

Applying the Möbius Strip Model to Corporate Social Responsibility: Survey-Based Findings from Italian Social Enterprises

Francisco Lopez Arceiz

*Department of Accounting and Finance (FECM)
University of Zaragoza, Italy*

Nazaria Solferino

*Economics Department
University of Rome "Tor Vergata", Italy*

Viviana Solferino

*Mathematics and Computer Science Department
University of Calabria, Italy*

Ermanno C. Tortia

*Department of Economics and Management
University of Trento, Italy*

Received 15 March 2017

Accepted 6 June 2017

Published 6 July 2017

In this work, we apply the electro-magnetism geometrical model of the Möbius Strip in the context of Corporate Social Responsibility (CSR) in order to test the relationship between CSR and organizational performance. We exploit a unique dataset that includes 4135 workers in a matched sample of 320 Italian social enterprises. Results show that CSR is the strongest determinant of firm performance, although there is an indirect effect of cooperation and worker alienation in terms of higher job satisfaction.

Keywords: Corporate social responsibility; econophysics; firm behavior; firm performance; structural equations modeling.

JEL Classification: C3, D21, L13, Z1

This is an Open Access article published by World Scientific Publishing Company. It is distributed under the terms of the Creative Commons Attribution 4.0 (CC-BY) License. Further distribution of this work is permitted, provided the original work is properly cited.

1. Introduction

The analysis of the interdependence of social and economic relationships and the social role of entrepreneurial organizations requires dedicated theories and suitable tools, more so in the contemporary context of heightened competition in the globalized economy. Interdependence implies multiple positive and negative feedback loops making system interdependent and interacting dissipatively with their environment.⁴⁷

In Economics, this interdependence among systems and among agents is just the core of the models of Corporate Social Responsibility (CSR), which consider the global integration between firms and their stakeholders, including workers, customers and the whole socio-economic and natural environment.⁵ Sacconi⁴² discusses CSR for the generality of businesses and defines it within the social contractarian tradition as enlarged governance that extends the fulfilment of the firm's fiduciary duties towards all of its stakeholder groups.^{2,9} CSR is a norm that emerges spontaneously as a contractarian solution in an equilibrium selection process, leading to the creation of a corporate governance institution. It also allows deducing a multi-stakeholder objective function. CSR has been seen as a norm that can favor, not halt, organizational and production performance through the inclusion of different stakeholder groups in corporate governance.³⁶

CSR implies the move from the maximization of shareholder value to the satisfaction of a more complex objective function in which varied stakeholder interests are taken into account. In turn, this creates benefits also for businesses. For instance, Becchetti *et al.*⁵ show that, since more and more profit maximizing firms are adopting CSR practices, there must be pecuniary benefits to such practices. The authors also document that CSR has the potential to generate several value increasing effects by attracting better employees, and enhancing their intrinsic motivation and loyalty, by reducing turnover rates, by improving production efficiency and by reducing operating costs.

Furthermore, CSR boosts sale revenues and attracts more ethical consumers, so that the firm can benefit from increases in its demand share. Other authors show positive linkages between socially responsible behaviors and individual or organizational outcomes, such as worker satisfaction⁴⁴ and firm location decisions.²⁶ All the above mentioned advantages can be seen as a sort of ethical capital accumulated through CSR practices, which also requires the payment of additional costs. Becchetti *et al.*⁵ underline, by using a dynamic model, the conditions required to obtain that such benefits overrun the costs. These advantages can also be understood as the result of the synergy which relates each subsystem's and each agent's performance. Thanks to this synergy, net benefits flow across stakeholder groups by virtue of their connections with the firm and of intra-organizational cooperation, which generates net transactional benefits across the business system.

Several works deal with the benefits for stakeholders and in particular for workers that arise by investing in CSR. Within this field of enquiry, many analyses use the

standard taxonomy of CSR criteria provided by Kinder, Lydenberg and Domini Research and Analytics, Inc. (KLD). They include the following eight wide-ranging categories into the Domini 400 index: (i) community; (ii) corporate governance; (iii) diversity; (iv) employee relations; (v) environment; (vi) human rights; (vii) product quality; and (viii) controversial business issues. Every category has its strengths and weaknesses identified and analyzed within the index, as well as the suggestion of corporate activities compliant with each specific category. For instance, by using the KLD index, Becchetti *et al.*⁶ showed that CSR firms, which take into account workers' well-being, are less exposed to business risks and profit volatility. Other authors analyzed the effects of increased productivity of individual workers.³⁹ The authors showed how specific investments in CSR can be seen as the optimal incentive system that prompts employees to allocate greater effort in cooperative tasks because they derive utility from cooperation. In the meta-analysis devised by Harter *et al.*,²⁷ positive workplace perceptions and feelings are associated with higher business-unit customer loyalty, higher profitability, higher productivity and lower turnover. In Gond *et al.*,²⁵ it is explained how employees' perceptions of CSR trigger attitudes and behaviors in the workplace, which affect organizational, social and environmental performance. Myers and Sadaghiani³⁵ added an analysis specifically directed to the benefits of cooperation between coworkers and discuss the effects of firm's values and workplace interaction on coworkers. Finally, using data collected from employees in three private airline companies in Iran, Rast and Jourani³⁸ showed that an important factor impacting on job satisfaction and productivity is the relationship with co-workers. In connection with the literature on social capital, Degli Antoni¹⁹ evidenced that individual motivations akin to socially responsible behavior (the desire to be useful to others and ideal motivations) enable people to extend their social networks by creating relations characterized by familiarity. Degli Antoni and Portale²⁰ analyzed the effects of CSR pointing out how the adoption of CSR good practices fosters the creation of workers' social capital understood as cooperative networking, generalized trust, and relational skills. Relatedly, Sabatini *et al.*¹⁴ worked on the cognitive dimension of social capital (within the literature developed by),^{23,29,37,40} and found out that people employed in organizations characterized by inclusive governance and community-oriented objectives, such as cooperative enterprises, are more prone to strengthen overtime the degree of their generalized social trust.

Following these premises, our CSR standpoint posits that firms and stakeholders can be depicted not as two distinct and unconnected systems, but instead as crossed-systems where transfers occur in such a way that businesses co-evolve with the stakeholders' interests, which become part of the business. In this crossed-system, the output of each part is transferred across the other parts to become the others' input, so that these subsystems are strongly overloaded and linked inextricably together.

According to our viewpoint, we need models taking into account this complexity and nonlinearity in the connections. We submit that the best metaphor, suggested by

and analyzed in the physical sciences, to approximate and represent this new conceptualization of CSR and more generally of fundamental linkages among stakeholders in economic systems and between agents, is the Möbius strip.

This is a topological enigma independently documented in 1858 by two mathematicians A. F. Möbius and J.B. Listing. It is a bend of paper that is given a 180 degree twist prior to having its two ends connected. The first use of the Möbius strip as a metaphor in business relationships is found, to the best of our knowledge, in Litz,³¹ who discussed an alternative approach to business family and family business relationships.

In our contribution, we aim at extending this approach to CSR analysis by extensively relying on recent discoveries in electromagnetism. We assimilate firms and their stakeholders' contributions to the action of electrons traveling a Möbius strip which, unlike a regular bend, return to a mirror reality in each count. In particular, we strictly follow the model of Yakubo *et al.*⁴⁹ who show that the electrons traveling on a Möbius strip produce energy of higher intensity or, equivalently, that there is lower energy dissipation thanks to decreased resistance by virtue of the twist in the bend. We analyze how the contributions of economic agents in a CSR context, thanks to the effects on ethical capital, produce higher benefits and lower dissipation in terms of lower costs thanks to augmented cooperation.

The paper is divided into four sections (including introduction and conclusions). In the second section, we describe how the geometrical model for the electrons traveling on a Möbius strip is built. In the third section, we investigate how to apply this model to the behavior of firms and economic agents in a CSR context. We define a new cost function that shows the convenience to invest in socially responsible activities thanks to three positive crossed effects on efficiency: (i) cooperation within the same group of stakeholders; (ii) cooperation among similar stakeholders in different sectors of the firm; (iii) stakeholders' loyalty towards the company. We provide an example of a firm's decisional problem in which the firm decides whether to invest in social responsibility activities. Our analytical results show that this is always the optimal choice depending on the number of stakeholder groups, on stakeholders' sensitivity to these investments and on the decay rate to alienation. We empirically test our findings on survey data in the third section. The survey deals with labor relations and CSR and involves 4135 workers employed by 320 matched Italian cooperatives working in the social service sector (the so called "*Cooperativa Sociale*" as defined by law n. 381/1991). The survey (ICSI 2007) was conducted nationally by a pool of 5 university departments. Social cooperatives are the most relevant and fastest growing^a instance of social enterprise in Italy since they alone

^aSocial cooperatives started from scratch in 1991, when law 381 on the "Cooperativi Sociali" was passed by the Italian Parliament. In 2013, about 11,000 social cooperatives employing 390,000 workers were recorded by official statistics.^{12,22}

accomplish about 30% of total production and employment in the social service sector.^{22b} They are mutual benefit entrepreneurial organizations characterized by a (partial) nonprofit distribution constraint, socialization of the firm assets, multi-stakeholder governance, and by a social aim spelled out in statutory bylaws. Hence, they all produce private, but meritorious goods and services.

In the empirical part, we test our cost–benefit model by analyzing the impact of CSR and organizational processes, which represent a proxy for increased propensity to cooperation, on net benefits in terms of organizational performance. Our empirical results show that CSR is, in all specifications of the model, the strongest determinant of firm performance in terms of improvement in service quality and achieved professional and personal growth. These results hold true after controlling for several socio-economic features of the workforce, and for firm size and macro-regional location within Italy. Positive and strong direct effects of CSR on performance are added to indirect effects mediated by organizational patterns informed by cooperation and reduced worker alienation in terms of higher on-the-job satisfaction.

2. Theoretical Model

2.1. *The model of the “Möbius strip-like-CSR economy”*

In this paper, we want to empirically investigate the theoretical results by Solferino and Solferino,⁴⁵ who draw extensively from the analogies with the behavior of fermions (a typology of electrons) moving on a Möbius strip to show what kind of interactions among stakeholders are at work and affect improvements in a company’s performance. In this section, we shortly describe the main features of the model which relies on the consideration that the twist in a Möbius strip generates two important effects on the electrons’ trajectories and on the energy produced. First, unlike a cylinder, in a Möbius strip an electron moves in the longitudinal direction along the ring, encircling the system twice before returning to its initial position. This movement creates flux periodicities generating more persistent electric current. Second, the electrons move also in the transverse direction, so that they can tunnel to their neighbors in more directions. Finally, thanks to the twist the electrons in the last wire tunnel in the same wire on the corresponding replicated new element. Similarly, in a CSR company, the SR investments just like the twist should make stakeholders’ relationships closer and more persistent, so that one stakeholders’ interest (the fermions) becomes the others’ interest too.^c As foreshadowed also by

^bThe remaining 70% of the Italian social service sector is occupied by public sector organizations (about 25%), by traditional nonprofit organizations (associations and foundations, which are not considered enterprises by the Italian civil code, about 40%), and by profit-making, investor owned companies (about 5%).

^cFermions are similar to the contributions of stakeholders who clearly are proportional to their interests. The n stakeholders and the m sectors are the vertical and horizontal stripes that make up the tape of the Möbius strip. They are located on both sides. The twist pushes all of them closer to each other, closing up the relationship of all the m with all the n . In our case, the n workers with the interests and m different sectors of their cooperative.

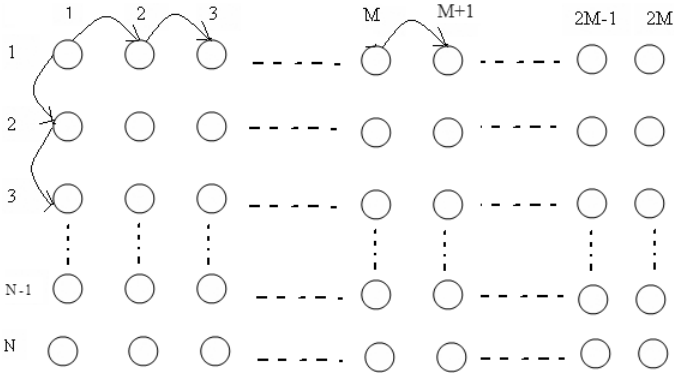


Fig. 1. Electrons moving in a lattice $N \times 2M$.

scholars studying social enterprises^{3,14,15} thanks to appropriate incentive-mixes, different stakeholders in different sectors are put in contact and become straightly interdependent, just as different neighboring sides of the Möbius strip on which fermions are tunneling. Finally, CSR activities should strengthen stakeholders' adherence to the firm's mission, so that each stakeholder group can be seen as a replicated one working both for his specific sector and for the firm's mission. Figures 1 and 2 below shows the moves of the electrons in the Möbius strip before and after a twist. Specifically, we consider a rectangular lattice including $N \times 2M$ sites (see Fig. 1). The electrons move in the longitudinal directions on $2M$ wires and transverse directions on N wires as indicated by the curved arrows.

The rectangle is then twisted by 180 degrees and its two sides are connected, such that the longitudinal wire 1 is attached to wire $2M$; wire 2 is attached to wire $2M - 1$ and so on (see Fig. 2). The Möbius strip so constructed includes M longitudinal wires

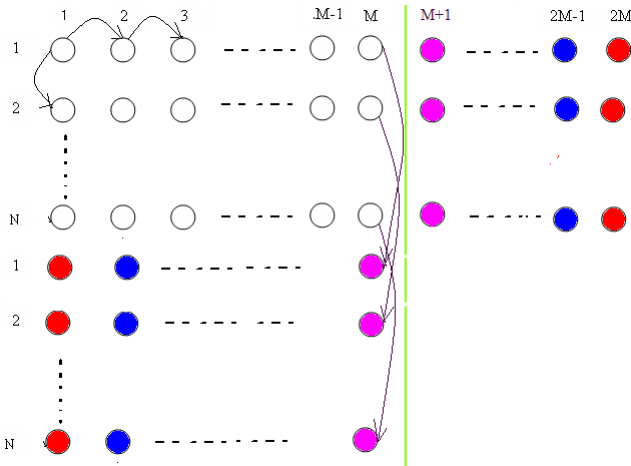


Fig. 2. The electrons moving in a Möbius strip.

with $2N$ sites on each wire. In other words, the columns, $M + 1, M + 2, \dots, 2M$ (the area behind the green line) are shifted to the bottom on the left, after the row N in correspondence, respectively, of the column $1, 2, \dots, M$. Hence, more interactions are possible. For example the electrons in column M , which before the twist tunneled in the longitudinal direction in the adjacent $M + 1$ column, now tunnel in the transverse direction in the same column M but on the corresponding replicated element as well as tunnel in the transverse direction in the same column in the adjacent position.

It is possible to apply this construction to a SR company with $n = 1, \dots, N$ stakeholders or clusters of stakeholders and $m = 1, \dots, 2M$ activities, where $m = 1, \dots, M$ represent the traditional sectors of production of intermediate goods, necessary to produce the final good M ; while $m = M + 1, \dots, 2M$ are the specific activities devoted to the CSR.

Denoting by $0 \leq a_{mn} < 1$, the contribution of stakeholder n to sector m , like in a Möbius strip, also in a socially responsible firm the effects of a twist may be considered as the returns of CSR activities on its stakeholders and on firm production (see Fig. 3). These activities, therefore, amplify the crossed contributions of different stakeholders also operating in different sectors of the company. Figure 3 highlights the analogies between the move of the electrons in a Möbius strip with the n stakeholders in a Company with m sectors, after suitable investments in CSR have been carried out. This is the equivalent of Fig. 2 in the case of investments in CSR and in a matrix form. The electrons are replaced by stakeholder's contributions. The part of Fig. 2 after the green line corresponds to the part of the table after the dotted line and, as in Fig. 2, this part is shifted to the bottom on the left, after row N . Hence, stakeholder 1 contributes with a_{11} to the production of sector 1 and with a_{12} to the production of sector 2 and so on. Stakeholder 2 contributes with a_{21} to the production of sector 1 and with a_{22} to the production of sector 2 and so on. The same happens for all the other stakeholders. The value of a_{12M} measures the expected additional contribution that stakeholder 1 would give, thanks to the socially responsible activity $2M$. The same holds true for the other socially

	1	2	...	M	M+1	...	2M
1	a_{11}	a_{12}	.....	a_{1M}	a_{1M+1}	.....	a_{12M}
2	a_{21}	a_{22}	.....	a_{2M}	a_{2M+1}	.....	a_{22M}
.						
.							
.							
N	a_{N1}	a_{N2}		a_{NM}	a_{NM+1}		a_{N2M}
1	a_{12M}	a_{12M-1}		a_{1M+1}			
2	a_{22M}	a_{22M-1}		a_{2M+1}			
.						
.							
.						
N	a_{N2M}	a_{N2M-1}		a_{NM+1}			

Fig. 3. The matrix of stakeholders' contributions in a CSR context.

responsible activities, which are ordered in such a way that $2M$ is more relevant for sector 1, $2M - 1$ is more relevant for sector 2; etc. (for instance $2M$ can be seen as the socially responsible activities dedicated to assure safe working conditions in sector 1; $2M - 1$ are the activities assuring safe working conditions in sector 2 and so on).

According to the above described analogies, analytically it is possible to devise a new cost-benefit model for CSR companies by using the Hubbard model for fermions, as in Ref. 49, where energy dissipation can be assimilated to production costs, while the crossed interaction-effects among fermions can approach the benefits associated to the joint contributions of n stakeholders in m sectors (for more details on how to derive this function, see Ref. 45).

By applying this model to a profit maximization problem of a company with only one class of stakeholders, i.e., n workers, for given values of prices p and wages w , we get

$$H_{\text{CSR}} = - \sum_{n=1}^{2N} \sum_{m=1}^M ca + \sum_{n=1}^{2N} \sum_{m=1}^M [t_1(1 - \delta)a^2] + t_2 \sum_{n=1}^{2N} \sum_{m=1}^{M-1} a^2 + \frac{t_2}{2} \sum_{n=1}^{2N} a^2, \quad (1)$$

with $a \in \mathbb{R}$ and $0 \leq a < 1$ for all $n = 1, \dots, N$ and $m = 1, \dots, M$, subject to the constraint of positive profits

$$NMa[(p - w) - c] \geq 0. \quad (2)$$

The function is made up of four parts. (i) In the first (negative), ca represents the sum of the costs c undergone by a company to finance socially responsible activities devoted to each n in sector m ; (ii) the second, called the *neighborhood efficiency term*, measures the gains associated to the crossed contributions of n subjects (workers in our case) in sector m with the nearest $n + 1$ subject in the same sector; (iii) the third, called *sector cooperation efficiency term*, measures the gains associated to the crossed contributions of n subjects in sector m with the other subject types n in the nearest sector $m + 1$; (iv) the last part, called *loyalty efficiency term*, measures the gains associated to the increased productivity of each n which contributes to the production of the final good M . Moreover we assume that $0 \leq \delta < 1$ is the decay rate due to the possible effect of alienation (caused for instance by satiety, insufficient spare time, etc.). Finally t_1 and t_2 measure worker's sensitivities. They are related to the investments in CSR.

We assume that the workers' sensitivities t_1 and t_2 are equal and related to the investments in CSR through the function

$$t = t_1 = t_2 = k(ca)^\beta,$$

where k is a positive constant and $\beta \in \mathbb{R}$. Solving this maximization problem, we obtain:

$$c^{1-\beta} = \frac{2M}{[2M(1 - \delta) - 2 + a^2]ka^{1-\beta}},$$

which, for $\beta > 1$, increases for high values of δ and decreases for high values of β and M .

These effects of β , δ and M on the optimal value of c are reversed when workers show low sensitivity to SR activities and $\beta < 1$, while for $\beta = 1$, it is always convenient to invest in CSR and the company chooses the optimal value of c satisfying condition (2), as it can easily recoup CSR costs from the proportional increase in t for $k \geq 1$.

These findings reveal that investments in CSR affect the firm's final performance, not only directly through the three above mentioned crossed-effects, but also through the intermediate action of following factors: (a) workers' sensitivity, which makes convenient for the firm to develop CSR practices and to pay for the related expenses, since this process increases workers' productivity; (b) the alienation effect implies higher workers' aversion to job tasks and to the company culture or a greater preference for other activities, leisure or the family; (c) the effect of the number of sectors is controversial. First, if there are many sectors, the company can invest a limited amount for each of them, but on the other hand, social capital and workers' relations are of better quality in smaller sized firms, so that fewer additional responsible investments are required in smaller than in larger sized firms. As a result, what effect prevails in terms of efficiency depends on β .

2.2. Hypotheses

The theoretical model hypothesizes that CSR impacts first on organizational performance. Although several empirical papers assume that CSR improves performance,^{10,21,28,43,48} other empirical analyses find that socially friendly activities are not able to improve organizational performance.^{1,33} Taking into account the conflicting results reached by previous studies, we propose the following first working hypothesis:

H1: There is a positive and statistically significant effect of CSR investments on organizational performance.

If this hypothesis is not rejected, we proceed to analyze the role of the improvement in cooperative organizational patterns, as a consequence of CSR practices. In our empirical test, we do this by developing a SEM mediation model. The improvements in the relational context (indexed in the empirical part of the paper by time spent with colleagues, superiors and users) and the development of an incentive mix based on both monetary and nonmonetary rewards can improve the level of cooperation (for example, a high degree of involvement in decision-making and in the mission of the organization). Through the intermediate effect on cooperation, CSR influences performance, which is measured in our data by improved service quality and by achieved organizational and professional growth. CSR in terms of responsibility, reputation and trust, is also hypothesized to impact on worker satisfaction concerning professional growth and personal fulfilment and on worker extrinsic

motivations concerning contractual conditions such as work hours, career prospects and job stability. In socially oriented organizational forms, organizational patterns informed by CSR criteria can interact in a complex way with workers drives, fulfilment, and behavior.¹³ The sign of these relations is hypothesized to be positive, since the better social standing of the organization is expected to positively reinforce motivation and improve fulfilment. The strength of the relation, however, needs to be enquired further. We also hypothesize that motivations and fulfilment influence organizational patterns based on cooperation. Workers that perceive organizational patterns informed by socially responsible objectives and procedures, and that are intrinsically and socially motivated, can react by looking for a higher degree of involvement, and increase their effort in terms of improved relations, pursuit of extra-role tasks and time spent with colleagues, superiors and users. The sign of these relations, though, needs further enquiry and explanation. Consequently, we propose the second working hypothesis:

H2: Cooperative organizational patterns exert a positive mediating effect between CRS practices and organizational performance.

We finally analyze the differential impact of a series of moderator variables: organizational size and socio-demographic features of the workforce.

H3: Organizational size and socio-demographic features of the workforce have a moderator effect on the relationship between CSR practices and organizational performance.

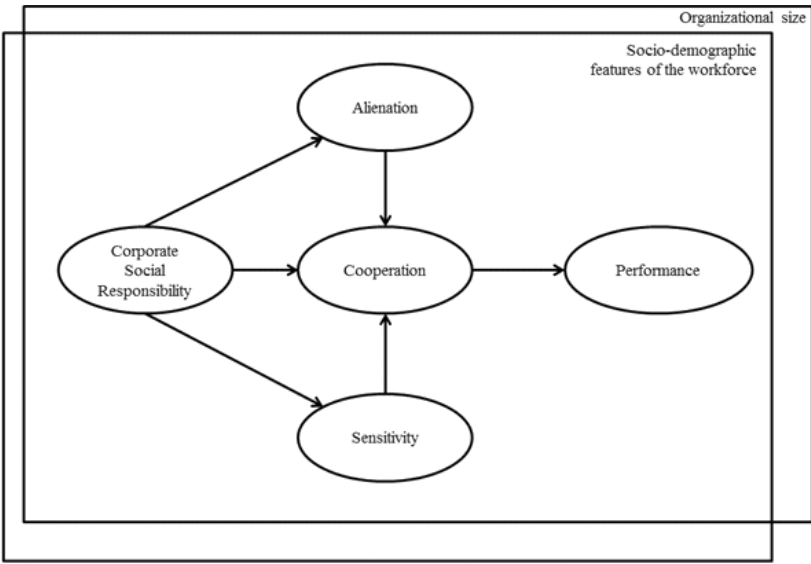


Fig. 4. SEM model: CSR as determinant of organizational performance.

These hypotheses enable us to test both the direct effect flowing from CSR to cooperation patterns and performance, and the indirect effects mediated by the workers' motivations and fulfillment. Figure 4 substantially mimics the results and prepares the ground for the empirical test of the theoretical model. It shows how final firm performance is positively affected by the investments in CSR, not only directly but also through the effects of improved cooperation. These effects, in turn, depend on the mediating role of alienation and sensitivity, and can be affected by firm size and by the socio-demographic features of the workforce, which determine the optimal investment in CSR. This double influence is highlighted by the two overlapped rectangles.

3. Empirical Analysis

3.1. *The survey*

We can't recall the existence of any database including all the relevant behavioral dimensions of several stakeholder groups in several sectors, as identified in the theoretical model. However, when attention is restricted to workers as stakeholders of the organization in Italian social enterprises, represented by a national sample cooperative enterprises with a social aim (defined as Type A and Type B "Social Cooperatives" by the Italian legislation^d), it is possible to exploit the data collected by the ICSI 2007 survey (Survey on Italian Social Cooperatives). The survey is implemented by means of three different matched questionnaires compiled by paid workers, managers and representatives of the organization addressing 4134 paid workers, the matched 320 organizations employing them, and managers.

The three questionnaires are based on multiple-item questions, most of which are measured by Likert items. Questionnaires were administered by trained staff that supported the respondents on site, and compiled by workers in groups or taken at home and, in both cases, handed in anonymous envelopes, while late questionnaire were sent by post. This analysis uses mainly salaried-worker data to observe the worker's perspective on organizational processes. From an overview of individual profiles, we know that we are looking at workers in their 30s, mainly females (74%), holding a permanent job positions (80%). Education is college or university in 69% of cases. On average, the hourly wage was, in 2005, about 6.6

^dThe initial sample of 411 organizations was extracted from the 2003 census on social cooperatives (ISTAT, 2003), which counted 6168 active units (with at least one employee) at the national level. Social enterprises in Italy take, as a norm, the form of socially oriented co-operatives (so-called cooperative sociali), which are of two types in the Italian legislation: Type A delivers social services, while Type B is regulated by law to reintegrate weak individuals (the disabled, ex-drug addicted, ex-convicted, mentally ill, and long term unemployed) into the labor market. A nationwide representative sample was stratified on the basis of three parameters: (a) typology of cooperative (Type A and Type B); (b) geographic representativeness by province (Italy counts 20 regions and 109 provinces); (c) size (number of employees). About 85% of workers answered on average 90% of the 87 questions (56 single choice questions and 31 multiple choice questions).

Euro, and tenure nearly six years. The average firm size is 33 employees, 78% of the involved organizations are Type A and 22% Type B cooperatives. A total of 62% are located in the North, 22% in the Centre, and 16% in the South of the country.

We use several questions included in the worker questionnaire, as they concern labor relations, involvement patterns, on the job satisfaction, and worker motivations. Questions related to CSR and firm performance are extracted, instead, from the organization questionnaire.^e

3.2. Main variables

The empirical model strictly corresponds to the theoretical one. In this latter model, performance represents the final outcome and is affected by the three typologies of cooperative interaction among the firm's stakeholders. The hypotheses in the empirical model aim at testing the effects of the three types of cooperation patterns on performance, as mediated by sensitivity (as represented by worker motivations) and alienation (as represented by different dimensions of job satisfaction). The socio-demographic features of the workforce and organizational size act as moderators.

3.2.1. Performance

The two indicators of performance are labelled PERF1 and PERF2 and are drawn from questions in the organization questionnaire. PERF1 is related to improvements in service quality over the past two to three years (ordered from 1 to 4 — “Worse” to “Much better”, D40 in the questionnaire), while PERF2 is related to the current achieved condition of the organization in terms of professional growth, relational context and motivations of workers and managers (Likert scale 1 to 10, D66 in the questionnaire).

3.2.2. Corporate social responsibility

Likewise, CSR measures are drawn from the organization questionnaire and relate to the degree of social responsibility of the organization, as represented by perceived social responsibility towards its main stakeholders and towards public authorities and the community (ordered from 1 to 3 — “Not at all” to “Very much”, D43), by the good reputation of the organization with the different stakeholder groups (dichotomous — “Low” and “High”, D48), by trust relations between the cooperative and its stakeholders (ordered from 1 to 3 — “Not at all important” to “Very important”, D50), and by organizational climate (ordered from 1 to 7, from “conflictual climate”, to “community climate”, D49).

^eThe three ICSI 2007 questionnaires (organizations, managers and paid workers), the dataset, log and do files of our SEM estimates are readily available upon request from the authors.

3.2.3. *Cooperation, alienation and sensitivity of workers*

The variables concerning cooperation (indexed by time devoted to relations and worker involvement, DC), alienation (indexed by satisfaction, SAT) and sensitivity to the working of the organization (indexed by motivations, MOT) are measured by workers' self-reported, perceptions and evaluations. Cooperation is captured by three different measures: (i) cooperation among workers by the amount of time devoted to relations with other workers (e.g., with colleagues, superiors, the work group, and with volunteers; 1 to 5 Likert items, from "Never" to "Always", D29); (ii) cooperation with the cooperative, as represented by the development of interpersonal relations, and involvement in the mission and decision making processes of the cooperative (1 to 5 Likert items, from "Never" to "Always", D38); (iii) loyalty to the organization, as represented by the intention to stay in the same organization in the future (ordered from 1 to 4, from "Leave as soon as possible" to "Stay as long as possible", D49). The variables representing alienation relate to satisfaction with personal and professional growth, and autonomy (1 to 7 Likert items, D25). Finally, sensitivity to organizational dimensions is reflected in self-reported worker motivations, as related to extrinsic and contractual aspects, such as flexibility of working hours and job stability (1–12 Likert items).

3.2.4. *Socio-demographic features of the workforce and size of the organization*

We have introduced a final set of variables to moderate the postulated relationships. At the organizational level, we have studied the role of organizational size. The dimension of the workforce (including both members and employees) has been the classification criterion, distinguishing between small (below 15 workers), medium (between 16 and 50 workers) and large cooperatives (above 50 workers). Among the socio-demographic features of the workforce, we consider gender and education. The latter is sorted into five different educational degrees: elementary, intermediate, professional, high-school and university.

3.3. *Methodology*

Given the objective of this study, we start by carrying out a descriptive analysis of the observed variables in terms of their position measurements and use exploratory analysis techniques to evaluate their correlation matrix (Tables A.1 in the Appendix). We then use confirmatory factor analysis to examine the dimensional structure of the theoretical constructs involved in our hypothesis (Tables A.2 and A.3 in the Appendix). We subsequently analyze the respective measurement models in terms of reliability and validity.^{4,32} After these initial steps, we examine the measurement model and we estimate the factor scores, which are used in the structural model.

The structural model analyses the theoretical one and tests the working hypotheses. In the model, CSR measures affect (incentivize) cooperation (DC), which acts as intermediate organizational dimension through which the effect of CSR

impacts on final performance. At the same time, the variables representing worker motivations (MOT) and worker satisfaction (SAT) are linked to CSR as they mimic the mediating role of worker sensitivity and alienation respectively on the CSR measures adopted by the organization. In order to evaluate the global fit of the model, we present different goodness of fit statistics and indices.¹¹ This approach enables us to test the relationship between the performance variables and the different typologies of cooperative interaction among the firm's stakeholders through the analysis of direct, indirect and total effects in the mediation model.

Finally, the moderator effect of the socio-demographic features of the workforce and organizational size is conducted through a multi-group analysis.^{8,30} In this approach, we estimate the general model for the whole sample, assessing the individual significance of the direct, indirect, and total effects. Once the general model is tested, to assess whether socio-demographic variables and organizational size exert a moderating effect, we repeat the same process in each group. The moderating effect is assessed by analyzing the changes on the individual significance of each parameter.

This statistical approach enables us to obtain, test and estimate measurement and/or structural models based on robust statistics with multivariate non-normality and non-independence of observations.³⁴ The general estimation method used is MLR (maximum likelihood robust to non-normality and nonindependence of observations) with the option complex due to the clustered structure of data. This approach is preferred to the two-level model option, since it takes into account stratification, non-independence of observations due to cluster sampling, and/or unequal probability of selection.³⁴ We use the MPLUS 7.4 software.³⁴

3.4. Results

Our structural equations model shows reasonable fit although this is slightly weak in the measurement model because of sample size and the number of variables (Appendix A). At any rate, fit indexes are above 0.90 and the RMSEA is lower than 0.08. The WRMR is close to 1 in both models. These values allow us to assess the economic relevance of the obtained results.

3.4.1. Corporate social responsibility

Table 1 shows the results of the structural model. CRS measures show a strong positive impact on performance. Direct effects on performance are positive and highly statistically significant. (PERF1-on-CSR:0.493; PERF2-on-CSR:0.717; p -value < 0.01). This result shows that social responsibility is an element that is able to improve service quality, and organizational and personal achievement.

When the indirect effects of CSR are added to the direct ones, the total effects are still stronger (CSR → PERF1:0.502; CSR → PERF2:0.726; p -value < 0.01) confirming the strong positive relation between socially responsible behaviors and organizational performance. As a consequence, it is not possible to reject hypothesis

Table 1. Results of the structural equations model.

	Estimate*	SE	p-value	R ²
<i>Direct effects</i>				
SAT on				
CSR	0.055	0.034	0.108	0.003
MOT on				
CSR	0.010	0.024	0.663	0.000
DC on				
SAT	0.913	0.004	0.000	0.838
MOT	-0.033	0.008	0.000	
CSR	0.026	0.011	0.020	
PERF1 on				
DC	0.092	0.057	0.104	0.254
SAT	-0.059	0.055	0.282	
MOT	0.013	0.027	0.623	
CSR	0.493	0.045	0.000	
PERF2 on				
DC	0.207	0.046	0.000	0.538
SAT	-0.128	0.041	0.002	
MOT	0.021	0.021	0.302	
CSR	0.717	0.030	0.000	
<i>Indirect effects</i>				
CSR→PERF1	0.004	0.003	0.127	
CSR→PERF2	0.009	0.004	0.039	
<i>Total effects</i>				
CSR→PERF1	0.502	0.045	0.000	
CSR→PERF2	0.726	0.029	0.000	
$\chi^2(5): 0.137; RMSEA: 0.000; SRMR: 0.002; CFI: 0.999$				

*Standardized coefficients are reported PERF1 with PERF2: 0.271.

H1, since a positive and statistically significant effect of CRS on organizational performance is detected.

3.4.2. Cooperation, alienation and sensitivity of workers

Concerning the effects of alienation, measured by the level of worker satisfaction (SAT), and the effect of sensitivity, measured by worker motivations (MOT), the former impacts positively (DC-on-SAT:0.913; p -value < 0.01), while the latter negatively (DC-on-MOT:-0.033; p -value < 0.01) on organizational patterns informed by cooperation (DC), represented by time spent in relations with colleagues, users and superiors, worker involvement in decision-making and in the mission of the organization, and stated loyalty towards the organization. These results show positive and reinforcing feedbacks between individual well-being, and organizational patterns that stabilize work relations and strengthen involvement. Increased satisfaction (SAT), which corresponds to a lower degree of alienation, can push workers to spend more time with colleagues and superiors, and to search for a higher degree of

involvement. As for sensitivity, workers who are sensitive to the more extrinsic elements in the contractual relation (job stability, career and work hours' flexibility) would tend to pay less attention to organizational patterns informed by cooperation. This result is coherent with the idea, which is present in related literature, that intrinsic and social motivations are positively associated with worker wellbeing and involvement organizational patterns, while extrinsic motivations are *negatively* associated with the same elements.¹⁵ When the positive, though weakly significant, relation between CSR and satisfaction (SAT-ON-CSR:0.055; p -value ≈ 0.10) and the strong positive relation between cooperation and the second index of performance — achieved results (PERF2) — are considered together (PERF2-on-DC:0.207; p -value < 0.01), a complete and positive pattern running all the way from CSR to satisfaction, cooperation and performance is reconstructed (CSR \rightarrow PERF2:0.009; p -value < 0.05). As we shall see, this positive relation between satisfaction and cooperative organizational patterns more than compensates the negative direct relation between satisfaction and performance.

The analysis of the direct relation between motivations and fulfilment on the one hand, and performance on the other appears partially counter-intuitive. While motivations do not show strong direct impact on performance (PERF1-on-MOT:0.013; PERF1-on-MOT:0.021; p -value > 0.10), worker satisfaction shows stronger, but negative, impact (PERF1-on-SAT:-0.059; p -value > 0.10 ; PERF2-on-SAT:-0.128; p -value < 0.01). These results can be compared to several other results in the literature which, as a norm, rarely found a positive and/or strong relation between, on the one hand, job satisfaction and, on the other hand, job or organizational performance.^{4,17} Our results, which are statistically significant only in the case of the second index of performance (PERF2-achieved targets), may mean that satisfied workers do not feel the need to reach better results in terms of better relations, professional growth and motivation/participation. Increased satisfaction may indeed be directly connected with reduced effort, hence with a lower degree of achievement.¹⁸ Complementary, the requirement to increase effort and performance may reduce worker satisfaction, and this would be coherent with the assumptions of orthodox economics and agency theory, when satisfaction is taken as subjective self-reported measure of worker utility.¹⁷ On the other hand, the indirect effects running from CSR to performance and flowing through motivations, fulfilment and cooperative organizational patterns show positive impact on performance, even if they are not particularly strong (only the indirect effect on the second index of performance is statistically significant). These results highlight that, while satisfaction may not translate into better performance, the combination of intrinsic and social objectives, stronger motivations, fulfilment, and cooperative organizational patterns does. In other words, the negative effect of increased effort on satisfaction is more than compensated by the desire to pursue intrinsic and social objectives and by better involvement and relations. Therefore, there is a mediation effect of cooperation in the relation between CSR practices and organizational performance. This result is consistent with the second hypothesis ($H2$) of the theoretical model, which is not rejected.

Therefore, there is a mediation effect of cooperation between CSR practices and organizational performance. This result is consistent with the second hypothesis of the theoretical model and does not allow us to reject H_2 .

3.4.3. Firm size

We include firm size as moderator variable and comment in a detailed way the related results (Table 2), since this organizational dimension has central role in the theoretical model, and it served to stratify the original sample of surveyed organizations.

The difference between small and large size lies in the negative and statistically effect of CSR on satisfaction, which is positive and much stronger in smaller organizations (SAT-on-CSR:0.198; p -value < 0.01). In large organizations, the relation between CSR and satisfaction is negative (SAT-on-CSR:-0.038; p -value < 0.01), contrary to what is observed in the general sample. The negative relation between motivations and the formation of cooperative organizational patterns appears much weaker in small organizations than in the general sample (DC-on-MOT:-0.027; p -value > 0.10). Also, CSR impacts more heavily and positively on the formation of organizational patterns characterized by cooperation in small (DC-on-CSR:0.046; p -value < 0.05) than in medium (DC-on-CSR:0.028; p -value > 0.10) and large organizations (DC-on-CSR:0.014; p -value > 0.10). These results would testimony the importance of interpersonal relations and knowledge in smaller organizations, which undergo weaker processes of formalization of organizational routines.

When performance is considered, it is important to notice that cooperation exerts a strong positive effect (PERF2-on-DC > 0 ; p -value < 0.10) and satisfaction a negative effect on achieved results (PERF2) only in large organizations (PERF2-on-SAT: -0.197 ; p -value < 0.05). In this case, it appears that the governance structure in terms of cooperative organizational patterns becomes more important in boosting performance as dimension increases. Large cooperatives are more structured, managed by professional managers and give workers more opportunities for professional growth. When these elements are conjugated with organizational patterns based on good relations and involvement, the positive effect on performance can become tangible. CSR always exerts strong positive effects on both indexes of performance in terms of both direct and total effects independently of size.

As related to the theoretical model, it predicts that the effect of size is controversial and that it essentially depends on worker sensitivity. In cases in which the effect of CSR is not very strong in large organizations, this weaker effect depends on the weak mediating role of alienation and sensitivity, which weaken the overall effect of CSR on performance. This is in line with our empirical results, since we find that the impact of CSR on satisfaction and motivations is stronger in smaller than in larger organizations, implying that the indirect (mediated) effect of CSR on performance is stronger as well. Indeed, the total impact of CSR on performance appears relatively stronger in smaller than in larger organizations.

Table 2. Results of the structural equations model. Covariate: Size.

	Small			Medium			Large					
	Est*	SE	p-value	R ²	Est*	SE	p-value	R ²	Est*	SE	p-value	R ²
<i>Direct effects</i>												
SAT on												
CSR	0.198	0.041	0.000	0.039	0.054	0.054	0.317	0.003	-0.038	0.058	0.515	0.001
MOT on												
CSR	0.058	0.043	0.172	0.003	-0.010	0.042	0.811	0.000	-0.017	0.035	0.637	0.000
DC on												
SAT	0.897	0.010	0.000	0.823	0.912	0.007	0.000	0.837	0.921	0.006	0.000	0.848
MOT	-0.027	0.018	0.132		-0.045	0.014	0.001		-0.026	0.013	0.054	
CSR	0.046	0.021	0.028		0.028	0.021	0.172		0.014	0.016	0.387	
PERF1 on												
DC	0.006	0.092	0.950	0.288	0.163	0.105	0.120	0.292	0.074	0.096	0.438	0.191
SAT	-0.001	0.085	0.993		-0.150	0.105	0.153		-0.015	0.092	0.870	
MOT	-0.017	0.055	0.752		0.060	0.041	0.142		-0.016	0.050	0.754	
CSR	0.126	0.074	0.000		0.530	0.069	0.000		0.433	0.087	0.000	
PERF2 on												
DC	0.126	0.074	0.090	0.536	0.134	0.074	0.069	0.655	0.289	0.097	0.003	0.447
SAT	-0.078	0.063	0.215		-0.077	0.070	0.276		-0.197	0.084	0.019	
MOT	0.030	0.030	0.320		0.015	0.028	0.581		0.027	0.049	0.585	
CSR	0.715	0.047	0.000		0.800	0.037	0.000		0.654	0.068	0.000	
<i>Indirect effects</i>												
CSR→PERF1	0.000	0.009	0.989		0.004	0.005	0.419		-0.001	0.005	0.884	
CSR→PERF2	0.014	0.009	0.130		0.006	0.006	0.276		0.001	0.008	0.896	
<i>Total Effects</i>												
CSR→PERF1	0.536	0.075	0.000		0.534	0.070	0.000		0.432	0.086	0.000	
CSR→PERF2	0.729	0.047	0.000		0.806	0.036	0.000		0.655	0.067	0.000	

$\chi^2(3)$: 2.157; RMSEA: 0.000; SRMR: 0.008; CFI: 0.999;

*Standardized coefficients are reported.

3.4.4. Socio-demographic features of the workforce

We describe here only the most relevant results concerning the main socio-demographic features of the workforce, taking into account education levels and gender. These results are detailed in Tables B.1 and B.2, Appendix B. The results concerning education evidence some relevant pattern: CSR exerts stronger influence on satisfaction in lower educated (Table B.1: SAT-ON-CSR:0.169; p -value < 0.05) than in educated individuals (Table B.1: SAT-on-CSR:0.060; p -value > 0.10). This result can signal frustrated expectations about organizational goals in educated workers. The positive impact of CSR on motivations is weakly confirmed only in the case of graduated workers (Table B.1: MOT-on-CSR:0.059; p -value ≈ 0.10), who may show better ability to adapt and be resilient to the organizational context. On the other hand, while the strong and positive relation between satisfaction and cooperative organizational patterns is confirmed for all education levels (Table B.1: DC-on-SAT > 0 ; p -value < 0.01), the negative relation between motivations and cooperative organizational patterns is confirmed only in the case of educated workers (Table B.1: DC-on-MOT: -0.050 ; p -value < 0.01). This evidence can signal, in educated workers, motivational burn out and frustrated expectations concerning involvement patterns and on the job relations. Finally, as concerns performance, its positive relation with cooperation is confirmed only in the case of educated workers (Table B.1: PERF1-on-DC:0.140; PERF2-on-DC:0.246; p -value < 0.10), and this may signal better effectiveness, governance rules and involvement patterns in the case of individuals with better job positions, training and educational background.

When gender is considered, it is observed that the relation between CSR, satisfaction and cooperative organizational patterns is stronger in the case of women (Table B.2: SAT-on-CSR:0.06; p -value < 0.10). This result can confirm indirectly the stronger sensitivity shown by women, when socially responsible aims and intrinsic motivations are considered. Notably, no relation is detected between CSR and cooperative organizational patterns in the case of men (Table B.2: DC-on-CSR: -0.002 ; p -value > 0.10). The sign of the relations between performance in terms of achieved results, on the one hand, and satisfaction (negative sign) and cooperation (positive sign), on the other hand, is confirmed for both sexes but appears much stronger in the case of women than in the case of men.

After having observed differential impacts due to organizational size and to the socio-demographic features of the workforce, we can state that these elements can redefine the model parameters, that is, they have a moderator effect on the relationship between CSR practices and organizational performance. Hypothesis $H3$ cannot be refused too.

As final comments to the empirical analysis, we evidence that the main message emerging from the analysis concerns the positive relation between CSR and performance in the context of Italian social cooperatives. This relation is exerted both directly through the positive effect of responsible behavior, especially towards users

and the local community, trust and reputation, on the targets reached by the organization, or indirectly through improved cooperation in terms of relational context, satisfaction, and involvement in the workplace.

These empirical arguments are perfectly coherent with the theoretical hypotheses underpinning our model, since CSR impacts positively on cooperation, and CSR jointly with cooperation positively impacts on the second index of performance and, more weakly, also on the first index of performance. This confirms our working hypotheses. The positive effect of satisfaction on cooperation signals a reduced level of worker alienation, meaning that satisfied workers would contribute more to organizational patterns characterized by improved relations and involvement.

4. Conclusion

Within a CSR framework of analysis, all socio-economic activities generate inter-linked relationships, which can be better interpreted and analyzed by resorting to the complex system approach. By following the theoretical model by, see Ref. 45 which relies on basic analogies with the physics model of electrons traveling on a Mobius strip, it is possible to account, both theoretically and empirically, for the effects of increased cooperation among stakeholders due to their investments in CSR. In this work, by using worker data on labor relations drawn from a large sample of Italian social enterprises (social cooperatives), we empirically test the existence and the effects of these interactions. In particular, in accordance with our theoretical model, we ask whether firm's performance is correlated with its stakeholders' investments in CSR through their effects on cooperation among the stakeholders and on loyalty towards the organization. Again following the theoretical model, we also enquire the mediating role of workers' sensitivity, proxied by motivations, of their degree of alienation, proxied negatively by higher on-the-job satisfaction, and of firm size.

To achieve our results, we use mathematical models that are seldom applied in the social sciences, and structural equation modeling to test and quantify the impact of CSR on firm performance. This approach represents an initial, but effective attempt to accomplish a rigorous analysis of much debated questions, which did not find settled answers to date. Also, we submit that our main results concerning CSR and the role of co-operative governance can represent important tools in designing new governance solutions, managerial practices, and training courses, informed by advanced knowledge about the relation between the social behavior of organizations, and their positive external effects which, as we show, are not in contrast with better organizational performance. The implications of our results are coherent with our theoretical premises, confirming that the behavior and performance of cooperatives enterprises can't be described by using the traditional profit function because more interactions and complex relationships among agents should be taken into account.

Our empirical test concerns CSR as embodied in labor relation in the Italian social economy. More specifically, we use worker data drawn from social cooperatives

operating in the social service sector. In this kind of organization, CSR is to be considered a crucial organizational dimension and a strategic asset, since it enters the social and reputational capital on which the activity of the organization is based. Consequently, our result need to be considered first and foremost as specific to the working of third sector and social economy organizations.

Organizations that consider CSR as a strategic asset can invest more than average in such an asset. Higher investments in CSR can generate stronger and more effective impact on performance. The social economy has a limited, but relevant effect on the outcomes of most advanced economy. The weight of the nonprofit sector is estimated to be close or higher than 10% of GDP in several advanced countries, and social economy organizations create a higher than average percentage of new jobs in the same countries. Furthermore, social economy organizations are reported to be able to produce public, semi-public, and meritorious goods and services, implying increased positive external effects and reduced social costs.¹⁴ In most circumstances the public and the private sectors are not able to do so in the same effective way.⁴⁶

The value of the study can be considered high when the economics of the third sector is considered. Its relevance is more limited, but not absent, for the economy at large and other types of business organizations. Indeed, important contributions have been underlying the positive relation between CSR and firm performance in all business enterprises,³⁶ and this makes us confident about the possibility to replicate similar tests in different sectors and organizational contexts. We can hypothesize that the model can be generalized and applied to contexts characterized by more complex interactions than what is implied by the model of the self-interested homo economics. For instance, this is the case in cooperation games, in reciprocating behaviors (see Ref. 16) in the vote-with-the-wallet game⁷ and, in more general terms, in all social and organizational contexts in which accumulated social capital is high.⁴¹ In all these cases, people interact having as their objective the common good, and not only their own welfare, aware that the wellbeing of everyone else affects, in turn, their own welfare, increasing this way also the shareable surplus. Finally, we also show that to stipulate cooperation, important investments and costs, both monetary and in terms of time expensive and cultural activities, are required. To the best of our knowledge, our approach represents the first attempt to theoretically model and empirically test a new cost-benefit function analyzing such organizational behaviors in the presence of deep interactions among the organization and its stakeholders. Such dimensions are not dealt with in the traditional profit function. Clearly, more research and survey work are needed to improve the reach, width and validity of our work, for example concerning further interactions and effects in the theoretical model. Future empirical research can use larger samples and consider additional organizational and social contexts to study crossed contributions and impacts among different stakeholders and sectors. Comparative studies would be needed as well, since different organizational forms can invest differently in CSR, this way obtaining different impacts on performance.

Acknowledgments

The survey on which the empirical analysis is based was carried out between March 2004 and February 2008 in Italy by five research units at the Universities of Brescia, Milan, Naples, Reggio Calabria and Trento. The research was supported by (1) a grant of the Italian Ministry for University and Scientific Research based on the national research project (PRIN) titled: “The Economic Role of Nonprofit Organizations: New Theoretical Developments and Empirical Tests”; (2) by a grant of the Foundation of the Saving Bank of the Lombard Provinces (Ca.Ri.P.Lo. Foundation); (3) by the personnel at ISSAN-EURICSE (European Research Institute for Cooperative and Social Enterprises) in Trento. This work is part of EURICSE (European Research Institute on Cooperative and Social Enterprises) project “Survey on Italian Social Cooperatives” (SISC/ICSI survey). We wish to thank Carlo Borzaga, principal investigator of the ICSI research program, Maurizio Carpita for methodological development, and Sara Depedri, Marica Manisera e Elena Poli for data handling. We would like to also thank CREVALOR (S17) research group for its support in the elaboration of this paper, FPU Financial Program (FPU 13/02481) and MINECO project (ECO2016-74920-C2-1-R).

Appendix A. Descriptive Statistics and Measurement Models

Table A.1. Descriptive statistics.

Dimension	Abr	Item	Mean	SE	Max	Min
PERF1	A3	Service quality relative to similar organizations	3.122	0.691	5	2
	A4	Service quality relative to two years ago	3.062	0.549	5	1
	A5	Service quality relative to five years ago	3.463	0.667	5	1
PERF2	A8	Target reached: good relations among workers	7.376	1.137	10	5
	A9	Target reached: relations between workers and their superiors	7.292	1.243	10	1
	A10	Target reached: professional skills and competencies of managers	7.755	1.213	10	1
	A11	Target reached: professional skills and competencies of workers	7.668	1.106	10	3
	A13	Target reached: ability to work in team	7.343	1.452	10	3
	A15	Target reached: internal communication/relations	6.993	1.333	10	2
	A17	Target reached: motivation/participation of managers	8.093	1.271	10	1
	A18	Target reached: motivation/participation of workers	7.408	1.379	10	1
CSR1	A20	Cooperative responsible towards service beneficiaries	2.855	0.355	3	2
	A21	Cooperative responsible towards local community	2.432	0.554	3	1
	A22	Cooperative responsible towards workers	2.833	0.373	3	2
	A23	Cooperative responsible towards private financial supporters	1.980	0.719	3	1
	A24	Cooperative responsible towards public institutions	2.346	0.570	3	1
CSR2	A25	Reputation of the cooperative towards users	5.746	0.906	7	4
	A26	Reputation of the cooperative towards other organizations in the sector	5.688	0.932	7	1
	A27	Reputation of the cooperative towards local community	5.476	0.932	7	3
	A29	Reputation of the cooperative towards public institutions	5.639	0.888	7	2
	A31	Reputation of the cooperative towards public administration	5.449	1.048	7	1

Table A.1. (Continued)

Dimension	Abr	Item	Mean	SE	Max	Min
CSR3	A35	Trust between the cooperative and public administration	5.989	1.088	7	1
	A36	Trust between the cooperative private suppliers	5.177	1.240	7	1
	A41	Trust between the cooperative in general	5.620	1.130	7	1
	A33	Organizational climate	4.370	0.973	6	1
SAT	A42	W25.1 Satisfaction with professional growth and training	4.645	1.586	7	1
	A43	W25.2 Satisfaction with on the job autonomy and independence	5.072	1.475	7	1
	A44	W25.3 Satisfaction with past and perspective career advancement	3.854	1.700	7	1
	A45	W25.4 Personal fulfilment	4.932	1.620	7	1
MOT	A49	W54.4 Flexibility of work hours	8.010	3.093	12	1
	A51	W54.6 Personal accomplishment and career prospects	8.374	3.126	12	1
	A52	W54.7 Job stability	9.523	2.794	12	1
DC1	A59	W29.2 Time devoted to relations with colleagues	3.997	0.880	5	1
	A60	W29.3 Time devoted to relations with superiors	3.397	1.078	5	1
	A62	W29.5 Time devoted to relations with institutions and users	2.757	1.194	5	1
DC2	A64	W38.1 Satisfaction of needs as worker	3.819	0.969	5	1
	A65	W38.2 Job stability	3.821	1.069	5	1
	A66	W38.3 Other material incentives	2.974	1.198	5	1
	A67	W38.4 Interpersonal relations	3.273	1.079	5	1
	A69	W38.6 Involvement in the mission of the organization	3.127	1.243	5	1
	A70	W38.7 Involvement in decision making	2.883	1.267	5	1
	A71	W38.8 Organization of cultural events with colleagues and associates	2.644	1.147	5	1

Table A.2. Results of the measurement equations models. Cooperatives.

		Estimate*	SE	p-value	Alfa	AVE	CRC
PERF1 by							
A3	Service quality relative to similar organizations	0.690	0.079	0.000	0.518	0.564	0.750
A4	Service quality relative to two years ago	0.763	0.060	0.000			
A5	Service quality relative to five years ago	0.796	0.060	0.000			
PERF2 by							
A8	Targets reached: good relations among workers	0.797	0.027	0.000	0.917	0.643	0.801
A9	Targets reached: relations between workers and their superiors	0.814	0.023	0.000			
A10	Targets reached: professional skills and competencies of managers	0.834	0.022	0.000			
A11	Targets reached: professional skills and competencies of workers	0.806	0.024	0.000			
A13	Targets reached: ability to work in team	0.772	0.028	0.000			
A15	Targets reached: internal communication/relations	0.732	0.027	0.000			
A17	Targets reached: motivation/participation of managers	0.776	0.026	0.000			

Table A.2. (Continued)

		Estimate*	SE	p-value	Alfa	AVE	CRC
A18	Targets reached: motivation/paticiption of workers	0.876	0.021	0.000			
CSR1 by							
A20	Cooperative responsible towards service beneficiaries	0.832	0.091	0.000	0.648	0.480	0.680
A21	Cooperative responsible towards local community	0.814	0.067	0.000			
A22	Cooperative responsible towards workers	0.568	0.104	0.000			
A23	Cooperative responsible towards private financial supporters	0.503	0.079	0.000			
A24	Cooperative responsible towards public institutions	0.674	0.075	0.000			
CSR2 by							
A25	Reputation of the cooperative towards users	0.735	0.036	0.000	0.823	0.584	0.762
A26	Reputation of the cooperative towards other organizations in the sector	0.676	0.043	0.000			
A27	Reputation of the cooperative towards local community	0.790	0.033	0.000			
A29	Reputation of the cooperative towards public institutions	0.840	0.027	0.000			
A31	Reputation of the cooperative towards public administration	0.769	0.031	0.000			
CSR3 by							
A35	Trust between the cooperative and public administration	0.525	0.066	0.000	0.515	0.262	0.501
A36	Trust between the cooperative private suppliers	0.366	0.066	0.000			
A41	Trust between the cooperative in general	0.658	0.053	0.000			
A33	Organizational climate	0.454	0.080	0.000			
CRS by							
CSR1	Responsible	0.625	0.070	0.000	0.862	0.589	0.761
CSR2	Reputation	0.839	0.059	0.000			
CSR3	Trust and climate	0.820	0.070	0.000			
PERF1 with							
PERF2	Performance 2	0.416	0.061	0.000			
CSR	Corporate Social Responsibility	0.373	0.062	0.000			
PERF2 with							
CSR	Corporate Social Responsibility	0.623	0.045	0.000			

$\chi^2(269) 597.887$; RMSEA: 0.018; WRMR: 1.222; CFI: 0.943

*Standardized coefficients are reported.

Table A.3. Results of the measurement equations models. Workers.

		Estimate*	SE	p-value	Alfa	AVE	CRC
SAT by							
A42	W25_1 Satisfaction with professional growth and training	0.789	0.009	0.000	0.809	0.560	0.747
A43	W25_2 Satisfaction with on the job autonomy and independence	0.680	0.011	0.000			
A44	W25_3 Satisfaction with past and perspective career advancement	0.757	0.010	0.000			
A45	W25_4 Personal fulfilment	0.761	0.009	0.000			
MOT by							
A49	W54_4 Flexibility of work hours	0.458	0.021	0.000	0.522	0.274	0.520
A51	W54_6 Personal accomplishment and career prospects	0.506	0.021	0.000			
A52	W54_7 Job stability	0.597	0.024	0.000			
DC1 by							
A59	W29_2 Time devoted to relations with colleagues	0.514	0.022	0.000	0.583	0.352	0.582
A60	W29_3 Time devoted to relations with superiors	0.745	0.023	0.000			
A62	W29_5 Time devoted to relations with institutions and users	0.488	0.026	0.000			
DC2 by							
A64	W38_1 Satisfaction of needs as worker	0.546	0.017	0.000	0.821	0.381	0.614
A65	W38_2 Job stability	0.522	0.016	0.000			
A66	W38_3 Other material incentives	0.651	0.014	0.000			
A67	W38_4 Interpersonal relations	0.707	0.012	0.000			
A69	W38_6 Involvement in the mission of the organization	0.669	0.014	0.000			
A70	W38_7 Involvement in decision making	0.657	0.015	0.000			
A71	W38_8 Organization of cultural events with colleagues and associates	0.543	0.016	0.000			
DC by							
DC1	LD29	0.483	0.022	0.000	0.656	0.454	0.653
DC2	LD38	0.822	0.025	0.000			
SAT with							
MOT	L54	0.016	0.028	0.575			
DC	DC	0.795	0.027	0.000			
MOT with							
DC	DC	-0.011	0.034	0.747			
$\chi^2(114) 916.379$; RMSEA: 0.041; WRMR: 1.978; CFI: 0.928							

*Standardized coefficients are reported.

Appendix B. Socioeconomic Features of the Workforce

Table B.1. Results of the structural equations model. Covariate: Education.

	Elementary			Intermediate			Professional			High-school			University							
	Est*	SE	p-value	R ²	Est*	SE	p-value	R ²	Est*	SE	p-value	R ²	Est*	SE	p-value	R ²				
<i>Direct effects</i>																				
SAT on																				
CSR	0.169	0.081	0.038	0.028	0.038	0.063	0.550	0.001	0.056	0.044	0.197	0.003	0.038	0.111	0.733	0.001	0.060	0.053	0.262	0.004
MOT on																				
CSR	-0.151	0.160	0.346	0.023	0.005	0.044	0.904	0.000	0.015	0.030	0.614	0.000	-0.060	0.059	0.305	0.004	0.059	0.039	0.127	0.003
DC on																				
SAT	0.903	0.220	0.000	0.812	0.905	0.009	0.000	0.823	0.913	0.006	0.000	0.839	0.919	0.013	0.000	0.852	0.922	0.006	0.000	0.852
MOT	0.077	0.061	0.205		-0.025	0.021	0.227		-0.030	0.010	0.003		-0.038	0.029	0.195		-0.050	0.015	0.001	
CSR	-0.021	0.059	0.723		0.024	0.020	0.235		0.032	0.014	0.023		0.051	0.036	0.152		0.003	0.016	0.867	
PERF1 on																				
DC	-0.422	0.233	0.070	0.302	-0.054	0.089	0.546	0.270	0.127	0.068	0.062	0.271	0.404	0.180	0.025	0.256	0.140	0.083	0.093	0.205
SAT	0.431	0.299	0.150		0.058	0.082	0.484		-0.090	0.064	0.159		-0.330	0.176	0.061		-0.097	0.080	0.221	
MOT	-0.032	0.091	0.724		0.026	0.054	0.629		0.011	0.032	0.732		0.026	0.073	0.722		0.026	0.039	0.511	
CSR	0.484	0.170	0.004		0.520	0.058	0.000		0.512	0.050	0.000		0.458	0.064	0.000		0.445	0.058	0.000	
PERF2 on																				
DC	0.134	0.161	0.406	0.603	0.214	0.087	0.014	0.525	0.196	0.054	0.000	0.565	0.262	0.165	0.112	0.452	0.246	0.073	0.001	0.487
SAT	-0.230	0.189	0.224		-0.133	0.073	0.067		-0.092	0.049	0.061		-0.206	0.139	0.137		-0.191	0.069	0.006	
MOT	-0.055	0.058	0.342		0.012	0.037	0.743		0.040	0.024	0.095		0.051	0.053	0.344		-0.009	0.032	0.790	
CSR	0.780	0.069	0.000		0.709	0.040	0.000		0.730	0.029	0.000		0.650	0.097	0.000		0.689	0.041	0.000	
<i>Indirect effects</i>																				
CSR→PERF1	0.027	0.041	0.509		-0.001	0.004	0.819		0.006	0.004	0.152		0.022	0.020	0.291		0.003	0.004	0.406	
CSR→PERF2	-0.014	0.016	0.352		0.007	0.009	0.382		0.012	0.006	0.054		0.012	0.015	0.405		0.002	0.005	0.772	
<i>Total effects</i>																				
CSR→PERF1	0.512	0.163	0.002		0.519	0.058	0.000		0.517	0.049	0.000		0.480	0.063	0.000		0.448	0.058	0.000	
CSR→PERF2	0.766	0.067	0.000		0.717	0.038	0.000		0.742	0.029	0.000		0.663	0.095	0.000		0.690	0.041	0.000	

$\chi^2(5)$ 4.872; RMSEA:0.000; SRMR:0.010; CFI:0.999

*Standardized coefficients are reported.

Table B.2. Results of the structural equations model. Covariate: Gender.

	Male				Female			
	Est*	SE	p-value	R ²	Est*	SE	p-value	R ²
<i>Direct effects</i>								
SAT on								
CSR	0.042	0.051	0.404	0.002	0.060	0.036	0.091	0.004
MOT on								
CSR	-0.010	0.037	0.793	0.000	0.016	0.026	0.543	0.000
DC on								
SAT	0.923	0.006	0.000	0.854	0.909	0.005	0.000	0.833
MOT	-0.038	0.014	0.006		-0.031	0.010	0.002	
CSR	-0.002	0.017	0.927		0.036	0.012	0.003	
PERF1 on								
DC	0.078	0.081	0.337	0.220	0.092	0.062	0.141	0.269
SAT	-0.092	0.073	0.209		-0.043	0.060	0.473	
MOT	-0.002	0.037	0.957		0.019	0.030	0.528	
CSR	0.468	0.050	0.000		0.509	0.049	0.000	
PERF2 on								
DC	0.131	0.066	0.047	0.588	0.234	0.050	0.000	0.521
SAT	-0.065	0.056	0.240		-0.149	0.046	0.001	
MOT	0.007	0.023	0.758		0.027	0.024	0.250	
CSR	0.761	0.033	0.000		0.700	0.032	0.000	
<i>Indirect effects</i>								
CSR→PERF1	-0.001	0.002	0.609		0.006	0.004	0.110	
CSR→PERF2	0.002	0.005	0.642		0.013	0.005	0.019	
<i>Total effects</i>								
CSR→PERF1	0.467	0.050	0.000		0.515	0.049	0.000	
CSR→PERF2	0.763	0.032	0.000		0.712	0.031	0.000	
$\chi^2(2)$ 1.446; RMSEA: 0.000; SRMR 0.006; CFI:0.999								

*Standardized coefficients are reported.

References

1. B. Y. Abiodun, The impact of corporate social responsibility on firms' profitability in Nigeria, *Eur. J. Econ. Financ. Adm. Sci.* **45**(1) (2012) 39–50.
2. M. Aoki, *The Cooperative Game Theory of the Firm* (Cambridge University Press, Cambridge, MA, 1984).
3. A. Bacchiega and C. Borzaga, Social enterprises as incentive structures: An economic analysis, in *The Emergence of Social Enterprise*, eds. C. Borzaga and J. Defourny (Routledge, New York, 2001).
4. R. P. Bagozzi, *Causal Models in Marketing* (John Wiley and Sons, New York, 1980).
5. L. Becchetti, A. Palestini, N. Solferino and M. E. Tessitore, The socially responsible choice in a duopolistic market: A dynamic model of ethical product differentiation, *Econ. Model.* **43** (2014) 114–123.
6. L. Becchetti, N. Solferino and M. E. Tessitore, Corporate social responsibility and profit volatility: Theory and empirical evidence, *Ind. Corp. Change* [In press].
7. L. Becchetti, V. Pelligra and S. F. Taurino, Other regarding preferences and reciprocity: Insights from experimental findings and satisfaction data. CEIS Working Paper No. 363.

8. P. M. Bentler, EQS 6.1. Encino, CA: Multivariate software (2006).
9. M. M. Blair and L. A. Stout, A team production theory of corporate law, *Va. Law Rev.* **85**(2) (1999) 247–331.
10. K. J. Blois, Trust in business to business relationships: An evaluation of its status, *J. Manage. Stud.* **36**(2) (1999) 197–215.
11. K. A. Bollen, *Structural Equation Models* (Wiley Online Library, New York, 1998).
12. C. Borzaga and C. Carini, La cooperazione sociale: dinamica economica ed occupazionale tra il 2008 ed il 2013. [Online] Available at: <http://www.euricse.eu/wp-content/uploads/2015/09/09-Carini-Borzaga.pdf> (2014) last accessed 1 June 2014.
13. C. Borzaga, S. Depedri and E. C. Tortia, Organizational variety in market economies and the emergent role of socially oriented enterprises, in *Social Enterprise and the Third Sector: Changing European Landscapes in a Comparative Perspective*, eds. J. Defourny, L. Hulgård and V. Pestoff (Routledge, London, 2014). <https://www.researchgate.net/publication/295405980>.
14. C. Borzaga and S. Sacchetti, Why social enterprises are asking to be multi-stakeholder and deliberative: An explanation around the costs of exclusion, Euricse Working Papers, 1575, Euricse (2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2594181.
15. C. Borzaga and E. C. Tortia, Worker motivations, job satisfaction, and loyalty in public and nonprofit social services, *Nonprof. Volunt. Sect. Q.* **35**(2) (2006) 225–248.
16. L. Bruni, *Reciprocità. Dinamiche di cooperazione, economia e società civile*. Mondadori Eds.
17. M. Christen, I. Ganesh, D. Soberman, Job satisfaction, job performance, and effort: A reexamination using agency theory, *J. Mark.* **70**(1) (2006) 137–150.
18. A. E. Clark and A. J. Oswald, Satisfaction and comparison income, *J. Public Econ.* **61**(3) (1996) 359–381.
19. G. Degli Antoni, Intrinsic vs. Extrinsic motivations to volunteer and social capital formation, *Kyklos* **62**(3) (2009) 359–370.
20. G. Degli Antoni and E. Portale, The effect of corporate social responsibility on social capital creation in social cooperatives, *Nonprofit Volunt. Sect. Q.* **40**(3) (2011) 566–582.
21. P. F. Drucker, *Managing the Non-Profit Organization: Principles and Practices* (Harper Collins, New York, 1990).
22. Euricse (2015). Economia cooperativa. Rilevanza, evoluzione e nuove frontiere della cooperazione italiana. Euricse, European Research Institute on Cooperative and Social Enterprises, Trento. [Online] Accessed June 1 2017: <http://www.euricse.eu/it/publications/economia-cooperativa-rilevanza-evoluzione-e-nuove-frontiere-della-cooperazione-italiana/>.
23. F. Fukuyama, *Trust: The Social Virtues and the Creation of Prosperity* (The Free Press, New York, 1995).
24. A. Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Polity Cambridge, 1984).
25. J. P. Gond, A. El-Akreimi, J. Igalens and V. Swaen, Corporate social responsibility influence on employees. *ICCSR Research Paper Series* No. 54.
26. G. Grolleau, L. Tarik and M. Naoufel, Does ethical activism lead to firm relocation? *Kyklos* **57**(3) (2004) 387–402.
27. J. K. Harter, L. S. Frank and L. M. K. Corey, Well-being in the workplace and its relationship to business outcomes: A review of the gallup studies, in eds. *Flourishing: The Positive Person and the Good Life*, L. M. K. Corey and J. Haidt (American Psychological Association, Washington D.C., 2003).
28. E. Kinnell, M. MacDougall and J. MacDougall, *Marketing in the Not-for-Profit Sector* (Oxford: Butterworth-Heinemann, 1997).

29. S. Knack and P. Keefer, Does social capital have an economic payoff? A cross country investigation, *Q. J. Econ.* **112**(4) (1997) 1251–1288.
30. T. D. Little, On the comparability of constructs in cross-cultural research: A critique of Cheung and Rensvold, *J. Cross Cult. Psychol.* **31**(2) (2000) 213–219.
31. R. A. Litz, Two sides of a one side phenomenon: Conceptualizing the family business and business family as a möbius strip, *Fam. Bus. Rev.* **21**(3) (2008) 217–236.
32. K. I. MacDonald, On the formulation of a structural model of the mobility table, *Soc. Forces* **60**(2) (1981) 557–571.
33. A. McWilliams and D. Siegel, Corporate social responsibility and financial performance: Correlation or misspecification?, *Strateg. Manage. J.* **21**(5) (2001) 603–609.
34. L. K. Muthén and B. O. Muthén, Mplus user's guide (Muthén & Muthén, Los Angeles, CA 1998–2013).
35. K. K. Myers and K. Sadaghiani, Millennials in the workplace: A communication perspective on millennials' organizational relationships and performance, *J. Bus. Psychol.* **25**(2) (2010) 225–238.
36. M. Osterloh, B. S. Frey and H. Zeitoun, Voluntary co-determination produces sustainable productive advantage, in *Corporate Social Responsibility and Corporate Governance: The Contribution of Economic Theory and Related Disciplines*, eds. L. Sacconi, M. Blair, R. E. Freeman and A. Vercelli (Palgrave Macmillan, Basingstoke, 2010), pp. 332–352.
37. R. D. Putnam, *Making Democracy Work: Civic Traditions in Modern Italy* (Princeton University Press, Princeton, 1993).
38. S. Rast and A. Tourani, Evaluation of employees' job satisfaction and role of gender difference: An empirical study at airline industry in Iran, *Int. J. Bus. Soc. Sci.* **3**(7) (2012) 91–100.
39. R. Rob and P. Zemesky, Social capital, corporate culture and incentive intensity, *Rand J. Econ.* **33**(2) (2002) 243–257.
40. F. Sabatini, Social capital and the quality of Economic development, *Kyklos* **61**(3) (2008) 466–499.
41. F. Sabatini, F. Modena and E. C. Tortia, Do cooperative enterprises create social trust?, *Small Bus. Econ.* **42** (2014) 621–641.
42. L. Sacconi, Corporate social responsibility and corporate governance. Milan: Econometrica Working Paper No. 38/2012. www.econometrica.it, Accessed May 28 2017.
43. A. Sargeant, *Marketing Management for Nonprofit Organizations* (Oxford University Press, Oxford, 1999).
44. A. Semykina and S. J. Linz, Job satisfaction and perceived gender equality in advanced promotion opportunities: An empirical investigation, *Kyklos* **66**(4) (2013) 591–619.
45. N. Solferino and V. Solferino, The corporate social responsibility is just a twist in a Möbius strip, *Economics E-journal*. <http://www.economics-ejournal.org/economics/discussionpapers/2016-12> (2016).
46. E. C. Tortia, The impact of social enterprises on output, employment, and welfare, in *The Economics of Social Responsibility: The World of Social Enterprises*, eds. L. Becchetti and C. Borzaga (Routledge, London, 2010), pp. 55–72.
47. V. Valentinov, The meaning of nonprofit organization: Insights from classical institutionalism, *J. Econ. Issues* **45**(4) (2011) 901–915.
48. S. A. Waddock and S. B. Graves, The corporate social performance–financial performance link, *Strateg. Manage. J.* **18**(4) (1997) 303–319.
49. K. Yakubo, Y. Avishai and D. Cohen, Persistent currents in Möbius strips, *Phys. Rev. B* **67** (2003) 125319.