series includes only those firms that integrate the responsible investment criteria to their company mission (positive screening). So, screening could actually incentivize companies to foster their effort into becoming greener in order to avoid the exclusion or, even better, to increase their chances of being included in those selections. The third possible approach, engagement, could simply be translated in the long-term incorporation of green factors in the company mission and foster the growth and value of the green market through a reputational spillover. The constant public pressure on environment and social related matters in recent years has permitted an exponential growth of the green market, in Figure 1 called sustainable market that it is considered a synonym term. In a six-year period the sustainable investing assets has more than doubled their presence in the market, mainly led by Europe and US. Nevertheless, as shown in the figure, the percentage share of other national markets is rapidly increasing.

Figure 1: Sustainable investing market Size comparison (2012-2018)



Source: BLACKROCK, (2020) *Sustainability goes mainstream 2020 global sustainable investing survey*, available at <https://documents.pub/document/sustainability-goes-mainstream-blackrock-kong-indonesia-japan-philippines.html?page=36>

1.1.2 GREEN INVESTING ADVANTAGES

The advantages of green investing can be set up in four categories. First, investors may be driven by an ethical motive. Second, they may be attracted purely by profitable return profiles of the green companies. Third, by incorporating an environmental dimension as an integral part of their investment decisions process, green investors, without any elaboration, may be addressing both present and future legal or regulatory constraints. Finally, these investors may be just seeking to promote and, in some cases, straighten up, their reputation by making a public showing of their concern for the environment. The ethical consideration is the most straightforward driver in the analysis due to the nature of the investment the investor partakes: the extra financial information taken into account in the investment decision may result in an additional benefit. If the company's conduct and product or service is consistent with the ethical

goal of the investor, the financial consideration might be less relevant⁴. In other words, although they are looking to gain returns, some investors may also want their investments to do good (Pastor et al. 2021).

Alternatively, the return profiles of green companies may be advantageous for investor because the incorporation of extra financial information and criteria may push both return and risk, addressing not only the monetary needs but also the prudence and risk aversion needs. Thus, the attractiveness of green investing may be relevant from a standpoint of pure financial accountability.

For what concerns returns, a positive abnormal movement may be enabled, in green investing, by the decreased costs obtained through the avoidance and elimination of inefficiencies related to the environment that might consequently lead to higher earnings and value (Dunn, 2009). In addition to that, both investors and consumers' growing tendency to associate their purchases to an act of environmental protection and to societal benefit may provide earnings growth (Dunn, 2009) for those companies that successfully fulfil these needs with new products and markets addressing the extra financial requests. Thus, many consumers are also willing to pay higher prices for green products (Wei et al., 2018) making green firms and green investment, as a result, more profitable and creating value that would not be realized in the case the firm were not green.

Furthermore, the financial attractiveness of green investment goes beyond the sole return profile but also extends to the risk considerations and evaluation. Firstly, correlation seems to be not high between green stock and the general stock market, suggesting the fact that green stock may present a diversification effect. To corroborate this elaboration, Chia et al. (2009) found that such common risk factors as firm size, sector, style, and geographic distribution do not fully explain the superior performance

⁴ Lewis and Mackenzie (2000) and Lewis (2001) argue that, when structuring their investment portfolios, investors derive utility from behaving in ways consistent with ethical considerations. Such utility gains may mean that investors would even be willing to sacrifice some financial returns.

of renewable energy stocks, which are noticeable and self-evident green stocks. A statistically significant “green factor” is registered even after all characteristics equity risk factors are controlled for. This factor's existence in the scope of equity markets can prove beneficial to stocks which get exposure to it, in that exposure to standard equity risk factors is diversified.

Finally, the financial considerations implied in the choice of green investing can be driven by the hedging properties that of such products, most of all when investing in resource saving should serve as a hedge against commodities price spikes. Investments in companies that exploit alternative energy sources or that allow energy savings, for example, benefit when energy prices rise (Greenstein 2008; Preston and Martel 2008).

Moving along, the incorporation of green extra financial information in the investment decision making process could be advantageous for a green investor because, risk consideration still withstanding, the environmental risk that each company face is preemptively dealt with. Through a better management of potential environmental, societal and governance risks, green firms may be subject to lower risk overall and may reduce significantly the hazard of legal perils (Konar and Cohen 2001; Ashwin Kumar et al. 2016). Avoidance of environmental risk may lead to lower stock price volatility and research even shows that firms that fulfilling green criteria and expectation present reduced tail risk, meaning that in the downside of the economic cycle they usually withstand losses better than non-green firms (Lööf H. et al., 2022).

Moreover, when firms do not consider or adhere to environmental criteria, they are exposed to changes in regulations that could imply the future redesign of resources to changing standard or the whole business and in the most serious of cases having to bear responsibility for environmental disasters, which could in turn result in to considerable losses for shareholders. An explanatory event is for example the 2010 share price drop of the oil company BP due to the ecological disaster caused by the failed plugging of a well in the Gulf of Mexico. Therefore, if investors were able to screen out in advance the companies that may be subject to such additional risk, they would account for a risk reduction.

In sum, investors may prefer to consider green investment over brown investments relying on various arguments from its ethical dimension to the pursuit of particular risk/return properties. The last but non negligible reason that could convince investors to partake green investing is the reputational improvement. The image and external feedback on the investing activity and activism is nowadays more regarded by both consumers and beneficiaries and that could foster to the association to green and responsible companies that considered virtuous. In fact, The Swedish Society of Financial Analysts (SFF) has noted that a positive environmental profile has become a major marketing tool (Aguilera et al. 2006; SFF 2000, Pureza et al. 2019).

1.1.3 GREEN INVESTING DRAWBACKS

As I have described, the decision to prefer green investing yields on different reasons that go well beyond the pure financial logic of monetary compensation. However paradoxical, those same reasons can offer the counterargument to green investing and suggest why not to pursue it. This ambiguity is borne from the contradictive and inconclusive amount of literature on the matter, that recognizes the world shaping power of green investing but also alerts that its dynamics may pose a threat on its efficient realization.

The main and clearly the most cited drawback is the financial aspect of green investment, that was not conclusively found to be superior in terms of performance with respect to non-green investment. The fact that there is no a priori concordance of its financial advantage could lead investors to avoid such investment and concentrate their portfolio selection on non-restricted samples of firms.

Moreover, the practice of screening according to sustainable criteria had been found to reduce the investment universe readily available and thus result in a poorly diversified portfolio.

In equity markets the stress toward sustainability and the implementation of extra financial information in the investors decision making process could yield in the

overpricing of those green stocks that fulfil the environmental and ethical friendliness required by investors. This would also signify that polluting brown stock would be underpriced and consequently be more financially viable and profitable. Blitz and Fabozzi (2017) directly alerts that investors seeking high financial returns could then just make irresponsible, if not unethical, investments to easily be remunerated. From their conclusion we get where the practice of vice investing is borne, that is in other words the idea of holding precisely those stocks that other investors will shun for extra-financial or ethical reasons.

Another financial consideration that counterweights green investing financial advantages is the fact that being environmentally friendly or socially responsible does not come without a cost, thus the cost efficiencies and growth potential derived from the greenness of the firm might be offset by the cost of adopting green practices and adapting to investors ethical standards. The latter adds up to the reasons why returns of virtuous company may not be so attractive. For what it concerns the ethical motive, the ambiguity arises from research, as Lewis (2001) stated, many investors perceive the ethical dimension of investment linked to a poorer performance.

In addition to that, the exposure to ethical and environmental factors can lead to the creation of equity portfolio that are evidently biased. As it turns out, the most widespread bias in green and ethical portfolio deeply tampers the security selection toward small cap and growth stocks⁵. Also in this case, the screening instrument for some researchers appears to be a mechanism of value destruction rather than a tool to empower investors, for example, Clow (1999) shows that these biases and the screening criteria ultimately lead to a portfolio that disregard old-line industrial activities to the favour of technology stocks.

Having shown the counterargument to the ethical motive and the environment inclusion in the process decision making, the last motive to be addressed is the reputational gain

⁵There is still no concordance on the biases found, the ones cited are the result of a research conducted by Kurtz (1997) while Amenc et al. (2009) found no evidence of growth or value biases. More recent research by Ibikunle and Steffen (2017) confirms Kurtz's assessment.

from adoption of green practices. The recognition of a positive feedback for ethical and environmentally involved companies is not at stake, but the pursuit of such recognition shed the light on the fact that communication and marketing are nowadays more heavily funded, drawing away resources from more purposeful areas and investments and in some cases the manipulation of the stakeholder audience. In this latter case, green investing is a victim of asymmetric information and more specifically of the greenwashing risk. Delmas and Burbano (2011) specify that *“Greenwashing is the act of misleading consumers regarding the environmental practices of a company (firm-level greenwashing) or the environmental benefits of a product or service (product-level greenwashing)”*. The firm-level greenwashing plays out as the intersection of two firm behaviours: poor environmental performance and positive communication about environmental performance. Nevertheless, the sustainability profile of a company is not bi-dimensional, but it articulates on a spectrum. However, for the sake of a clearer way to recognize wrong doing, the conventional display of the firm environmental conduct presents two alternatives: brown firms, namely negative environmental performers and green firm which are virtuous sustainable firms. Brown firms’ conduct presents hazardous effects when, instead of avoiding the discussion on their environmental profile, they attempt to distort their sustainability outlook by either displaying false information or conveying a non-existent better well doing.

The skyrocketing incidence of described phenomenon can pose a serious threat to the development of the green market, endangering the reliance on green products through the disruption of the clientele confidence. The practice of greenwashing has similar repercussions in the financial world, from eroding investors’ confidence to the incentive of pursuing analogous behaviours to attract capital, shrinking capital flows to proper green firms.

1.1.4 GREEN ASSET CLASSES

Green investing policies do not equally apply to the whole financial world, different asset classes present different trends. Some investment products were born no more than a decade ago and their development and endowment may not be completely established. Traditionally, the green market was mainly composed by equity products but in recent years, the attention of green investors diverted towards bonds, real estate, and alternative assets. The application of a climate change-related asset allocation and selection process is quite new for all the level of asset classes. This phenomenon can be directly linked to the increasing discussion about investors role in fighting climate change and the economic potential of a new paradigm, the so-called low carbon and energy efficient economy. The basic idea is to differentiate the degree of greenness between asset classes and consequently adjust the investment policy in each investment type sector.

At the beginning of 2020, Larry Flick CEO of Blackrock, the world's largest asset manager, expressed the company's will and determination to direct its investments toward firms and financial products that implement strategies and practices related to environmental and social values⁶. Besides the financial motivation and opportunities that is clearly at play, the determined positioning of the asset owner is emblematic and started back in 2011 launching a renewable power investment group⁷ stating that renewable power projects represent a compelling investment opportunity for the investment community. Since then, many asset owners followed Blackrock path but many other investors resorted also to green bonds or sustainable real estate as well as the integration of climate risk into the ESG and general investment process (Inderst et al. 2012). Green markets presented the investors' world new investment opportunities, but contingently new specific investments risks arise. It is still rather complicated to define the relative greenness of all the asset classes and the risk to confine this definition to a tautology is present.

⁶ <https://www.blackrock.com/corporate/investor-relations/2020-larry-fink-ceo-letter>

⁷ <https://www.businesswire.com/news/home/20110228005679/en/BlackRock-Establishes-Renewable-Power-Investment-Capability-Announces-Strategic-Relationship-Agreement-with-NTR-plc>

Beside this latter risk is maybe more relevant to lawmakers, the green investing paradigm suffers from policy risk and technology risk. Sullivan (2011) explicitly discussed the main uncertainties considered by investors, in particular the implicit and explicit policy risks given by an adaptive and, at the time, incomplete regulatory landscape. Policy makers efforts, such as EU green taxonomy and the strategy for financing the transition to a sustainable economy, reduced legal ambiguities but as Migliorelli (2021) pointed out the heterogeneity inherent in the green market, from labelling to frameworks, may indeed dilute policy and industry efforts to streamline and mainstream sustainable finance, by triggering specific financial and policy risks. Moreover, the researcher also pointed out the technology risks inherent to low carbon investments that are developing and may potentially suffer substitution by technologies created later on in time.

The green equity sector, in particular, can be traced back to the 70s mainly in the US, where proto-green firms, according to the modern conception of them, started to implement green strategies. The subsequent step in this financial sector was the institution of green indices, that presented until the first decade of 2000 the main funding channel of green activities. It is noteworthy to say that the green indices around the world are neither homogeneous nor harmonized and some major differences can stem from the comparison, some of them have a relatively narrow sectoral or thematic focus while others include the whole business universe related to green activities. More precisely, the index constituents are selected and weighted differently according to index providers' approach. The most commonly used approach are: the first is screening that consist in the creation of a green / ESG / SRI subset of a broader market index; the second is the best-in-class approach where only a percentage of the best performing (in terms of sustainability) companies are selected; and the third approach is re-weighting, meaning that index providers adjust the weightings of stocks in a standard market index according to a green factor. For example, FTSE has three types of sustainable indices: FTSE4Good Series and FTSE Environmental Market Series involve a screening technique related to relevant technologies; while the third, FTSE CDP Carbon Strategy Index Series reweights companies based on the exposure to carbon risk. An example of best-in-class

approach is the MSCI World ESG index that applies it to the regional indexes that make up MSCI ACWI, a global equity index.

Moreover, the metric used can be considered as a distinguishing factor. Some providers select green stocks on a qualitative basis while others try to specify greenness using some quantitative measurement (Inderst et al., 2012). Some indices stress the absolute values, in others it is all relative to peer companies. Consequently, there is great diversity in the number and structure of the stock components of indices, ranging from specialist niche producers to the big multinational companies. These green indices do present limitations and weaknesses, even though due to the different weighting and selection approaches that may not be common to all. Some of the biases reported recall the ones described in the drawbacks of green investing, such as an overabundance of technology stocks (sector bias) or of small cap ones (size bias). Other biases, instead, stem from the peculiar creation of the indices, for example the country bias that limit the presence of equities from emerging markets. More often than not, the biases do not present the biggest downfall of the categories since green indices usually suffer from poor data quality and transparency, specifically with regard to the disclosure and reporting of environment and social information. It must be noted that in this regard many steps were made, thanks to regulatory efforts and investors engagement in the topic⁸.

For what concerns debt instruments, the first green bond was issued in 2007 by the European Investment Bank (Morningstar, 2021). From the first issuance to 2016, the green bonds' presence in the bond market was minimal and only limited to few financial institutions such government agencies and development banks. However, from 2016 the market size of green bond has steadily grown and the issuance has become more broad with a wider set of institutions that comprises green bonds, including sovereigns and corporations. At present times, bonds are the most important asset class for many categories of investors, in fact according to statistics from Climate Bond Initiative and Statista, the value of green bonds issuance worldwide amounted to 508.8 billion USD in

⁸ Cohen et al. (2022) found that environmentally engaged institutional investors induce firms to disclose climate-related information and, in turn, use the disclosed information in a way that encourages firms to reduce their carbon footprint.

2021⁹. Europe remained, from being its first proponent, the leading region of green bond issuance with 65 green bond funds domiciled in the continent. Just like equities, green bonds present both a stimulative side for the new opportunity of debt instrument but also entail multi-faceted risks. Morningstar¹⁰ still advise its users and investors that these particular type of fixed-income security is not to be considered a substitute of traditional bonds because they take up more credit and duration risk. Their financial purpose, always according to Morningstar, serves more as impact sleeve for the investor portfolio rather than replacing the traditional fixed-income holdings. Their impact characteristics is very well justified by the exponential growth of the market and by the fact that they raise capital which can be directly tied to green projects.

Finally, Alternative asset classes comprise the remaining financial products of the green market and are labelled as non-traditional financing vehicles like, for example green private equity and green real estate. As for green bonds, the incorporation of green factors in the alternative investment class is quite recent and as for equities, investors approach it in many different ways, ranging from the integration of green factors into the assessment of assets to the buying a thematic alternative fund. The direct channel of funds to infrastructure and development of sustainable green technology and projects represented by this broad category of asset class is of vital for the innovation process inherent in the market and allows sophisticated investors to bear the high risk of materialization of such projects. One example that seems compelling to cite, since I did my internship in a start-up accelerator, is the case of Energy Dome that went from being funded through Green Venture capitalists and green private equity funds to the construction of the first of a kind energy storage facility with liquid CO₂ in Sardinia.

⁹ STATISTA, Statista Research Department, Aug 15 2022, Green bonds market worldwide - statistics & facts.

¹⁰ https://www.morningstar.com/articles/1043249/what-are-green-bonds?utm_medium=referral&utm_campaign=linkshare&utm_source=link

1.2 ESG FACTORS AND PRACTICES

Behind the acronym ESG, increasingly known even outside the world of finance, and "sustainability", there are three very self-explanatory terms: Environmental, Social, and Governance. They are three fundamental dimensions to verify, measure, control and support (with the purchase of products or investment choices) the commitment in terms of sustainability of a company or an organization.

The term "environmental, social, and governance (ESG) investing" was first coined in a 2004 report (The Global Compact, 2004) which outlined the conviction of more than 20 of the world's largest financial institutions that positively addressing ESG issues is important for the overall quality of companies' management.

ESG criteria are the representation of a series of standards intended for measuring and monitoring the performance of companies in relation to their environmental, social and governance impact that inspires their activities. ESG investing represents a knowledge-driven investment style, increasingly used in the financial world as a platform for certifying the sustainability of investments per se and as a balanced assessment of the performance of companies, together with traditional economic parameters. The Global Compact further declared that: *"Companies that perform better with regard to these issues can increase shareholder value by, for example, properly managing risks, anticipating regulatory actions or accessing new markets, while at the same time contributing to the sustainable development of the societies in which they operate. Moreover, these issues can have a strong impact on reputation and brands, an increasingly important part of company value."* (Global Compact, 2004, p. 5). Specifically, ESG must be primarily traced back to a set of measurement criteria and standards (in many cases still under development) of an organization's environmental, social and governance behaviours within the workplace and in relation to the outside network and environment.

The rationale of these criteria, that only in a second phase take the form of a set of operational standards, is that they must ultimately inspire a company's operations to ensure the achievement of certain environmental, social and corporate governance

results. Many of the principles guiding the ESG logics should then be used by investors to evaluate and decide their investment choices.

The reference points of the Environmental, Social and Governance logics can be identified indirectly in two major moments in the establishment of a global green market: the 2030 Agenda for Sustainable Development and the United Nations SDGs and the Paris Agreements. The qualifying points of these two great and historic events are inspiring the strategies and methods by which sustainability is supposed to shape countries, organizations and businesses. The 2030 Agenda for Sustainable Development is the program signed on 25 September 2015 by the UN General Assembly, i.e. by the governments of the 193 member countries. The 2030 Agenda concerns commitments for people, prosperity and protection of the planet and is embodied in the 17 Sustainable Development Goals, hereafter SDGs, which make up a vast program of actions and interventions composed of 169 targets.

Figure 2: the 17 sustainable development goals as formulated by United Nations.



Source: United Nation website,

<https://www.un.org/sustainabledevelopment/news/communications-material/>

The 17 SDGs objectives are strongly interconnected and address a large family of issues related to economic and social development, starting from the fight against poverty,

hunger, to get to guarantee the right to health and education, access to water and energy, dignity at work and the possibility of creating conditions for inclusive and sustainable economic growth. Last but not least, the 17 SDGs address the issues of climate change and environmental protection, urbanization, and new models of production and consumption, alongside issues related to social and gender equality, justice and peace. ESG criteria are therefore not "new" at all, they are active and shared among the community of companies and organizations most attentive to the issues of environmental and social sustainability and good management practices of a company. Their importance has grown strongly as these criteria are used by the financial community to measure, evaluate, compare the environmental, social and governance performance of companies together with their conventional business performance. Therefore, ESG practices can unmistakably be seen as a financial translation of the ideal brought up by the UN SDGs.

The world of finance has begun to show great attention to the evaluation of ESG criteria, first of all for the management of different forms of investment that are inspired by criteria of social and environmental responsibility and that address objectives related to the environment, the social dimension and a governance inspired by ethical principles. Secondly, the attention of the financial world has extended to the evaluation of these criteria for all companies, regardless of their vocation or mission. Many published analyses have shown that the companies with the best ESG assessments are also those that achieve greater performance and that they better cope with risks, including emergencies or crisis situations.

With respect to the logic of evaluation, the criteria underlying the letter "E" of Environmental are environmental criteria and evaluate how a company behaves towards the environment in which it is located and the environment in general, for example the land consumption of the business or the use of harmful chemicals. The criteria linked to the letter "S" are related to social impact and examine the impact and relationship with the territory, with people, with employees, suppliers, customers and in general with the communities with which it operates or with which it is related, for instance the work-life balance of employees or the gender and racial distribution of the

workplace. Finally, the "G" of Governance concerns the issues of corporate management inspired by good practices and ethical principles, in this context the issues under examination concern the logic related to the remuneration of managers, respect for shareholders' rights, transparency of decisions and corporate choices, respect for minorities.

Then, ESG criteria are relevant because they allow the environmental, social and governance activities of a company to be measured on the basis of standardized and shared parameters¹¹. For a long time, the social, environmental and good governance practices of an organization have represented a completely free and independent choice by organizations and so their representation and communication. The results achieved were represented on the basis of commercial choices and logics linked to each reality and could not be measured or compared to those of other companies and could not be the subject of objective evaluations. The adoption of ESG standards, then, present financial operators the strain of novelty in its comparability of those environmental, social and governance activities. Although at present time, comparability is viable only within the same rating system and different agency ratings present different constructions of their scores.

To reduce the discussion onto the actors of interest, the reasons that push financial operators to pay more and more attention to ESG criteria in the analysis of companies and in decisions related to investments is the conviction that the integration of standard practices with ESG criteria allows to improve, not only financially, the performance of companies and in some respects allows greater control over the performance of financial portfolios. This motive acquired special relevance after 2020, due to the pandemic and its economic and social consequences.

The ESG analysis, in terms of assessing the performance of companies in relation to their situation and to the environment, society and the ethical principles that guide management, is also known as "extra-financial" analysis, precisely because it ties the more traditional financial analysis to complete the reading of corporate values and assets also from the point of view of sustainability criteria. This type of analysis is

¹¹ Shared parameters are intended to be shared within a rating system. For example, Bloomberg ESG scores uses different parameters from MSCI scores.

particularly important for the modern financial world when it comes to selecting the stocks of the companies that best meet the sustainability criteria based on objective parameters and criteria.

The positive financial impact of ESG (Environmental, Social and Governance) is determined by a number of factors. The first element comes from the realization that nowadays the environmental risk is an all-sector-encompassing problem, that augments by various degree both the systematic and the systemic risk that market actors have to bear and then, a sustainable society is in a position to face fewer risks related to environmental emergencies. A sustainable society, driven by a sustainable finance, would be able to comply better with the regulations that will presumably be more rigorous in terms of attention to the environment, ultimately being less subject to any legal disputes. At the same time, there are companies that, precisely because of this commitment, express a greater determination in terms of scientific research and innovation both in terms of production capacity (i.e., innovation in terms of operations and safety for personnel) and in terms of the relationship with their customers and partners, in terms of transparency and trust. This approach expresses its benefits in terms of reducing the risks related to incidents or inappropriate practices at the level of operations, customer relations and legal actions. Concretely, companies that base their strategies and choices on ESG criteria and that adopt appropriate criteria to measure and control their commitment are more resilient companies that can achieve better business results and that are at the same time less exposed to risks.

1.2.1 *ESG RATING*

Investments guided by ESG criteria represent a type of financial choice that in the past has been “confused” with the concept of sustainable investments. Certainly, ESG-driven investing has many points in common with the traditional sustainable investing, but they also have important differences. The first and most relevant concerns the concept of measurability. With the association to the values of sustainability it usually meant investments that are aimed at producing a positive return, which is obviously

measurable, from an economic point of view for investors, but they are also investments capable of generating positive effects for society and the environment. And these results must also be measurable and clearly representable. The difference compared to sustainable investments of the past or “traditional” is that the ESG approach allows to concretely measure the social and environmental effects of these investments. In addition to the economic effects linked to business results, they allow to create real rankings that put in merit-based hierarchical scales the performances of companies that aim to achieve results in environmental, social and governance terms.

The role of ESG rating as a crucial resource for investors and financial institutions is clearly noted by a letter written by the executive director of Eurosif, Victor Van Hoorn, to the Executive Director of ESMA, Natasha Cazenave:

“ESG ratings play an increasingly important role in European capital markets, as a growing number of investment products and strategies may integrate these ratings in their investment process. These ratings are meant to express a view or opinion of a specific provider across a complex and wide range of Environmental, Social and Governance (ESG) issues. Given their nature, the methodologies applied will inevitably vary between providers and the ratings for a company may vary and display low correlation. We believe this very plurality of views is beneficial for investors and enables them to form a more sophisticated view of a particular company, using different ratings to assess different aspects of the Environmental, Social & Governance spectrum.” (Van Hoorn, 2022)

What these sustainability rating aims to is to integrate a classic-rating classification by incorporating ESG criteria and measurement. By doing so, companies are graded not only for their financial performance, but also for the effect they have on the stakeholders and on the society. Even though stakeholders may possess the information and capacity to figure out the environmental, social and governance commitment of a company, the need of an intermediary to reliably assess in a timely manner the extent of those commitments is evident in the market. As a result, sustainable rating providers act as a bridge between the company and the stakeholders and serve the market advisory purpose by: firstly, gathering enough information and consequently formulate

a rating based on some constraints which can be associated to each dimension of ESG, the environmental, social and governance dimensions. Anyhow, for this process to be set up properly, the whole business environment must be able to sustain an adequate information system in order to guarantee constant flows of information towards the market and the rating agencies. A major difference between traditional rating and ESG rating is that the latter is often unsolicited, which means that companies do not ask to receive such service. Intuitively, only the virtuous would pay for being rated in order to display their well conduct. Thanks to the unsolicited setting of the ratings, the latter upward bias can be avoided but it must be noted that sometimes unsolicited ratings can be considered incomplete due to the fact that they access far less information than a similar rating done with the voluntary disclosure of information by the company.

For what it concerns the rating system, four focuses can be deduced about the company's ESG adherence, regarding the way in which these rating were redacted: first, assessing the risks confronted by the company from an environmental and social standpoint; second, determining the impact of the managerial strategies directed towards increasing the firm's sustainability in the long term; third, focusing on the company's innovational growth at an above-average rate, and on companies adopting innovatory methods; fourth, setting up specific processes to identify managerial best practices in term of social and governance responsibility. Due to the lack of homogeneity in the rating systems across agencies no generalized consideration can be deduced but it has to be stressed that the variety of sources available to the investor can convey the multifaceted commitment to ESG ideals of one's company through the analysis of each score, bearing in mind the way in which they are computed.

1.2.2 ESG INTEGRATION AT COMPANY LEVEL

Despite the fact that a plurality of agencies employing diverse approaches might lead a resourceful and sophisticated investor to less biased conclusions about a company's sustainability welldoing, it should be noted that the same plurality may deter certain investors from spending their time around it. Nevertheless, a response to this scepticism

in the ESG landscape is represented by the approach called ESG integration. Eurosif¹² defines ESG integration as “... *the explicit inclusion by asset managers of ESG risks and opportunities into traditional financial analysis and investment decisions based on a systematic process and appropriate research sources...*”. In addition to this citation, this approach further assimilates ESG information into company’s structure even without creating a real investment ESG strategy. This can clearly be seen in figure 3, where Ernst & Young, a world-renowned consultancy firm, clearly details the significant internal gains that can be attributed to the company after the adoption of ESG criteria that empower intangible assets inherent in the company.

Figure 3: ESG integration benefits at a company level



Source: Kalia and Tyagi, (2021), *Why integrating ESG into your business could be the key to its resilience*, EY research, available at https://www.ey.com/en_in/climate-change-sustainability-services/why-integrating-esg-into-your-business-could-be-the-key-to-its-resilience.

In this case, the management makes both investment decisions and workplace decision that incorporate ESG factors, making them relevant for the long-run subsistence of the business and for the traditional portfolio management and modernization framework. In other words, ESG criteria are exploited for their knowledge potential to analyse and

¹² <https://www.eurosif.org/responsible-investment-strategies/>

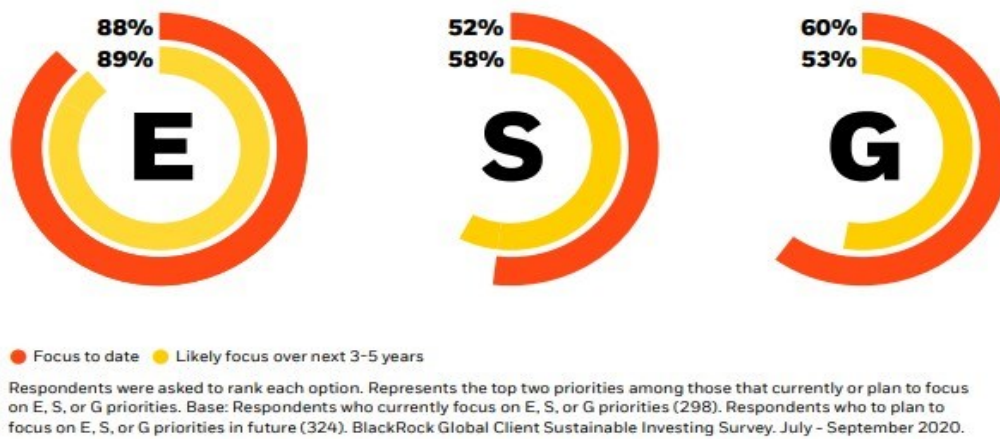
understand risk factors and return potential but also in light of their positive impact on day-to-day operations. Eurosif goes further into its definition by distinguishing the activities performed by the management of companies engaged in ESG integration into three categories: category 1: non-systematic ESG Integration, where ESG research and analyses made available to mainstream analysts and fund managers are used; category 2: systematic ESG integration, where the inclusion of ESG research and analyses in financial ratings and valuations is applied in the decision making process consistently; category 3: where mandatory investment constraints are based on financial ratings and valuations derived from ESG research and analyses . In Eurosif valuation, only categories 2 and 3 comply with its definition of ESG integration.

Currently, investment strategies that integrate ESG factors serve a distinct service for many providers of investment services, even though it is peculiar feature is the inclusion of several non-financial dimensions of a stock's performance. The main drawback of such inclusion, as previously said for the rating system, is the enormous amount of information on the firm's practices that has to be collected and processed. In other words, ESG integration potentially builds up an unnecessary burden on the investment process imposing costly constraints. Kempf and Osthof (2008) and Baker et al. (2018) found indeed that mutual funds' managers integrating ESG factors charged higher expense ratios. In their study, the average delta with respect to non-ESG funds was 13 basis points and this difference was found to be statistically significant. Other authors emphasize that ESG information provides a positive benefit by providing superior returns. For instance, Derwall et al. (2005) found that equity portfolios highly ranked in eco-efficiency (the economic value added relative to the waste produced) achieved higher risk adjusted returns than portfolios in the lowest ranking position of eco-efficiency.

The integration is not homogeneous even in its guideline term, as the research Sustainability goes Mainstream, carried out by BlackRock, tells us: between the three criteria Environment, Social and Governance, the environmental aspect is preponderant with respect to the "S" of Social and the "G" of Governance. The 425 investors involved in the research, active in 27 countries and representing 25 trillion dollars show that the

prevalence towards environmental issues is expected to grow in the next 3-5 years from 88 to 89%; the social part slightly exceeds 50% and is expected to grow from 52% to 58% while for the "G" of Governance there is a decrease in attention from 60% to 53%.

Figure 4: BlackRock's survey answer to present and future relevance of ESG criteria



Source: BLACKROCK, (2020) *Sustainability goes mainstream 2020 global sustainable investing survey*, p. 29, available at <https://documents.pub/document/sustainability-goes-mainstream-blackrock-kong-indonesia-japan-philippines.html?page=36>

II. INSTITUTIONAL INVESTORS' ROLE IN THE GREEN MARKET

2.1 INSTITUTIONAL INVESTORS' DEFINITION AND CHARACTERISTICS

2.1.1 AN INSTITUTIONAL OVERVIEW

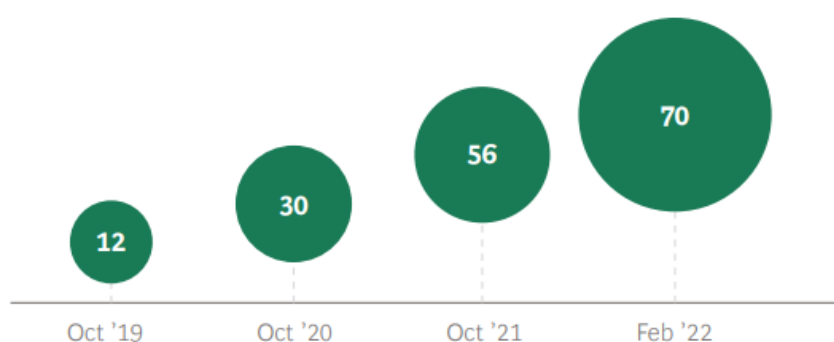
As green investing becomes more popular in the financial world, it is clear that individual investors may be unable to properly address the funding needs of the green market across all its asset classes. Furthermore, as the ESG criteria adoption becomes more widespread, it is even more clear that the individual investor contribution to the green market is, unfortunately, marginal. It suffices to remind that recent studies, by consultancy firm McKinsey, forecast the need of a yearly additional spending of \$3.5 trillion to respond to the objective of transitioning to a net-zero global economy¹³. Nevertheless, this last statistics does not take into account the other dimension of ESG criteria, the social and governance dimensions, therefore a much higher economic commitment must be taken into account.

The significant amount of spending, then, raises the question of who would be the bearer of such a capital and time-extensive transition. The designated actors should have not only the capacity of raising capital at a considerable speed and scale but also the capacity of operating with high regards to the principles of equity guiding their decisions. It is in this context that institutional investors gain a prominent and promising role. They comprise the primary layer of capital in the investment value chain, and are conventionally referred to as asset owners or allocators. However, the term institutional investor covers a wide range of organisations, from pension funds and mutual funds to foundations and trusts, and common definitions do not restrict the scope of the entities that it includes. In fact, institutional investors are those entity that pool money, from various investors and individuals, which are then invested throughout various asset classes. In contrast to individual investors, institutional investors are usually professionals in certain fields, so they are mainly distinguished from other investors in

¹³ Information and data gathered from Krishnan et al., (2022)

the market for their sophistication. The latter characteristics is mainly due to, or exactly the reason why, the size of this investors type allows it to perform better than their individual counterparts. This is particularly true when referring to the green market, as they are the most indicated financial actors in the literature and by important organizations, like the OECD and the UN. The margin call¹⁴ for institutional investors is to be placed chronologically as the origin of the sustainable public debate and the concurrent establishment of the green market. Figure 5 perfectly shows the growing adherence of institutional investor to the concept of green finance, associating in alliances, investments groups and agreements.

Figure 5: Total number of institutional investors in the Net-Zero Asset Owner Alliance (2019-2022)



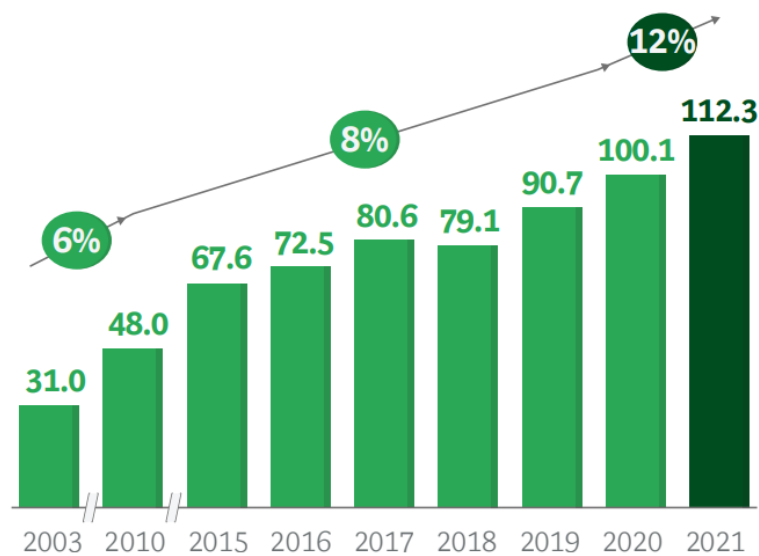
Source: BCG, (2022), *From Tailwinds to Turbulence*, p. 20

For example, the Decision No 1386/2013/EU of the European Parliament and of the Council, number 4, calls for an increase in private sector funding for environmental and climate-related expenditure, in particular by putting in place incentives and methodologies that stimulate companies to measure the environmental costs of their

¹⁴ The term, which indicates “a broker’s demand that an investor deposit additional money or securities into the account so that the value of the investor’s equity (and the account value) rises to a minimum value indicated by the maintenance requirement.” (Investopedia), is used metaphorically to symbolize the ultimate call to action.

business and profits derived from using environmental services. The superficial reason behind global reliance on this new dominant investor, shown in figure 6, is the mere size of the asset under management that according to the study “From tailwinds to turbulence” conducted by the Boston Consulting Group amounted to \$112 trillion in 2021.

Figure 6: Global asset under management by asset management entities (2003-2021) in \$trillions



Source: BCG, (2022), *From Tailwinds to Turbulence*, p. 4

As figure 6 presents, not even the COVID-19 pandemic seems to have slowed the asset management industry growth. Not only no saddle point is displayed, but also the yearly growth, 12%, from 2020 to 2021 is at the level of pre-pandemic years. What figure 6 does not reflect, though, is the actual amount available to institutional investors that can be redirected or committed to green investing. In a 2012 survey, OECD found out that at the time, whilst holding over USD 83 trillion¹⁵ in assets, less than 1% of the assets

¹⁵ The calculation inconsistency with relation to figure 5 assets may be due to differences in the markets considered in the computations and estimations

under management were allocated to green infrastructure. Nonetheless, noting the rising environmental awareness it is safe to say that the percentage share of those assets, dedicated to climate and social action, has risen consistently in the last decade. The other motives that make institutional investor eligible for leading green investing are peculiar to this set of investors. The size, the investment horizon and their sophistication make them able to provide the green investing landscape an efficient monitoring and information processing and, in addition to that, the engagement which allows them to purposely carry out activism within firms. Ultimately, in contrast to less sophisticated and smaller investors, they can address the green market needs across all its asset classes and exploit the positive feedback derived from environmental and ethical investments. In other words, the central positioning of institutional investors in the green market is due to their unique idiosyncratic traits.

2.2. INSTITUTIONAL INVESTORS' HETEROGENEITY

2.2.1 AGENCY THEORY

To better comprehend the role of the institutional investor in the market and their potential contribution, it is useful to make a historical digression onto the theories of the relationship between these actors and the market.

The first theory to consider is the agency theory (Jensen and Meckling 1976), which is one of the most influential in the management literature. In the agency framework, one party, the principal, contracts the services of another party, the agent. It is postulated that self-interest will impel the agent to deviate from wholly fulfilling the contractual obligation to the principal. Agency costs, which are borne by the principal, derive from this agent's tendency to engage in self-serving behaviour (Arrow, 1985). Principals would, then, attempt to minimize agency costs by supervising agents and by putting in place an incentive system that align agents' interests with their own.

The agency theory entrusts its validity, in part, on market mechanisms to respond to issues related to the separation of ownership and control, such as the market for

corporate control. These market mechanisms may have contributed to the renewal of shareholder activism that will be considered in depth in the next sections. The newly proposed concentration of control in institutional representatives' hands actually supports agency theorists' call for shareholder action in aligning managerial and owner interests.

The observation of how agency theory's assumptions conform to or are distorted by institutional investors proves particularly useful in highlighting the corporate areas in which they relate to and improve market practices, providing in some cases the rationale of their involvement in the green market.

The first two fundamental assumptions¹⁶ are that individuals are motivated by self-interest and agency costs to the principal will tend to emerge. Notwithstanding the fact that criticism have been postulated in the literature, we can consider these former assumptions to be present still in the institutional investor framework without alteration. The third assumption states that the dyadic contractual approach to relationship is appropriate. While the contractual nature of the relationship between the actors is not at stake, the dual direction may be, in the sense that it fails to comprehend the complexity of the business bonds in place. In other words, the dyadic contractual approach is insufficient for capturing the parties and interests associated with ownership through financial intermediation (Ryan and Schneider, 2003). The latter suggests that an institutional investment brings about new agency costs that are not considered in the two-tier agency structure, so that it is vital that institutional investors are burdened with the responsibility of monitoring actively the investee and help reduce the additional expense. The following assumption, the fourth, refer to the fact that the economic-based contractual solutions will reduce agency costs. In the case of institutional investor framework, agency theory is inclined to assume that conflict resolution occurs through the alignment of economic incentives rather than through the means of power and politics. The underlying meaning is that financial incentives provide a stronger pacification aspect with respect to other means of dispute resolution.

¹⁶ The assumption and structure of the agency theory refer to the one postulated in Ryan and Schneider (2003)

Anyhow, this statement does not rule out the incidence of power options available to institutional investor, as it will be described further on in the thesis. Then, the fifth assumption postulates that the monitoring of agents and the alignment of principal-agent interests will tend to put in place adequate forms of control. In fact, in an impaired power relationship one actor may have an informational advantage over the other, implying the emergency of asymmetries leading to higher agency costs. The acknowledgement of such power and knowledge disparities must favour the establishment of monitoring mechanisms, for example preventing risk such as the previously described greenwashing risk. The sixth assumption is probably the most blatant example of distance to the actual role that institutional investors must embody, it says that contract outcomes are measured in terms of financial criteria, for example, maximizing shareholder value. This cannot clearly be the case in the sustainable institutional investor scheme, since the principle of the integration of ESG in decision making processes is exactly the enrichment of valuation with extra-financial measures and analysis to achieve both financial and environmental or social or governance positive outcomes. Assumption number seven instead is the most controversial, stating that markets tend toward efficiency, anyhow without enumerating each market failures it is well known that frictions reduce efficiency. Market inefficiency is, counterintuitively, a reason why institutional investors are justified to become more relevant in the green market dynamics. Long-term institutional investors, in particular, are best suited to mitigate the moral hazard problem presented by market frictions because they can exploit their powers, through engagement or voice options. Finally, the last assumption is that a narrow focus on the contract itself is appropriate, meaning that the focus on the contract is the sole objective of the relationship, disregarding the effect of contextual variables. On the contrary, the contract and the relationship between the principal and the agent should reflect the range of external factors that ultimately influence the contract itself as, for example, the environment or the actual characteristics of the institutional entity and its network.

In summary, it can be observed that many of the basic assumptions of agency theory still hold in the application of the institutional framework. However, some critical parts have been superseded, at least to some extent, such as market efficiency, the financial criteria primacy in the contract valuation, and the extraneousness of the contract's

institutional context. The key information that can be derived from this analysis of agency theory is that institutional investors represent a crucial monitoring tool as part of external corporate governance. Thanks to exit and voice options, they enforce a strong monitoring mechanism that limit the moral hazard incurred by top executives, thus reducing agency costs. But the main common denominator of this assumptions, that have been proved to be short-sighted in the analysis of institutional investors, is the presupposition that they are a homogeneous group of investors with homogeneous preferences. The failure to extrapolate the heterogeneity of this investor category is present also in the literature, where many researchers do not recognize different features for specific types of institutional investors or even after recognising this diversification, they aim at explaining their behaviour in general terms (Gillan and Starks 2003, Ryan and Schneider 2003; Faller and Knyphausen-Aufsess, 2018). It is important to stress that principal agent theory represents the central theorem for prior institutional ownership studies. Thus, the application of such theory was not tailor-made for investors discussed in this thesis. An additional criticism is the assumption that institutional investors are only interested in the short-term financial performance, because traditional agency theory focuses on the financial value maximization of listed firms and neglects ESG performance (Kordsachia et al. 2021). Because ESG-related investments may reduce short-term financial performance, shareholders may put pressure on the management to disregard ESG performance and instead strengthen current financial performance measures and increase dividends.

2.2.2 STAKEHOLDER THEORY

The second theory that is worth citing is the stakeholder theory¹⁷. Compared to the agency theory, the stakeholder theory embodies a fundamentally different response to the separation of ownership and control. Stakeholder theorists advise managers to take advantage of their discretion to advance the interests of non-shareholder constituencies, rather than those of shareholders, as is the case in the current management-led version of agency theory. However, this theory also bases its claims on a managerial viewpoint that asserts that the introduction of the corporate form resulted in shareholders losing their property rights to the maximized profits of their companies, thereby diminishing their moral standing (Berle and Means, 1991, p. 312). This alteration left the ethical door open for other third parties, including clients, employees, and communities, to expect benefits that went beyond what their contracts previously entailed. In other words, the shift of power from shareholders to stakeholders could result in the former group being disinterested in the moral standing of the firm and, as a consequence, dispersed individual shareholders would only pursue dividends, an increasing share price, and a reasonable level of risk (Berle and Means, 1991). Whereas the assumption that shareholders' interests are purely monetary has been reinforced over the previous decades in the theory (Jensen and Meckling, 1994; Seth and Thomas, 1994), this financial consideration fades in the light of recent investor concentration and activism and of recently imposed constraints on managers. In fact, the investor type represented by modern institutional investors bring about a new paradigm, bearing little to no resemblance to the individual shareholders that the stakeholder theory refers to. For example, following the institutional-investor wake-up call of the 1980s and early 1990s, many shareholders discovered and increasingly exercised their newfound power to limit managers' discretion, both through influencing regulations and through direct intervention such as activism (Romano, 1993) and CEO firings (Ward, 1997). But on a more compelling note, public pension funds, labour-union pension funds and social-interest mutual funds started to pursue social goals as well as financial ones (Ryan and Schneider, 2002). The environmental and social motivations and interests of this new

¹⁷ As described in Hill, C. W., and Jones, T. M. (1992)

class of investors could thus enhance stakeholder theory, both by allowing theorists to embrace institutional investors as powerful potential allies and by sending a signal to critics that stakeholder theorists recognize recent shifts in the economy.

The overview of these two management theories serves the purpose of highlighting the economic and financial breaches where the institutional investor class can fill in the gaps and help to make finance more stable and sounder. In fact, while the classic agency perspective on social and sustainable practices argues that good social performance comes at the expense of good financial performance because valuable resources are misused instead of being spent on value-added projects or returned to shareholders, the stakeholder perspective argues that effective stakeholder management can enhance firms' ability to achieve competitive advantage and long-term value creation, and therefore, firms should invest in CSR¹⁸. However, in order for this value creation to be effective, both theorist and practitioners have to recognize the heterogeneity within this investor class so that realistic objectives are posed only to suitable actors.

The first source of heterogeneity is revealed by the temporal horizon to which institutional investors are operating. For instance, hedge funds and mutual funds often structure their strategies over the short-term whereas pension funds typically have long-term investment horizons. The firm itself but also the stakeholders should gain from the policies promoted by institutions with long-term investment objectives in order to increase the firm's long-term value (Gaspar et al., 2005; Allen et al., 2014; Harford et al., 2018). By influencing corporate policy and taking advantage of informational advantages, institutions with short investment horizons, on the other hand, strive to make short-term trading profits at the expense of the company's long-term worth. In addition to that, survey data from Graham et al. (2005) and results from Chen et al. (2014) reveals that executives of short-term institutional entities choose to sacrifice expenditures that can boost long-term value in order to fulfil short-term

¹⁸ used as a synonym of, between the others, green or sustainable, CSR is the acronym of Corporate Social Responsibility which is, according to Investopedia, "is a business model by which companies make a concerted effort to operate in ways that enhance rather than degrade society and the environment".

earnings objectives, which results in less funds being invested in R&D. Chen et al. (2014) finds that high turnover and momentum trading, associated to short horizon strategies, by institutional investors encourages managers' myopic investment behaviours when such institutional investors own a significant amount of the firm's stock. Likewise, Gaspar et al. (2005) find that investors with shorter investment horizons are subject to worse outcomes during corporate takeovers whether they are investors of targets or acquirers. Other studies, like Derrien et al. (2013), find that when a firm is undervalued, greater long-term investor ownership is associated with more investment, more equity financing, and less payouts to shareholders. This distinction acquires even more sense when we are referring to institutional investors that systematically integrate their investment decision making process with ESG criteria. From recent research, Glossner (2019), Kim et al. (2019) and Oikonomou et al. (2020), it has been highlighted that distinct investment horizons influence the capacity and incentive to implement a rigorous monitor mechanism, thus affecting different corporate resolution and behaviours related to the firm ESG performance.

Without implying any moral criticism toward short termism, long-term institutional investors are preferable when identifying the appropriate actor for fighting environment and social battle. In fact, financial markets necessitate investors with different views and investment horizons, while speculators or short-term financial operators can act as a warning and disciplining device (Wehinger, 2011), the long-term financing of environment-related projects and firm is lacking and therefore most needed. Financial stability and sustained growth may be fostered by long-term investors. Long-term investors can smooth their resources throughout the medium and long term due to the structure of their balance sheets. They resist to the herd mentality¹⁹ and are able to hold onto their investments during difficult times, acting in a counter-cyclical manner. Long termism is also associated to social and governance improvement. Long-term institutional investors have an incentive to convince to pursue and monitor managers towards agendas that intensify long-run value maximization because it seems that, besides altruistic motives, investment horizon determines the financial

¹⁹ "...institutional investors are less influenced by 'attention grabbing' stocks, tend to be less myopic than individuals in terms of the strategies their holding firms are employing ..."
Oikonomou et al., (2020).

advantageousness of environmental investments (Calza et al. 2016). Through long-term commitments, they are likely to implement a more responsible investment policy and to be more active investors, thus improving the governance of the enterprises they invest in (Wehinger, 2011). Whether their long-term strategies are motivated by economic or social interests, themes such as climate change can impact the economic growth over the long exposure they sustain, due to investments in green firms or projects. So that, there is growing concern amongst some institutional investors that the previous forecasts of the economic impact of climate change for the coming decades, have failed to properly consider the significant tail risks associated with extreme climate change and as a result these greatly underestimate the possible economic risks involved (Kaminker and Stewart, 2012). More specifically, following Krueger et al. (2020) temperature-augmented long-run risk models imply that climate risks should be a bigger threat for long-term investors, who are more likely to bear the consequences of adverse climate risk realizations. In addition, they refer to recent research based on archival data that suggests that long-term investors care more about ESG issues and that environmental issues matter more for investment performance when institutions are long-term oriented. These findings support the implication that long-term investors should be more concerned about climate risks than shorter-term investors. The topic of short-termism has been addressed quite extensively in global forums such as the OECD, the APEC, the G20 and the World Economic Forum. Generally, these initiatives call for more responsible and longer-term investment among institutional investors and a transformational change in investor behaviours. They try to tackle myopic investment behaviour that translate in practice in underinvesting in long-term, intangible projects like research and development for the purpose of meeting short-term goals (Kordsachia et al., 2022). An example could be companies that neglect environmental safety expenses and norms in order to fund other projects and later incurs in fines and compensation costs (Calza et al. 2016). However, the case for the long-term investments (e.g., environmentally and socially responsible investments) among institutional investors highly depend on the type of institutional investor involved, regulation-wise but also structurally banks and pension funds, for instance, operate in different ways with different objectives. Beside the contribution that long-term oriented investors may bring to the green landscape, they may also be the beneficiaries from the improvement of

a firm's environmental performance. The long termism of the institutional investors seems to be a relevant characteristic in the grasp of such benefit (Kim et al. 2019). In particular, the higher presence of investors with an extended investment horizon is associated to a higher capacity to direct funds to long-term investments such as green investments. Short-term investors, instead, are less concerned about environmental performance and they refrain from long-term firm value maximization, for the sake of short-term project remunerations (Erhemjamts and Huang 2017). Moreover, green investing, unlike vice investing, protects shareholders and stakeholders from future punishments and government sanction related to environmental and social practices, eventually leading to a better firm performance. (Oh et al. 2011; Calza et al. 2016). American based studies find that long-term investors, especially institutional investors, strengthen environmental and social performance (Meng and Wang 2020; Erhemjamts and Huang 2017; Glossner 2019; Kim et al. 2019; Lamb and Butler 2018; Boubaker et al. 2017). Finally, based on the large amount of studies cited, it seems evident that heterogeneity in investment horizon has a distinguishing function in the institutional landscape. In addition to that, it can be inferred that not just already sustainable investors should be drawn to green investing but also those long-term oriented institution, not pertaining to the sector since an either financial, reputational or efficiency incentive is put forth in the literature.

2.3 INSTITUTIONAL INVESTORS' MONITORING ROLE

The monitoring role performed by institutional investors is crucial in establishing their centrality in the green market. It becomes evident when analysing corporate structure of other market actors, for instance, Roe (1990) states that the rise of agency problems between shareholders and managers is not only derived from the separation of ownership and control but also by the atomistic or dispersed structure of the corporate ownership in firms. In fact, in an extensively dispersed ownership environment, firm management would refrain from actively monitor because of the free riding problem, where one owner would be subjected to all the implementation costs and simultaneously all the shareholders would benefit from the monitoring without actually paying for it. Thus, the ownership structure impacts both the magnitude and nature of agency costs. Institutional investors, and more specifically institutional ownership, seem to offer a gateway, as suggested before in agency theory's fifth assumption, given their sharp differences with individual investors in terms of size and sophistication. According to Gillan and Starks (2003), the involvement of large shareholders in monitoring or control activities has the potential to limit agency problems.

Other authors have further suggested that, since the benefits achieved through the monitoring are spread across all shareholders without incurring in a loss, then only large shareholders have the required impetus to put in place such monitoring activity. While the solution of the free-rider problem can be identified with institutional investors, Ho et al. (2020) pointed out that the monitoring effect would still be insufficient because large shareholders would only enforce such activity if commensurate to the potential gain or risk avoidance.

Li et al. (2021) find that the presence of large shareholders is associated with increased management turnover, suggesting that these institutions might provide a monitoring function. Moreover, Ho et al. (2020) find that the presence of institutional investors on the board is associated with tighter control over executive compensation. Heterogeneity is, once again, present in the discussion not only for the different characteristics between institutional investors but also regarding the way monitoring is enforced in the investee firm.

Lin and Fu (2017) categories three views of considering the interaction between the institution and the monitor function.

According to the “active monitoring” view, institutional investors actively oversee firms’ business, trying to minimize information asymmetry and agency costs, and enhance firm performance. The latter is achieved through the application of their highly developed managerial skills, professional knowledge, and voting rights to influence managers to improve both firm efficiency and corporate governance, in addition to helping the firm make business decisions. Furthermore, institutional investors can provide a direct channel of funding or exploit their network to sustain possible business expansions expansion.

According to the “passive monitoring” view, institutional investors are considered short-term traders that focus solely on speculative short-term trading profits based on information advantages to satisfy their portfolio needs (Elyasiani and Jia, 2010) rather than monitors determined to enhance corporate governance and financial performance. According to the “exploitation” view, institutional investors may cooperate with the management in order to exploit small shareholders and weaken firm performance. Specifically, they may overlook management fraud if they can benefit from it. Therefore, a negative relationship between firm performance and institutional ownership would be potentially shown if management undertakes activities that diminish firm value (Elyasiani and Jia, 2010).

As said previously, the incentives to monitor and their relative effectiveness varies within the institutional investor class and they refer to these precedent views according to their objectives. For example, Kaldonski et al. (2020) argues that long-term institutional investors, like pension funds, have a tendency to help the management avoid misbehaviours that are value destroying. Muniandy et al. (2017) differentiates between the different types of institutional investors and notices that pressure-sensitive actors have the tendency to back management proposals and resolutions, unlike pressure-resistant institutions. The underlying explanation is that the first type of investors might be more entangled with the management and it benefits from the business relationship in place, so that a management turnover or disapproval would be detrimental for their financial objectives. More specifically, a shareholding majority of

pressure-sensitive institutions in a company is associated with a higher amount of proxy votes that follows the management will. Moreover, firms with concentration of pressure-insensitive shareholders, such as pension funds and mutual funds have more proxy votes against management's recommendations.

Entailed to the concept of monitoring, there is the important market mechanism of transmitting information and processing them in an efficient and transparent way. Once again, institutional investor thanks to their sophistication and size might be a reliable actor. According to Roychowdhury et al. (2019), large institutional investors can reliably process insider information that they gather from management and pass it onto other shareholders. But for such monitoring to be credible, the institutional investor would need to invest and be actively monitoring for a sufficiently long period of time and hold enough shares to resolve the free-rider problem. Therefore, under certain conditions, there will be a positive outcome for the institutional investors who perform costly monitoring to oversee managers and transmit reliable information in the market. The green market, in particular, to operate efficiently relies on timely and accurate information regarding firms' risk exposures. High-quality information on firms' environmental risk exposures is critical for informed investment decisions as well as the appropriate pricing of the products menaced from these risks (Litterman 2016; Krueger et al., 2020). As outlined in reviews by Goldstein and Yang (2017) for financial information, and Christensen et al. (2021) for nonfinancial information, although disclosure may have benefits, such as increasing stock liquidity, reducing a firm's cost of capital, or making the pricing of risks more efficient, disclosure may also impose unaccounted costs on a firm. In the green investing context, disclosure on climate risks could reveal proprietary information about a firm's future strategy and current operations. Institutional investors have the potential to play a pivotal role in climate finance since their pressure is considered to be the most powerful financial mechanism to reduce firms' climate risk exposures, according to the investors and academics surveyed by Stroebel and Wurgler (2021). This pressure is likely to extend also to ESG-related disclosures. The reporting effect is highlighted by Bird and Karolyi (2016), whose results suggest that institutional investors demand incremental corporate disclosure and that such disclosure is informative and relevant to capital market participant. The failure to disclose does not necessarily forecast bad news or a brown firm if the

disclosure mechanism is costly or if there is a chance that the discloser merely has not processed or gathered the adequate information just yet (Kim and Lyon, 2011). Nevertheless, disclosure also entails a reputational feedback and might be beneficial for the firm and the investors.

However, monitoring is not to be considered as a free lunch for Institutional investors. For example, Daryaei and Fattahi (2020) describe that institutional ownership and the related monitoring impact on the firm impairs the equity market access to investors that experience reduced trading activity and, consequently, the lower liquidity. The relationship between liquidity and monitoring (or control) has been investigated by several studies, including Chung et al. (2020) that find that the monitoring effectiveness does not vary in different liquidity situations but the institutional presence can be detrimental when corporate governance is not decisive.

The monitoring function also influences boards, in fact a diversified board likely reflects more stakeholder representation on boards and therefore more CSR-friendly behaviours (Galbreath 2016; Rao and Tilt 2016) as well as better board governance due to quality information and stronger scrutiny from the different perspectives of the board members (Carter et al. 2003; Bernile et al. 2018).

2.4 INSTITUTIONAL INVESTORS' ACTIVISM

Institutional investors are not just static monitors²⁰ but they can be also active contributors. The theoretical framework on which the institutional activism is based on comes from Hirschman (1970), where the authors articulate the possible actions that the financial actor could pursue when the management of a company do not reflect the financial outcome required by the former. With the rising concern of social and environmental risks, the possible actions at disposal do not change, but the motives, mainly in the recent decades, acquired also social and environmental dimensions.

The first action, referred to as Wall Street walk, is the exit, thus expressing the dissatisfaction by selling the firm's stock.

The second action is the exploitation of the voice (i.e., the engagement of the management). The voice means that the unhappy institutional investor engages with the management of the firm in order to manifest the discontent while still trying to achieve the financial, social or environmental presupposed objective. A third course of action that might not be considered as activism is just holding the shares without actually impelling the management of the firm. Only the first two activities are taken into account, because they suggest an active response to a management or financial issue. The vast majority of research on shareholder activism implies that institutional investor activists, who are motivated primarily by financial rather than social purposes, are homogenous in their goals and preferences (Shi et al., 2021). However, institutional investor activists are likely to distinguish themselves substantially in their objectives and preferences, which in turn can factor in complexity and nuance into how these activists impact targeted firms' decision making. Kim et al. (2020) found that a crucial dimension in which institutional investor activists differ is their political ideology. The political ideology of other governance actors such as management executives and board members has been shown to shape their choices, decisions, and behaviours (Gupta and Wowak 2017, McDonnell and Cobb 2020) especially regarding stakeholder-related

²⁰ Monitoring can be classified as an active function, since mainly those institution that are interested in the course of action of the firm would be incentivised to bear the expense of such function. Anyhow, monitoring is not an action that necessarily imply dissatisfaction with the management.

issues (Chin et al. 2013, Gupta and Briscoe, 2020). Despite their common focus on a financial motive, liberal and conservative institutional investor activists present sharp differences in their attention to stakeholders. Therefore, institutional heterogeneity stems also from external contexts, such as politics, and may lead to different degrees of aggressiveness in putting forth the ESG agenda.

In general term, the activity of institutional investors presents advantages for the targeted firms, institutional investor activism can increase the firm's operational performance and productivity (Clifford 2008, Del Guercio et al. 2008, Brav et al. 2015) and innovation efficiency (Brav et al. 2018). Importantly, studies have highlighted that following hedge fund activism, the financial market valuation of targeted firms can increase as measured by Tobin's Q (Boyson and Mooradian 2011, Brav et al. 2009), and that the shareholders of targeted firms can experience positive returns on the announcement of the activism (Clifford 2008, Becht et al. 2009, Klein and Zur 2009). Some studies (Uchida and Xu 2008, Bebchuk et al. 2015) suggest that the positive returns do not revert in the long run. Overall, the evidence implies that the shareholders of targeted firms can benefit economically from institutional investor activism (Shi et al., 2021). Institutional investor activists, including pension funds, mutual funds, and hedge funds, undertake activist campaigns, varying from communication with management and board to lawsuits and takeover bids, mainly to seek financial gains (Brav et al. 2009). Voice options for institutional investor might be particularly effective since the impact potential of such engagement strategy is higher when the investor holds a significant amount of shares and builds strong relationships with the management of the target company (Ryan and Schneider, 2003). Moreover, the engagement strategy tends to be more effective when the investor is a large, internationally well-known, and motivated active shareowner with cultural affinity with the investee company. However, the voice is a difficult activity to capture because much of the activism is conducted "behind the scenes" through private negotiations where there is no external observation of the event (Jahnke, 2021). When taken public, it can be reflected by a shareholder proposal or public criticism, the former is good news in that it indicates increased monitoring. But it also signals that a shareholder could not negotiate a behind-the-scenes agreement with management. McCahery et al. (2016) find that the widespread use of private

discussions supports the view that investors try to engage firms behind the scenes through direct negotiations, and take public measures only if these private interventions fail. This observation, in their line of reasoning, might help explain why many shareholder proposals filed by institutional investors are eventually withdrawn before the shareholder meeting, and why stock markets often do not react positively to shareholder proposals. In addition to that, they note long-term institutional investors may have stronger incentives to intervene. For example, these investors may be more interested in long-term profits, they may be more likely to remain shareholders long enough to realize the corresponding benefits, or they may have more time to learn about a firm in order to intervene effectively. Even though this means that long termism assumes a higher engagement and intervention the same can be said for short-term institutional investors such as hedge funds that intervene in order to boost the short-term profits. For instance, short-term investors may push for actions that are profitable in the short term but detrimental to firm value in the long term (Bratton and Wachter, 2010).

The size of an institutional investor can also be important for the use of voice. Larger investors are more likely to have larger holdings in their portfolio firms, and larger holdings provide stronger engagement incentives because they allow an investor to keep a larger share of the benefits if engagement is successful (Jahnke, 2021). Furthermore, the high concentration of control partially inhibits the option of exit because of the related costs and therefore, favours the establishment of a company-wide discussion. Finally, engagement and the recourse to voice may vary across institutions because of different regulatory constraints, compensation structure, expertise, or conflicts of interest.

Lastly, several authors argue that exit and voice are complements. Starting from Hirschman (1970, p. 82) it has been reiterated that *“the chances for voice to function effectively ... are appreciably strengthened if voice is backed up by the threat of exit”*.

Levit (2014) shows that the option to exit improves the effectiveness of voice, even if a manager is not concerned about the short-term stock price. In his work, the two options are complements because the potential exit manoeuvre increase the ability of an activist to influence the management in the demanded direction. Similarly, Dasgupta and

Piacentino (2015) show that exit and voice can complement each other. In their model, voice comes in the form of costly shareholder proposals and managers only listen to shareholders if voice is backed up by the threat of exit.

The exit option, when considered by itself, is an aggressive tactic that publicly signals dissatisfaction, conveying the investor disapproval of management. Anyhow, this instigation of change may not be benefitted by the exiting party. As noted by Parrino, Sias and Starks (2003), the repercussion of institutional selling are various. To begin with, heavy institutional selling can put downward pressure on the stock price. In addition to that, the resort to capital markets might be signalling bad news to other investors that could react increasing the selling spree and contracting, even more, the stock price. As a result of the institutional selling, the ownership base composition could drastically change, for example, long-term institutional investors could be replaced by more myopic and short-sighted investors that only pursue profit in a limited time horizon. This last effect might be important to the board of directors if the types of institutions holding the stock affect share value or the management of the company. Parrino et al. (2003) also find that the practice of firing top managerial figures, instead of a voluntary CEO turnover, is associated with a higher drop in institutional presence in the year prior to the event. Their findings go along with the hypothesis by which institutional investors actions on the equity market shape the board of directors' decision-making process, in particular selling is related to a greater likelihood of CEO removal from office. Therefore, a board concern over institutional trading and ownership activity in their firms is highlighted. Further, the authors find that an external CEO is more likely to be replace the current one when institutional shareholding presence decreases, leading them to suggest that directors are more willing to break with the current corporate management and institute change, driven by the potential exit of important and sophisticated investors.

For what it concerns environmental, social and governance considerations, these options are undoubtedly beneficial since they describe the market mechanisms used to compel management and directors toward a sustainable agenda. By exploiting shareholder engagement, institutional investors can request and obtain meaningful changes in investee companies that improve the ESG performance of the latter.

However, the effectiveness of shareholder engagement is subject to certain market conditions according to which both the investor and the investee have appropriate incentives to implement the requests. Companies will not commit to changes that would significantly reduce their profits, augment excessively their exposure to risks, or negatively affect their competitiveness. Nevertheless, as it is described in chapter 1, the adherence to ESG criteria, while possibly impairing the financial side of a company, also grants reputational and risk avoidance incentives. As a last resort, institutional investors can also signal their perspective in secondary market to influence the firm trading activity or strategy through differentiated capital allocations. It must be noted that, certain sustainable financial institutions already convey a certain course of action without the need of engaging, acting on their reputation. This latter phenomenon can be interpreted as a market signal, in the sense that this already provides a signal to the market that a high value is placed on strong ESG performance at company level. The only problem entailed in signalling is that whether such signals are clear enough and whether they result in improved financing conditions for more sustainability is still not validated by compelling empirical evidence. Indeed, the findings by Kölbel et al. (2020) suggest buying and selling by investors in the secondary markets has a marginal effect on improving corporate practices.

2.5 APPROACH AND BARRIERS TO ASSET CLASSES

Market conditions also play a significant role in the evaluation of investment opportunities and investment selection (Eurosif, 2021). Interestingly, McKinsey estimates that nearly half of the €28 trillion investments necessary to transition certain key sectors to net-zero by 2050 – power, transportation, buildings, industry, agriculture, and infrastructure – are not profitable in the current market and policy context (Krishnan et al., 2022). Institutional investors are not venture capitalists, at least not all of them. Many between them are seeking investments which potentially guarantee steady, low correlation, long-term, and preferably inflation adjusted income streams. Generally, this investment profile tends to direct financial resources to established and mature technologies with characteristics that resemble more bonds. Moreover, the green technology landscape while vast and heterogeneous, is concentrated at pre-commercial stage, thus making it more compelling for private equity funds and venture capitalist that are willing to bear high risk to get high returns. Evidence suggests that a large percentage of breakthrough innovations comes from new firms that challenge existing business models and enterprises are motivated by a desire to have a positive impact on the environment and society through the endowment to such innovations (Eurosif, 2021).

An institutional investor has three basic options for investing in the green market. The first option is investing in corporations, by means of equity shares, corporate bonds, or other related investment vehicles, that then use this capital to invest in sustainable projects and improvement to the firm environment. These publicly traded instruments provide greater liquidity and visibility than off-the-market options and are, as a consequence, more suitable for institutional investors. The targeted corporations can be either already committed to green initiatives or present features that allows institutional investors to pursue a greening process. The second option at their disposal is direct investments in green projects, either through equity ownership in the project, loans, other private placement project debt instruments made directly to the project, or a host of other similar variations. The third option is, instead, represented by investments in pooled investment vehicles, such as investment or infrastructure funds,

that invest in green projects. Once again, these can be either debt or equity funds or a combination of both. From an institutional investor standpoint, the differences in the financial and market characteristics of these three investment options clearly imply diverse effects on the portfolio implementation. For instance, the degree of expenditure related to direct investment in green projects is not homogeneously distributed across institutional investors (McKinsey, 2022).

When institutional investors invest in a company, they are not only interested in investing in the series of assets that the company owns, but they also invest in the management, experience, and skills of the company itself. A significant slice of many companies' value lies not in the assets, but in the expectations and potential that the company will be capable of fulfilling using the said skills to create additional value. The value added can be reflected in the development of new assets, the entry in new markets, and the enhancement of the value of existing assets. Anyhow, from an institutional investor perspective, this also means, particularly in renewable energy investments, bearing a series of risks. One major example is the corporate strategy, whether the management will be committed to green project and initiatives in line with the institutional investor view for the long term or it will switch to brown investing. In the latter case, the previously described activism can play a crucial role in ensuring a long-lasting adherence to sustainability. (CPI report, 2013).

Alternatively institutional investors can resort to directly invest in green projects creating an opportunity to structure the institution's investment to match the profile of the long-term institutional liabilities. In fact, the advantages of certain institutional investors, namely pension funds and insurance companies, over others, namely banks, are that these institutions pursue asset-liability matching and their resources are long-term, spanning from 10 to 40 years. Insurance companies or pension funds can finance infrastructure projects, including large green energy projects such as large hydropower, as they are long-term projects (10–20 years) (Farhad and Naoyuki, 2020).

For what it concerns, pooled investment vehicles can bring to the table many of the characteristics of either corporate or direct project investment. If an investment fund is

large, well-researched, and traded over an exchange, the fund could eliminate both the liquidity and size constraints that may instead be incurred in direct investments. However, in this case, like corporate investment, to trade over an exchange and offer liquidity, the fund will be unable to lock into project investments for long durations and will thus reduce the connection to underlying projects. So, this option may be preferred by short-term institutional investors.

The downside of green investment is the number of constraints that still hamper the institutional investor ability to sufficiently fund the sector. While the regulatory system is adapting and trying to foster investment without endangering the financial position of institutions, financial constraints limit the potential effect of this investor type in the green market. Liquidity, for instance, is an important parameter for institutional investors involved in sustainable investment. In fact, green projects are very illiquid investments and a great shift towards them would disable the institution capacity of further investments and also the potential fulfilment of the current obligations, considering for instance potential withdrawal from clients.

2.6 INSTITUTIONAL INVESTORS' TYPE AND CONTRIBUTION

2.6.1 PENSION FUNDS

Pension funds are institutional investors whose main goal is to ensure there will be enough money to cover the pensions of clients after their retirement in the future. This type of institutional investors is a natural long-term investor, as it seeks assets that match the duration of their long-term liabilities. Therefore, they represent a perfect match for green projects and infrastructures that, typically, bear fruit over a long horizon. Such investments can promote productivity and efficiency in both the public and private sectors, and foster the type of economic growth that can address the environmental challenges to come (Wehinger, 2011). Their long termism enables them to engage with the management in a stable manner, as reported by Xie (2020). The same author states that shareholder activism has historically been pushed by the increase in pension assets and the adoption of ESG criteria.

However, the provision of this risk capital is dependent on the health of the balance sheet of these institutions, for example pension funds with a prevalence of older member in order to stand by their fiduciary duty should focus on conservative strategies rather than invest in pluri-annual projects. In this last example, pension funds are not well-placed to take on a fostering role in the green market as their balance sheets are weakened by large liabilities.

Cox and Wicks (2011) confirm the result of previous studies stating that dedicated institutional investor as pension funds are positively associated with an increased level of diversity in the workplace, factoring well the social and corporate dimension of ESG criteria. A recent study, Alda (2019), also finds that larger pension fund ownership positively impacts on ESG firm performance and encourages proactive behaviour towards environmental practices. In fact, the author concludes that firms with larger pension-fund shareholding are more incline to use renewable energies and disclose environmental information, increasing the firm transparency towards stakeholders.

2.6.2 MUTUAL FUNDS

Mutual funds are professionally-managed investment schemes, usually run by an asset management company that brings together individuals' financial resources and invests them in stocks, bonds and other securities. Mutual funds present a high degree of heterogeneity but they are normally short-term institutional investors with average holding periods of fewer than two years (Kordsachia et al., 2021). The existing literature shows that investors with longer investment horizons prefer firms with higher CSR and ESG scores and more effectively improve a firm's CSR policies (Starks et al. 2017; Gibson et al. 2020), thus mutual funds fall within the category that least impacts these enhancements. When comparing them to other institutional investors, actively managed mutual funds face a higher threat of fund outflows, have higher portfolio turnover, and seem to focus more on short-term financial performance, therefore limiting the incentives toward an active engagement with the management (Tucker, 2018). According to Bebchuk et al. (2017), this latter characteristic is due to the fact that mutual fund managers generally capture only a small fraction of the benefits that results from their stewardship activities while bearing the full cost of such activities. Both previously cited studies suggest that investment managers, those managing both passive index funds and active mutual funds, have incentives to be more passive with respect to governance themes than is optimal for their beneficial investors. Other researchers, like Dimmock et al. (2018), shed light to the inclination of mutual funds, with significant capital gains, to avoid threatening of existing their investment but, instead, focus on monitoring and extensively using voice option and votes. Therefore, the literature gravitates around specific mutual funds characteristics and, while recognising the contribution of mutual funds to green market across conventional financial instruments (Jia et al. 2022), its role in long term green investment still has to present conclusive results.

2.6.3 BANKS

Banks present a peculiar case in the institutional investors landscape because of their lending activity. Lenders occupy a unique governance position, given their monitoring and control abilities. To be specific, banks conventionally possess a comparative advantage driven by their bridge position in the economy which allows them the access to inside information (Anginer, Deniz, et al., 2019). The bank can, thus, access to superior information, relative to the information available to bondholders, reduces potential agency costs of debt financing (Fama and Jensen, 1985 in Gillan and Starks, 2003). Furthermore, the banking sector centrality is particularly evident in the fulfilment of financial needs of the private sector, by providing credit to households and individuals (Beck and Demirguc-Kunt 2006). The role of the banking sector is also critical since the financial resilience to climate risks that can be provided serves to support countries' adaptation to climate change. Banks can assist the minimization of climate change and sustainability risks, mitigating their effect, favouring adaption to climate change, and promoting recovery by reallocating funding to climate-sensitive industries. The role of banks in financing the transition to a green economy is to unlock private investments, to bridge supply and demand while considering the entire spectrum of risks and to evaluate projects from both an economic and environmental perspective (EBF, 2017). Although several banks have demonstrated their leadership in financing green or climate projects, the green portfolio of most banks is still very low (Park and Kim, 2021). The overall difficulty in approaching green investing is mainly explained by the financial and regulatory constraints imposed on banks. In particular, the new Basel III capital and liquidity requirements hampers the ability to sustain long-term banking and financial initiatives. Moreover, the IASB mark-to-market philosophy has been found to be particularly detrimental for long-term investments, since assets whose value is assessed in a long time horizon are subject to an instant market pricing mechanism; and the European Solvency II Directive additionally discourages insurance companies and pension funds from funding alternative asset classes, like green infrastructure, by impairing the match of long-term liabilities with long-term assets in their balance sheet (D'orazio and Popoyan, 2019).

III. REGULATORY FRAMEWORK TO FOSTER INSTITUTIONAL INVESTMENTS

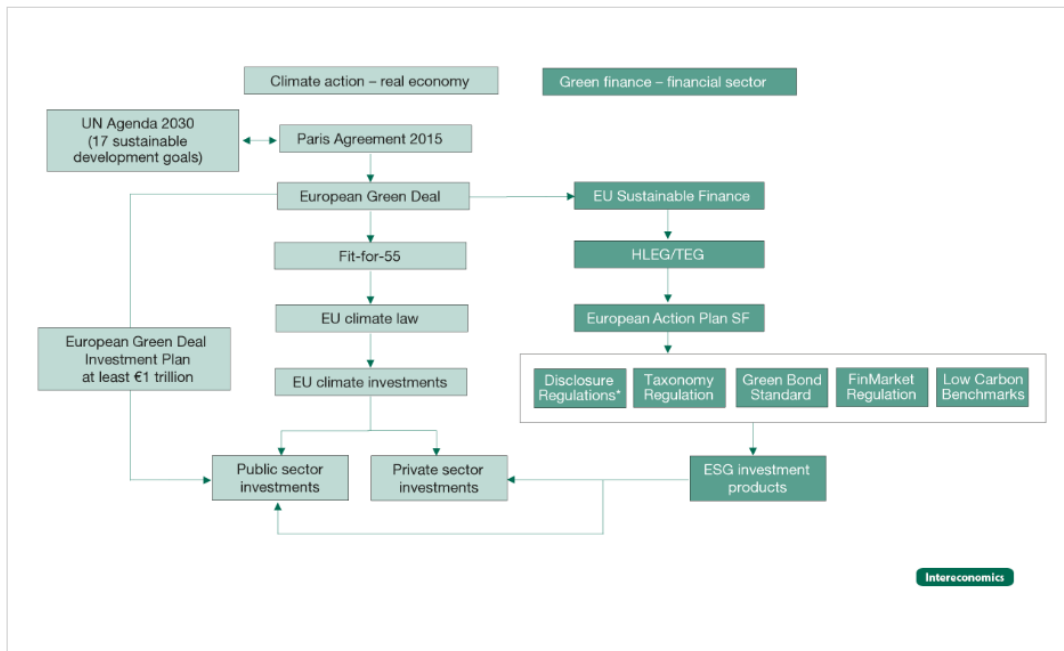
3.1 EUROPEAN ACTIONS REGARDING THE GREEN MARKET

3.1.1 CLIMATE PROTECTION AND GREEN FINANCE IN THE EU

A green transformation of nearly all parts of our economy is necessary, including but not limited to energy production and consumption, mobility, manufacturing and agriculture (Bruhl, 2021). Due to the global, multisectoral nature of the issue and the lack of reliable information, the massive expenditure amount needed is very troublesome to determine. Nonetheless, the estimated volume of investments required to achieve the low-carbon transition range from US \$1.6 trillion to US \$3.8 trillion annually between 2016 and 2050, for supply-side energy system investments alone (IPCC, 2018). The long-term policy makers support is instrumental for these objectives to be met.

At the European level, the legislative actions following the Paris Agreement of 2015 and the UN Agenda 2030 have been addressed to foster the green market in both the financial sector and the real economy. Figure 7 shows the articulated interaction of the climate protection regulatory tools with the ones developed for the financial sector. The climate protection part of the European regulatory strategy is intended to set up the restrictions and renewing the norms related to the environment, as the set of proposals brought up by Fit-for-55 that reminds the goal of reducing 55% of carbon dioxide emissions before 2030. The financial part regulates investments in different asset classes and tools to empower the financial sector both in term of purchasing power and clarity of the financial instruments at disposal.

Figure 7: The interaction between climate protection and green finance in the EU



Source: Bruhl V., (2021), p. 324.

The two branches of the EU legislative path come down to investments from the public and private sectors, in order to directly influence the real economy. The inception of this forward-looking strategy is embodied in the European Green Deal, that has the optimistic aim of making the EU climate-neutral by 2050 (European Commission, 2019). The financial aid from both the public and private sector are paramount in meeting the enormous investment goal set forth by the EU.

The EU estimates that approximately €350 billion of additional investment is required in the energy system alone each year up to 2030 in order to meet the 55% emission reduction target (European Commission, 2021). To fund the Green Deal, the EU Commission has notified that a total of €1 trillion will be directed in the green transformation of the European Single market. The funds will be retrieved, inter alia, under the 2021-2027 Multiannual Financial Framework (MFF) and Next Generation EU fund with a total volume of €750 billion. Even though it appears to be a massive amount, a huge gap of at least €2.5 trillion is still left unfunded and the common conclusion is that it is to be financed predominantly by the private sector, for which appropriate regulatory framework conditions and incentives are needed to further promote

environmental, social, governance investments (Bruhl, 2021). In fact, the financial provisions put in place by the European law makers stress particularly the green market foundations, through a detailed definition system and transparency requirements from market actors to consumers. Despite seeming of lesser importance with respect to the impending need of resources, the definition of what constitute a green or sustainable products or investment is crucial in the establishment of a sound and equitable green market. This is highlighted by a study²¹ by the BlackRock Financial Market advisory for the EU commission in which the second most feared challenge for the development of ESG products and services is the lack of standards and common definition.

The lack of resources is, instead, targeted through a plethora of funds accessible to both companies and investors that aim at facilitating the development of green projects and support of green businesses. The institutional investors' stance in the regulatory framework is deducible through the need of resources that these sophisticated actors can exploit, but no particular provision is set targeting this investor type. In practice, institutional investor due to their financial dimension and expertise are implicitly called up to play a major role in the green market, however the EU strategy involves all market actors. The implicit call is derived from the role that institutional investors can embrace in many of the funds established by EU, for instance, the Nordic Investment bank has become an entrusted entity to implement EU guarantees in the InvestEU fund alongside the EIB. In addition to that, they could also be eligible for support under the public sector loan facility entailed in the Just Transition Fund. Institutional investors are clearly not differentiated from other types of investors in all the set of standards that address the integrity of the green market, shown in figure X in the encircled box under the European Action Plan SF. These standards and regulations do not entail incentives for institutional investor but rather impose obligations in order to be properly recognized as sustainable actors.

The Taxonomy Regulation (Regulation (EU) 2020/852 on the Establishment of a Framework to Facilitate Sustainable Investments) is an important step toward a clear

²¹ BlackRock Financial Market Advisory, (2021)

and transparent market. It came into force on 12 July 2020, but many specifications are established through Delegated Acts. In order to discern precisely what constitute the criteria to be fulfilled by sustainable or green investment products, a clearly outlined classification system is established. Such a structured taxonomy serves the purpose by clarifying investor doubts, allowing them to recognize greenwashing and helping them to guide capital flows into sustainable investments.

A six-tiered scheme is set forth in the Taxonomy Regulation, identifying different environmental objectives by which economic activities can be classified as sustainable. Firstly, climate change mitigation comprises activities that contribute to a reduction of greenhouse gas emissions in line with the goals of the Paris Agreement, for instance through greater use of renewable energies. Secondly, climate change adaptation refers to activities that significantly cut down the adverse impacts of current and potential future climate change on nature and society. The other environmental objectives set out in the Taxonomy Regulation refer to the sustainable use and protection of water and marine resources, the transition to a circular economy, the prevention of pollution and the protection of biodiversity and ecosystems. Therefore, the qualification of sustainability for an economic activity is dependent on the substantial contribution to at least one of the environment objectives previously described, while doing no significant harm (DNSH) to the other objectives not entailed by the activity. Furthermore, the Delegated acts point out the precise screening standards to be applied so that a quantifiable positive effect can be assessed on the target. At last, minimum requirements on responsible management, as the OECD Guidelines on Multinational Enterprises and the UN Guiding Principles on Business and Human Rights, have to be met by the respective market actors. While climate change mitigation and climate change adaptation apply since 1 January 2022, the other objectives are applied from 1 January 2023. The Taxonomy is a pivotal element of the European Sustainable Finance Strategy as it affects the disclosure regulation of both financial institutions and corporates as well as the Green Bond Standard (Bruhl, 2021).

Considering the granularity and the preciseness of definitions for sustainable activities and the technical criteria to be met, the EU taxonomy is by far the most advanced compared to other alternatives in the market (OECD, 2020). The main benefit of the

Taxonomy, from an institutional investor perspective, is that it makes clarity on which activities are deemed sustainable, empowering the screening and selection of assets.

The Sustainable Finance Disclosure Regulation (SFDR), instead, imposes mandatory ESG disclosure requirements for asset managers and other financial market participants (Regulation (EU) 2019/2088). The SFDR, being a primary source of law, is directly applicable and it deepens the pre-existing disclosure legislation for financial market actors according to the industrial specificities (AIFMD, UCITS, Solvency II, IDD and MiFID II). Asset owners and financial advisors are mandated to disclose how sustainability risk are included and taken care of in the investment process. Their considerations must also acknowledge the principal adverse impact (PAIs) on sustainability factors that incur in the investment decisions and advice. The SFDR is developed in such a manner that sustainability disclosure obligations apply on financial products and advisers at two different levels: the entity level and the product level. At the entity level, the focus is set on the process of integration of sustainability risks in the investment decision making and financial advice. The SFDR mandates all firms to provide such information. At the product level, instead, the regulation focuses on widening the array of information about products, thus firms are required to disclose additional materials involving the objectives of a given financial product. The peculiarity of this latter obligation is that it is not restricted to sustainable products but it refers to all firms' products regardless of their sustainability parameters. Nevertheless, those products that have environment or social purpose need to provide additional information on how these purposes are addressed, such as the degree of alignment to taxonomy of the underlying economic activities, according to art. 8. All levels of disclosure are in force since 1 January 2022. The Disclosures Delegated Act (C(2021) 4987 final) directly targets large financial and non-financial companies on the part of their business, portfolio or lending activities that are in line with the EU taxonomy by requiring details on the content, methodology and presentation of information to be disclosed. Some large institutions are even required to publish non-financial information under the Non-Financial Reporting Directive (NFRD). The SFDR, the NFRD and the Taxonomy Regulation acts jointly to specify the key performance indicators (KPIs) related to turnover, capital expenditures and operational expenditures that non-financial companies have to communicate to the market. In

addition to that the cited regulations are complemented by the Disclosures Delegated Act, that define the appropriate definitions, calculation methods and reporting requirements for each KPI. Nevertheless, the Taxonomy Regulation avoids the imposition of such KPI on financial institution in light of the fact that these measure are business-sensitive and a generalized measure would grasp the sustainable effort of all the actors considered. This objective is mandated to the Disclosures Delegated Act that, also in this case, presents specific sustainability-related KPIs for banks, asset managers, investment firms, insurance and reinsurance firms, so that investors and other stakeholders can assess and measure the proportion of taxonomy-aligned economic activities performed by each financial institution. In particular, the proportion of investments, made according to taxonomy-aligned economic activities, in collective and individual portfolios has to be disclosed by all asset managers and investment firms. For credit institutions and investments, an ad-hoc performance indicator has been introduced, the green asset ratio, whose goal is to convey the proportional exposure of sustainable assets, as described in the Taxonomy Regulation, on the total assets. In addition to that, the banking industry is more closely stressed through the requirement of disclosure regarding the allocation of their trading book and the proportion of their fees and commission income derived from taxonomy-aligned activities of their clients. Likewise, analogous obligations are set to apply to insurance and reinsurance companies, for example the disclosure of taxonomy-aligned percentage of their underwriting and investment activities.

Finally, The European Green Bond Standard, like the previously cited regulations and directives, imposes strict criteria in the European bond market in order to achieve higher integrity and high-quality practices. Green bond issuance continues to experience persistent growth, especially over the last five years, with an estimated total issue volume of US \$270 billion, representing a compound annual growth rate of 60% since 2015 (Climate Bond Initiative, 2021). The primary aim of European institutions is, in this case, to avoid greenwashing. Even though several market standards have already been present in the sector, of which the ICMA's Green Bonds Principles are the most renowned, they do not present a strict categorization system. The Green Bond Principles present a list of green activities suitable for financing via green bonds. On the contrary,

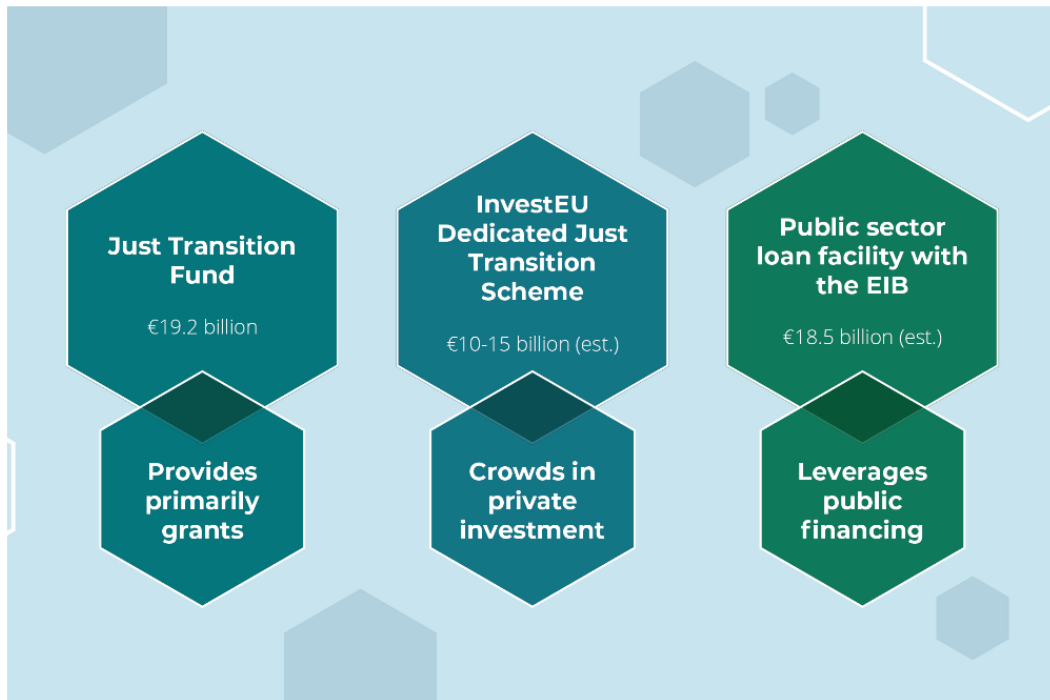
the European Green Bond Standard (COM (2021) 391 final) intention is to establish a voluntary European high-quality standard applicable to all issuers, even outside the Union, to incentivize the fruition of sustainable investments. These high-quality standards are achieved through the imposition of certain criteria in order to qualify as green bonds. For instance, the funds collected through the bond issuance must, then, be completely allocated to economic activities deemed sustainable under the Taxonomy regulation. Moreover, a European Green Bond Allocation Report has to be disclosed by the issuer on a yearly basis detailing the use of the funds and external reviewers, selected by ESMA, are delegated to monitor the compliance with the standards. Ultimately, a European Green Bond Impact Report on the positive and potentially negative environmental impacts of the bond related activities has to be published at least once during the maturity of the bond. These strict criteria are designed to foster market integrity by avoiding greenwashing, but also to enhance investor confidence and issuer transparency.

3.1.2 *JTM AND INVESTEU*

Regulation (EU) 2021/1060 of the European Parliament and of the Council of 24 June 2021 lays down common provisions for the establishment and government of 8 EU funds in shared management with the member states and the regions. These eight funds jointly represent a third of the EU budget, directed to sustain European markets across different objectives. The lion share of this budget is allocated to 5 common policy objectives: a more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity; a greener, low-carbon transitioning towards a net-zero carbon economy and resilient Europe by promoting clean and fair energy transition, green and blue investment, the circular economy, climate change mitigation and adaptation, risk prevention and management, and sustainable urban mobility; a more connected Europe by enhancing mobility; a more social and inclusive Europe implementing the European Pillar of Social Rights; a Europe closer to citizens by fostering the sustainable and integrated development of all types

of territories and local initiatives. Each fund has specific objectives defined in their respective Fund-specific regulations. The 8 funds covered by this common regulation are: the European Regional Development Fund (ERDF), the European Social Fund Plus (ESF+); the Cohesion Fund (CF), the Just Transition Fund (JTF), the European Maritime, Fisheries and Aquaculture Fund (EMFAF), the Asylum and Migration Fund (AMIF), the Internal Security Fund (ISF) and the Border Management and Visa Instrument (BMVI). The importance of these funds is directly attributable to the massive channel of funding that institutional investors, among others, can potentially be granted. Between all the funds, the JTF could possibly be the most beneficial with regards to institutional investors. Its mission, entrusted in the Just Transition Mechanism (JTM), is ensuring that no one is left behind in the transition to a climate-neutral economy. Since the task is extremely demanding in term of financial resources, the JTM is expected to mobilise around €55 billion in the period 2021–2027 to support the regions, sectors and workers most-affected by the transition. As Figure 8 shows, the structure of the JTM is articulated in three pillars.

Figure 8: Pillars of the Just Transition Mechanism



Source: European Commission, [Infogregio - Just Transition Fund \(europa.eu\)](https://infogregio.eu)

The first pillar of the Just Transition Mechanism, regulated by Regulation (EU) 2021/1056, is the Just Transition Fund (JTF). Through the fund monetary capabilities, the Commission is able to administer grants to those regions that might be more profoundly transformed by the transition to a climate-neutral economy. The Fund has a considerable number of resources, €19.2 billion in current prices, and it is expected to mobilise around EUR €25.4 billion in investments with national co-financing and voluntary transfers from other funds²². The JTF also prescribes the possibility of additional transfers of resources by the member states from their national allocations, under certain limits. The aim of the JTF is to alleviate the socio-economic costs triggered by the transition towards carbon-neutrality, supporting the economic diversification and reconversion of the most-affected territories and helping people to adapt in a changing labour market. Support can be provided to: productive investments in small and medium-sized enterprises; the creation of new firms; environmental rehabilitation; investments in clean energy; upskilling and reskilling of workers; job-search assistance; active inclusion of jobseekers' programmes; and the transformation of existing carbon-intensive installations, when these investments lead to substantial emission cuts and job protection. Therefore, the EU policy embodies the environment and social effort that guides UN SDGs and the ESG criteria but this first pillar is not directly applicable to institutional investors since it acts on the real economy level. In other words, JTF supports the establishment and improvement of green projects and enterprises that bring innovation in the sector. Institutional investors, acting on the financial playfield, are indirect beneficiaries only in the sense that they could invest in the selected projects avoiding some of the risk entailed, by the simple reason that part of the funding is linked to national or regional authorities.

Anyhow, the EU also considers more direct ways to directly influence the involvement of big market actors in the green market. In fact, private and public investment cannot be sustained merely by EU funds. In order to attract private investment, support for green financial instruments, such as loans equity and guarantees, are put in place since they allow an implementation of EU objectives which goes beyond the usual disbursing

²² [Inforegio - Just Transition Fund \(europa.eu\)](https://europa.eu)

of funds to beneficiaries. The strength of these financial instruments is the fact that they enable to leverage public investment by making green project more financially sound and convenient for private investors. It suffices to note that, by the end of 2021, the ERDF and CF paid €12.9 billion to beneficiaries and in the form of guaranteed loans and resulted in the mobilisation of €48.3 billion of financing (through loans, loans backed by guarantees supported from programme resources, and equity support or similar)²³. So that each euro from the EU funds brought about €3.7 in financing. The application of these financial incentives can be provided by the EU through financial intermediaries in Member States under shared management to support their policies and programmes. Start-ups, SMEs, and larger businesses can all benefit from this type of funding. The various types of financial instruments, equity and debt, loan guarantees, venture capital and risk sharing facilities led to the above-mentioned promising result so that the EU has doubled their use in the programming period from 2014 to 2020 compared to 2007-2013.

The second pillar of JTM is dedicated to crowding in private investments, establishing the InvestEU scheme. InvestEU acts in the framework of TJTPs (The Just Transition Platform), covering the funding gap in a wide range of initiatives including green alternative asset classes, such as projects for energy and transport infrastructure, including gas infrastructure and district heating, as well as decarbonisation projects, economic diversification and social infrastructure.

However, the InvestEU scheme pass through the European Commission that provides a budgetary guarantee to implementing partners to provide financing directly or indirectly to project promoters located in just transition territories with an approved TJTP. Projects not located in those territories can also benefit from the scheme, provided that those projects contribute to meeting the development needs stemming from the transition of those territories as set out in the relevant TJTP. Moreover, the establishment of the InvestEU Advisory Hub act as a central reference for those seeking advisory and technical assistance for projects under pillars 2 and 3 of the JTM, as well as for some projects to be financed under the JTF. The latter provides tailor-made technical

²³ Inforegio - Financial instruments have leveraged almost 50 billion worth of financing for the benefit of the European Union (europa.eu)

assistance and capacity-building support, depending on the needs of the project promoter. The hub is intended to link green innovators to financial institutions, that possess advisory power and expertise, creating a long-lasting business relationship that entails the support of the project selected to the financing stage. The InvestEU Advisory Hub complements the InvestEU Fund by supporting the identification, preparation and development of investment projects across the EU, as well as the capacity-building of project promoters (Bruhl, 2021). The relevance of the InvestEU Portal is given by the single and unique EU-wide database of investment opportunities that joins the two ends of the innovation process, the project promoters and the investors. Once again, the institutional investor figure is not specified, but it is clearly entailed that, as a financial intermediary, it can support the strengthening of green infrastructures that would be otherwise difficult to invest in and as a business company in making green practices common in day-to-day operations and strategy. In fact, The InvestEU Programme's goal is to foster the real economy supporting innovation and job creation, together with the assistance of the financial sector backing sustainable investment in the European Union. The estimations suggest it will trigger more than €372 billion in additional investment over the period 2021-27 by bringing together, in a single entity, the European Fund for Strategic Investments and 13 other EU financial instruments. The idea of this massive support is born to create an ad-hoc repository that is uniquely suited to provide long-term funding to companies and to support EU policies in a recovery from a deep economic and social crisis. The recent crisis and pandemic situation have influenced the market allocation of resources, which is not fully efficient, and the perceived risk impairs private investment flow significantly. InvestEU, whose budget stems partly from Next Generation EU, can, thus, administer crucial support to companies in the recovery phase and in the meanwhile, it redirects a strong focus of investors on the EU's medium- and long-term policy priorities such as the European Green Deal, the European Green Deal Investment Plan and the Strategy on shaping Europe's digital future. In particular, the InvestEU Fund aims to activate €372 billion of public and private investment by means of an EU budget guarantee of €26.2 billion in support of investment by implementing partners such as the European Investment Bank (EIB) Group and other financial institutions, and increase their risk-bearing capacity. According to EU commission estimations, the financial partners will contribute at least €6.55 billion (25%) in risk-

bearing capacity. The budget guarantee is partitioned among the 4 policy windows, where €9.9 billion are dedicated to sustainable infrastructure, €6.6 billion in Research, innovation and digitisation, €6.9 billion for SMEs and finally €2.8 billion social investment and skills. All investments linked to green and digital transitions, enhanced resilience and strengthening value chains are valued as strategic in the EU optic and can, thus, fall into all of the four windows since they retain a common European interest. The final recipients, that are deemed economically viable according to internationally accepted standards, can be natural or legal persons established in an EU country or in a third eligible country, including, as reported in the dedicated website (investeu.europa.eu): private entities such as special-purpose vehicles (SPV) or project companies, large corporates, midcap companies, including small midcap companies, and SMEs; public sector entities (territorial or not) and public-sector type entities; mixed entities, such as public–private partnership (PPPs) and private companies with a public purpose; non-for-profit organisations.

It must be pointed out that funding resources are not distributed equally to member states and this give rise to some controversies. In fact, in the attempt of channelling resources to the green market to foster its integrity and soundness, this capital might endanger effective competition in EU market. State aid rules regulate the Single market in the attempt to grant equitable and fair competition across national firms that are subject to profoundly different socio-economic but also cultural conditions. In order for breaches of such rules to be avoided and, at the same time, allowing to target market failures and foster private investments, EU funds managed centrally by the Commission were deemed to not constitute State aid. In June 2018 the Commission advanced an amendment to one of the Council regulations governing EU State aid control and the Council adopted it in November 2018. This revised enabling regulation enables the Commission, under specified conditions, to exempt Member State funding channelled through the InvestEU Fund or supported by the InvestEU Fund from the requirement to report such interventions to the Commission prior to their implementation. As long as the condition detailed in the amendment are fulfilled, the funding from Member States would be declared compatible with EU State aid rules. The Commission proposal, thus,

ensures that State aid rules can help facilitate a seamless deployment of the InvestEU fund.

The third pillar of the Just Transition Mechanism, recalling figure 8, is the public sector loan facility, established by Regulation (EU) 2021/1229. The facility is intended to leverage public financing to support projects that do not produce a sufficient stream of revenues to cover their investment costs. The EIB provides up to €10 billion in loans as finance partner, while the Commission provide an additional amount, up to €1.5 billion in grants. These loans and grants will ensure financial support for public sector entities to meet their development needs in the transition towards a climate-neutral economy. The public sector loan facility is accessible to all public sector entities through an open call for proposals. The applications may be made by any public sector entity²⁴ wishing to finance a project based in, or benefitting, a just transition territory identified by the JTM. Therefore, institutional investors in regulations do not enjoy the same attention of international climate change stages, where they are recognized as a primary actor in the transition. That is to say that institutional investors are not explicitly called out within regulation but they can benefit from European financial resources, as any other company, to green their operations and portfolios.

3.1.3 COUNTRIES SPECIFIC LEGISLATION

At the national level, the heterogeneous European landscape favours financial institutions mainly on a fiscal perspective. The fiscal action of European countries is articulated in tax credits and incentives. To foster the green market almost all European countries implement a tax deduction or subsidy on R&D, but institutional investors specifically benefit from tax credit on investments.

²⁴ In this case, a public sector entity means a legal entity established in a Member State either as a public law body or as a body governed by private law entrusted with a public service mission.

The Italian law system actually facilitates investments on tangible and intangible assets 4.0, described in Annex A of Law n. 232/2016 as those assets that are functional to enable the sustainable and digital transformation of firms, applying different benefit rates. The benefit differs also according to the period of the investment and the acquisition cost. For tangible assets, with investment made between 1 January 2022 and 31 December 2022, 3 tax credit brackets are recognized: 20% of the investment cost if up to €2.5 million; 10% of the investment cost if between €2.5 and €10 million; 5% of the investment cost if between €10 and €20 million²⁵. For the following time period, until 30 June 2026, the tax credit is still recognized but halved with respect to the previous period keeping constant the investment amount.

On the other hand, intangible assets, included in Annex B of Law 232/2016, were redefined in Law No. 234/2021 introducing different rates depending on the year of investment. More in detail, the investments made up to 31 December 2023 were granted a 20% tax credit (relative to the cost) up to a maximum amount of eligible costs of €1 million and the benefit rate was increased to 50% for those investments concluded in the 2022 fiscal year. In the fiscal year of 2024, the tax credit is granted at 15% of the cost, again up to an annual maximum of EUR 1 million. The following year, 2025, the tax credit is granted at 10% of the cost, again up to an annual maximum of EUR 1 million. The tax credits are available to all companies that invest in eligible activities, regardless of the legal form and the economic sector in which they operate. Furthermore, a tax credit is in place for technological and digital innovation and ecological transition that applies to all the enterprises that invest in related activities and projects. The 2022 Budget law set the applicable rate for technological innovation activities or project compliant to the 4.0 model at 5% with a maximum annual amount of €2 million. Whereas, the tax credit for investment to foster digital innovation and ecological transition is set at 10% with maximum limit at €4 million for 2023 and 5% for the following period up until 2025 with the same maximum limit.

The German law, quite surprisingly, does not offer tax incentives, at least none is registered to foster investment environmental activities.

²⁵ The Budget law 2023 reduced the relevant tax credit for tangible asset in each bracket by cutting them in half.

The Netherlands system instead presents deductions on investments in environment-related and energy-efficiency assets. The latter, given that the asset meet the energy list requirement, enables with a minimum investment of €2.500 an additional deduction to the Corporate Income Tax (CIT) equal to 45.5% in 2023. The right of the deduction, called EIA, is subject to its timely report to the Netherlands Enterprise Agency. For what it concerns the investments in environmental assets, given that they are compliant with the environment list requirements, the deduction (MIA) applies to corporate income tax with the same minimum amount of the EIA deduction. However, in this case, the allowance is divided in three brackets: 45%, 36% and 27% depending on the ministerial classification of the asset and the maximum limit is €25 million.

Lastly, French Law do not have incentives to green investments but it relies, for the fostering of such investment, on a favourable depreciation scheme. However, both French and German apply eased regimes on start-ups expenses making them more appealing to investors.

Once again, institutional investors do not have tailor-made incentives at a national level across Europe. The reasons may be numerous but clearly national authorities, in the light of the funds accessible and the characteristic of these actors, may pursue different routes to encourage green transition. In fact, the diverse governmental efforts are directed to foster the real economy side of the transition, while the financial sector's focus has been addressed nationality through the establishment of market mechanisms that are sound and transparent.

IV. EMPIRICAL ASSESSMENT OF INSTITUTIONAL INVESTORS' ROLE

4.1 EMPIRICAL ANALYSIS' BACKGROUND

Many of the researches that target institutional investors investigate the premises put forth by the agency theory, in particular the short-term orientation of such actors. Questioning this cornerstone of the theory is particularly relevant in the green market framework due to the fact that, according to theorists' logic, the integration of ESG criteria would be avoided by institutional investors in order to enhance shareholders value through the redirection of expenditure toward short-term profitable businesses (Bebchuk et al. 2017). The academical landscape on the matter mainly focuses on the importance of institutional ownership to respond to the issue of the role in the sustainable environment. The institutional ownership ratio, nature and type clarify which actor is deemed more suitable or active with respect to ESG performance, allowing when on scope, the inclusion of heterogeneity in the analytical investigation. Whereas the recognition of heterogeneity may clearly reflect an added value to the research, the analysis of the aggregated data still conveys important hint to institutional investors' behaviour. In fact, the analysis of the aggregate institutional ownership serves to present the general movements toward sustainability in the sector and these latter can be, in future research, investigated to determine the precise incidence of each particular investor type. In addition to that, institutional ownership and ESG²⁶ have a bi-directional relationship (Velte, 2020) that will be investigated in my dissertation thanks to the consideration of two models proposed in two scientific papers. The first model, referring to Jia et al. (2022), considers institutional ownership as an independent variable, while in the second model, referring to the work Mili et al. (2019), institutional ownership is treated as the dependent variable.

Jia et al. (2022) examine the presence of institutional investors, more specifically mutual funds, in the Chinese stock market, basing the rationale of their study on the increasing

²⁶ In this case no specification is attributed to ESG due to the fact that researchers investigate the relationship in terms of different ESG-related matters such as the scores, the criteria or some individual dimension of them.

amount of funds' resources that are being poured in the Chinese capital market. Moreover, they investigate whether the increased institutional investors' presence is an expression of the financial world concern over the ESG subject and whether it serves the greening of the Chinese economy. To test the involvement of this financial actor in the promotion of ESG values and performance at company level they pose themselves three questions. The first question is whether mutual funds invest more in green firms given that the Chinese governmental and local authorities developed highly encouraging policies. They describe the tendency to invest more in sustainable firms as the attention effect and test it through a logistic regression. The second question is whether institutional investors play a role in promoting their investees' social performance in term of ESG rating. Thanks to their sophistication, information advantage and, above all, the ability to engage the management to direct decision-making toward sustainable and ethical choices, green institutional investors should provide improvements on the firm revealing a stronger social performance than that of non-green institutional investors. The third question is whether the network put in place by the relationship between the firm and the institutional investors has any impact on the social performance. Thus, the network effect postulates that institutional investors' ownership benefits the firms because of the existing relationship of the shareholders with their invested firms. In my dissertation, I will consider their first question, in order to verify whether the same results can be expected in a profoundly different financial region and test if institutional investors behave in the same manner.

Mili et al. (2019), instead, come from a fundamentally different perspective, but still relates to the institutional ownership and sustainability framework. They examine the effect of an ethical indicator on the value of a company and the attractiveness of the company stock for major owners, such as institutional investors. Therefore, they test whether the investment choices of institutional investors are influenced by the ESG score of a company. In their line of reasoning, the proportion of shares held by institutional investors might be explained by the ethical stance of company in which they invest in.

The first step in their investigation is linking the business ethics with the company value, considering 240 US-based firms, for which they found a positive and significant

association. Then, they proceed to regard the institutional ownership in the analysis, on the basis that institutional owners play a relevant role in the governance structure and management of companies. Their second model aims to explain the determinants of such ownership and, in particular, if the ethical score considered has a non-negligible influence. They get to the conclusion that, being the specific score significant, institutional investors take into account the commitment to ethical and socially responsible principles of companies, thus influencing their investment decision-making. The second model proposed is particularly relevant since it offers the opportunity to extend the reach of my dissertation, stressing the opposite direction of the other reference paper. In simpler words, while the Chinese study allows to investigate the sustainability dimension in relation to the ownership structure and other variables, the American study allows to investigate the ownership dimension with respect to a social dimension. As a result, both directions of the supposed relationship are present in the personal contribution advanced by the thesis.

4.1.1 EMPIRICAL CONTRIBUTION

My original contribution to the subject in the thesis is expressed, not only by the previously discussed consideration of the dual relationship in place between institutional ownership and ESG, but also through the adjustments made with respect to the reference papers.

The model under question, proposed by Jia et al., performs a logistic regression with a dependent dummy variable *gc* that indicate whether a firm is green or not and a series of explanatory variables that capture the mutual funds' shareholding and some firm performance indicators. While the data selection and collection will be thoroughly discussed in the next section, the major difference in my analysis with respect to the Chinese one, is the substitution of the mutual funds' specific shareholding with the aggregate institutional shareholding. Even though it could signal the overlooking of heterogeneity, the examination of a broader set of institutional investors shareholding allows for an all-encompassing result that is not constrained by the peculiar restriction of each investor type, that may be sectorial or regulatory. Moreover, the inclusion of all

institutional investors broadens the sheer number of firms that can be included in the analysis and allows to comprehend their impact across all the equity market. In fact, similarly to the Chinese beneficial policies, also the European Union has introduced funds and sustainability mechanisms that target institutional investors as a whole, making the aggregated approach more meaningful. Another major difference is the geographical consideration, in fact my thesis examines the attention effect on European firm, that respond to a different regulatory but also socio-economic environment with respect to Chinese firms and institutional investors.

The second model in my dissertation is, instead, mirroring the American based study with regard to the institution ownership. As pointed out, Mili et al. (2019) uses institutional ownership as the dependent variable in the regression equation, where the independent variables are several KPIs and a dummy variable for ethically and socially responsible firms. Since the authors examine the aggregate institutional investors' shareholding no changes were to be put in place and the same dataset used for the first study is considered. On the other hand, likewise the first study, the difference arises from the geographical selection of firms that are based in Europe.

4.2 DATA AND SAMPLE

4.2.1 DATA SELECTION AND DEFINITION

The data collection and selection process has been completely carried out through the use of the Bloomberg Finance Lab in 5 different sessions where I performed the following tasks: the search for a broad and ESG-supportive²⁷ equity index in the Euro Area; the screening of firms in the selected European index based on data availability; the retrieval of the data in an excel spreadsheet in order to later perform the required logistic and linear regressions.

²⁷ Meaning that the index in question should present a detailed breakthrough of the ESG scores assigned to each firm, comprising the individual scores related to the environmental, social and governance dimension

The selected equity index is the STOXX 600 EUR, which is composed of a fixed number of components, 600, from the principal European capital markets, accounting for 90% of the European market capitalization and reaching firms in 17 European countries. Thanks to its comprehensive coverage²⁸, both geographical and sectorial, it can be considered as an effective and diversified benchmark, which is suited for the analysis. The period of interest is a time window of four years, starting from 01/01/2017 and ending on the 01/01/2021. Effectively, only three years are considered in the analysis since 2017 presented the lack of certain extra-financial information and was ultimately used for lagged variables. The rationale behind the selection of this time period relies on the fact that the systematic adoption of ESG criteria was slow paced up until recently. A quite recent timeframe allows for a minimal screening in terms of data availability and captures the issue at stake in a period where sustainability is more than ever present in the social, political and economic discourse.

The required data for the logistic regression retrieved from Bloomberg, shown in Table 1, encompassed extra-financial scores such as the ESG Bloomberg score and its breakdown and several financial indicators. Between the others, the current ratio was included in substitution of the liquidity ratio, to still consider a liquidity indicator in the regression, since the latter was not unsuccessfully gathered from the terminal²⁹. The same line of reasoning was followed for the profit margin, whereas the original model accounted for the gross profit margin that would have shrunk the sample to an unacceptable number. Moreover, the variables relating to the asset liability ratio and the size were achieved through the download and computation of the individual liabilities and total assets.

²⁸ Whereas the range of constituents for the principal European national indices is between 5 and 100 of the English FTSE100.

²⁹ Out of the 600 firms that compose the STOXX 600 EUR index less than 50 presented a numerical value for the liquidity ratio.

Table 1: (Logistic) Model 1, variable definition.

Model 1	
Variable	Description
ESG	The quantified value from the ESG rating by Bloomberg
InstOwn	Institutional investors' shareholding percentage
n°Inst	The number of institutional investors
CurRatio	The current ratio (current assets divided by current liabilities)
Lar	The asset liability ratio (the liabilities divided by the total asset)
Revgr	The revenue growth adjusted year on year
PrMar	The profit margin
ROA	The return on asset
Size	Size of the firm determined by the logarithm of the total asset
Dual	The dummy variable for the one person with the dual role of board chair and CEO
Inddirr	The ratio of independent directors (the number of independent directors divided by the board size)
gc	The dummy variable for firms associated with a high degree of ESG practices

For what it concerns the second model, hereafter Model 2, some of the financial information were already present in the data of Model 1. In table 2, it can be seen that Model 2 is a more parsimonious model. The additional information refers to the return on equity and the debt-to-equity ratio, while ROA, Lar and Size are the same used in the logistic case.

Table 2: (Linear) Model 2, variable definition.

Model 2	
Variable	Description
ET	The dummy variable for firms associated with a high degree of social and governance practices
ROA	The return on asset
ROE	The return on equity
Lar	The asset liability ratio (the liabilities divided by the total asset)
Size	Size of the firm determined by the logarithm of the total asset
D/E	The debt to equity ratio

4.2.2 DATA SUMMARY

The dataset used for the analysis, shown in aggregate in Table 3, besides the modification required by data unavailability, presents some sharp differences with respect to the dataset of the reference papers. In particular, the most relevant variable of the model, InstOwn, describes a situation where institutional investors are systematically involved in the equity market with no particular variation between the year. This is certainly due to the fact that, in this case, the variable of interest comprises a significantly larger array of investors and not just mutual funds.

The aforementioned discrepancy is notable even more when the number of institutional investors, n°Inst, is taken into account, but, once again, the difference is justified by the larger scope of the analysis. The rest of the variables present similar numbers to the ones of Jia et al. (2022) with no sharp movements between the selected time period. The American dataset from Mili et al. (2019) is more resembling to this European dataset, in that the institutional investors shareholding percentage provides similar insights on the pervading presence of institutional investor across the equity market.

Table 3: Descriptive statistics of variables in Model 1 and 2.

Model 1 & 2 Variable	2018				2019				2020				N
	mean	sd	max	min	mean	sd	max	min	mean	sd	max	min	
ESG	3,436	1,220	7,340	0,710	3,714	1,251	7,460	0,860	4,042	1,276	8,010	0,810	498
InstOwn	65,754	23,559	100	0,319	64,308	23,881	100	0	64,540	23,925	100	5,695	588
n°Inst	384,390	219,380	1244	8	427,748	233,239	1695	0	476,604	249,862	1967	19	588
CurRatio	1,596	1,338	16,766	0,052	1,537	1,186	14,884	0,023	1,691	1,364	14,997	0,036	505
Lar	0,608	0,213	1,276	0,009	0,621	0,206	1,368	0,007	0,629	0,209	1,367	0,008	560
Revgr	8,826	25,508	289,675	-97,793	10,937	27,533	321,389	-73,206	-1,055	30,859	391,006	-82,203	537
PrMar	18,826	42,284	498,697	-310,218	16,240	34,389	233,220	-233,531	11,723	46,578	669,002	-326,315	598
ROA	6,938	12,644	236,782	19,435	6,125	11,200	213,871	-42,490	4,339	8,914	84,903	-33,257	598
ROE	17,259	22,546	300	-30,516	15,447	18,052	242,264	-57,219	11,059	26,037	242,264	-159,096	596
Size	9,652	1,931	15,090	4,029	9,769	1,884	15,140	4,339	9,847	1,837	15,229	4,987	598
D/E	84,787	99,327	593,754	0	94,513	98,361	629,236	0	105,491	110,880	664,053	0,027	594
Dual	0,092	0,290	1	0	0,099	0,299	1	0	0,092	0,289	1	0	588
Inddirr	66,557	20,572	100	0	66,907	20,557	100	0	67,175	20,663	100	0	567

It must be noted that in table 3 the number of observations is relative to the single variable of interest, whereas the subsequent screening to ensure robustness and the sole consideration of firms with a complete data sequence bring the dataset suitable for the analysis to a range between 357 and 449 firms. For what it concerns the differentiation between green and non-green firms in Model 1, 95 green firms were identified (26% of the restricted sample) and the differentiation of socially responsible firms or not in Model 2 resulted in the identification of 126 ethical firms (29% of the restricted sample).

Table 4: Correlation matrix for Model 1.

	<i>gc</i>	<i>InstOwn</i>	<i>n°Inst</i>	<i>CurRatio</i>	<i>Lar</i>	<i>Size</i>	<i>Revgr</i>	<i>PrMar</i>	<i>ROA</i>	<i>Dual</i>	<i>Inddirr</i>
<i>gc</i>	1										
<i>InstOwn</i>	0,004	1									
<i>n°Inst</i>	0,291	0,030	1								
<i>CurRatio</i>	-0,135	0,014	-0,104	1							
<i>Lar</i>	0,229	-0,064	0,074	-0,514	1						
<i>Size</i>	0,258	-0,188	0,472	-0,238	0,301	1					
<i>Revgr</i>	-0,244	-0,032	-0,136	0,275	-0,168	-0,182	1				
<i>PrMar</i>	-0,106	-0,062	-0,008	0,216	-0,188	0,030	-0,024	1			
<i>ROA</i>	-0,047	0,083	0,008	0,096	-0,155	-0,309	-0,021	0,062	1		
<i>Dual</i>	-0,076	-0,134	0,116	-0,084	0,087	0,102	0,002	-0,025	-0,060	1	
<i>Inddirr</i>	0,182	0,093	0,144	0,005	0,027	-0,105	0,043	-0,097	0,009	-0,260	1

Looking more closely at the data, Table 4, provides the correlation matrix of the variables in Model 1 and denote no particularly strong correlated variable in both directions.

The correlation matrix of Model 2, instead, displayed in Table 5, presents similar correlation values with the exception of ROA and ROE. These two variables appear to be strongly positively correlated, thus following O'Brien (2007), to avoid multicollinearity problems the tolerance and Variance Inflation Factor (VIF) are computed. This first measure is calculated as $1 - R^2_k$ where R^2_k is the determination coefficient of the

independent variable k on the other variables in the model. The second measure, VIF, is derived from the computation $1/\text{Tolerance}$ ratio. Multicollinearity evidence would be present in the model for values of less than 0.20 or 0.10 regarding the tolerance and values of more than 5 or 10 regarding the Variance Inflation Factor. This is clearly not the case as all variables respect the appropriate range.

Table 5: Correlation matrix for Model 2 and Tolerance and VIF of the independent variables.

	<i>InstOwn</i>	<i>ET</i>	<i>ROA</i>	<i>ROE</i>	<i>D/E</i>	<i>Size</i>	<i>Lar</i>
<i>InstOwn</i>	1						
<i>ET</i>	-0,017	1					
<i>ROA</i>	0,057	-0,078	1				
<i>ROE</i>	0,058	-0,061	0,708	1			
<i>D/E</i>	-0,070	-0,025	-0,287	-0,159	1		
<i>Size</i>	-0,110	0,073	-0,290	-0,161	0,276	1	
<i>Lar</i>	-0,035	0,050	-0,404	-0,102	0,468	0,521	1

	Tolerance	VIF
<i>ET</i>	0,985	1,015
<i>ROA</i>	0,387	2,581
<i>ROE</i>	0,455	2,197
<i>Lar</i>	0,528	1,893
<i>Size</i>	0,698	1,432
<i>D/E</i>	0,978	1,022

4.3 MODEL 1

4.3.1 MODEL 1 DESCRIPTION

The first model, which follows the model postulated in Jia et al. (2022), consists in a logistic regression. A logit regression, as it is often called, is a statistical model commonly used for predictive analytics that estimates the probability of an event, a binary event, based on a dataset of independent variables. Use cases of logit regression include credit risk assessment and disease prediction as it links the occurrence of an event to some predetermined risk factors. For the instance of my dissertation, the binary event in question is the greenness of the firm³⁰. This dummy variable, that takes value 1 for green firms and value 0 for non-green firms, is constructed in accordance to the ESG score for each individual firm. In practice, the average ESG score in the sample do not necessarily translate to above average firms being green, since sectorial differences may penalize some firms more than others. Therefore, value 1 of the dummy variable *gc* is attributed to only those firms that present a consistently higher than average ESG score throughout all the years considered. This methodology might not precisely reflect the greenness of the firms, but it conveys the continued effort to adopt sustainable practices and the firms' responsible behaviour in the market³¹. The risk factors are the independent variables, that comprise two measures related to the institutional presence in firms and a series of financial variables that are used as control variables. The rationale behind the use of such model is determining if the higher percentage or numerical presence of institutional investors in the firm is associated with a higher probability of the considered firm to be green.

The model specification is as follows:

³⁰ Jia et al. (2022) do not propose a methodological way of certifying whether a firm is green or not, therefore the method used for such determination is linked to the ESG score of each company to determine whether the firm has a suitable sustainability profile.

³¹ In the following analysis those firms that present the cited continued effort to adopt sustainable practices and responsible behaviour in the market will be called green firm for simplicity.

$$gc_i = \alpha_0 + \beta_{i,k} hv_{i,k} + \sum_m \gamma_{i,m} con_i + \varepsilon_i$$

Where gc_i is the dummy variable for firms with a suitable ESG profile, i corresponding to each individual firm. The variables of institutional presence are represented by hv , where i refers to the firm and $k= 1, 2$ refers to the shareholding percentage (InstOwn) and the number of institutional investors (n° Inst) respectively. The set of control variables is included since their effect on investment corporation governance is detailed in the literature (Jia et al., 2022). Specifically, a measure of liquidity, such as the current ratio (CurRatio), is present, together with the asset liability ratio (Lar), the revenue growth (revgr), a measure of profitability i.e., the profit margin (PrMar), the return on asset (ROA), the logarithm of the total asset (Size), the ratio of independent directors (Inddirr), and the dummy variable for dual role of board chair and CEO (Dual).

In the model, one year lagged values were used for the firm specific variables in order to mitigate the possible source of endogeneity.

4.3.2 MODEL 1 RESULTS AND DISCUSSION

The logistic regression provides the results³² reported in Table 6³³. The result deviates partially from what was expected. In fact, the hypothesis and objective of the model were to determine if a higher presence of institutional investors, would that be in shareholding percentage or the mere number of institutional investors in the firm, would result in a higher probability of the firm of being green. However, the shareholding percentage variable is found to be non-significant in all the years considered, thus not confirming the attention effect found in the Chinese market³⁴.

³² The logistic regression results for the year 2018 are not displayed in Table 6 as their R^2 was deemed insufficiently high to present argumentative results.

³³ In the table, asterisks ***, ** and * indicate significance at the 99, 95 and 90% levels, respectively.

³⁴ It must be stressed that a straightforward comparison is not completely adequate, since, in the context of the dissertation, the sample of institutional investors is not restricted to just mutual funds.

Table 6: Model 1, Logistic regression results.

Model 1	2019				2020			
	%		n		%		n	
	coefficient	sd	coefficient	sd	coefficient	sd	coefficient	sd
Intercept	-3,4332***	(1,2401)	-3,2092***	(1,1194)	-4,2840***	(1,1601)	-3,9264***	(1,1063)
InstOwn	-0,0007	(0,0051)	-	-	0,0006	(0,0047)	-	-
n°Inst	-	-	0,0017***	(0,0006)	-	-	0,0019*	(0,0005)
CurRatio	0,0616	(0,1342)	0,0714	(0,1337)	0,1025	(0,1214)	0,1032	(0,1213)
Revgr	-0,0185**	(0,0084)	-0,0176**	(0,0084)	-0,0247***	(0,0088)	-0,0231***	(0,0088)
PrMar	-0,0007	(0,0017)	-0,0006	(0,0015)	-0,0008	(0,0014)	-0,0008	(0,0014)
ROA	-0,0275	(0,0228)	-0,0393*	(0,0235)	0,0102	(0,0139)	0,0108	(0,0101)
Lar	0,2132	(0,8616)	0,2808	(0,8716)	0,3356	(0,8084)	0,4299	(0,8121)
Size	0,2762***	(0,0833)	0,1370	(0,0977)	0,2989***	(0,0843)	0,2149**	(0,0961)
Dual	-0,7831**	(0,3878)	-0,9734*	(0,3979)	-0,1031	(0,3419)	-0,1963	(0,3469)
Inddirr	0,0134**	(0,0059)	0,0072	(0,0063)	0,0218***	(0,0058)	0,0196***	(0,0061)
R ²	0,0808		0,0976		0,0975		0,1022	
pseudo R ²	0,1105		0,1335		0,1303		0,1365	

The only variable considering institutional investors presence that was found to be statistically significant is the number of institutional investors in the firms. Although weak, a positive statistical significance is encountered both in 2019 and 2020 scenarios, suggesting that institutional investors crowd their investments more in firm that have a positive green outlook. This variable does not specifically explain the magnitude of impact on the equity market besides linking a higher volume of institutional investors interested in green firm. However, it clearly highlights the tendency to direct investment toward firms with a positive sustainable profile.

Likewise, the size of the firm shows a positive significance, which signals that green firms in the equity market have big financial and economical dimension, leaving outside the reach of the analysis an abundant number of small firms that operate outside the European stock market.

The other coefficient that is worth considering in this discussion is the ratio of independent directors, that is statistically significant and positive, showing that the governance dimension of the firm is crucial in determining its internal and, most importantly, its external behaviour.

For what it concerns the model specification, both years present a non-negligible result, where R² and pseudo R² show values up to six times the corresponding measures of the paper of reference. Anyhow, a meaningful contribution on the matter is given by the

classification tables³⁵ displayed in Table 7, that represent the accuracy of the logistic regression in identifying, or better predicting, the green firms on the basis of the independent variables that were provided.

Table 7: Classification tables for Model 1 in the year 2019 and 2020.

2019	Green	Non-Green	2020	Green	Non-Green
Successful Prediction	30%	13%	Successful Prediction	54,5%	29,5%
Failed Prediction	70%	87%	Failed Prediction	45,5%	70,5%

Basically, the accuracy of the model can be deduced from the cell intersecting green and successful prediction, in the sense that the number shown reflect in percentage the number of times that the model correctly predicts a green firm. As it can be noted, in 2019, the accuracy is not highly satisfactory, since less 1 in 3 green firms is identified as such. However, in 2020 the classification table suggests that more than half of the green firms are recognized as such. For what it concerns the other cell in the table, the high values in the failed prediction line could suggests that the variables in the model do not present striking discriminatory values between the green and non-green category of firms, thus variables that present different values, when related to green practices, should be introduced and eventually substituted.

To reconcile the model with previous research, it goes in accordance with the work of Graves and Waddock (1994), where the shareholding percentage was found insignificant and the number of institutions explained better the responsible positioning of the firm.

³⁵ Unfortunately, Jia et al. (2022) do not display any measure of the accuracy of test, therefore no comparison can be made.

4.4 MODEL 2

4.4.1 MODEL 2 DESCRIPTION

The second model, postulated by Mili et al. (2019), tries to explain the determinants of the institutional presence in firms. The stance of the authors suggests that, while all the financial independent variables are relevant in the investment perspective of institutional investors, a positive ethical feedback or consideration on a firm incentivize even further the institutional investor to buy stocks. The rationale for the inclusion of the financial indicators is that they are used to explain the company value. In line with the finding of Sahut et al. (2016), the return on equity (ROE), the return on asset (ROA), the debt-to-equity ratio, the asset liability ratio (Lar) and the logarithm of total assets (Size) were chosen for the American study and replicated in the present one:

$$\mathbf{Institutional\ Ownership} = f(\mathbf{ET, ROA, ROE, \frac{D}{E}, Lar, Size})$$

In the layout of the equation, the dependent variable is the institutional ownership, that corresponds to the InstOwn variable of Model 1, detailing the percentage shareholding of Institutional investors in the sample firms. The dummy, independent, variable in Model 2 is ET, which gives value 1 to socially responsible firms and value 0 for those not pertaining to the category. ET is constructed in the same manner as gc in Model 1, but, in this case, only the social and governance dimensions of the ESG score are taken into account. Through the use of this methodology, the responsible firm identified in the sample are only those that show a persistent integration of social and governance best practices over the time period considered. The subsequent point of distance is given by the geographical setting, that allows to comprehend whether the relationship between institutional ownership and responsible conduct is present also in the European countries.

To ensure an application of the model that is coherent with respect to the American study, the model has been tested eliminating the asset liability ratio, as the American authors did, in the attempt to make the results as comparable as possible.

4.4.2 MODEL 2 RESULTS AND DISCUSSION

The linear regression results³⁶ are displayed in Table 8. In this case, the variable expected to show significance, ET, do not present the desired outcome. In fact, the categorical variable related to the social and governance well-doing of the firm would have advocated for the institutional investors' propensity of integrating social and governance considerations in their investments decision. Anyhow, for the regression result such hypothesis cannot be supported.

Table 8: Model 2, Linear regression results.

Model 2	
Intercept	87,5611*** (6,686)
ET	-3,3756 (2,5808)
ROA	-0,3170** (0,1556)
ROE	0,09473** (0,0408)
D/E	0,00085 (0,0087)
Size	-2,2225*** (0,6804)
R ²	0,04562
Observations	449
Significance F	0,00038

The variables that seem to have salient weight in explaining the institutional ownership in STOXX quoted firms are ROA, ROE and Size. Some of the significant coefficients present a counterintuitive result, for instance, institutional investors seem to be attracted by relatively small size companies. In a social and governance perspective, this latter finding goes along with the work of Cox et al. (2004) where a negative significant coefficient for size was motivated by the avoidance of large firm investments and the preference of small firm in which the relative ownership quota would be higher, enabling the impact of corporate decisions. However, the same authors identify this precise motive only for short-term institutional investors and in the context of this

³⁶ The values in the table represent the coefficient of the variable, as the first number displayed, the level of significance, as per the asterisks, and the standard deviation of the coefficient in brackets.

analysis, it could be suggesting a higher short-term institutional presence in the composition of the institutional ownership data.

It must be pointed out that the proposed model does not present a high coefficient of determination, meaning that the model specification explains to a tiny extent the degree of variability of the dependent variable in question. In order to mitigate the doubt related to the model appropriateness, the value of significance of the F statistic is presented that suggest, when below 0.05, a good reliability of the model with respect to the independent variables.

4.5 LIMITATIONS AND CONCLUDING REMARKS

Despite situational limitations, such as lack of data and unavailability of certain information of interest, that should become less and less frequent in research of this type thanks to the disclosure strategy put in place by numerous national and supranational authorities, the models proposed present a slight limitation in depicting the function of institutional investors in the green market. In fact, the sole consideration of the equity market restricts the possible conclusion to a limited horizon, whereas, as it was discussed in previous chapters, the vehicles to foster the green market are numerous and the ones that might present the higher world-shaping power are off the market, in the form of alternative assets and startups. The presence of institutional investors in the European equity market can clearly convey that they are vital actors for the sustenance of green firms at a mature stage but it does not capture the crucial support at earlier stages, that may be more beneficial to the innovation and strengthening of the green market.

Further research on the matter should expand the geographical horizon seen in the models, both in terms of regions of interest but also in terms of number of firms, in order to derive a generalised snapshot of the institutional behaviour toward green firms and products. In addition to that, subsequent research should look into the disaggregated data for institutional ownership, so that the heterogeneous landscape of actors can be depicted in all its nuances.

Finally, the mixed results of the analysis, rather than being short-sighted suggestions, could actually reinforce the need in the literature to analyse the behaviour of institutional investors in a disaggregated perspective to, on the one hand, convey the heterogeneity within the category and, on the other hand, understand whether the aggregated results bear significance after having singled out the different constraints and opportunities.

CONCLUSION

The main aim of the thesis was the clear depiction of the relevance of green themes in the financial world and the more pressing need of a suitable reference in the development of the green market.

Institutional investors embody, in their variate characteristics, the accurate response to fill the financing gap necessary to the realization of a constructive transition. Thanks to their expertise, volume of money at their disposal and ability to engage firms, institutional investors have the opportunity to address the needs of the green market across all its possible assets. Moreover, their monitoring capability, when linked to a sustainable strategy, could act as a scrutinizing tool that ensure an internal and external balancing impact of companies' operations.

However, such investors cannot be interpreted as the uniquely competent actors, the sound development of the green market requires the continued effort by all member of society and of the financial world. In fact, institutional investors' calling is accompanied by initiatives and legislations at a national and global level without which their contribution would be of a lesser significance.

At last, my contribution was the attempt to prove empirically that institutional investors' presence presented a substantial input in the green market optic. The number of institutional investors in a firm appears to slightly predict the sustainable well doing. The rest of the analysis put in place did not present the desired outcome, but it seems reasonable to assert that ESG integration and ethical and sustainable behaviours are not shunned by institutional investors, as the agency theory would suggest. Moreover, the mixed results do not fully characterize the relationship between institutional investors and responsible and sustainable behaviours of firms but, nonetheless, they strengthen the recurring consideration that, in order to define the role of institutional investors in their entirety, the focus should be drawn by each singular investor type in the category. In addition to that, future literature should extend the reach of this analysis to other asset classes, so that the registered effect embraces all the investigable green universe.

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