Firm and country characteristics related to cumulative contribution to society

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Abstract

Purpose – Many indicators attempt to measure the social performance of a company from different perspectives. Grounded in stakeholder theory, this paper aims to propose capitalising the economic value distributed annually to society over a period of time, hereafter called a firm's cumulative contribution to society (CCS). This can be done by including everything that stakeholders value; for example, payments of taxes, remuneration of employees, payments to suppliers and creditors, donations, dividends, research and development expenses and efforts to improve the environment.

Design/methodology/approach – First, this paper makes a methodological proposal about how to calculate the CCS and discusses potentials and shortcomings. Then, a set of hypotheses are formulated about the firm characteristics and country attributes that make the most positive contribution to society such as business models, financial performance, a country's human development, income equality and the extent of its shadow economy. The authors also argue that a company that originally contributes to society will continue to do so because of the structural inertia faced by organisations. The hypotheses were validated with an empirical study conducted with a sample of 9,276 new-born European companies.

Findings – The most significant contributors to society are large, profitable companies, which are leveraged but solvent, with high asset turnover and high-profit margins and which are productive and pay high wages. Unfortunately, this win-win situation describes a small percentage of the explained variance, which can explain why social and financial performance sometimes do not go hand-in-hand. The paper identifies features of other types of companies that contribute to society, suggesting criteria for socially responsible investors. Country development favours the cumulative contribution that firms make to society.

Research limitations/implications – Most accounting systems do not collect all the information necessary to calculate a refined version of the indicator such as percentage of purchases from local suppliers, percentage of salaries for executives and disabled employees and percentage of financing from socially responsible financial entities. The authors encourage modification of the accounting systems to include those aspects.

Practical implications – This paper identifies several types of companies that contribute the most to society from a modest set of financial indicators. Socially responsible investors can estimate their contribution to society, devising new investment criteria.

Social implications – The paper identifies several types of companies that contribute the most to society from a modest set of financial indicators. Socially responsible investors can estimate their contribution to society, devising new investment criteria.

Originality/value – The paper makes two contributions, one methodological and the other empirical. By applying a financial methodology, the authors propose to capitalise the contributions of a company over a period of time. The empirical study identifies both firm and country characteristics that explain CCS.

Keywords Financial ratios, Social accounting, Social performance, Impact, Economic value

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1. Introduction

The "principle of corporate legitimacy" by Evan and Freeman (1988) declared that corporations should be managed for the benefit of their stakeholders, namely, their customers, suppliers, owners, employees and local communities. Today, it is assumed that companies have an impact on society and stakeholders want to know about it (Bellantuono *et al.*, 2016); however, translating the social objectives of organisations into financial measures is complicated and subjective and generates a great deal of criticism (Millar and Hall, 2013). We propose to consider the financial outputs that have social implications as the first step in social assessment because accounting information is not only useful for analysing financial performance but also can reveal a great deal about social performance in aspects such as employment, taxes paid or donations made to the community (Bagnoli and Megali, 2011). To this end, we propose to apply a financial methodology by compounding at a given interest rate the direct economic value distributed annually by the company over a period of time. We call this a firm's cumulative contribution to society (CCS). It is unrealistic to think that it is possible to develop a "golden standard" capable of determining an organisation's real impact (Costa and Pesci, 2016). CCS does not pretend to be a comprehensive indicator, but provides a set of complementary indicators to other approaches because it considers only what the accounting reveals and no other indirect impacts.

Direct economic value, generated and distributed, is already included in the guidelines of the global reporting initiative (GRI, 2016) and core indicators of the United Nations Conference on Trade and Development (UNCTAD, 2018). Economic value generated provides a straightforward indication of how an organisation creates wealth for stakeholders and analysing the components of the economic value distributed provides a basic social profile of an organisation. That information is easy to obtain because it comes from data in the firm's profit and loss statement and is useful for more than just financial stakeholders (García-Castro and Aguilera, 2015). In fact, this information has been used for a long time, presenting the value-added statement as an independent document and is even mandatory in some countries such as France, for companies of a certain size (Burchell *et al.*, 1985; Haller and van Staden, 2014). The Shanghai Stock Exchange was a pioneer in requesting listed companies to disclose information about the direct economic value distributed annually by the company to stakeholders, which is called the social contribution value per share (SCVPS).

This paper aims to calculate a set of CCS indicators, discussing potentials and shortcomings from a theoretical perspective, following the postulates of Freeman's (1984) stakeholder theory. The proposed set of indicators is based on a simple idea: many companies present annual reports that outline their annual contributions to society, including accounting items such as taxes or wages paid, following GRI (2016). UNCTAD (2018) includes aspects such as green investments and research and development (R&D) expenditures, which are also valuable for some stakeholders. We borrow that idea and expand it, suggesting that the cumulative contribution be calculated over several years. We, thus, propose a financial methodology, capitalising the past contributions of a company and proposing various financial ratios. We formulate several hypotheses about the relationship among CCS, financial performance and the type of business model that favours contributions to society. Stakeholder theory advocates positive interaction between financial and social performance (López-Arceiz *et al.*, 2018), but with nuances. Based on the theory of organisational ecology by Hannan and Freeman (1984), we also argue that it is the companies that stand out in their first years for their contributions to society who will contribute the most throughout their existence because of structural inertia and imprinting.

This paper makes two contributions. Many methodologies and indicators have been proposed to measure social performance (Epstein, 2018). Social return on investment (SROI) stands out as a methodology that translates some of the social objectives of organisations into financial measures, representing a further development in traditional cost-benefit analysis (NEF, 2004). Bagnoli and Megali (2011) also proposed calculating economic and social contributions to measure social performance and Noronha *et al.* (2018) used the SCVPS for firms listed in China, finding that investor reactions towards corporate social contributions were stronger for companies with higher quality corporate governance. Our research is based on the same idea, but proposes capitalising the contributions of a company over a period of time, which adds to the literature on the topic. The second contribution of the paper is the study of the firm and country characteristics that determine a firm's cumulative contribution. An empirical study was carried out by analysing 9,276 new-born European companies. We identified the types of companies that contribute the most to society, supporting our model and hypotheses. These types of companies should be of interest to investors with social concerns because the patterns are maintained throughout the company's life because of structural inertia and imprinting. We also identified country characteristics that favour the CCS such as human development index (HDI), income equality and the lack of a shadow economy.

The rest of the paper is organised as follows. Section 2 presents the CCS set of indicators. Section 3 presents the hypothesis development. Section 4 describes the empirical study. The Section 5 presents the conclusions.

2. A firm's cumulative contribution to society indicator

2.1 Corporate social performance measures

Financial ratios are accepted as proxies for the measurement of corporate financial performance; however, the measurement of corporate social performance (CSP) is much more complex (Luo *et al.*, 2015). A survey of 1,581 social enterprises in the UK revealed that 25% of social enterprises did not obtain a single social indicator (Social Enterprise UK, 2017). The lack of standardisation is also a problem: 61% of social enterprises that obtained indicators used their own methods and the remaining 39% applied a diverse set of methodologies. The most commonly used tools for measuring social contributions are SROI, social accounting and audit (SAA), the outcome star and randomised controlled trials (Beer and Micheli, 2018). Sustainability disclosure remains incomplete, however, as it is biased and driven by concerns with legitimation (Patten and Shin, 2019).

SROI stands out among the most common indicators, being used by 13% of social enterprises (Social Enterprise UK, 2017). SROI goes beyond traditional cost-benefit analysis, expressing the expected social impact of an investment in monetary terms, discounted to determine the social present value [Roberts Enterprise Development Foundation (REDF), 2001; Hall and Millo, 2018]. SROI is not exempt from conflicting assumptions, however: some investors consider it inappropriate to use financial proxies to measure the outcomes of social enterprise activities, in addition to the methodological complexity that entails their implementation (Millar and Hall, 2013).

SAA, developed by Pearce (2001), was used by 6% of the social enterprises surveyed (Social Enterprise UK, 2017). SAA starts with internal data collection and then analyses procedures (social accounting), followed by an independent audit of the results (social auditing) and ultimately, the outcome is widely reported (Gibbon and Dey, 2011). SAA is based on a checklist that analyses issues such as governance and accountability, stakeholder analysis, financial sustainability, reports on outputs and outcomes and even a

section on the monetisation of impacts, which can include SROI calculations and other financial and economic indicators.

There are many other social performance measurements and social ratings, organised in databases such as the Bloomberg ESG, MSCI ESG KLD STATS, Calvert Social Index, Ethibel Sustainability Index and CSR Hub (Pagano *et al.*, 2018; Conway, 2019). Vishwanathan *et al.* (2020) measured corporate social responsibility (CSR) using third-party evaluations of a firm's CSR, archival measures of actual CSR activities and self-reported assessments of CSR in surveys. This variety of measures means that integrated reporting represents a range of rich avenues for future research and practise (Simnett and Huggins, 2015). Several international bodies have, thus, emerged that help organisations to communicate the impact of business on sustainability issues such as the GRI. GRI standards include the direct economic value generated and distributed in Disclosure 201–1, which is particularly relevant for our research. The direct economic value complements the income statement, providing a basic indication of how an organisation has created wealth for stakeholders (GRI, 2016).

2.2 A proposal to measure cumulative contribution to society

Stakeholder theory is a theory of organisational management and ethics that focusses on the attention that a firm pays to the interests and well-being of its stakeholders: those groups or individuals who can affect or are affected by the achievement of the organisation's objectives and those actors with a direct or indirect interest in the company (Freeman, 1984). Companies managed under the prism of stakeholder theory consider not only the shareholders but also the stakeholders, when establishing strategies and commitments (Phillips *et al.*, 2003). Although the theory of stakeholders is the main theoretical approach adopted to justify CSR (Garde-Sanchez *et al.*, 2018), some of its aspects still deserve further research. One such aspect is that standard metrics of firm success are inadequate to capture the total value created by an organisation (Harrison *et al.*, 2019), which creates an opportunity to investigate new indicators beyond traditional financial ratios to account for the value a firm is creating for all its stakeholders (García-Castro and Aguilera, 2015).

Our proposal has common elements with SROI [Roberts Enterprise Development Foundation (REDF), 2001], economic value distributed (GRI, 2016), core indicators (UNCTAD, 2018) and SAA (Pearce, 2001). It starts by analysing a firm's accounting information and calculating the elements that make up the economic value distributed from a given date. These amounts are then capitalised using a social interest rate that takes inflation rates into account. The cumulative contribution in personnel expenses is, thus, calculated (CC_E), as is the contribution in taxes (CC_T), donations and grants (CC_G), dividends (CC_D), interest charges (CC_I), purchases from suppliers (CC_S), research and development expenses ($CC_{R\&D}$) and the effort to improve the environment (CC_{ENV}). Relative magnitudes can be obtained by dividing the cumulative contributions by the result of capitalising the annual increases in total assets (TA). For purposes of simplicity, the denominator could be the TA figure for the past year analysed. This allows the ratio of cumulative contributions to employees divided by TA (CC_E/TA) to be calculated and then the same procedure to be followed using taxes (CC_T/TA), donations and grants (CC_G/TA), interest charges (CC_I/TA), dividends (CC_D/TA), purchases from suppliers (CC_S/TA), research and development expenses ($CC_{R\&D}/TA$) and efforts to improve the environment (CC_{ENV}/TA). The set of indicators obtained and the financial ratios obtained, could be integrated into the SAA methodology as an assessment of the financial outputs that have social implications, providing an objective measure of the contribution to society.

The above indicators are based on the concept of economic value distributed among stakeholders (GRI, 2016) and they measure only aspects of the first two components of the pyramid of CSR (Carroll, 1991) that is to say, the economic and legal aspects. It would be advisable to take a step forward and measure aspects related to companies' ethical responsibilities, the third level of Carroll's pyramid. For example, the mere payment of taxes does not reveal an ethical plus, but is a legal responsibility of the company, so it is reasonable to use a measure of corporate tax avoidance. It can be argued that payments to the chief executive officer (CEO) and other executives do not involve a social contribution. A distinction could also be made between interest payments made to social financial institutions. Furthermore, it is reasonable to think that companies that pay high-interest rates make the greatest relative contribution to creditors. It would be interesting to consider purchases from local suppliers, as they have a positive impact on the community.

Our proposal has the same requirement as SROI, which is choosing an adequate interest rate. Three conceptual frameworks are identified to address the interest rate issue, namely, opportunity cost; time preference; and capital markets (Spackman, 2007). Social opportunity cost is the rate of return which the same investment would be expected to earn if it were invested in the private sector. Social time preference is the rate at which society is ready to postpone a unit of current consumption in exchange for more future consumption and it is the framework currently recommended in EU guidance for cost-benefit analysis (Sartori *et al.*, 2014). According to the advocates of the efficient markets hypothesis, the appropriate interest rates are obtained by comparison with the provision of similar services in capital markets (Spackman, 2007). Many real-world projects simply take an interest rate recommended by the administration, mostly in the range of 3%–5.5% (Evans and Sezer, 2005). Inflation should be considered – otherwise, the projects exaggerate the qualifications obtained, as Pathak and Dattani (2014) pointed out.

One question is whether it makes sense to combine all the components of the CCS in a single indicator because the components might not be worth the same. It is sometimes erroneously stated that stakeholder theory implies that all stakeholders should be treated equally, when obviously some contribute more than others to an organisation, as Phillips *et al.* (2003) pointed out. In fact, the stakeholder theory requires the interests of all stakeholders to be balanced. The literature on CSR has not identified a theoretically derived ranking of importance for the various stakeholder groups as a guide for empirical work, however, so Ioannou and Serafeim (2012) recommend assigning equal importance to each of the elements related to CSR. Other authors have followed this approach (Waldman *et al.*, 2006; Cheng *et al.*, 2015). Principal component analysis (PCA) can be useful in developing a social index because if we have a set of p social indicators that are correlated with each other, we can calculate the first principal component and use it as a social index reflecting the overall cumulative contribution (Attig *et al.*, 2016; Bae *et al.*, 2019). Another option is to weigh the components of the CCS to obtain a cumulative contribution index (CCS_{index}) according to stakeholder preferences, using some of the multi-attribute methodologies applied to the field of social assessment (Govindan *et al.*, 2015). The weighting depends on the decision-maker: some might value the donations made and others might be sensitive to the payment of taxes. The current economic situation can also be relevant, as, for example, employment can be highly valued if there are high unemployment rates.

3. Literature review and hypothesis development

3.1 Literature review

There are two visions on the role of CSR in the literature, well-summarised by Bhandari and Javakhadze (2017): for some academics, CSR can be consistent with shareholder wealth

maximisation and achieving broader societal goals, while for others, CSR is a manifestation of agency problems and is often costly for shareholders. Desender and Epure (2015) argue that recognising differences in the distribution of the costs and benefits to shareholders and other stakeholders is crucial to understanding what drives CSP. These key independent variables should be causal factors (determinants) that relate to the costs vs benefits of making social contributions. Factors such as manager incentives, aspects related to corporate governance and a country's fiscal policy may be among the explanatory determinants of CCS. Nor should we forget the role of a manager's personal values in explaining the adoption of CSR, as highlighted by Hemingway and Maclagan (2004).

Olawumi and Chan (2018) and Beer and Micheli (2018) provided a literature review of different aspects of sustainable development, highlighting the relationship between social and financial performance. The stakeholder theory developed by Freeman (1984) and extensions such as stakeholder-agency theory (Hill and Jones, 1992), suggest a positive relationship between CSP and financial performance because CSP increases managerial competencies, enhances organisational efficiency and helps firms build a positive reputation with their stakeholders. In fact, the positive interaction between the two types of performance is a central assertion of stakeholder theory (López-Arceiz *et al.*, 2018). Harrison *et al.* (2019), however, warn that there is an obsession with trying to prove that managing for stakeholders is more profitable than other management approaches, highlighting that stakeholders receive much more than the financial value from their relationships with a company.

Empirical studies that analysed the relationship between social performance and financial performance found mixed results. Some studies found a positive relationship such as the work of Waddock and Graves (1997), but others did not find a statistically significant link (Soana, 2011). Bhandari and Javakhadze (2017) found that CSR activities distort a company's investment efficiency, which is detrimental to its financial performance. Wood (2010) concluded her literature review by finding a modest positive relationship. Given the lack of standardisation in social performance measures, the relationship between financial strength and social performance will arguably depend on how the latter is measured (López-Arceiz *et al.*, 2018).

Some determining factors affect all the elements that make up a CCS. Corporate governance is a good example: social enterprises – hybrid organisations that are for-profit but have a social purpose (Battilana and Lee, 2014) – are expected to contribute more to society than other companies. It would be inconceivable for these companies to use aggressive tax management strategies to avoid paying taxes. It seems reasonable that these companies serve the maintenance of employment as a priority and buying from local suppliers. It would be consistent for them to borrow from socially responsible financial entities such as ethical banks. Companies that stand out for having adopted CSR practises as a way of doing business, without becoming hybrid organisations, are also expected to contribute more to society. Other factors such as ownership concentration and board independence are also related to CSP (Desender and Epure, 2015).

Sprinkle and Maines (2010) studied the costs and benefits associated with donating. Opportunity costs arise because the donated cash could be used for another project that generates a high return, while sales could decrease if the donation is in kind. Sprinkle and Maines (2010) noted among the benefits that a donation normally involves tax deductions and that donations improve a company's reputation. A donation can become a notorious marketing action, for example, if a company donates in-kind products from the company that serve as advertising samples. A company can see returns if they make grants that help students or universities because it can be a way to capture future grateful and well-trained

employees. Corporate donations to charity are frequently a way to attract, motivate and retain talent (Balakrishnan *et al.*, 2011). Shareholders interested in socially responsible investment consider both financial and in-kind donations by companies to be positive (Rosen *et al.*, 1991).

Social investors may question whether paying dividends is a social contribution, although shareholders are stakeholders, too. The magnitude of the cumulative dividends derives from profits and a company's dividend pay-out. Many theories try to explain the dividend policy of companies (Denis and Osobov, 2008). Miller and Modigliani (1961) argued that dividend policy is irrelevant to firm value, while Gordon (1963) argued that shareholders prefer cash dividends than highly uncertain capital. Jensen (1986) demonstrated that a firm's dividends reduce shareholder/manager conflicts by decreasing the cash flow available to managers and Lang and Litzenberger (1989) found support for this hypothesis. Aspects of corporate governance stand out among the determinants that explain the distribution of dividends such as the number of external directors on boards, which is negatively associated with dividend pay-outs (Al-Najjar and Hussainey, 2009), suggesting that companies with weak corporate governance need to establish their reputation by paying dividends. The propensity to pay dividends is higher among larger, more profitable firms and those for which retained earnings comprise a large fraction of total equity (Denis and Osobov, 2008).

3.2 Hypothesis development

The database we used in our empirical study allows us to calculate the cumulative contribution over the years in four areas of interest to stakeholders tax payments, wages, interest charges and purchases from suppliers. For this reason, we only developed hypotheses about these four aspects. More hypotheses could be developed, focussing on other stakeholders such as customers, the recipients of donations (Gautier and Pache, 2015) or the shareholders who receive dividends (Bøhren *et al.*, 2012); aspects that interest society such as investment in research and development (Riahi-Belkaoui, 2003); or the efforts made by a company to improve the environment (Prado-Lorenzo *et al.*, 2009).

Let us start with the CCS measured by tax payment. According to Dowling (2014), scholars have been largely silent on the issue of the payment of corporate tax, probably because tax avoidance has a positive outcome for three of a company's stakeholders (employees, customers and investors), as it could mean more money available to support low prices, pay higher wages and make the company more profitable. Taxes support governmental social programmes and tax avoidance can be seen as socially irresponsible, but the reduction of tax expenses can be viewed as economically necessary because the reduction of costs improves profitability (Huseynov and Klamm, 2012) and because a successful tax avoidance strategy transfers wealth from the government to shareholders (Zhang *et al.*, 2017). Therefore, a tax strategy may be viewed either positively or negatively depending on the stakeholder. Government and local communities are the stakeholders most interested in the correct payment of taxes. Both would like to know what characterises companies that pay high taxes. However, most social companies are not the ones that simply pay the most taxes, but the ones that evade them the least. Preuss (2012) analysed the practises of companies that use aggressive tax avoidance strategies from the perspective of three ethical theories (utilitarianism, deontology and virtue ethics), concluding that these strategies are a morally dubious activity from all three perspectives.

The payment of taxes depends mainly on the profits of the company and the tax rate of the country, but another determining factor is tax management, which can bring costs and benefits. Tax savings are important benefits of tax management, while costs involve

possible fines and reputational costs (Lanis and Richardson, 2011). Societal trust is an important reason for tax management because managers in societies with greater social trust avoid evading taxes so as not to be rejected by society for breaking social norms (Kanagaretnam *et al.*, 2018). In contrast, if the costs for breaking social norms are relatively low, managers may aggressively avoid taxes to increase firm value for their shareholders. For example, Gallemore *et al.* (2014) did not find evidence that firms are subject to significant reputational costs if they use a tax shelter, probably because it is not perceived by stakeholders as misconduct.

Some country characteristics favour the payment of taxes. It is reasonable to expect that companies will contribute highly in countries with a high national corporate tax rate, control tax fraud, have high social trust and demonstrate a low informal economy rate. Furthermore, the level of tax avoidance is expected to be low in developed countries. The legal form of a firm matters: for example, cooperatives enjoy tax exemptions in some countries. Khan *et al.* (2016) found that institutional ownership is associated with increases in tax avoidance, as some institutional owners explicitly demand tax avoidance. However, this pressure is low in legal forms such as cooperatives, which are unlikely to be involved in tax avoidance strategies as socially responsible companies (Lanis and Richardson, 2015).

In a controversial paper, Friedman (1970, p. 122) argued that "the social responsibility of business is to increase its profits". As companies that pay high amounts of tax are usually those that generate the highest profits, a positive relationship is expected between financial performance and contribution to society through cumulative tax payments. The opposite would happen only in a generalised situation of tax evasion or tax engineering. Companies that are already profitable may face less pressure to avoid paying taxes. Thus, high financial performance will be associated with a low degree of corporate tax avoidance. Empirical studies have found mixed results regarding the relationship between financial performance and corporate tax avoidance, suggesting that the relationship could be sample-specific. Zhang *et al.* (2017) found that tax avoidance achieves immediate benefits, including higher profitability, Irianto *et al.* (2017) concluded that profitability does not significantly influence tax avoidance and Katz *et al.* (2013) reported that companies with low profitability need to make an effort to achieve a high profit, including tax avoidance.

Porcano (1986) and, more recently, Lanis and Richardson (2015) studied the relationship between effective tax rates (ETRs) and firm size, finding a negative association between the two variables. Larger companies can reduce their tax burdens to a greater extent than smaller corporations because they possess the resources to optimise their tax savings (Lanis and Richardson, 2015) and because tax specialists are often located inside large corporations and accounting firms (Dowling, 2014). Large firms may enjoy economies of scale in tax planning (Badertscher *et al.*, 2013). Rego (2003) also found considerable evidence of economies of scale in tax planning. Consequently, the following hypothesis is proposed:

H1. High financial performance and a small firm size will lead to high levels of accumulated contribution to society, measured through tax payments and a low degree of corporate tax avoidance.

Employees are key in stakeholder theory because they have a significant influence on the firm and, reciprocally, are greatly affected by the success or failure of the firm (Greenwood, 2007). Personnel expenses basically depend on the number of employees and their wages, in addition to social security costs and other pension costs. Not all payments to employees involve a social contribution; for example, payments to the CEO and other executives should be discarded. There have even been scandals concerning excessive compensation paid to the CEO and executives, which scratch the surface of a lack of ethics (Perel, 2003). The legal

form of cooperative, as a firm that is controlled by its workers, also favours high contributions for employees. Large companies demand a higher quality of labour, defined by such observable characteristics as education, job tenure and a higher proportion of full-time workers (Oi and Idson, 1999). Indeed, supply-side wage determinants include education, experience, particular skills and characteristics potentially connected with discrimination (Balcar, 2012). It seems reasonable that a country's favourable circumstances towards cumulative contributions to employees include a low shadow economy rate, a high HDI, a high-income equality, a high employment-to-population ratio and a high capacity to retain talent.

A company can reduce their workforce through outsourcing, although this practise is questionable from a CSR point of view (Cho and Kim, 2018). Harland *et al.* (2005) highlight the costs and benefits of outsourcing for shareholders, managers and the company. Cost reductions and the improvement of financial performance are major advantages of outsourcing. The company also focusses on core activities, letting significantly more advanced suppliers do their job. Finally, outsourcing helps to undermine the power of trade unions. Outsourcing concerns are associated with economic costs derived from the increased complexity of the total supply network and with reputational costs because outsourcing is associated with hollow organisations that cut employment and promote job insecurity. An example of this is false self-employment, a situation in which companies force workers to set up their own business to reduce the cost of labour, the tax burden and social security liabilities and to avoid problems with regular employees (Skrzek-Lubasińska and Szaban, 2019).

The portion of the economic value generated by the company that the employees receive may depend on organisational and technological aspects of the company and the salary level. As for the former, some companies are characterised by great employee participation (labour-intensive), while others replace employees with technology. The debate on the relationship among productivity, technology and employment has a long pedigree, from Ricardo (1817) to Samuelson (1989). As companies incorporate technologies they often replace low-skilled workers (Doms *et al.*, 1997), hence, labour-intensive companies that require a large number of human resources to produce goods or services present the highest payments to employees in the income statement, leading to high levels of social performance. Size matters and small companies are less labour-productive than large ones, which is well-documented in the literature (Leung *et al.*, 2008). It is common for small companies to lag behind large companies in the adoption of technology, which lowers their productivity (Swamidass and Kotha, 1998). Consequently, the following hypothesis is proposed:

H2a. Small firm size and low productivity will proportionally lead to high levels of accumulated contribution to society, measured through personnel expenses.

The pattern that characterises a company with proportionally large personnel expenses in the income statement may correspond to small companies with low productivity, but, from the point of view of ethics, the salary level also matters. A company can exhibit large personnel expenses, but pay little to its numerous employees. How to compensate employees is also a strategic decision that can affect social performance. Clearly, the higher the salary level, the greater the contribution to employees will be. High wages can increase a company's personnel expenses, but having employees with high levels of training and experience, from whom high productivity is expected, brings benefits. Wage determinants include the industry, business type, productivity and firm size. Large companies pay higher wages than small businesses (Evans and Leighton, 1989). More precisely, Oi and Idson (1999) found a

wage gap of 35% because of firm size. Workers in large companies are more productive than those in small companies (Idson and Oi, 1999). Krueger and Summers (1988) found significant industry effects on pay levels that were stable over time and industry wage differentials existed even after controlling for aspects such as working conditions and labour quality. Consequently, the following hypothesis is proposed:

H2b. Large firm size and high productivity will lead to high levels of accumulated contribution to society, measured through the average salaries paid to employees.

The following hypothesis argues about the determinants of contribution to society, measured by payment to suppliers, which logically involves the purchasing policy that a company follows. Outsourcing decreases personnel expenses, but increases payments to suppliers. Suppliers are an important type of stakeholder in that they have decisive effects on corporate strategy and firm operations (Freeman, 1984), but they are much less commonly investigated than shareholders, employees or creditors (Zhang *et al.*, 2014). From a social point of view, it is very interesting when purchases are made from local suppliers, as proposed by Bagnoli and Megali (2011). If local suppliers are small businesses, then the reliability of supply is sometimes questioned. The reduction of energy consumption and transportation costs are valued among the economic advantages. Local purchases can also be a way to support the local economy (Esteves and Barclay, 2011).

Much can still be learned from looking at the financial statements of companies because annual accounts make business models visible and these determine social performance. An example of this is the decomposition of profitability into its two components, namely, profit margin (PM) and asset turnover (ATO). Two companies can obtain the same profitability in different ways, one by selling many products at low prices (i.e. having high ATO ratios) and the other by managing high PMs. Companies that have opted for a high ATO strategy make more purchases, implying that their contribution to purchases will be higher than that of companies that have chosen to maintain high margins. Large companies, with low margins and a high turnover of assets, which translates into high trade credit from suppliers, are features that fit with Porter's (1980) cost leadership strategy. The cost leadership strategy focusses on economies of scale, which arise when the unit costs fall as the output rises because of the scale of operation (Laitinen, 2014). The cost leadership strategy seeks to make a profit by reducing costs, which can negatively affect suppliers by paying them low prices. Many purchases and sales occur, but at a low margin. Although the overall number of purchases from suppliers is high, the prices paid are low. However, the cost leadership strategy can be applied to production, incorporating better procedures that allow costs to be lowered without negatively affecting suppliers. Consequently, the following hypothesis is proposed:

H3. Cost leadership strategy applied to productions will lead to high levels of accumulated contribution to society, measured by payments to suppliers.

Creditors supply the necessary funds for a company to operate. As stakeholders, they can also influence the corporation's role in socially responsible activities. Many social investors may question whether paying interest is a social contribution. Only the percentage of funding that is from socially responsible financial entities should be considered, from a purely social point of view. There is a growing number of socially responsible financial entities such as ethical banks, green banks, microfinance institutions and financial cooperatives (Weber, 2014). Other than that, the cumulative contribution of the interest payment basically depends on a firm's debt and the interest rate (Prado-Lorenzo *et al.*, 2009).

The interest rate is related to the characteristics of the country. There are countries with high relative interest rates, with capital markets of low importance, but whose companies have good access to credit. These conditions favour contributions to creditors. An important aspect when determining the costs and benefits for a company associated with having debt is the existence of an optimal debt/equity structure. The debt/equity relationship is irrelevant to firm value under the assumptions of perfect markets, absence of growth, absence of tax effects and no transaction costs (Modigliani and Miller, 1958); however, this is not a real-world situation and decisions about the choice of debt/equity structure should be linked to the competitive environment of the company. Leverage has either a positive or negative impact on performance, depending on whether the firms are in stable or dynamic environments (Simerly and Li, 2000). If an environment is stable and the cost of debt is lower than the cost of equity, borrowing helps companies grow more because debt acts as a lever that drives growth. More debt means more risk for shareholders, however and if an economic crisis arises or if interest rates rise, highly leveraged companies experience difficulties that can even lead to bankruptcy. This explains why the debt ratio is a bankruptcy predictor (Altman *et al.*, 2019). It has also been argued that debt reduces shareholder/manager conflicts by decreasing the cash flow available to managers because they are committed to making contractual payments (Jensen, 1986), but too much leverage also has agency costs, including bankruptcy costs.

The empirical study was conducted with newly created companies. Newly created companies suffer from the liability of newness, which is explained by the accumulation of knowledge, skills and the growth of organisational consistency over time (Freeman *et al.*, 1983). The liability of newness is one of the causes of the high proportion of start-up bankruptcies, compared to the bankruptcies of mature companies. Many shareholders, particularly venture capital investors in new companies, prefer that a company gets into debt because if the company does not get enough external financial support, they must prop up the project with their funds. Some authors argue that bank debt is a good sign in new companies: a sign that a bank supports the company (Robb and Robinson, 2014). Cole and Sokolyk (2018) found that a new firm using debt in its capital structure is significantly more likely to survive. A new leveraged firm, however, assumes risks (Laitinen, 1992) that are amplified by the frequent absence of profits in the first years of the company's life. In fact, leveraged companies go bankrupt in greater proportions than those that maintain a balanced net worth figure (Lang *et al.*, 1996). The relationship between company size and leverage has also been studied. Larger companies tend to be more leveraged because of the credit rationing suffered by small businesses (Levenson and Willard, 2000). Consequently, the following hypothesis is proposed:

H4a. Large firm size and weak financial performance will lead to high levels of contribution to society, measured with accumulated payments to creditors.

However, for a financial institution as a stakeholder, it is not only the amount borrowed that matters but also the price at which it lends, that is, the interest rate. It is reasonable to think that companies that pay high-interest rates make a substantial relative contribution to creditors. The interest rate is related to the characteristics of the country, particularly the country's lending rate (Hawtrey and Liang, 2008). For a financial institution, a good client is a large company with strong financial performance (profitable, low debt and solvent). A large company takes out large loans, which matter to the bank because it obtains large revenues with low operating costs. This is an application of Pareto's 80/20 Principle, which states that about 80% of profits come from 20% of borrowers and recommends that banks focus on the most profitable clients (Hales, 1995). Companies with strong financial performance are also good customers for a bank because lending to them is the best way to avoid delinquency (Altman *et al.*, 2019).

However, lending to large, creditworthy companies is not the only way to make a profit. An extreme example is provided by microfinance institutions, which lend to small entrepreneurs who are financially excluded, lacking collateral or guarantee and who generate high operating costs for the institutions. Despite this, microfinance institutions are profitable because borrowers pay very high-interest rates. Most studies have found a negative relationship between firm size and bank lending rates, for which there are several reasons, namely, credit availability (Stiglitz and Weiss, 1981); informational inefficiencies (Berger and Udell, 1998); operational costs (Dietrich, 2012); and borrowers' negotiation power (Machauer and Weber, 1998). Small firms typically cannot access public debt or equity markets, so they rely primarily on financial institutions as providers of funds and they even experience credit rationing (Kirschenmann, 2016). Small borrowers tend to be more informationally opaque than larger businesses, as they often do not have a sophisticated accounting system and, in the absence of accurate information, financial institutions react by raising their interest rates. Operational costs are another key factor in explaining the differences in lending rates between small and large enterprises (Dietrich, 2012). Operational costs include the application, screening and monitoring costs, as well as the ongoing running costs of lending. Dietrich (2012) also found that the lack of negotiation power of small enterprises is a determining factor that explains the negative relationship between firm size and bank lending.

On the other hand, loans to companies with poor performance should be made at high-interest rates because financial theories support a positive relationship between credit risk and bank lending rates (Modigliani and Miller, 1958; Merton, 1974). Riskier borrowers should pay higher loan rate premiums to compensate lenders for the risk that they will not repay their loans (Machauer and Weber, 1998). In other words, worse borrowers should have higher interest rates (Cressy and Toivanen, 2001). Credit rating systems assign a score to a borrower according to the perceived risk, enabling a financial institution to determine proportionally the interest rate charged to the borrower (Czarnitzki and Kraft, 2007). These systems use financial information to assess performance and determine credit risk (Altman *et al.*, 2019). We must recognise, however, that high-interest rates do not always correspond to companies with weak financial performance because financial institutions face numerous problems of adverse selection (Stiglitz and Weiss, 1981). For example, newly created companies have no credit history, making it difficult to determine the risk (Cressy and Toivanen, 2001). Consequently, the following hypothesis is proposed:

H4b. Small firm size and weak financial performance will lead to high levels of contributions to society via creditors, measured through the overall interest rate of the firm.

The last hypothesis proposes that a company, which favours contribution to society in its first years will continue that way. This hypothesis is based on the theory of organisational ecology developed by Hannan and Freeman (1977). According to this theory, individual organisations are subject to strong inertial forces and the market provokes the loss of weak companies through natural selection, although this approach does not exclude adaptation (Sisaye, 2011). Companies are conservative in their processes of change because resistance to change is inherent in organisational design (Hannan and Freeman, 1984). Orlitzky *et al.* (2003) extended the theory to the social field, arguing that CSP can be motivated by an ecological selection process because stakeholders might force organisations to consider social issues and CSP in their day-to-day strategising. Hannan *et al.* (1996) studied inertia and change in an organisation's early years, concluding that initial conditions matter a great deal.

A related issue is organisational imprinting (Stinchcombe, 1965): the initial accumulation of social, strategic, financial, human and technological resources provided by the entrepreneur. Elements imprinted onto an organisation in the nascent stages persist over time because founders actively pass their environmental influence onto their organisations, which affects aspects such as survival, performance and organisational strategy (Ellis *et al.*, 2017). Imprinting also favours company stability because the initial conditions create durable imprints on organisations (Stinchcombe, 1965). For these reasons, the following hypothesis is proposed:

H5. If a company in its first years already favours contribution to society via the governments, employees, suppliers and creditors, it will probably continue that way.

4. Empirical study

4.1 Sample and data

The sample is from AMADEUS, a database of comparable financial information for public and private companies across Europe, owned by Moody's corporation. The companies in the database are large and very large companies that match at least one of the following conditions: operating revenue is not less than €10m; TA are not less than €20m; and the number of employees is not less than 150. The AMADEUS database does not contain information on financial companies and in any case, the inclusion of financial companies would distort the results when considering the payment of interest and also purchases from suppliers, so the cumulative contribution of financial institutions should be studied separately. An examination of companies from their birth can provide an accurate measure of their contributions; for this reason, the sample comprised all the newly created companies from 2007–2012. After eliminating companies without available information to calculate their CCS, the final sample consisted of 9,276 companies. We winsorized the data at the 1% and 99% levels for each variable, to minimise the effect of outliers on the analysis (Barber and Lyon, 1996). The contribution to society of companies from birth to five years was calculated for each company: that is, for a company created in 2007, the financial data covered up to 2012 and for a company created in 2012, the financial data covered up to 2017. Table 1 shows the number of companies by year of creation, by geographical area and by industry.

Table 2 shows the variables used for hypothesis testing and their definitions. The dependent variables are the indicators used to measure social performance. The AMADEUS database does not have data on donations or dividends, so we calculated cumulative contribution on the payment of taxes, remuneration of employees, payments to suppliers and payments to creditors. The cumulative contribution was obtained by capitalising each item for each of the five years analysed. We followed the guidelines of the European commission regarding rates for social projects and specifically, the social interest rate was 5% according to the European commission for the sample of years in our empirical study (Sartori *et al.*, 2014). Annual inflation rates were obtained from Eurostat, the statistical office of the European Union (EU). Finally, the CCS ratios were calculated by dividing the CCS by the result of capitalising the annual increases in TA. We, thus, calculated the ratios of cumulative contribution to taxes (CC_T/TA), employees (CC_E/TA), purchases from suppliers (CC_S/TA) and interest charges (CC_I/TA).

Several tax avoidance proxies have been proposed (Desai and Dharmapala, 2006; Dyreng *et al.*, 2008; He *et al.*, 2020). We have followed the methodology of Dyreng *et al.* (2008) and He *et al.* (2020) to calculate the long-term ETR, computing the sum of corporate income tax paid

Year	2007	2008	2009	2010	2011	2012	Total
Num.	1,863	1,721	1,452	1,601	1,541	1,098	9,276
%	20.08	18.55	15.65	17.26	16.61	11.84	

Geographical area	Northern Europe	North-Western Europe	Southern Europe	Central and Eastern Europe	Total
Num.	1,199	2,266	4,323	1,488	9,276
%	12.93	24.43	46.60	16.04	

Economic activity	Agriculture (A)	Industry (B to E)	Construction (F)	Services (G to Q)
Num.	202	2,552	553	5,969
%	2.18	27.51	5.96	64.35

Code	Description	Num.	(%)
A	Agriculture, forestry and fishing	202	2.18
B	Mining and quarrying	29	0.31
C	Manufacturing	2,198	23.70
D	Electricity, gas, steam and air conditioning supply	186	2.01
E	Water supply; sewerage, waste management and remediation activities	139	1.50
F	Construction	553	5.96
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	2,938	31.67
H	Transportation and storage	469	5.06
I	Accommodation and food service activities	158	1.70
J	Information and communication	249	2.68
K	Financial and insurance activities	498	5.37
L	Real estate activities	198	2.13
M	Professional, scientific and technical activities	662	7.14
N	Administrative and support service activities	415	4.47
O	Public administration and defence; compulsory social security	10	0.11
P	Education	24	0.26
Q	Human health and social work activities	227	2.45

Table 1. Firms in the sample by year of creation, by geographical area and by industry

and dividing it by the sum of a firm's pre-tax income net of special items over the previous five years. In some countries, the legislation describes a pay ratio that compares the compensation of a company's CEO with the median compensation of its other employees [Securities and Exchange Commission (SEC), 2017]. Several indicators of wage inequality have been proposed as a measure of diversity in organisations such as the coefficient of variation or the Gini coefficient (Harrison and Klein, 2007). Unfortunately, the AMADEUS database does not differentiate between payments to executives and payments to other employees, nor does it allow us to calculate indicators of inequality. Thus, we simply calculated the average salaries paid to employees as a social indicator, taking the cumulative value of personnel expenses to the number of employees (CC_E/E). The last dependent variable is the overall interest rate of the firm, that is, interest payments divided by the total debt, taking the average of the past five years (INT).

Financial ratios (measuring *H1* to *H4*) and the initial contributions to society (measuring *H5*) are the independent variables. Annual statements for the second year were taken, to calculate both the financial ratios and the initial contribution because the first annual statement from a company created, for example, in December, will reveal little. *H1*, on the

Variable	Definition
Dependent variables: contribution to society	
A firm's cumulative contribution to tax ratio (CCT/TA)	Cumulative value of taxes to cumulative value of total assets
ETR	The sum of taxes divided by the sum of pre-tax income net of special items, over the previous five years
A firm's cumulative contribution to employees ratio (CCE/TA)	Cumulative value of personnel expenses to cumulative value of total assets
Average salaries paid to employees (CCE/E)	Cumulative value of personnel expenses to the number of employees
A firm's cumulative contribution to suppliers ratio (CCS/TA)	Cumulative value of the cost of suppliers to the cumulative value of total assets
A firm's cumulative contribution to creditors ratio (CCI/TA)	Cumulative value of interest charges to cumulative value of total assets
Overall interest rate (INT)	Overall interest rate of the firm (interest charges/ total debt), as averaged over the previous five years
Firm variables	
ROA	Profitability. Net income to total assets
Debt ratio (D/TA)	Leverage. Total debt to total assets
Working capital to total asset ratio (WC/ TA)	Liquidity. (Current assets – current liabilities) to total assets
ATO	Total sales to total assets
PM	Net income to total sales
Trade credit ratio (AP/TA)	Supplier financing. Accounts payable to total assets
Sales per employee (S/E)	Labour productivity. Sales to the number of employees
Salary over industry-standard (SOIS)	Salary per employee/average industry salary per employee
Size (TA)	Total assets
Cooperative (COOP)	A binary variable, which takes the value of 1 if the firm is a cooperative and 0 otherwise
A firm's initial contribution to society	
Initial contribution to tax ratio (ICT/ TA)	Taxes to total assets (in the first year of the sample period)
Initial effective tax rate (IETR)	Taxes to pre-tax income net of special items (in the first year of the sample period)
Initial contribution to employees ratio (ICE/TA)	Personnel expenses to total assets (in the first year of the sample period)
Initial average salaries (PE/E)	Personnel expenses per employee (in the first year of the sample period)
Initial contribution to suppliers ratio (ICS/TA)	Cost of suppliers to total assets (in the first year of the sample period)
Initial contribution to creditors ratio (ICI/TA)	Interest to total assets (in the first year of the sample period)
Initial overall interest rate (IINT)	Interest to debt (in the first year of the sample period)
Macroeconomic, industry and country variables	
GDP per capita (GDP)	Gross domestic product by the total population. Source: World Development Indicators by the World Bank
HDI	A summary measure of average achievement in key dimensions of HDI: a long and healthy life, being

(*continued*)

Table 2.
Variables used for hypotheses testing and their definitions

Variable	Definition
	knowledgeable and having a decent standard of living. Source: United Nations
Labour force participation rate (LABFOR)	Percentage of a country's working-age population that engages actively in the labour market, either by working or looking for work. Source: World Development Indicators by the World Bank
Strength of investor protection (INVES)	An average of 3 indices: the extent of disclosure index, the extent of director liability index and the ease of shareholder suit index. Source: World Economic Forum Global Competitiveness Index
Lending interest rate (L_RATE)	Bank rate that usually meets the short- and medium-term financing needs of the private sector. Source: World Development Indicators by the World Bank
Access to loans (ACCESS)	Ease of access to loans measuring how easy is it to obtain a bank loan with only a good business plan and no collateral. Source: World Economic Forum Global Competitiveness Index
Strength of the stock market (STMCAP)	The market capitalisation of listed domestic companies (% of GDP) Source: World Economic Forum Global Competitiveness Index
Talent (TALENT)	Country's capacity to retain talent. Source: World Economic Forum Global Competitiveness Index
Statutory corporate income tax rate (T_RATE)	Basic central government statutory (flat or top marginal) corporate income tax rate. Source: OECD tax database
Shadow economy (SHADOW)	The shadow economy as percent of total annual GDP. A detailed methodology of the estimations can be obtained from Medina and Schneider (2018). Source: theglobaleconomy.com
Social Trust (TRUST)	Based on responses to the World-Based Survey question: Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? Source: World Values Survey
Inequality (GINI)	The Gini coefficient takes values between 0% and 100%, meaning that the closer it is to 100%, the greater the inequality in the country
Cheating on taxes (CHEATTAX)	Based on responses to the World-based survey question: Please tell me whether "Cheating on taxes" can always be justified, never be justified or something in between. Source: World Values Survey
Industry	Economic activity. Source: European classification of economic activities (NACE) code 2.2 revised

Notes: *Firm's Cumulative Contribution to Society ratio* $= \dfrac{\sum_{t=1}^{5} Distributed\ \ Value_t \prod_{t=1}^{5}(1+r_t)}{TA_1(1+r_1)^4+\sum_{t=2}^{5}\Delta TA_t \prod_{t=2}^{5}(1+r_t)}$ Distributed value equal to annual personnel expenses, annual taxes, the annual cost of suppliers or annual interest charges. r_t is nominal rate, calculated as: [(1 + social rate) (1 + inflation rate$_t$)]−1. The social rate proposed by the European commission was 5% in the period analysed. The inflation rate is the annual average rate of change in harmonised indices of consumer prices

Table 2.

relationship between tax payment and financial performance, was tested using three financial ratios, assessing aspects such as profitability Return on assets (ROA), leverage (D/TA) and liquidity (WC/TA). *H2*, on cumulative contribution to employees, was tested using two financial ratios, namely, average salary per employee to average industry salary per employee (SOIS) and labour productivity (S/E). PM, ATO and trade credit ratio (AP/TA) reveal a cost leadership strategy for making profits and were used to test *H3*. *H4*, on contribution to creditors, was tested using three financial performance ratios, namely, profitability ROA, leverage (D/TA) and liquidity (WC/TA). Size is used in all hypotheses and was measured by the TA figure (TA). The initial contribution to society was calculated in each of the four items analysed to test *H5*. Four ratios were calculated by dividing each item by the TA figure. Note that this is not a cumulative contribution, but an annual one, so they were labelled "initial contribution". In this way, we calculated the ratios of initial cumulative contribution to taxes (IC_T/TA), employees (IC_E/TA), purchases from suppliers (IC_S/TA) and interest charges (IC_I/TA). We additionally calculated the ETR for the first year of the sample period (IETR), the average salaries for the first year (PE/E) and the overall interest rate for the first year (IINT).

We also studied the legal form of a company, considering whether it is a cooperative business or not (COOP). We analysed country characteristics using the following independent variables: GDP per capita (GDP), HDI, national corporate tax rate (T_RATE), rate of the shadow economy (*SHADOW*), the proportion of the country's working-age population that is employed (*LABFOR*), capacity to retain and attract talent (*TALENT*), country's social trust (*TRUST*), cheating on taxes (*CHEATTAX*), the strength of investor protection (*INVES*), ease of access to credit (*ACCESS*), lending interest rate (*L_RATE*), Gini index of the country (*GINI*) and relative strength of the capital markets (*STMCAP*). We considered the industry as a control variable, using the NACE Rev. 2 divisions.

4.2 Method and results

Table 3 shows the results of an exploratory analysis of the CCS ratios and Table 4 shows the results of the independent variables. Table 3 shows the average of the CCS for each euro invested. On average, companies contributed €0.062 in the form of taxes, €1.290 in the form of personnel expenses, €5.264 in the form of purchases from suppliers and €0.054 in the form of interest paid to creditors for each euro invested, over five years. There are statistically significant differences between sectors: the service sector achieves the highest cumulative contribution value, while the agriculture sector is the lowest.

Table 5 shows the results of a Pearson correlation matrix. The correlation coefficients between the types of contributions are low and some are even negative, which means that if a company contributes to one aspect, it does not usually contribute to another. The result highlights the positive and significant correlation between profitability and contribution to taxes ATO and contribution to suppliers (0.683). There is a negative and significant correlation between the contribution to employees and size (−0.180) and productivity (−0.389). There is also a positive and significant relationship between leverage and interest payments (0.336). Table 5 reveals a high correlation among those variables related to the development of the country. The results of the correlation analysis are consistent with the hypotheses.

A PCA was performed. Four principal components were obtained because there are four main variables (tax contribution, employee contribution, supplier contribution and interest contribution); however, there must be a high linear correlation between the variables for the PCA to be useful and Table 5 reveals that they are very low. In fact, the highest Pearson correlation coefficient among the four contributions was 0.125. The first principal

		CC_T/TA	ETR	CC_E/TA	CC_E/E	CC_S/TA	CC_I/TA	INT	CCS_{index}
Total	*Mean*	0.062	0.313	1.290	218.3	5.264	0.054	0.111	0.345
(n = 9,276)	*25th*	0.011	0.001	0.299	107.7	0.810	0.014	0.025	0.273
	Median	0.043	0.255	0.710	192.5	2.881	0.036	0.052	0.319
	75th	0.096	0.372	1.468	276.8	6.641	0.070	0.119	0.382
	St. dev.	0.123	0.613	1.976	169.4	8.22	0.065	0.137	0.124
Agriculture	*Mean*	0.048	0.213	1.077	217.2	4.028	0.052	0.093	0.318
(n = 202)	*25th*	0.003	0.000	0.138	57.57	0.497	0.015	0.023	0.251
	Median	0.021	0.216	0.455	161.1	2.351	0.398	0.049	0.299
	75th	0.083	0.282	1.157	280.6	5.162	0.067	0.100	0.356
	St. dev.	0.078	0.280	2.038	221.1	5.818	0.053	0.115	0.097
Industry	*Mean*	0.055	0.309	1.019	215.8	3.818	0.056	0.111	0.320
(n = 2,552)	*25th*	0.007	0.000	0.338	119.6	1.375	0.017	0.026	0.269
	Median	0.379	0.232	0.702	209.1	2.651	0.397	0.049	0.304
	75th	0.086	0.382	1.318	281.7	4.434	0.075	0.110	0.351
	St. dev.	0.082	0.731	1.113	143.1	5.451	0.057	0.139	0.087
Construction	*Mean*	0.073	0.351	1.224	239.7	2.629	0.038	0.351	0.306
(n = 553)	*25th*	0.016	0.168	0.256	136.3	0.603	0.007	0.168	0.252
	Median	0.056	0.263	0.869	213.6	1.574	0.213	0.263	0.293
	75th	0.107	0.360	1.720	295.7	3.628	0.493	0.360	0.341
	St. dev.	0.082	0.552	1.418	170.7	3.599	0.055	0.552	0.086
Services	*Mean*	0.065	0.315	1.419	217.5	6.169	0.055	0.111	0.359
(n = 5,969)	*25th*	0.012	0.023	0.293	105.5	0.578	0.014	0.024	0.279
	Median	0.045	0.263	0.711	183.7	3.433	0.353	0.053	0.331
	75th	0.099	0.371	1.544	217.8	8.231	0.069	0.121	0.400
	St. dev.	0.088	0.569	2.272	177.6	9.357	0.068	0.136	0.137
K-W rank test		51.24 (0.000)	42.73 (0.000)	41.05 (0.000)	42.72 (0.000)	114.61 (0.000)	99.02 (0.000)	1.90 (0.593)	282.28 (0.000)

Notes: CC_T/TA, a firm's cumulative contribution to tax ratio; ETR, effective tax rate; CC_E/TA, a firm's cumulative contribution to employees ratio; CC_E/E, average salaries paid to employees; CC_S/TA, a firm's cumulative contribution to suppliers ratio; CC_I/TA a firm's cumulative contribution to creditors ratio; INT, overall interest rate; CCS_{index}, a firm's cumulative contribution index

Table 3. Descriptive statistics for contribution to society indicators. K-W rank test: Kruskal-Wallis rank test. Z: Mann–Whitney U test

component explained 29.58% of the variance. Correlation analysis showed that the first principal component is related to the cumulative contribution in taxes and their correlation coefficient was 0.80. The second principal component explained 27.10% of the variance, is related to the cumulative contribution in personnel expenses (correlation coefficient = 0.74) and is negatively related to the cumulative contribution in purchases from suppliers (correlation coefficient = −0.71). The third principal component explained 24.04% of the variance and is related to the cumulative contribution in interest charges (correlation coefficient = 0.77). The fourth principal component explained the rest of the variance (19.28%). Therefore, although PCA is useful because it obtains new uncorrelated variables, the first component is not interpreted in this case as an aggregate, but is mainly related to cumulative contribution in taxes.

One regression model was developed for each of the eight dependent variables, that is, the four economical contributions (CCT/TA, CCE/TA, CCS/TA and CCI/TA), the three ethical contributions (ETR, CC_E/E and INT), plus one for the cumulative contribution index (CCS_{index}). The importance of each stakeholder should be weighted to calculate the latter, but we simply calculated the average of the four economical contributions (CC_T/TA, CC_E/TA,

	Num.	Mean	25th	Median	75th	SD
ROA	8,942	0.076	0.024	0.069	0.135	0.185
D/TA	9,276	0.795	0.664	0.845	0.948	0.280
WC/TA	9,276	0.091	−0.027	0.080	0.234	0.289
ATO	9,269	2.328	0.924	1.687	2.816	2.863
PM	9,273	0.002	0.007	0.026	0.061	0.495
AP/TA	9,276	0.607	0.363	0.638	0.855	0.322
S/E	6,839	1,112	119.39	263.07	629.17	4,428
Ln(S/E)	6,828	5.608	4.787	5.574	6.446	1.568
SOIS	6,844	1.000	0.476	0.838	1.213	1.442
TA	9,276	63,843	2,113	6,754	24,439	714,901
Ln(TA)	9,276	8.881	7.655	8.818	10.104	1.879
IC_E/TA	9,276	0.347	0.069	0.181	0.388	0.573
PE/E	6,844	42.88	19.78	35.90	50.66	79.15
IC_T/TA	9,276	0.017	0.000	0.009	0.027	0.036
IETR	9,274	0.313	0.001	0.255	0.371	0.613
IC_S/TA	9,276	1.412	0.155	0.674	1.656	3.069
IC_I/TA	9,276	0.014	0.002	0.008	0.019	0.021
IINT	9,276	0.061	0.000	0.035	0.075	0.079
lnGDP	9,276	10.425	10.328	10.496	10.669	0.537
SHADOW	9,259	18.31	12.09	23.35	23.38	5.889
INVES	9,276	5.569	5.000	5.687	5.700	0.529
T_RATE	9,276	29.14	27.77	32.00	32.00	6.057
TRUST	9,276	0.302	0.302	0.198	0.275	0.151
CHEATTAX	9,276	2.308	2.147	2.159	2.328	0.300
HDI	9,276	0.876	0.868	0.872	0.885	0.034
LABFOR	9,276	54.97	48.39	56.06	58.84	5.521
TALENT	9,276	3.455	2.414	3.316	3.887	0.659
GINI	9,276	32.45	30.92	34.50	34.50	3.147
ACCESS	9,276	3.000	2.156	2.888	3.426	0.816
L_RATE	8,538	5.849	5.102	5.103	5.103	1.947
STMCAP	8,538	46.77	35.26	35.26	73.38	21.36

Table 4.
Descriptive statistics for independent variables

CC_S/TA and CC_I/TA). In other words, CCS_{index} is an equal-weighted index. As the four economical contributions may have large differences between their ranges, they were standardised to mean zero and variance one to achieve equal weighting. Table 6 shows the multivariate regression estimations. The independent variables in each model are those that test each of the four hypotheses, in addition to the initial cumulative contribution ratios to test *H5*. All the estimated models also include industry effects. We calculated the variance inflation factor (VIF) to detect multicollinearity. An empirical rule states that a VIF of 10 or greater reveals multicollinearity, but with the proviso indicated by O'Brien (2007). The results showed multicollinearity among some of the variables, especially those related to the development of the country. We ensured that none of the variables that entered the models had multicollinearity.

The estimation of the first model demonstrated that profitability had a positive effect on contributions to tax (coef = 0.343 $p < 0.001$) and the effect of size and leverage was negative. The second model used tax avoidance as a dependent variable and showed a positive relationship with financial performance and a negative relationship with firm size, as expected. Some country characteristics favour the payment of taxes. We found that countries with a low informal economy rate, where the investor is protected, with high GDP per capita, a high national corporate tax rate and characterised by a low level of tax cheating

	CCS_{index}	CC_T/TA	CC_S/TA	CC_E/TA	CC_I/TA	ETR	CC_E/E	INT	ROA	D/TA	WC/TA	ATO	PM	AP/TA	ln(S/E)	SOIS	lnTA
CC_T/TA	0.434**	1															
CC_S/TA	0.601**	0.100**	1														
CC_E/TA	0.533**	0.125**	−0.081**	1													
CC_I/TA	0.408**	−0.122**	−0.018	0.007	1												
ETR	0.023*	0.108**	−0.000	0.017	−0.055**	1											
CC_E/E	0.023*	0.025*	0.016	0.039**	0.053**	−0.000	1										
INT	0.073**	0.026*	0.033**	0.038**	0.049**	0.000	0.036**	1									
ROA	0.124**	0.369**	0.037**	0.003	−0.070**	0.045**	−0.037**	−0.026*	1								
D/TA	0.159**	−0.116**	−0.139**	−0.015	0.422**	0.027**	−0.051**	0.029**	−0.148**	1							
WC/TA	0.033**	0.154**	0.049**	−0.014	−0.098**	0.012	0.084**	−0.024*	0.370**	0.163**	1						
ATO	0.515**	0.160**	0.683**	0.132**	−0.075**	0.003	−0.062**	0.056**	0.137**	−0.178**	0.071**	1					
PM	0.038**	0.118**	0.052**	0.049**	−0.062**	0.025*	−0.013	0.019	0.285**	−0.082**	0.123**	0.086**	1				
AP/TA	0.159**	0.018*	0.174**	0.101**	−0.161**	0.061**	−0.083**	0.094**	−0.296**	0.022*	−0.595**	0.222**	−0.012	1			
ln(S/E)	0.029*	0.066**	0.380**	−0.029*	−0.035**	0.023	0.294**	0.004	0.110**	−0.136**	0.116**	0.265**	0.312**	0.111**	1		
SOIS	−0.005	0.029*	0.007	−0.031*	−0.005	0.031*	0.564**	0.033**	−0.018	0.017	0.095**	−0.044**	0.052**	−0.065**	0.461**	1	
lnTA	−0.145**	−0.131**	−0.195**	−0.180**	0.257**	−0.046**	0.343**	−0.025*	−0.013	0.261**	0.028**	−0.349**	−0.004	−0.404**	0.180**	0.343**	1
IC_E/TA	0.375**	0.095**	−0.093**	0.793**	−0.056**	0.031*	0.056**	0.049**	−0.074**	−0.034**	−0.082**	0.208**	0.004	0.205**	−0.386**	−0.010	−0.287**
IC_T/TA	0.247**	0.570**	0.090**	0.089**	−0.138**	0.111**	−0.007	0.018	0.623**	−0.160**	0.238**	0.236**	0.190**	−0.024*	0.098**	0.027*	−0.162**
IC_S/TA	0.445**	0.094**	0.760**	−0.069**	−0.045**	−0.003	−0.016	0.021*	0.068**	−0.126**	0.048**	0.840**	0.045**	0.149**	0.310**	0.001	−0.205**
IC_I/TA	0.235**	−0.066**	−0.007	−0.015	0.589**	−0.041**	−0.004	0.066**	−0.034**	0.336**	−0.098**	0.084**	−0.006	−0.068*	−0.031*	−0.039**	0.081**
IETR	0.042**	0.160**	−0.014	0.043**	−0.066**	0.203**	0.015	−0.014	0.105**	0.023**	0.015	0.015	0.053**	0.092**	0.049**	0.046**	−0.037**
PE/E	−0.005	0.028*	0.006	−0.031**	−0.005	0.031*	0.564**	0.033**	−0.181	−0.063**	0.094**	−0.044**	0.037**	−0.066**	0.461**	0.763**	0.374**
IINT	0.087**	0.003	0.023*	0.023*	0.127**	−0.007	0.035**	0.546**	0.009	0.004*	−0.009	0.048**	0.036**	0.014	0.018	0.068**	−0.037**
lnGDP	0.110**	0.082**	0.064**	0.105**	−0.032**	0.066**	0.397**	0.013	0.020	−0.010	0.081**	−0.005	0.060**	−0.027**	0.230**	0.192**	0.112**
SHADOW	−0.143**	0.014	−0.050**	−0.152**	−0.078*	0.121	−0.173**	−0.013	−0.047**	0.050**	−0.104**	−0.032**	−0.022**	0.172**	−0.024*	−0.083**	−0.158**
INVES	0.028**	0.084**	0.005	0.018	−0.034**	0.054**	0.072**	−0.063**	0.046**	0.031**	−0.022*	0.034**	0.008	0.058**	0.020	0.017	−0.104**
T_RATE	0.021*	0.047**	0.062**	0.018	−0.096**	0.118**	0.291**	0.088**	−0.067**	0.048**	−0.017	−0.017	0.052**	0.124**	0.220**	0.156**	0.077**
TRUST	0.117**	0.079**	0.013	0.107**	0.051**	0.013	0.173**	−0.084**	0.103**	−0.048**	0.109**	0.007	0.026*	−0.137**	0.061**	0.082**	0.042**
CHEATTAX	0.000	−0.057**	0.039**	0.026*	−0.038**	−0.093**	−0.041**	0.073**	−0.058**	0.075**	−0.097**	0.039**	−0.024*	0.084**	−0.062**	−0.020	−0.043**
HDI	0.143**	0.068**	0.058**	0.137**	0.021*	0.026*	0.349**	0.004	0.043**	−0.051**	0.133**	−0.002	0.057**	−0.119**	0.197**	0.176**	0.173**
LABFOR	0.137**	−0.058**	0.051**	0.126**	0.129**	−0.193**	0.058**	−0.057**	0.069**	−0.087**	0.109**	0.035**	0.009	−0.224**	−0.034**	0.001	0.109**
TALENT	0.157**	−0.026*	0.035**	0.160**	0.128**	−0.157**	0.132**	−0.019	0.073**	−0.079**	0.129**	0.038**	0.018	−0.231**	−0.027*	0.047**	0.171**
ACCESS	0.146**	−0.011	0.043**	0.144**	0.101**	−0.158**	0.126**	0.041**	0.085**	−0.053**	0.088**	0.052**	0.016	−0.172**	−0.025*	0.038**	0.078**
L_RATE	−0.027*	−0.090**	−0.102**	0.002	0.182**	−0.164**	−0.291**	0.043**	0.010	0.031*	−0.049**	0.006	−0.052**	−0.103**	−0.263**	−0.164**	−0.012
STMCAP	0.061**	−0.049**	0.070**	0.066**	−0.005**	0.139**	0.190**	−0.046**	−0.030**	−0.026**	0.020	0.019	0.046**	−0.006	0.112**	0.080**	0.086**
GINI	−0.022*	−0.031**	−0.027**	−0.006	0.021*	0.004	−0.037**	0.003	−0.020	−0.029**	0.005	−0.047**	−0.018	−0.059**	0.008	0.054**	0.152**

(continued)

Table 5. Pearson correlation matrix. Variables are defined in Table 2

Table 5.

	5IC$_E$/TA	IC$_T$/TA	IC$_S$/TA	IC$_I$/TA	IETR	PE/E	IINT	lnGDP	SHADOW	INVES	T_RATE	TRUST	CHEATTAX	HDI	LABFOR	TALENT	ACCESS	L_RATE	STMCAP	GINI
IC$_E$/TA	1																			
IC$_T$/TA	0.132**	1																		
IC$_S$/TA	−0.032**	0.138**	1																	
IC$_I$/TA	0.037**	−0.063**	0.034**	1																
IETR	0.039**	0.223**	−0.007	−0.060**	1															
PE/E	−0.009	0.026*	0.001	−0.039**	0.046**	1														
IINT	0.034**	0.010	0.029**	0.173**	−0.003	0.068**	1													
lnGDP	0.063**	0.073**	0.040**	−0.050**	0.096**	0.562**	0.048**	1												
SHADOW	−0.107**	0.000	−0.018	−0.071**	−0.159**	−0.254**	−0.075**	−0.442**	1											
INVES	0.033**	0.082**	0.012	−0.008	0.082**	−0.026*	−0.059**	0.205**	0.123**	1										
T_RATE	−0.006	0.037**	0.043**	−0.104**	0.158**	0.461**	0.091**	0.697**	−0.040**	−0.094**	1									
TRUST	0.081**	0.078**	0.007	0.038**	0.001	0.269**	0.042**	0.581**	−0.432**	0.489**	−0.130**	1								
CHEATTAX	0.031**	−0.035**	0.016	0.009	−0.119**	−0.061**	−0.081**	−0.087**	−0.530**	−0.242**	0.017	−0.207**	1							
HDI	0.085**	0.060**	0.031**	−0.008	0.036**	0.532**	0.043**	0.932**	−0.624**	0.157**	0.521**	0.642**	−0.061**	1						
LABFOR	0.092**	−0.054**	0.026*	0.107**	−0.256**	0.094**	0.021*	0.230**	−0.707**	−0.023*	−0.276**	0.508**	0.196**	0.410**	1					
TALENT	0.118**	−0.014	0.009	0.112**	−0.214**	0.1511**	0.051**	0.292**	−0.719**	−0.009**	−0.182**	0.508**	0.369**	0.525**	0.834**	1				
ACCESS	0.117**	0.003	0.019	0.101**	−0.201**	0.121**	0.030**	0.332**	−0.796**	0.251**	−0.236**	0.668**	0.317**	0.474**	0.849**	0.899**	1			
L_RATE	0.025	−0.096**	−0.073**	0.131**	−0.221**	−0.479**	0.056**	−0.502**	0.257**	0.114**	−0.788**	−0.610**	0.170**	−0.626**	0.466**	0.401**	0.623**	1		
STMCAP	0.043**	−0.057**	0.046**	−0.010	0.203**	0.341**	0.026*	0.473**	−0.257**	−0.205**	0.536**	−0.086**	0.093**	0.413**	0.404**	0.246**	0.305**	−0.444*	1	
GINI	−0.014	−0.032**	−0.033**	−0.016	−0.008	0.054*	−0.018	0.003	−0.029**	−0.035**	0.009	−0.018	−0.005	0.016	0.014	0.031*	0.006	0.031*	−0.009	1

Notes: **Significant at 1% level; and *significant at 5% level

Table 6.
Regression model results for CCS ratios

	M1 (CCT/TA)	ITCV	M2 (ETR)	ITCV	M3 (CCE/TA)	ITCV	M4 (CCE/E)	ITCV	M5 (CCS/TA)	ITCV
ROA	0.339***	0.167	0.036***	0.041						
D/TA	−0.040***	−0.034	0.014	0.019						
WC/TA	0.042***	0.05	0.018*	−0.008						
ATO									0.658***	0.147
PM									−0.015***	−0.033
AP/TA									0.066***	0.028
ln(S/E)					−0.393***	−0.369	0.313***	0.261	0.141***	0.107
SOIS					0.096***	0.077				
lnTA	−0.132***	−0.109	−0.037***	−0.025	−0.165***	−0.152	0.382***	0.374	0.092***	0.058
ICT/TA	0.432***	0.169								
ICS/TA									0.292***	0.084
ICE/TA					0.622***	0.236				
ICI/TA										
IETR			0.166***	0.095						
PE/E							0.511***	0.372		
IINT										
COOP	−0.023***		0.024*		0.021*					
lnGDP	0.043***		0.044***						0.024**	
HDI					0.169***		0.173***			
GINI					0.004		−0.018**			
SHADOW	−0.011*		−0.005		−0.023***		−0.019**		−0.034***	
INVES	0.021*		0.036**							
T_RATE	0.015**		0.099***							
TRUST	0.012**		0.011*							
CHEATTAX	−0.035***		−0.080***							
LABFOR					0.047***		0.019**			
TALENT					0.020***		0.051***			
Intercept	0.039***		−0.013		−1.944***		2.866***		−7.441***	
Industry	Yes		Yes		Yes		Yes		Yes	
N	8,871		8,924		6,811		6,746		6,810	
Adj. R^2	0.348		0.064		0.674		0.588		0.644	
Wald χ^2	1,815.7***		1,164.7***		3,701.7***		5,726.2***		5,548.3***	
Highest-impact		0.007 lnGDP		0.018 T_RATE		0.035 lnGDP		0.022 TALENT		0.012 SHADOW

	M6 (CCC/TA)	ITCV	M7 (INT)	ITCV	M8 (CCSindex)	ITCV	VIF range
ROA	−0.076***	−0.035	−0.005***	−0.01	0.125***	0.053	1.2–1.4
D/TA	0.394***	0.156	0.069***	0.046	0.204***	0.113	1.3–1.8

(*continued*)

Table 6.

WC/TA	−0.164***	−0.076	−0.014	0.006	−0.064**	−0.023	1.3–2.1
ATO					0.383***	0.412	1.2–1.5
PM					−0.028*	−0.017	1.0–1.1
AP/TA					0.050	0.009	1.1–2.5
ln(S/E)					−0.111***	−0.057	1.1–1.5
SOIS					0.023**	−0.002	1.2
lnTA	0.164***	0.101	−0.023**	−0.020	−0.054***	−0.044	1.3–1.8
ICT/TA					0.106***	0.048	1.0–1.1
ICS/TA					0.148***	0.027	1.1–1.2
ICE/TA					0.284***	0.133	1.1–1.5
ICI/TA	0.442***	0.103			0.122	0.009	1.0–1.1
IETR							1.1
PE/E							1.1
IINT			0.545***	0.539			1.0
COOP					0.011		1.1–1.2
lnGDP	−0.036***		−0.005		0.078***		1.1–2.9
HDI					0.028**		1.3–3.1
GINI					−0.008		1.04–1.1
SHADOW					−0.027**		1.1–2.5
INVES					−0.003		1.9–2.1
T_RATE					0.025**		1.3–1.4
TRUST					0.022**		1.0–1.8
CHEATTAX					−0.025*		1.8–2.1
LABFOR					0.029**		1.1–2.3
TALENT					0.041***		1.1–1.4
ACCESS	0.062***		0.036***		−0.014		1.1–2.5
L_RATE	0.089*		0.034**		−0.057***		1.3–1.4
STMCAP	−0.033***		−0.035***		−0.009		1.4–1.8
Intercept	0.023		0.078***		0.068		
Industry	Yes		Yes		Yes		
N	8,524		8,538		5,940		
Adj. *R*2	0.422		0.312		0.478		
Wald χ2	1,664.2***		5,786.1***		2,849.1***		
Highest-impact		0.006 lnGDP		0.007 STMCAP		0.014 lnGDP	

Notes: Models estimated with OLS standard errors clustered at the firm-level. Standardised β coefficients are reported. All variables are defined in Table 2. ITCV: impact threshold of confounding variable for each of the main results. VIF range: variance inflation factor range of each variable; ***significant at 1% level; and **significant at 5% level. Regression model results for CCS ratios. Models estimated with OLS standard errors clustered at the firm level. Standardised β coefficients are reported. All variables are defined in Table 2. ITCV: impact threshold of confounding variable for each of the main results. VIF range: variance inflation factor range of each variable.

and high social trust favour the cumulative tax contribution. Cooperatives enjoy tax exemptions in some countries and we consistently found that cooperatives pay less tax but do not avoid payment.

The third model used cumulative personnel expenses to TA as a dependent variable. The productivity of employees presented a negative estimate coefficient (-0.377; $p < 0.001$), while the average salary estimate coefficient was positive (0.219; $p < 0.001$). Countries with a high HDI and low shadow economy rate, characterised by retaining talent and by a high employment-to-population ratio, favour the cumulative contribution to employees. We found that the cooperative legal form, as a firm that is controlled by its workers, also favours the cumulative contribution to employees. The fourth model used average salaries as a dependent variable and revealed a positive relationship with firm size and productivity, as expected.

In the fifth model explaining the contribution to suppliers, all explanatory variables presented the expected sign and were statistically significant. We found that countries with high GDP per capita and a low informal economy rate favoured the cumulative contribution to suppliers.

The variables that explained the cumulative contribution to creditors were the firm size and debt ratio, when using cumulative interest payments to TA as the dependent variable (sixth model). We found that countries with low GDP per capita and high-interest rate, whose companies have good access to credit, but with capital markets of low relative importance, favour cumulative contribution to creditors. The seventh model used the overall interest rate of the firm as a dependent variable. The results of the empirical study support the negative relationship between the interest rate and the firm size and the negative relationship between the interest rate and profitability.

Finally, the multivariate analysis suggested that the characteristics that most explain the equal-weighted index CCS_{index} are the initial social contributions, ATO, profitability and leverage. HDI, GDP per capita, income equality, the ability to retain talent, a lack of a shadow economy, low level of tax cheating and high social trust are country characteristics that favour CCS. The results, thus, provide support for *H1* to *H4*. The coefficients for the initial cumulative contribution were positive and significant in all models, which provides strong support for *H5*. The last column shows the estimation results of the CCS_{index} model.

A canonical correlation analysis was conducted using the 13 independent variables as predictors of the four economical contribution ratios (CC_T/TA, CC_E/TA, CC_S/TA and CC_I/TA). This technique can deal with a full set of dependent variables, estimating the maximum correlation between both sets of dependent and independent variables by performing linear combinations of the variables. This analysis is useful because it provides a global view of the relationships between variables, going beyond multivariate regressions and helps to identify the characteristic patterns of the companies that maximise their accumulated contribution to society. Table 7 shows the results. The analysis yielded four canonical functions. The full model across all functions was statistically significant using the Wilks's $\lambda = 0.045$ criterion, $F(52; 25{,}327.55) = 594.95$, $p < 0.001$. Because Wilks's λ represents the variance unexplained by the model, $1 - \lambda$ yields the full model effect size in an r^2 metric. For the set of four canonical functions, the r^2 type effect size was, thus, 0.95. Only the first two canonical functions presented eigenvalues greater than one, explaining 47.02% and 31.16% of the variance, respectively.

Function 1 is explained by contribution to employees (CC_E/TA) showing a structure coefficient of 0.870; it is also explained by contribution to suppliers (CC_S/TA) in a negative sense, with a negative structure coefficient of -0.542. The independent variable that best explains Function 1 is labour productivity with ln(S/E), in a negative sense, showing a

Table 7.
Canonical solution for the firm's cumulative contribution ratios and factors explaining them

	Function 1			Function 2			Function 3			Function 4			
	Coef.	r_s	r_s^2 (%)	Coef.	rs	r_s^2 (%)	Coef.	r_s	r_s^2 (%)	Coef.	r_s	r_s^2 (%)	h2 (%)
Firms' CCS													
CC_T/TA	−0.037	0.018	0.03	0.056	0.235	5.50	−0.435	−0.464	21.53	0.920	0.854	72.94	100
CC_E/TA	0.843	0.870	75.64	0.478	0.421	17.69	0.283	0.230	5.28	0.005	0.118	1.39	100
CC_S/TA	−0.482	−0.542	29.35	0.814	0.792	62.66	0.349	0.276	7.62	−0.024	0.061	0.38	100
CC_I/TA	−0.094	−0.064	0.41	−0.374	−0.380	14.41	0.771	0.826	68.26	0.523	0.411	16.91	100
Financial variables													
ROA	0.042	−0.037	0.14	−0.042	0.111	1.23	0.085	−0.334	11.13	0.096	0.558	31.16	43.66
D/TA	0.011	0.041	0.17	−0.092	−0.368	13.58	0.367	0.518	26.82	0.307	0.237	5.62	46.19
WC/TA	0.041	−0.024	0.06	0.083	0.093	0.86	−0.053	−0.207	4.27	0.009	0.180	3.23	8.41
ATO	−0.029	−0.247	6.12	0.345	0.851	72.42	0.062	0.258	6.64	0.025	0.171	2.92	88.10
PM	0.076	0.020	0.04	0.030	0.125	1.55	−0.080	−0.132	1.75	−0.027	0.129	1.65	5.00
AP/TA	0.028	−0.002	0.00	0.051	0.322	10.37	0.140	−0.054	0.30	0.163	−0.150	2.26	12.92
ln(S/E)	−0.266	−0.608	36.93	0.076	0.175	3.05	0.052	−0.065	0.42	−0.016	0.060	0.36	40.75
SOIS	0.065	−0.038	0.15	−0.029	−0.014	0.02	−0.091	−0.037	0.14	0.001	0.036	0.13	0.44
lnTA	0.073	−0.121	1.46	−0.046	−0.437	19.11	0.253	0.187	3.50	0.142	0.042	0.18	24.25
Firms' initial contribution to society													
IC_T/TA	−0.047	0.034	0.12	0.026	0.258	6.67	−0.478	−0.472	22.27	0.876	0.838	70.25	99.30
IC_E/TA	0.779	0.857	73.51	0.391	0.433	18.74	0.327	0.198	3.91	−0.016	0.110	1.22	97.37
IC_S/TA	−0.349	−0.490	24.04	0.460	0.779	60.73	0.345	0.279	7.79	−0.025	0.078	0.61	93.17
IC_I/TA	−0.100	−0.061	0.38	−0.296	−0.276	7.59	0.522	0.718	51.54	0.375	0.428	18.29	77.79
R_c^2			*71.20*			*61.83*			*41.30*			*30.15*	

Notes: Coef = standardised canonical function coefficient; r_s = structure coefficient; r_s^2 = squared structure coefficient; h^2 = communality coefficient

structure coefficient of −0.608. Small companies with low ATO figures and low labour productivity are, thus, the most significant contributors to employees. Function 2 is explained by the contribution to suppliers (CC_S/TA), showing a structure coefficient of 0.792 and by the contribution to employees (CC_E/TA), showing a structure coefficient of 0.421, but the contribution to creditors (CC_I/TA) is negative, showing a coefficient of −0.380. The independent variable that best explains this function is the ATO ratio ATO, with a coefficient of 0.851. Small companies with high ATO figures with very little debt and with high labour productivity are, thus, the most significant contributors to suppliers. In canonical Function 3, we find that the positive contribution corresponds to interest charges (CC_I/TA), with a coefficient of 0.826, but there is a negative contribution to taxes (CC_T/TA), with a coefficient of −0.464. Leveraged companies that are not very profitable and that have high ATO figures are, thus, the most significant contributors to creditors. Finally, all coefficients of the dependent and independent variables contribute positively to the canonical Function 4, which seems to indicate that the best of all worlds is possible, but the explained variance is only 8.3%. The independent variable that best explains this function is the profitability ratio ROA, showing a coefficient of 0.553. The pattern is characterised by large and very profitable companies, leveraged but solvent, with high ATO figures and high PMs, hiring well paid and productive employees. Unfortunately, this win-win situation, in which financial and social performance undoubtedly go hand-in-hand, explains a small percentage of the variance in the sample.

The canonical communality coefficient (h^2) was calculated, which is the proportion of variance in each variable that is explained by the canonical functions that are relevant, to measure the contribution of each variable to the model. The independent variables with the highest explanatory power are the firm's initial contribution to society, with canonical communality coefficients between 77.79% and 99.30%. Of the financial variables, the turnover assets ratio ATO exhibits the highest communality coefficient (h^2 = 88.10%), followed by leverage D/TA (h^2 = 46.19%), profitability ROA (h^2 = 43.73%), productivity of employees ln(S/E) (h^2 = 40.75%) and firm size lnTA (h^2 = 24.25%).

4.3 Robustness check

Four studies were conducted to check the robustness of the empirical results presented in Table 6. First, we repeated the analysis on the raw data (without winsorizing) using a robust regression technique, as an additional way to validate the robustness of the results obtained, following Adams *et al.* (2019). This was done because winsorization is not free of problems when dealing with financial ratios such as the arbitrariness of the cut-off point chosen for winsorization, limitations to the generalisability of results and sometimes the persistence of non-normality (Kane and Meade, 1998). The results did not change significantly using a multiple linear regression on the winsorized data or a robust regression on raw data (in the interest of brevity, we do not report these).

Second, we examined concerns because of potential reverse causality in the models because a firm's initial contribution could be endogenous concerning their cumulative contribution. In the presence of endogeneity, ordinary least squares (OLS) estimates were biased and inconsistent because endogeneity affects the orthogonality of the variables to the residual errors. We applied the C statistic, also known as the "GMM distance" statistic, to check potential endogeneity. The results indicated that we cannot reject the null hypothesis that all variables are exogenous, confirming that endogeneity probably does not affect our results (CC_T/TA model, C-statistic p-value = 0.16; CC_S/TA model, C-statistic p-value = 0.18; CC_E/TA model, C-statistic p-value = 0.19; CC_I/TA model, C-statistic p-value = 0.49).

Third, we examined the sensitivity of our results to possible unobserved confounding variables. Although the models in Table 6 include many relevant control variables, it could still be possible that some unknown omitted variables could invalidate our inferences. To check this problem, we calculated the impact threshold for a confounding variable (ITCV), as suggested by Frank (2000), Larker and Rusticus (2010) and He *et al.* (2019). ITCV measures how much an unobserved confound variable would have to be correlated with both predictors and the dependent variable to make the coefficients statistically insignificant. If the ITCV is high, the results are robust to omitted variable concerns. The ITCV was calculated for predictors in our eight models. Furthermore, we obtained the impact of control variables on coefficients for regressors, calculated as the partial correlation between each control variable and the dependent variable multiplied by the partial correlation between each control variable and regressors. Although we do not present all the results for the sake of brevity, the highest-impact row shows the largest impact value for variables included in each model – in other words, the most impactful control variable.

We obtained ITCV values between 0.008 (minimum absolute value for the WC/TA coefficient in Model 2) and 0.54 (maximum absolute for the IINT coefficient variable in Model 7). The minimum value implies that a potential omitted variable should correlate at least 0.09 (0.008^1/2) with both WC/TA and ETR, to make the WC/TA coefficient non-significant. The maximum value implies that a potential omitted variable should correlate at least 0.73 (0.54^1/2) with both INNT and the overall interest rate to make the estimated coefficient for INNT non-significant.

Comparing the ITCV values (and the implicit correlations) with the correlation coefficients presented in Table 5, we verified that none of the variables excluded in each model exhibit a correlation with both regressors and dependent variables, to influence the relationship between them. These results cannot exclude an omitted variable, but they could suggest that it is unlikely that an omitted variable would be correlated strongly with both key variables.

Finally, we performed a simulation modifying interest rates, which were set at 3%, 4%, 5% and 10%. The choice of the interest rate can dramatically change the SROI (Lingane and Olsen, 2004). Although it is sometimes important, this importance is sometimes overstated (Spackman, 2007) and so it is pertinent to perform a simulation. Cumulative contributions change depending on the rate chosen. For example, the cumulative tax contribution increases on average from €3,318,739 to €3,790,825, by moving from an interest rate of 3% to an interest rate of 10%. Table 8 shows the results of the simulation on CCS ratios, which barely changed. The relationships between the variables did not change and the hypotheses were also supported. The Pearson correlation coefficient among the different cumulative contributions, obtained by changing the interest rate, was high (ranging from 0.98 to 1.0). The simulation, thus validated the results, enhancing robustness.

4.4 Discussion, limitations and practical implications

Stakeholder theory refuses the maximisation of the total market value of a firm as the purpose of business, but it requires companies to balance the interests of all stakeholders (Phillips *et al.*, 2003). Optimising the well-being of multiple stakeholders is not easy and our approach may identify sustainability gaps. For example, Jung and Kim (2016) warned about the two faces of CSR, exemplifying the case of "good neighbours" but "bad employers". Harrison *et al.* (2019) confirmed that the financial performance variable needs a broadening in the stakeholder literature, to include more dimensions of the value created. Our approach follows that line of work: the CCS indicator tries to consider the interests of the stakeholders. It is even possible to balance the interests of the stakeholders according to their importance, creating a non-equal weighted index, which we propose as a future line of research.

		CC_T/TA	CC_E/TA	CC_S/TA	CC_I/TA	CCS_{index}
$r = 3\%$	*Mean*	0.066	1.341	5.537	0.056	0.297
	25th	0.011	0.308	0.833	0.015	0.251
	Median	0.044	0.729	2.961	0.036	0.282
	75th	0.099	1.518	6.836	0.072	0.323
	St. dev.	0.098	2.22	11.40	0.068	0.078
$r = 4\%$	*Mean*	0.065	1.319	5.446	0.055	0.308
	25th	0.011	0.304	0.821	0.014	0.238
	Median	0.043	0.720	2.914	0.036	0.293
	75th	0.097	1.496	6.737	0.01	0.335
	St. dev.	0.096	2.17	11.11	0.066	0.078
$r = 5\%$	*Mean*	0.062	1.29	5.264	0.054	0.345
	25th	0.011	0.299	0.81	0.014	0.273
	Median	0.043	0.71	2.881	0.036	0.319
	75th	0.096	1.468	6.641	0.070	0.382
	St. dev.	0.123	1.976	8.22	0.065	0.124
$r = 10\%$	*Mean*	0.060	1.205	4.981	0.049	0.360
	25th	0.010	0.283	0.757	0.014	0.286
	Median	0.040	0.662	2.678	0.034	0.346
	75th	0.090	1.367	6.216	0.065	0.389
	St. dev.	0.088	1.939	9.791	0.058	0.080

Notes: CC_T/TA, firm's cumulative contribution to tax ratio; CC_E/TA, firm's cumulative contribution to employees ratio; CC_S/TA, firm's cumulative contribution to suppliers ratio; CC_I/TA, firm's cumulative contribution to creditors ratio; CCS_{index}, firm's cumulative contribution index

Table 8. Simulation results with interest rates (r) varying from 3% to 10%

This paper sheds light on the relationship between financial performance and social performance. The results confirm that the relationship between financial performance and social performance depends on how we define both concepts (López-Arceiz *et al.*, 2018). For example, it is clear that profitable companies pay more taxes, which seems to be a very clear contribution from a social perspective; however, if the contribution to society is measured by personnel expenses, then the more human-resource-intensive companies will be the most social, although they may not be the most profitable. A company whose strategy is to turn over assets and maintain low PMs will make large volumes of purchases from suppliers, which can have an impact on the community if purchases are from local suppliers. Often, if a company contributes to one aspect, it does not contribute to another. This might explain why financial and social performance do not always go hand-in-hand, as was found in some empirical studies (Soana, 2011).

The AMADEUS database has accounting information and some other information, for companies. This allows for an empirical study of the firm characteristics that have made high cumulative contributions to society. We also analysed the legal form of companies, the industry and macro-economic variables; however, there is no information on governance, salaries, whether they are social enterprises or the level of CSP. This limited our ability to investigate the validity of the hypotheses. It can be virtually impossible to account for all variables that may affect the outcome in any research. We recognise this as a limitation of the study but also as an opportunity to start new lines of research.

A refined version of the CCS indicator could be obtained by distinguishing the most social aspects of each item, looking beyond the economic and legal aspects and aiming to measure aspects related to a company's ethical responsibilities. In this regard, we used a

measure of corporate tax avoidance, considering the average salary and the overall interest rate of the firm. Bagnoli and Megali (2011) proposed to differentiate local suppliers that favoured short supply chains and distinguishing socially or environmentally certified suppliers. They also proposed using the percentage of workers characterised by different types of disadvantages. The percentage of financing from socially responsible financial entities could also be considered because there is a growing number of socially responsible financial entities that adopt different forms such as ethical banking, green banking, microfinance institutions and financial cooperatives (Weber, 2014). Another item that could be considered in the CCS is the accumulated value of sales – in this case, of interest to customers and stakeholders. It would be interesting to identify the percentage of sales from social customers or permissible sources and be able to compare information on prices paid to suppliers. Unfortunately, current accounting systems do not normally collect all the accounting information necessary to calculate a refined version of the CCS, limiting the possibilities of our current research. We encourage the modification of accounting systems to include valuable information for assessing social performance.

New and accurate indicators could be developed with such data and this is proposed as a future line of research. Similarly, we suggest studying the relationship between the CCS indicator and the indicators proposed to measure CSR activities. This would identify whether the companies that rely on social ratings also stand out in their cumulative social contribution. Finally, the CCS indicator could be tailored to the preferences of the stakeholders using some of the multi-attribute methodologies applied to the field of social assessment (Govindan *et al.*, 2015).

The results have practical implications. Any socially responsible investor has a portfolio of companies of different sizes, sectors and business models in which to invest. It can be complicated to estimate the SROI or other indicators of social performance from a social perspective (Millar and Hall, 2013). The proposed indicator is easy to obtain because it extracts financial outputs that have social implications from the income statements. We have identified several types of companies that contribute the most to society from a modest set of financial indicators. Socially responsible investors can estimate their contribution to society, devising new investment criteria.

5. Conclusions

In contrast to the financial sphere, in which there are well-established standardised financial ratios, there is not yet a set of widely accepted social indicators. Even in the field of social enterprises, surveys show that many of the social indicators do not measure anything and most of those that do use their own methods. We propose considering the financial outputs that have social implications, capitalising the direct economic value distributed annually by the company over a period of time. Much can be learned by analysing this information, particularly its distribution because it is composed of items such as tax payments, donations, dividends to shareholders, contributions to creditors, purchases from suppliers, personnel expenses and R&D expenses and efforts to improve the environment. The indicators are easy to calculate because they derive from the income statement.

By applying the stakeholder theory to study the relationship among social performance, financial strength and corporate strategy, we raised a set of hypotheses about the firm and country characteristics that affect CCS, supported by an empirical study conducted with a sample of European companies. The relationship between financial performance and social performance depends on how the latter is measured. The strategy followed by a company affects social performance. Companies that were noted for their contribution to society in their first years continued to contribute the most throughout their lives because structural

inertia leads them to change, as predicted by the theory of organisational ecology. The most significant contributors to society are large and very profitable companies, leveraged but solvent, with high ATO and high PMs, which are productive and pay high wages. Unfortunately, this win-win situation explains only a small percentage of the variance in the sample. On average, for each euro invested and over five years, companies contributed €1.290 in the form of personnel expenses, €0.062 in the form of taxes, €5.264 in the form of purchases from suppliers and €0.054 in the form of interest paid to financial institutions. We found that countries with a high level of HDI, with the ability to retain talent, with little shadow economy, high-income equality, a low level of tax fraud and high social trust favour cumulative contributions to society.

The proposed methodology is another building block in the understanding of social indicators. An ideal social enterprise should change the data collection information systems according to social accounting, calculate the cumulative contributions according to our set of indicators, perform randomised controlled trials to monitor the impact of their actions and calculate the impact of each euro invested through SROI. All this information could be reported through the GRI standards, ending the process with a social audit, which ensures that social information is reliable.

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