

CORPORATE RESPONSIBILITY AND FINANCIAL PERFORMANCE: THE ROLE OF INTANGIBLE RESOURCES

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This paper examines the effects of a firm's intangible resources in mediating the relationship between corporate responsibility and financial performance. We hypothesize that previous empirical findings of a positive relationship between social and financial performance may be spurious because the researchers failed to account for the mediating effects of intangible resources. Our results indicate that there is no direct relationship between corporate responsibility and financial performance—merely an indirect relationship that relies on the mediating effect of a firm's intangible resources. We demonstrate our theoretical contention with the use of a database comprising 599 companies from 28 countries. Copyright © 2010 John Wiley & Sons, Ltd.

1 INTRODUCTION

2
3 Numerous studies have attempted to identify the
4 relationship between corporate financial perfor-
5 mance and corporate social performance. The
6 authors of two recent meta-analyses (Margolis
7 and Walsh, 2003; Orlitzky, Schmidt, and Rynes,
8 2003) have concluded that the existing empiri-
9 cal evidence supports a modest positive associa-
10 tion between these performance measures. Many
11 researchers still claim, however, that much research
12 remains to be conducted before this relationship
13 can be fully understood (e.g., see Griffin and
14 Mahon, 1997; Margolis and Walsh, 2003; Row-
15 ley and Berman, 2000; or Wood and Jones, 1995).
16 Specifically, Margolis and Walsh (2003: 278) have
17 stressed the importance of developing models
18 that incorporate omitted variables, test mediating

mechanisms and contextual conditions, and estab- 27
lish causal links between social and financial per- 28
formance. 29

Some scholars have begun to take steps along 30
these lines. For McWilliams and Siegel (2000), the 31
wide range of contradictory results found in pre- 32
vious literature may be explained by the omission 33
of the variable research and development (R&D), 34
which generates a misspecification problem. Other 35
scholars indicated that exogenous factors such as 36
the growth of an industry positively moderate the 37
relationship between environmental and economic 38
performance (Russo and Fouts, 1997). Waddock 39
and Graves (1997a) focused on the causality issue, 40
finding that social performance seems to be both 41
a predictor and a consequence of financial results, 42
forming what they called a 'virtuous circle.' 43

We have drawn upon this research to propose 44
a model in which intangible resources, tradition- 45
ally perceived to be the basis of a firm's com- 46
petitive advantage (Barney, 1991; Dierickx and 47
Cool, 1989; Wernerfelt, 1984), may be a miss- 48
ing link that could help explain the relationship 49
between corporate financial performance (CFP) 50

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22 performance; intangible resources; stakeholder theory

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1 and what we term corporate responsibility perfor-
2 mance (CRP).

3 CRP is conceptualized as the broad array of
4 strategies and operating practices that a company
5 develops in its efforts to deal with and create
6 relationships with its numerous stakeholders and
7 the natural environment (Waddock, 2004). CRP
8 reflects the idea that responsibilities are integral
9 to corporate actions, decisions, behaviors, and
10 impact, whereas the concept of corporate social
11 responsibility connotes the discretionary responsi-
12 bilities of business (Carroll, 1979).

13 Adopting this definition of CRP, our study
14 advances the understanding of the relationship
15 between CRP and CFP in three ways: theoreti-
16 cally, empirically, and methodologically. On the
17 theoretical side, we use the resource-based view of
18 the firm (RBV) to extend the literature on stake-
19 holder theory. In particular we propose a model in
20 which firm-based intangible resources, including
21 innovation, human resources, reputation, and orga-
22 nizational culture, are mediator variables between
23 CRP and CFP.

24 To articulate arguments linking intangibles to
25 both measures of performance, we relied on the
26 RBV framework and especially on its recent for-
27 mulations connecting social and environmental
28 challenges to firm resources—the so-called
29 natural-resource-based view (Aragón-Correa and
30 Sharma, 2003; Hart, 1995; Russo and Fouts, 1997;
31 Sharma and Vredenburg, 1998). Even though the
32 mainstream RBV focuses on intangibles as a
33 source of competitive advantage, studies adopting
34 the natural view have also supported the notion
35 that intangibles may enhance a firm’s responsibil-
36 ity performance (e.g., Aragón-Correa and Sharma,
37 2003). Researchers have studied intangibles such
38 as innovation (e.g., Klassen and Whybark, 1999),
39 human resources (e.g., Russo and Harrison, 2005),
40 corporate reputation (e.g., Strong, Ringer, and
41 Taylor, 2001), and organizational culture (e.g.,
42 Howard-Grenville and Hoffman, 2003) and their
43 links to different dimensions of corporate responsi-
44 bility. RBV scholars have also noted that the rela-
45 tionship between intangibles and performance—
46 whether financial variables or responsibility vari-
47 ables—may operate in reverse. On the one hand,
48 profitable firms have more opportunities to inno-
49 vate (e.g., Helfat, 1997) and to make invest-
50 ments for generating human capital (e.g., Wright
51 *et al.*, 2005), reputation (e.g., Roberts and Dowl-
52 ing, 2002), and culture (e.g., Denison, 1990). On

the other hand, CRP constitutes an organizational
resource that can help firms to develop new intan-
gibles that can be sources of competitive advan-
tages (e.g., Sharma and Vredenburg, 1998).

The main proposition of this paper, which is
based on this reasoning, is that intangibles medi-
ate the relationship between CRP and CFP, and
that this mediation operates in both causal direc-
tions. We hypothesize that there is no direct rela-
tionship between CRP and CFP, but that there
is a *virtuous* circle connecting both performance
measures through intangibles. Investing in CRP
improves intangibles that lead to superior levels
of CFP, which in turn must be reinvested in intan-
gibles in order to improve CRP. Further, because
other scholars (Russo and Fouts, 1997) have found
significant differences in the intangibles of high
and low growth industries, we also examine how
the growth of the industry influences the strength
of the relationships in our model. Accordingly,
we argue that firms are more likely to form the
virtuous circle when industry growth is high.

Empirically, we use an international database
provided by the Sustainable Investment Research
International Company (SiRi). It includes infor-
mation about stakeholder-related performance with
respect to employees, communities, suppliers, cus-
tomers, and environment. Our final sample of 599
firms from 28 nations allows us to overcome the
almost exclusive focus on U.S. companies of previ-
ous studies and provides robustness to our results.

From a methodological perspective, we use a
novel two-stage estimation strategy to determine
the relationship between CRP and CFP. A remark-
able characteristic of the method is the construc-
tion of instruments of the endogenous variables
that are independent of the intangibles. By pro-
ceeding in this way, our econometric approach
addresses endogeneity concerns between the per-
formance variables and allows us to test any direct
connection that may exist from CFP to CRP and
from CRP to CFP that is not explained by their
mutual connection to a firm’s intangibles.

EXPLAINING HETEROGENEITY OF RESULTS IN THE CRP-CFP LINK

Many researchers who have studied the link
between CRP and CFP claim that the relation-
ship has not been demonstrated indisputably (Grif-
fin and Mahon, 1997; McWilliams and Siegel,

2000).¹ Possible explanations for this lack of consensus rely on drawbacks related to measurement issues (e.g., Griffin and Mahon, 1997), the omission of variables (e.g., McWilliams and Siegel, 2000), and a lack of clear direction of causality between social and financial performance (e.g., Waddock and Graves, 1997a). These drawbacks are discussed in more detail in the next three subsections.

The measurement problem

Early research on the CRP-CFP link was plagued with measurement problems, because few good measures existed for the multidimensional construct of CRP (Aupperle, Carroll, and Hatfield, 1985; Griffin and Mahon, 1997). These measurement problems have often resulted in what Wood and Jones (1995) termed 'stakeholder mismatching,' as researchers tended to select a single item as a proxy for generic CRP, but one that actually represented only one stakeholder. Recent advances in data collection, particularly the use of the KLD database, have provided broader and more encompassing measures of CRP that have been used in many recent studies (e.g., Hillman and Keim, 2001). Although these data are far from perfect (e.g., Griffin and Mahon, 1997), they, like the data used in the present study, represent a multidimensional and stakeholder-defined assessment of CRP that is gathered externally by an independent social research firm, and based on a variety of internal and external sources of information, using consistent criteria from year to year.

Misspecification of models

The meta-analyses of Orlitzky *et al.* (2003) and Margolis and Walsh (2003) indicate that the wide range of contradictory results found in the literature may be in part attributable to such 'missing elements' as R&D and advertising (McWilliams and Siegel, 2000), stakeholders' moral values (Schuler and Cording, 2006), or measures of corporate strategy (Berman *et al.*, 1999; Ullman,

1985), any of which can mediate or moderate the connection between CRP and CFP (see Rowley and Berman, 2000).

Looking for missing elements requires theoretical models to identify variables that are determinants of performance, but have been omitted in econometric modeling (McWilliams and Siegel, 2000). In such a task, the RBV argues that a firm outperforming its rivals develops distinctive resources that are rare, valuable, inimitable, and not readily substitutable (Barney, 1991). As Sanchez, Chaminade, and Olea (2000) have argued, the only resources that meet these criteria are intangibles; hence we focus in the next sections on specific intangibles that have been associated with competitive advantage.

Direction of causality

Three views on the direction of causality between CRP and CFP have been tested empirically: 1) the view that stakeholder management (CRP) positively influences CFP, 2) the view that CFP positively influences CRP, and 3) the view defining a recursive relationship between both constructs.

The first research stream, related to instrumental theory (Donaldson and Preston, 1995; Jones, 1995), suggests that CRP influences CFP. The main argument is that good management implies positive relationships with key stakeholders, which in turn improve CFP (Freeman, 1984; Waddock and Graves, 1997a, 1997b). The basic assumption behind this theory, grounded in an RBV logic, is that CRP may be an intangible asset that leads to more effective use of resources (Orlitzky *et al.*, 2003), which has a positive impact on CFP (Hillman and Keim, 2001).

The second strand of literature proposes that CFP influences CRP. The central argument in this literature, called the slack resources hypothesis (Waddock and Graves, 1997a), is that better CFP results in a surplus of resources that provides firms with the financial wherewithal to consider social issues and to do something about them (McGuire, Sundgren, and Schneeweis, 1988).

These two previous streams of research were reconciled by Waddock and Graves (1997a), who suggested that CFP and CRP are synergistic—that CRP is both a predictor and a consequence of CFP, thereby forming a *virtuous* circle. Financially successful companies can afford to spend more money on social issues, but CRP also helps

¹ Although much of the research described in this section has been on corporate social performance (CSP) or corporate social responsibility (CSR), the same arguments apply to the concept of CRP. CRP not only incorporates the discretionary responsibilities of business (CSP or CSR), but also describes how these responsibilities are integrated in any corporate action, decision, behavior, or impact.

1 them become financially successful. The meta-
 2 analysis of Orlitzky and colleagues (2003) also
 3 supported this bidirectional causality, providing
 4 evidence that ‘both instrumental stakeholder the-
 5 ory and slack resources descriptions are accurate’
 6 (Orlitzky *et al.*, 2003: 406).

7 From this discussion, we can conclude that
 8 researchers exploring the CRP-CFP link should
 9 simultaneously address the measuring of the CRP
 10 construct, the identification of omitted control vari-
 11 ables, and the possibility that the causal link may
 12 operate in the reverse direction.

13
 14
 15 **HYPOTHESES**

16
 17 Our research model, which draws upon stakeholder
 18 theory and RBV formulations, is grounded on three
 19 assumptions: 1) there is a recursive causal link
 20 between CRP and CFP (Waddock and Graves,
 21 1997a); 2) various variables may intervene in
 22 this bidirectional linkage, supporting an indirect
 23 relationship between both performance measures
 24 (McWilliams and Siegel, 2000); and 3) the vari-
 25 ables intervening in the linkage are the intangi-
 26 bles. Two arguments support the latter assumption.
 27 First, it has been argued (Hart, 1995) and empiri-
 28 cally tested (Sharma and Vredenburg, 1998) that
 29 some corporations respond to calls for environ-
 30 mental protection by developing intangibles that
 31 can be sources of competitive advantage; stress-
 32 ing, therefore, the mediating role of intangibles
 33 in the association from CRP to CFP. Second, the

37 availability of internal funds is expected to stimu-
 38 late the development of intangibles, which may be
 39 drivers of further improvements in CRP (Shrivas-
 40 tava, 1995a).

41 Based on these assumptions, we argue that intan-
 42 gibles mediate the connection between social and
 43 financial outcomes in both directions. Figure 1
 44 depicts these relationships.

45
 46
 47 **Intangible resources**

48 The RBV provides us with a useful framework
 49 for analyzing the relationship between CRP and
 50 CFP for several reasons: 1) the RBV focuses on
 51 CFP as the key outcome variable, 2) the RBV
 52 presents the possibility of integrating such other
 53 outcome variables as CRP, and 3) work adopting
 54 this view provides an argument for the intercon-
 55 nection between social and environmental chal-
 56 lenges to firm resources.

57 According to the RBV, differences in firm per-
 58 formance are primarily the consequence of differ-
 59 ences in a firm’s endowment of resources, espe-
 60 cially intangibles, as they are difficult to acquire
 61 or develop, to replicate and accumulate, and to be
 62 imitated by competitors (Barney, 1991; Dierickx
 63 and Cool, 1989; Wernerfelt, 1984). Among pos-
 64 sible intangible resources, the firm’s technology,
 65 human capital, and reputation are considered to be
 66 the three of greatest strategic importance (Gomez-
 67 Mejía and Balkin, 2002). Other scholars, like Bar-
 68 ney (1986) and Grant (1991), have included cul-
 69 ture in this group of strategic resources. Empirical

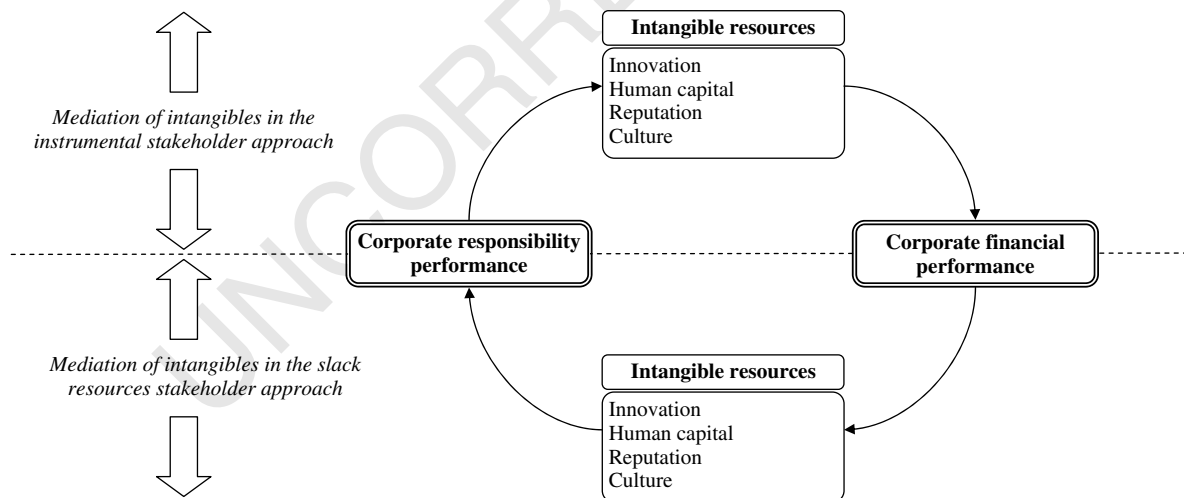


Figure 1. Research model

1 research has corroborated the positive influence of
 2 innovation (e.g., Cho and Pucik, 2005), human
 3 resources (e.g., Huselid, 1995), reputation (e.g.,
 4 Roberts and Dowling, 2002), and culture (e.g.,
 5 Marcoulides and Heck, 1993) on the competitive-
 6 ness of a firm.

7 Although the RBV is aimed at explaining a
 8 firm's competitive advantage and CFP, some stud-
 9 ies apply the resource-based logic for explaining
 10 how intangibles influence other conceptualizations
 11 of corporate performance, like corporate sustain-
 12 able development (e.g., Bansal, 2005) or environ-
 13 mental performance (e.g., Klassen and Whybark,
 14 1999).

15 This research has neglected CRP challenges as
 16 a source of competitive advantage, however (Hart,
 17 1995). Given the growing importance of social and
 18 ecological problems, inserting natural and social
 19 concerns into the RBV logic may be helpful for
 20 identifying new sources of competitive advantage.
 21 The natural RBV of Hart (1995), validated empir-
 22 ically by Sharma and Vredenburg (1998), among
 23 others, fills this gap and proposes that social and
 24 environmental challenges may lead to the develop-
 25 ment of organizational intangible resources, which
 26 in turn can be sources of competitive advantage.

27 Such contributions illustrate the potential of the
 28 RBV theory as an analytic tool for studying how
 29 CRP and CFP are interrelated through their mutual
 30 connection to a firm's resources (Russo and Fouts,
 31 1997). To date, however, the potential mediating
 32 role of intangibles has been largely overlooked in
 33 the literature on the CRP-CFP link. In analyzing
 34 such issues, we complement the RBV with the
 35 integrative view of stakeholder theory proposed by
 36 Waddock and Graves (1997a, 1997b). The comple-
 37 mentarities between these theories allow us to
 38 analyze the mediating role of intangibles in both
 39 causal directions: from CRP to CFP (instrumental
 40 approach), and from CRP to CFP (slack resources
 41 approach).

42
 43 **The mediating role of intangibles in the**
 44 **instrumental approach**
 45

46 Drawing upon instrumental stakeholder theory and
 47 the natural RBV, we claim that by developing
 48 close relationships with primary stakeholders a
 49 firm can develop certain intangible resources—
 50 technology, human resources, reputation, and cul-
 51 ture—which enable the most efficient and compet-
 52 itive use of the firm's assets and help it to acquire

a competitive advantage over its rivals (e.g., Or-
 litzky *et al.*, 2003; Sharma and Vredenburg, 1998).
 Thus, we argue in the following sections that these
 four intangibles mediate the relationship from CRP
 to CFP.

Innovation resources. R&D has long been asso-
 ciated with the innovative capacities of firms
 (e.g., Lichtenberg and Siegel, 1991; Anagnos-
 topoulou and Levis, 2008). This capacity to inno-
 vate new products, technologies, and market ideas
 is strongly influenced by the quality of a firm's
 relational capital (Thomson and Heron, 2006),
 which in turn can be enhanced through a proac-
 tive social and environmental strategy (Sharma and
 Vredenburg, 1998). Furthermore, because the capa-
 bility for generating new technology, products, and
 improved processes is costly for competitors to
 copy, innovation can become a source of compet-
 itive advantage (Russo and Fouts, 1997; Sharma
 and Vredenburg, 1998). For example, the adoption
 of an environmental technology—a best practice
 of CRP—can be a source of such new product
 ideas as environmentally friendly products (Shri-
 vastava, 1995a) with enhanced quality and attrac-
 tiveness, allowing a firm to improve product dif-
 ferentiation and CFP (Hart, 1995; McWilliams and
 Siegel, 2000, 2001). A firm's environmental policy
 may also generate process innovations. For exam-
 ple, pollution abatement requires the redesign of
 a firm's production processes to increase materi-
 al savings and reduce energy consumption (King
 and Lennox, 2002; Klassen and Whybark, 1999),
 thereby increasing the efficiency of the production
 cycle and reducing production costs (Christmann,
 2000). An example of environmental challenges
 leading to CFP enhancement may be enlightening:

3M discovered that in producing adhesives
 in batches that were transferred to storage
 tanks, one bad batch could spoil the entire
 contents of a tank. The result was wasted raw
 materials and high costs of hazardous waste
 disposal. 3M developed a new technique [a
 process innovation] to run quality tests more
 rapidly on new batches. The new technique
 allowed 3M to reduce hazardous wastes by
 10 tons per year at almost no cost, yielding an
 annual savings of more than \$200,000 (Porter
 and van der Linde, 1995: 102).

53
 54
 55
 56
 57

1 *Human resources.* Improved CRP also
 2 contributes to the accumulation of human resources
 3 (HR) or human capital for three reasons. First,
 4 those firms perceived to be committed to CRP tend
 5 to attract better job applicants and retain them once
 6 hired, thereby reducing turnover, recruitment, and
 7 training costs (Albinger and Freeman, 2000; Tur-
 8 ban and Greening, 1997). Second, CRP also influ-
 9 ences work attitudes, favoring employees' morale
 10 (Peterson, 2004) and their contribution to initia-
 11 tives that are beneficial to the organization, such
 12 as generating ideas for making corporate prac-
 13 tices more environmentally friendly (Ramus and
 14 Steger, 2000). Third, the adoption of a proac-
 15 tive environmental strategy leads to the designing
 16 of high-commitment HR practices that encourage
 17 employee involvement in environmental improve-
 18 ment (Hart, 1995). These practices are: employee
 19 empowerment; flexible organizational structures
 20 that facilitate the flow of information for identify-
 21 ing solutions to environmental problems; compen-
 22 sation packages to reward employee contributions
 23 to CRP improvement; and environmental training
 24 programs (Kitazawa and Sarkis, 2000; Rothenberg,
 25 Pil, and Maxwell, 2001).

26 The accumulation of human capital derived from
 27 socially responsible practices can become a source
 28 of competitive advantage and result in improved
 29 financial performance (Becker and Gerhart, 1996;
 30 Huselid, 1995; Pfeffer, 1994; Pfeffer and Veiga,
 31 1999). Hart and Milstein support this idea in
 32 describing how environmental performance affects
 33 profitability through the development of new intan-
 34 gibles related to human resources:

35
 36 Effective pollution prevention requires exten-
 37 sive *employee involvement*, along with
 38 well-developed capabilities in continuous
 39 improvement and quality management. . .
 40 [Therefore,] with the *appropriate set of skills*
 41 *and capabilities* (e.g., employee involvement
 42 [. . .]), firms pursuing pollution-prevention
 43 and waste-reduction strategies actually do
 44 *reduce cost and increase profits* (Hart and
 45 Milstein, 2003: 60; emphasis added).

46
 47 *Reputation.* Supporting social performance goals
 48 also helps firms to improve both brand and cor-
 49 porate image (Bramer and Pavelin, 2006; Rowley
 50 and Berman, 2000), which are important elements
 51 of reputation. Beyond achieving a good name for
 52 a firm, social responsiveness may influence its

stakeholders' judgments, which are the foundation
 of reputation (Fombrun and Shanley, 1990). As
 corporate reputations are representations of public
 opinion about a firm, and as such opinions depend
 on a firm's success in meeting the expectations of
 those stakeholders, demonstrating a high degree of
 CRP is a signal that the firm will behave in accor-
 dance with stakeholders' expectations (Bramer and
 Pavelin, 2006). The firm's reputation will con-
 sequently be augmented (Donaldson and Preston,
 1995).

Building a positive reputation ensures the con-
 tinuing participation of stakeholders in corporate
 activities (Bramer and Pavelin, 2006), which is
 basic to 'the survival and continuing profitabil-
 ity of the corporation' (Clarkson, 1995: 110).
 Improved reputations allow firms to attract bet-
 ter employees (Turban and Greening, 1997), aug-
 ment labor commitment, negotiate better terms
 with capital suppliers, and build customer loy-
 alty (Fombrun and Shanley, 1990), all of which
 result in CFP improvements (Fombrun and Shan-
 ley, 1990; Roberts and Dowling, 2002). To Hart
 (1995), BMW is an example of such a process of
 reputation building through CRP, resulting in an
 improved competitive position:

35
 36 In 1990, BMW initiated a 'design-for-
 37 disassembly' process. . . [through which] [b]y
 38 acting as the first mover, [the company] was
 39 able to capture the few sophisticated Ger-
 40 man dismantler firms as part of an exclu-
 41 sive recycling infrastructure, thereby *gaining*
 42 *a cost advantage over competitors* [. . .]. This
 43 move enabled BMW *to build an early repu-*
 44 *tation* [. . .] as a precursor to the introduction
 45 of its new line of design-for-environment. . .
 46 automobiles. Once the company had devel-
 47 oped and demonstrated the take-back infras-
 48 tructure through its exclusive BMW dis-
 49 mantlers and disassemblers, executives suc-
 50 ceeded in *establishing the BMW approach*
 51 *as the German national standard*. This move
 52 required other car companies to *follow*
 53 *BMW's lead*, but at substantially *higher costs*
 54 (Hart, 1995: 995; emphasis added).

55
 56 *Culture.* The adoption of a socially responsible
 strategy can be a source of fundamental changes in
 business philosophy, decision-making criteria, and
 ways of working together (Sharma and Vreden-
 burg, 1998). CRP generates a common language

1 among organizational actors trying to communi-
2 cate about social issues, leads members to share
3 routines to develop and implement innovative solu-
4 tions, and creates formal and informal channels
5 of interaction among stakeholder groups (Howard-
6 Grenville and Hoffman, 2003). Thus, by incorpo-
7 rating social considerations into business activi-
8 ties, a firm can develop a culture of innovation
9 and collaborative relationships and mutual trust
10 among stakeholder groups (Russo and Fouts, 1997;
11 Sharma and Vredenburg, 1998).

12 When social and environmental awareness
13 becomes rooted in the company's culture, CFP
14 improvements follow (Howard-Grenville and Hoff-
15 man, 2003). Such improvements can be explained
16 by a socially responsible cultural atmosphere that
17 promotes organizational commitment and learning,
18 cross-functional integration across the organiza-
19 tion, increased employee skills, and the incorpo-
20 ration of highly qualified employees (Russo and
21 Fouts, 1997). Consequently, when a firm adopts
22 a strong organizational culture with these charac-
23 teristics, an increase in financial performance is
24 expected (Barney, 1986; Marcoulides and Heck,
25 1993; Pfeffer and Veiga, 1999).

26 Considering the arguments regarding innovation
27 resources, human resources, reputation, and cult-
28 ure, we can state the following hypothesis:
29

30 *Hypothesis 1a: CRP will have a positive impact*
31 *on the development of intangibles, which in turn*
32 *will positively affect CFP. In short, intangibles*
33 *mediate the relationship from CRP to CFP.*
34

35 **The mediating role of intangibles in the slack** 36 **resources approach** 37

38 The slack resource approach suggests that better
39 financial performance results in more available
40 resources that may be allocated to responsibility
41 activities. We argue that this relationship will be
42 mediated by the firm's intangibles as well.
43

44 *Innovation resources.* The external financing of
45 technological activities is problematic, given the
46 difficulties in the valuation of R&D projects and
47 the risk of revealing sensitive information about
48 technological activities (Helfat, 1997). Con-
49 sequently, the availability of internal funds to sup-
50 port R&D is expected to favor innovation (Nohria
51 and Gulati, 1996). Later, through product inno-
52 vation, process innovation, or both, a firm may
53

improve its CRP (McWilliams and Siegel, 2001; 58
Klassen and Whybark, 1999). Product innovation 59
allows a firm to incorporate responsible attributes 60
into its goods and services: the redesign and pack- 61
aging of products in more environmentally respon- 62
sible ways, for example. Process innovation, on 63
the other hand, enables firms to implement such 64
responsible production practices (McWilliams and 65
Siegel, 2000) as the redesign of manufacturing 66
processes to be less contaminating, the use of 67
less polluting inputs, or the recycling of process 68
byproducts (Christmann, 2000). 69
70

Human resources. According to the slack 71
resources argument, high-performing organizations 72
may share profits with employees by developing 73
commitment-based HR practices such as profit- 74
sharing schemes, advanced training, team partici- 75
pation, and other forms of empowerment activi- 76
ties (Wright *et al.*, 2005). Apart from the slack 77
resources logic, there are two additional arguments 78
that justify a positive influence of CFP on the 79
development of HR practices (Wright and Gardner, 80
2002). HR practices serve as an important feed- 81
back mechanism for ensuring the future growth of 82
profits, and high-commitment HR practices reduce 83
the risk of future performance declines due to 84
employee lawsuits, unionization, and health and 85
safety fines. 86

87 Commitment-based HR practices are an integral 88
part of a firm's social responsiveness toward 89
employees, which is an element of CRP (de 90
la Cruz Déniz-Déniz and De Saá-Pérez, 2003; 91
Liedtka, 1998). Beyond that, employee empower- 92
ment, training and team collaboration, and well- 93
designed reward systems give workers the power, 94
knowledge, and motivation to understand the prob- 95
lems, identify solutions, and implement improved 96
CRP-related practices (Hart, 1995). As one man- 97
ager explained: 98
99

[A]ll of those systems and techniques within 100
[environmental production] remain nothing 101
but a collection of great ideas unless the 102
right people make it happen. . . We give team 103
members every opportunity to want to care 104
about environmental performance by get- 105
ting them involved in the decision-making 106
process. . . The whole key to environmen- 107
tal performance is people (Rothenberg *et al.*, 108
2001: 239). 109

1 *Reputation.* In a context of information asym- 58
 2 metries, a firm's reputation is determined by the 59
 3 signals that stakeholders receive about its corporate 60
 4 behavior (Brammer and Pavelin, 2006). Although 61
 5 there are various such signals, investment deci- 62
 6 sions of external investors, career decisions of 63
 7 employees, and product choices of customers are 64
 8 strongly affected by measures of CFP (Fombrun 65
 9 and Shanley, 1990). Thus, success in the competi- 66
 10 tive arena signals an effective corporate strategy, 67
 11 good management, and good resource allocations 68
 12 (Roberts and Dowling, 2002). 69

13 A positive reputation may also have favorable 70
 14 consequences for stakeholders, leading to higher 71
 15 CRP. If reputation is developed over time as a 72
 16 consequence of the fit between expectations of 73
 17 stakeholders and a firm's behavior (Brammer and 74
 18 Pavelin, 2006), a good reputation will lead stake- 75
 19 holders to believe that the firm will fulfill its ethical 76
 20 responsibilities in the future. Such beliefs should 77
 21 stimulate the formation of trust between stakehold- 78
 22 ers and the firm, resulting in closer relationships 79
 23 and greater stakeholder satisfaction (Strong *et al.*, 80
 24 2001). 81

25
 26 *Culture.* Although most of the research suggested 82
 27 that culture improves CFP, the opposite causal 83
 28 model has been upheld (see Saffold, 1988). Culture 84
 29 is not static, but is continuously built and rebuilt 85
 30 because of past successes and failures (Denison, 86
 31 1990). The case of Medtronic is illustrative. It was 87
 32 the premier firm in the cardiac pacemaker industry 88
 33 in the early 1960s (Denison and Mishra, 1995). 89
 34 Financial success allowed Medtronic's manage- 90
 35 ment to stop worrying about external adaptation 91
 36 and to focus all its efforts on the development of 92
 37 its internal processes, thereby creating a human- 93
 38 istic culture of high involvement, commitment, 94
 39 coordination, and identification with core values. 95
 40 But decreased profitability in the mid-1970s led 96
 41 Medtronic's CEO to create a new 'culture' based 97
 42 on bureaucracy, which clearly reduced the involve- 98
 43 ment of stakeholders and their identification with 99
 44 the firm. 100

45 A humanistic culture developed in a situation 101
 46 of high financial gain, may be instrumental in 102
 47 improving CRP. Such a culture promotes good 103
 48 working climate, harmony, trust, and commitment 104
 49 among all its organizational members (Frey and 105
 50 Denison, 2003; Maignan, Ferrell, and Hult, 1999), 106
 51 which in turn enhances stakeholder satisfaction 107
 52 (Maignan *et al.*, 1999). Moreover, by stimulating 108
 53 109

the cooperation among organizational members, a 58
 humanistic culture promotes the employees' search 59
 for solutions to reduce the firm's impact on the 60
 natural environment (Kitazawa and Sarkis, 2000). 61

In summary, these arguments lead to the follow- 62
 ing hypothesis: 63

*Hypothesis 1b: CFP will be positively related 65
 to the development of intangibles, which in turn 66
 will affect CRP. In short, intangibles mediate the 67
 connection from CFP to CRP. 68*

The combination of Hypotheses 1a and 1b lead 70
 us to predict that: 71

*Hypothesis 1c. There is no direct relationship 73
 between CRP and CFP. Rather, intangibles 74
 mediate the relationship between CRP and CFP 75
 in both directions. 76*

**The mediating role of intangibles in growth 78
 sectors 79**

80
 The majority of work in the RBV tradition has 81
 stressed that a firm's competitive advantage is 82
 rooted within the firm, in intangibles that are 83
 valuable and inimitable; whereas the influence of 84
 external factors has been ignored (Barney, 2001). 85
 This diagnostic can be extended to the natural 86
 RBV of the firm, with some exceptions; Russo and 87
 Fouts (1997) concluded, for instance, that profits 88
 are more likely to be enhanced through a proactive 89
 environmental strategy in high-growth industries 90
 than in lowgrowth ones. Other studies have also 91
 provided support for that contention (e.g., Goll and 92
 Rasheed, 2004). 93

Although past studies constitute an advance 94
 in understanding the influence of external fac- 95
 tors, they have not explicitly incorporated intangi- 96
 bles into research models, and may, therefore, be 97
 affected by misspecification problems. An excep- 98
 tion is the theoretical work of Aragón-Correa and 99
 Sharma (2003), who explained how external fac- 100
 tors such as industry growth (a proxy of munifi- 101
 cence) affect the linkages among intangibles, CRP, 102
 and CFP. 103

Taking advantage of this contingent approxima- 104
 tion to the RBV of the natural environment, we 105
 argue that firms in high-growth sectors are more 106
 likely than are firms in low-growth sectors to form 107
 a *virtuous* circle connecting CRP and CFP through 108
 intangibles. The positive association between CRP 109
 110

1 and CFP in growth industries, as found in Russo
 2 and Fouts's (1997) research, is expected to be neu-
 3 tral when intangibles are included as mediators.
 4 Such full mediation is expected because industry
 5 growth strengthens the association between intan-
 6 gibles and each performance measure, whether
 7 CFP or CRP. Next, we discuss the influence of
 8 industry growth on the relationships described in
 9 Hypothesis 1c.

10
 11
 12 **Forming the virtuous circle through innovation**
 13 **in growth sectors**

14 *The instrumental view.* Organizational inertia in
 15 the business environment explains why firms in
 16 mature stages of the industry life cycle are less
 17 likely than are their growing counterparts to obtain
 18 innovations from the adoption of best practices
 19 of CRP. Such inertia primarily affects firms of
 20 mature industries and acts as a barrier to adopt-
 21 ing the changes necessary to develop innova-
 22 tive capabilities from CRP strategies (Shrivastava,
 23 1995a, 1995b). In contrast, high-growth indus-
 24 tries are populated by firms with organic, non-
 25 formalized, and decentralized structures that are
 26 less affected by organizational inertia. Such orga-
 27 nizational structures facilitate CRP as a source of
 28 new ideas (Russo and Fouts, 1997).

29 Growing industries are also more likely to cre-
 30 ate a competitive advantage from new inven-
 31 tions, including technological, product, and pro-
 32 cess innovations. To affect the competitive land-
 33 scape through the development of new ideas, a
 34 company must design operations in smaller decen-
 35 tralized modules, establish organizational struc-
 36 tures designed to recognize and assimilate valu-
 37 able external environmental information, and inte-
 38 grate such information into a firm's procedures and sys-
 39 tems (Shrivastava, 1995b). Thus, firms such as
 40 high-growth companies with less hierarchical and
 41 bureaucratic structures will have a higher prospec-
 42 tive return from innovative resources (Russo and
 43 Fouts, 1997).

44
 45
 46 *The slack resources view.* Agency theory warns
 47 that managers may channel slack resources to
 48 unproductive investments rather than to produc-
 49 tive alternatives like R&D. Those agency problems
 50 are especially severe in mature firms with sub-
 51 stantial cash and limited growth options (Jensen,
 52 1986). In high-growth industries, in contrast, a

53 firm's survival depends on its capacity to inno- 58
 54 vate in order to take advantage of growth oppor- 59
 55 tunities. In such a context, slack resources play a 60
 56 crucial role in allowing firms to innovate by per- 61
 57 mitting them to experiment with new strategies and 62
 innovative projects that may not be approved in 63
 a more resource-constrained environment (Nohria 64
 and Gulati, 1996). 65

66 Industry growth also strengthens the associa- 66
 67 tion from innovation to CRP (Aragón-Correa and 67
 68 Sharma, 2003). The organic structures of firms 68
 69 in high-growth industries enhance the abilities of 69
 70 organizational members to explore, share, and inte- 70
 71 grate learning about environmental and social prac- 71
 72 tices across departments and functions, thereby 72
 73 facilitating the accumulation of social and envi- 73
 74 ronmental knowledge. This shared knowledge, 74
 75 in combination with the existing technological 75
 76 base of the firm, allows employees to experi- 76
 77 ment with new ways of coping with unanticipated 77
 78 environmental futures and to develop technolo- 78
 79 gies and new products that incorporate socially 79
 80 desirable properties (Rueda-Manzanares, Aragón- 80
 81 Correa, and Sharma, 2008). 81
 82

83
 84 **Forming the virtuous circle through human**
 85 **resources in growth sectors**

86
 87 *The instrumental view.* As noted, CRP contributes 87
 88 to the attraction of better job applicants; to retain- 88
 89 ing them once hired; and to improving labor 89
 90 morale, attitudes, and loyalty. These outcomes are 90
 91 necessary but not sufficient conditions for devel- 91
 92 oping human capital. It also requires supportive 92
 93 HR practices like employee empowerment, incen- 93
 94 tive programs, training, and teamwork, in order 94
 95 to encourage employee involvement (Pfeffer and 95
 96 Veiga, 1999). Organic, flexible, and lean organi- 96
 97 zational structures facilitate the implementation of 97
 98 these commitment-based labor practices (Pfeffer, 98
 99 1994), and such structures are, as mentioned, more 99
 100 common in growing industries. CRP will therefore 100
 101 be more likely to foster the accumulation of human 101
 102 capital in high-growth industries (Russo and Fouts, 102
 1997). 103

104 Furthermore, the accumulation of human capi- 104
 105 tal is vitally important for achieving competitive 105
 106 advantage in rapidly changing industries (Pfeffer, 106
 107 1994). When the industrial environment is more 107
 108 dynamic, providing a solution to competitive chal- 108
 109 lenges requires collaboration. In such a context, 109

1 commitment-based HR practices and organic struc- 58
 2 tures support the exchange and combination of 59
 3 knowledge among employees to search for solu- 60
 4 tions (Chatman and Jehn, 1994). Thus the per- 61
 5 formance effects of such practices are higher in 62
 6 firms belonging to high-growth industries (Lepak, 63
 7 Takeuchi, and Snell, 2003). 64

8
 9 *The slack resources view.* The effect of profits on 66
 10 HR practices is higher in high-growth industries 67
 11 than in mature industries. The predictability and 68
 12 stability of mature environments may lead firms 69
 13 to focus on bureaucratic labor practices. Contrari- 70
 14 wise, surviving in rapidly growing environments 71
 15 requires people with expertise in various areas who 72
 16 are motivated to work together to solve nonroutine 73
 17 problems (Chatman and Jehn, 1994). Such require- 74
 18 ments explain the importance of spending profits in 75
 19 progressive HR practices that stimulate expertise, 76
 20 collaboration, and motivation (Pfeffer, 1994). 77

21 Furthermore, the impact of HR practices on CRP 78
 22 will increase with the industry growth (Aragón- 79
 23 Correa and Sharma, 2003). Assuming that people 80
 24 are pivotal to the success of a proactive environ- 81
 25 mental strategy (Hart, 1995), one would expect that 82
 26 certain organizational structures facilitate employ- 83
 27 ees' activities toward environmental improvements 84
 28 (Shrivastava, 1995a). The search for solutions to 85
 29 environmental challenges requires the reforming, 86
 30 redesigning, and restructuring of companies for 87
 31 implementing HR practices that channel employee 88
 32 efforts toward the minimization of their firm's neg- 89
 33 ative ecological impact (Shrivastava, 1995b). Such 90
 34 restructuring is easier to achieve in high-growth 91
 35 industries than in mature industries (Shrivastava, 92
 36 1995a), because, as mentioned previously, grow- 93
 37 ing firms are characterized by flexible organiza- 94
 38 tional structures—designs that facilitate pollution 95
 39 prevention efforts (Russo and Fouts, 1997). 96
 40

41 42 **Forming the virtuous circle through reputation** 43 **in growth sectors**

44
 45 *The instrumental view.* In mature industries, firms 102
 46 have preexisting, established reputations on numer- 103
 47 ous dimensions unrelated to social issues (Russo 104
 48 and Fouts, 1997), so the deployment of resources 105
 49 away from core firm's activities (toward CRP 106
 50 activities, for example) may be perceived as wast- 107
 51 eful managerial excess, reducing the firm's rep- 108
 52 utation (Brammer and Pavelin, 2006; Goll and 109

Rasheed, 2004). Yet, on the contrary, when repu- 58
 59 tation is still under construction, as it is in growing 60
 61 industries (Russo and Fouts, 1997), demonstrat- 62
 63 ing good social performance helps firms to build 64
 65 social legitimacy and, with that, corporate reputa- 66
 66 tion (Goll and Rasheed, 2004). The growth of a 67
 68 sector, therefore, is expected to strength the rela- 69
 70 tionship between CRP and reputation. 71

72 Reputation is relevant primarily for guiding 73
 74 actions under conditions of informational asymme- 75
 76 tries between the firm and the public (Fombrun and 76
 77 Shanley, 1990). Thus, firms in high-growth indus- 78
 79 tries will be more likely to reap financial benefits 79
 80 by increasing their reputations (Russo and Fouts, 80
 81 1997) because the public's level of knowledge of 81
 82 corporate activities is considerably lower in these 82
 83 industries than it is in firms in mature sectors. 83
 84

85 *The slack resources view.* In mature industries, 86
 87 firms often build conglomerates of unrelated prod- 87
 88 uct market domains (Chatterjee and Wernerfelt, 88
 89 1991)—a strategy that impedes the capitaliza- 89
 90 tion of synergies and allows the redistribution of 90
 91 resources among divisions (Jensen, 1986). Firms in 91
 92 growth sectors, on the other hand, tend to restrict 92
 93 their focus to one domain (Chatterjee and Wern- 93
 94 erfelt, 1991), making profits a more informative 94
 95 signal of a firm's efficiency. Thus, the reputational 95
 96 effect of profits is stronger in more focused firms 96
 97 (Fombrun and Shanley, 1990), such as those in 97
 98 high-growth sectors. 98

99 Industry context may influence the effect of 99
 100 reputation on a firm's CRP as well. As the repu- 100
 101 tation of firms in mature industries is typically 101
 102 dispersed among unrelated domains, any improve- 102
 103 ment in the reputation of one domain will affect 103
 104 only the expectations of stakeholders with this 104
 105 domain (Mahon, 2002). In high-growth industries, 105
 106 on the other hand, because a firm's business and 106
 107 reputation tend to focus on one domain, or on 107
 108 closely related domains, an improved reputation 108
 109 is more likely to exert a positive influence on the 109
 110 expectations of all the firm's stakeholders and will 110
 111 therefore have a stronger positive impact on CRP. 111
 112 Illustrative are the mature diversifier, Procter & 112
 113 Gamble (P&G), and Andersen, a focused company 113
 114 in the high-growth industry of information technol- 114
 115 ogy, consulting, and auditing (Mahon, 2002). The 115
 116 Enron problem cost Andersen its good reputation 116
 117 in auditing (and, indeed, its existence), an effect 117
 118 that generalized to its closely related consulting 118
 119 business. Yet the problem with Rely—a feminine 119
 120

1 hygienic product—caused little damage to P&G’s
 2 reputation. Thus, while the incapacity of Ander-
 3 sen to immunize its reputation against the ‘Enron
 4 problem’ destroyed trust between the firm and its
 5 stakeholders, Rely’s problem ‘was with a narrow
 6 set of Procter & Gamble’s customers, and it did
 7 not impact employees, owners, suppliers, or the
 8 larger customer base’ (Mahon, 2002: 433).

10 **Forming the virtuous circle through culture**
 11 **in growth sectors**

13 *The instrumental view.* CRP may be instrumental
 14 in creating a culture around innovativeness and risk
 15 taking (Sharma and Vredenburg, 1998), and indus-
 16 try growth favors these links. In growth indus-
 17 tries, the unpredictable environment hinders the
 18 managerial task of specifying employees’ jobs in
 19 advance (Chatman and Jehn, 1994; Gordon, 1991).
 20 In this context, CRP activities involving employees
 21 as well as other stakeholders will channel stake-
 22 holders’ efforts toward organizational objectives if
 23 the firm uses some form of social control. Such
 24 social control may be based on a system of val-
 25 ues—a culture—that favors risk taking and inno-
 26 vation and instills pride, cooperation, and loyalty
 27 among members of the organization (Chatman and
 28 Jehn, 1994). In contrast, the influence of CRP
 29 on culture is less clear in mature industries that
 30 rely on a bureaucratic management style to direct
 31 the efforts of organizational members (Russo and
 32 Fouts, 1997).

33 Furthermore, Christensen and Gordon (1999)
 34 have found that industry type moderates the rela-
 35 tionship between culture and financial perfor-
 36 mance, suggesting that some cultural traits are
 37 successful in one type of industry but unsuccess-
 38 ful in another. In high-growth industries, firms
 39 need to develop risk taking and innovation cultures
 40 in order to succeed in the marketplace (Gordon,
 41 1991). Hence, industry growth will not only favor
 42 the development of this type of innovative culture
 43 in socially responsible firms, but will also make it
 44 more profitable.

46 *The slack resources view.* The case of Medtronic,
 47 mentioned previously and described in Denison
 48 and Mishra (1995), is illustrative of how the stage
 49 of growth in an industry influences the associa-
 50 tion between CFP and culture. During Medtronic’s
 51 early years, financial success allowed managers
 52 to develop a strong humanistic culture. Several

years later, when the industry matured and com- 58
 petition intensified, Medtronic adapted its orga- 59
 nization to a more inflexible, hierarchical, and 60
 bureaucratic structure and exchanged its human- 61
 istic culture for more formal control mechanisms, 62
 considerably reducing employee involvement. 63

As industry growth increases, humanistic cul- 64
 tures that stimulate innovation are more likely to 65
 generate prevention efforts (e.g., minimize emis- 66
 sions), thereby improving CRP (Russo and Fouts, 67
 1997). To facilitate pollution prevention, such an 68
 innovative culture needs to be accompanied by 69
 organizational structures that allow the creation 70
 of cross-functional teams of empowered employ- 71
 ees who may introduce environmentally friendly 72
 changes without excessive management interven- 73
 tion (Kitazawa and Sarkis, 2000). These organic 74
 structures are more likely to exist in high-growth 75
 industries rather than in mature ones (Chatman and 76
 Jehn, 1994). 77

From the previous arguments, we can hypothe- 78
 size that: 79

*Hypothesis 2: In high-growth industries, there 81
 is no direct relationship between CRP and CFP. 82
 Rather, there is a relationship mediated in both 83
 directions through intangibles. In such sectors, 84
 the mediating role of intangibles is larger than 85
 it is in nongrowth sectors. 86*

87
 88
 89 **METHODS**

90 **Sample and data**

91
 92 Our sample comprises 599 industrial firms
 93 included in at least one year of the 2002–2004
 94 SiRi PRO™ database. These data are compiled by
 95 the Sustainable Investment Research International
 96 Company (SiRi)—the world’s largest company
 97 specializing in the analysis of socially responsible
 98 investment based in Europe, North America, and
 99 Australia. SiRi comprises 11 independent research
 100 institutions such as KLD, which are coordinated
 101 from the SiRi headquarters in Friburg, Switzer-
 102 land. For each company, SiRi provides detailed
 103 profiles of 199 items in collaboration with SiRi’s
 104 national partners.² Using a harmonized methodol-
 105 ogy, each national partner scrutinizes the social
 106

107
 108 ² Visit www.centreinfo.ch/doc/doc_site/SP-Novartis-06.pdf for an
 109 example of a detailed profile, and [www.ais.com.es/ingles/
 productos/derivados.htm#1](http://www.ais.com.es/ingles/productos/derivados.htm#1) for more information on SiRi PRO™.

1 dimensions of the main corporations in its respec-
2 tive home markets. SiRi does not ask companies
3 if they wish to be surveyed, but incorporates them
4 year by year, beginning with the largest compa-
5 nies, to satisfy their objective to cover the largest
6 companies in each home capital market.³ The cov-
7 erage of the S&P 500, for example, increased
8 from 163 to 196 companies between 2002 and
9 2004. Information to build these items is extracted
10 from multiples sources, such as financial accounts,
11 company documentation, databases, media reports,
12 interviews with stakeholders, and ongoing contact
13 with managers.

14 SiRi translates this information into a com-
15 prehensive format—a rating—by implementing
16 Likert-type scales and grouping them into eight
17 sections, with one additional section with general
18 information about the company. The first research
19 section provides a description of business ethics.
20 Another section describes corporate governance
21 practices and evaluates whether or not they con-
22 form to codes of best practices. The last section
23 measures the degree of involvement in controver-
24 sial business activities like gambling or alcohol.
25 The remaining five sections cover various issues
26 related to five stakeholder groups: community, cus-
27 tomers, employees, suppliers, and environment.
28 For each stakeholder, the database addresses: the
29 level of firm's transparency/disclosure, the exist-
30 ence of corporate policies and principles related
31 to the stakeholder group, the importance of man-
32 agement procedures, and the level of controversies
33 with respect to this stakeholder. Each of these
34 four areas has information items that result in a
35 Likert-type scale score. Importantly, each infor-
36 mation item is weighted according to a methodol-
37 ogy developed by SiRi. These weights are sector-
38 specific and are developed annually. For each sec-
39 tor, SiRi's analysts determine the firm's potential
40 negative impact on each stakeholder and assign a
41 weight in proportion to this potential. Appendix 1
42 demonstrates some cases that indicate, for exam-
43 ple, that the 'environment' is weighted more heav-
44 ily for energy companies than it is for companies
45 in the banking industry. The final score provided
46 by SiRi is the sum of each of the scores of the 199
47 items averaged by its corresponding weight and
48 rated on a scale from zero (worst) to 100 (best).

49
50 ³ In testing for sample selection bias (available upon request), we
51 separated firms by size, and the results comparing both samples
52 were qualitatively the same, thus precluding a size bias in our
53 data.

We complement these data on corporate respon- 58
sibility with financial data from 2001–2005, 59
extracted from COMPUSTAT Global Vantage. 60
This information allowed us to construct a panel 61
dataset for 599 companies in 28 countries. 62

63 Measures 64

65 *Corporate responsibility performance* 66

67 SiRi PRO™ rating is used to measure CRP. In 67
68 addition to providing a final overall rating, the 68
69 database provides a score for each stakeholder. 69
70 Consistent with previous studies (e.g., Hillman 70
71 and Keim, 2001), we consider five stakeholder 71
72 groups: employees, customers, suppliers, commu- 72
73 nity, and environment. We, therefore measure *cor-* 73
74 *porate responsibility performance* as the weighted 74
75 sum of scores of these five stakeholder groups, 75
76 using the corresponding SiRi weights averaged by 76
77 sector and country. Note that these dimensions are 77
78 similar to those from the KLD data used in other 78
79 research (e.g., Berman *et al.*, 1999). 79

80 Although the SiRi and KLD databases both 80
81 include a multidimensional appraisal of firm 81
82 responsibility performance, we believe that the 82
83 SiRi measure of CRP provides answers to the 83
84 aggregation problems underlined by Graafland, 84
85 Eijffinger, and Smid (2004), Griffin and Mahon 85
86 (1997), and Rowley and Berman (2000) with ref- 86
87 erence to KLD ratings. The problems they identi- 87
88 fied are threefold. First, individual dimensions of 88
89 CRP are sometimes uncorrelated, which makes the 89
90 aggregation of dimensions unrepresentative of a 90
91 latent variable. Our data do not present this prob- 91
92 lem given that, for example, the Pearson's correla- 92
93 tions for 2003 among the five stakeholders' scores 93
94 ranged from 0.34 to 0.73, and all were signifi- 94
95 cant at $p < 0.01$. Second, companies in the various 95
96 sectors are subject to differing circumstances, so 96
97 would likely treat their stakeholders differentially. 97
98 As explained, our measure tackles this problem by 98
99 using sector-specific weights. The authors' third 99
100 criticism is the treatment of ordinal measures of 100
101 CRP, such as the KLD index, as if they were 101
102 cardinal. To Graafland *et al.* (2004), a solution to 102
103 this problem may be to rely on the judgment of 103
104 a third party (non-governmental organizations in 104
105 their case) to weight all CRP dimensions. This is 105
106 the methodology applied by SiRi to its CRP index, 106
107 with weights that rely on the judgment of experts. 107
108 The outcome is an index that can take any value 108
109 between zero and 100. 109

1 Corporate financial performance

2 We use Tobin's q to measure CFP, mainly because
3 of its ability to capture the value of long-term
4 investments like intangible investments, as
5 explained by Dowell, Hart, and Yeung (2000). Like
6 these authors, we proxied Tobin's q by dividing the
7 sum of firm equity value, book value of long-term
8 debt, and net current liabilities by the book value
9 of inventories and property, plant and equipment.
10

11 Intangible resources

12 *Innovation.* We measure the intangible of inno-
13 vation using the ratio of R&D expenses to a
14 firm's total number of employees. This ratio is
15 'less sensitive to the spurious effects of busi-
16 ness cycles, accounting manipulations, and asset
17 sales than R&D spending as a proportion of sales'
18 (Baysinger, Kosnik, and Turk, 1991: 207), and is
19 positively related to patents and product innova-
20 tions (Hitt, Hoskisson, and Kim, 1997).
21

22 *Human capital.* According to Coff (1997), the
23 following human resource practices ultimately con-
24 tribute to the accumulation of human capital:
25 the measurement of job satisfaction, training pro-
26 grams, profit-sharing programs and employee par-
27 ticipation, and the introduction of indicators to
28 seek information about employees. We therefore
29 measure human capital using seven items provided
30 by SiRi that approximate these practices. Each of
31 these items, detailed in Appendix 2, is rated in a
32 five-point Likert scale. Cronbach's alpha for this
33 composite measure is 0.7118.
34

35 *Reputation.* To measure reputation, we use *For-*
36 *tune* magazine's 'World's Most Admired Com-
37 panies' survey (published annually in a March
38 issue), which extends the methodology of 'Amer-
39 ica's Most Admired Corporations' to global com-
40 panies. The survey is based on responses from
41 executives, directors, and financial analysts, and
42 determines a reputation score from eight attributes
43 ranked on 11-point scales from poor to excellent.
44 These attributes are long-term investment value;
45 financial soundness; wise use of corporate assets;
46 community and environmental friendliness; quality
47 of management; product quality; innovativeness;
48 and ability to attract, develop, and keep talented
49 people.
50

51 Due to the possible effect of past financial per-
52 formance on reputation, the so-called halo effect,
53

we regressed reputation on increasingly higher- 58
order lags of CFP until no further significant 59
improvement in R^2 was observed (Roberts and 60
Dowling, 2002). We found no significant increases 61
in R^2 beyond two lags. We then calculated the 62
residual of reputation as the difference between 63
reputation and the predicted value found in a spec- 64
ification of CFP that included up to two lags of that 65
variable. This residual was our measure of reputa- 66
tion. 67
68

Culture. This intangible has four dimensions: 69
involvement, consistency, adaptability, and mis- 70
sion (Denison and Mishra, 1995; Frey and Deni- 71
son, 2003). We measured these dimensions by 72
using eight SiRi PRO™ items, defined in a five- 73
point scale. A list of the items is included in 74
Appendix 2. Cronbach's alpha for culture is 0.866. 75
76

77 Tangible resources and controls

78 The management and development of intangible 79
resources is also conditioned by a firm's tangible 80
resources, such as physical assets, leverage, and 81
financial resources. 82

Physical resources are measured through capital 83
intensity, which is the ratio of total assets minus 84
current assets divided by total assets (Russo and 85
Fouts, 1997); it captures the proportion of 'per- 86
manent assets.' Russo and Fouts (1997) obtained 87
a negative effect of this variable on CFP, which 88
is justified because physical assets hinder radical 89
changes on several responsible policies that may 90
boost CFP. 91

For external financing, we used *leverage*, which 92
is defined as the accounting value of debt to the 93
accounting value of equity (Waddock and Graves, 94
1997a). We expected that the higher the value of 95
this ratio, the greater the degree to which man- 96
agement would give preferential attention to cred- 97
itors at the expense of other stakeholders (Roberts, 98
1992: 602–603). Additionally, the impact of lever- 99
age on CFP depends on whether or not the positive 100
effect of the reduction in discretionary free cash 101
flows dominates the negative effect on the conflicts 102
of interest between shareholders and debt holders 103
(Jensen, 1986). 104

We measured *financial resources* using the cash- 105
flow-to-revenues ratio, which approximates the 106
firm's liquidity (Griffin and Mahon, 1997). We 107
hypothesized that the higher the firm's liquidity, 108
the greater the opportunity to invest in new projects 109
110

1 that may have a positive social and financial out-
 2 come.

3 Finally, we controlled for size, risk, industry,
 4 country, and year. *Size* was recognized as a deter-
 5 minant of social and financial performance (Ull-
 6 man, 1985). We approached this variable by the
 7 logarithm of the number of employees (e.g., Wad-
 8 dock and Graves, 1997a). Risk and industry have
 9 been suggested as factors that affect both social
 10 and financial performances (e.g., Waddock and
 11 Graves, 1997a). Firm *risk* is measured with the
 12 firm's beta (e.g., Hillman and Keim, 2001), as
 13 reported in Global Vantage. Previous studies have
 14 noted that there are significant industry (Waddock
 15 and Graves, 1997a) and country (Aguilera and
 16 Jackson, 2003) effects in the CRP data. There
 17 is also a time effect because, as time goes by,
 18 more members of the public have access to infor-
 19 mation about CRP, pressuring firms to invest in
 20 responsible practices (Bansal, 2005). We therefore
 21 controlled for industry, country, and year by cal-
 22 culating, for each firm, the mean values of the
 23 dependent variable for the corresponding coun-
 24 try, year, and sector (we adopted the Standard
 25 Industrial Classification [SIC] codes of Waddock
 26 and Graves, 1997a), excluding the focal firm.⁴ We
 27 included this average as explanatory variable.⁵

28
 29 **Analysis**

30
 31 Our mediation hypotheses were tested using an
 32 adaptation of the method outlined by Baron and
 33 Kenny (1986), the technical details of which
 34 are shown in Appendix 3. Baron and Kenny's
 35 method consists of the estimation of three regres-
 36 sion models. The first model (Model 1 in the
 37 Appendix) regresses each of the intangibles (*inno-
 38 vation; human capital; reputation, and culture*)

39
 40
 41 ⁴ The percentages by each of the 14 sectors are comparable to
 42 those of Waddock and Graves (1997a). Remarkably, our results
 43 are robust once we exclude those sectors with the lower (14) or
 44 the largest (122) number of firms.

45 ⁵ As we explain in the Analysis section, we used fixed-effects
 46 models to test our hypotheses. In such models, time-invariant
 47 variables are eliminated, so we cannot use sector and country
 48 dummies given that firms do not change country and sector over
 49 time. Researchers have adopted two interrelated approaches to
 50 quantify and control for these effects in fixed-effects estimations.
 51 One consists of subtracting the value of the dependent vari-
 52 able averaged by industry, country, and year from each firm's
 53 dependent variable (e.g., Ogden and Watson, 1999). The second
 54 approach, which we have followed, consists of introducing
 55 the averaged dependent variable (excluding the focal firm) as an
 56 explanatory variable (Cassiman and Veugelers, 2002).

58 in terms of CRP and CFP, tangible resources,
 59 and controls. The second model (Model 2A in
 60 the Appendix) estimates CFP in terms of CRP
 61 and controls. The last equation (Model 3A in the
 62 Appendix) explains CRP in terms of the mediators
 63 (intangibles), and the other independent variables.

64 Regarding our Hypothesis 1a, three conditions
 65 must hold in order to establish mediation: 1) CRP
 66 must affect intangibles in Model 1, 2) CRP must
 67 affect CFP in Model 2A, and 3) intangibles must
 68 affect CFP in Model 3A. Mediation holds if the
 69 coefficient of CRP, initially significant in Model
 70 2A, turns out to be nonsignificant when intangibles
 71 are included (Model 3A). Our estimating equations
 72 for testing Hypothesis 1b are formally equivalent
 73 to Models 1, 2A, and 3A, but with CFP and CRP
 74 interchanged in the last two models. The resulting
 75 models are denoted by 2B and 3B.

76 Our adaptation of the Baron and Kenny's (1986)
 77 method consists of refining the estimation of the
 78 complete models (Models 3A and 3B) by imple-
 79 menting a two-stage strategy. In the first stage,
 80 we construct instruments for CRP and CFP by
 81 regressing each performance variable on intangi-
 82 bles and controls, and then computing the residual
 83 of each measure of performance by subtracting the
 84 predicted effect of intangibles from the dependent
 85 variable. In the second stage, we estimate the com-
 86 plete models using such residuals as instruments in
 87 order to test the existence of direct effects between
 88 the performance variables (Models 3A* and 3B*).
 89 To control for potential reverse causality, we lag
 90 the residual by one period in this second stage.
 91 Finally, we estimated these models by using fixed
 92 effects.

93 This estimation strategy has the advantage of
 94 tackling problems of multicollinearity and endo-
 95 geneity. By construction, the residuals of perfor-
 96 mance will have low correlations with the vari-
 97 ables of intangibles thus preventing multicollinear-
 98 ity. Furthermore, by combining the estimation in
 99 differences (fixed-effect estimation) with the use
 100 of instrumental variables (lagged residuals), we
 101 addressed both the issues of reverse causality (first
 102 endogeneity problem) and the possible correlation
 103 between time-invariant unobservable heterogene-
 104 ity and explanatory variables of performance (sec-
 105 ond endogeneity problem). The fixed-effect esti-
 106 mation controls for the second endogeneity prob-
 107 lem. Additionally, consistency in the fixed-effect
 108 estimation requires the reverse causality problem
 109 (first endogeneity problem) to be treated by using

1 instruments for the potential endogenous variables
2 (Baltagi, 2003). We have done this by lagging
3 by one period the potential endogenous variable
4 (the residual of the explanatory variable of perfor-
5 mance).⁶

6 Finally, it is a sufficient result for Hypothesis
7 2 that all these conditions are satisfied only for
8 growth sectors, which are defined as those two-
9 digit SIC code sectors, in which the growth in sales
10 is larger than the yearly mean for all sectors in the
11 corresponding country (Russo and Fouts, 1997).⁷

14 RESULTS

16 Table 1 provides the descriptive statistics for all
17 variables used in the study. Examining the variance
18 inflation factors (VIF), we have found no multico-
19 linearity problems in the data, as VIF values are
20 far from the threshold of 10. To control for indus-
21 try influences, we use industry-adjusted measures
22 of each variable by subtracting industry averages
23 from each variable, calculated by excluding the
24 focal firm. Analysis of the correlation matrix lends
25 support to a positive relationship between CFP and
26 CRP ($p < 0.05$), a result that is consistent with
27 recent meta-analyses (e.g., Orlitzky *et al.*, 2003).
28 Table 1 also shows positive associations between
29 firm's intangibles and both measures of perfor-
30 mance. Thus, we have to undertake a more in-
31 depth exploration if the positive link between CRP
32 and CFP could be spurious—simply the result of
33 connections of intangibles with both dimensions of
34 performance.

36
37 ⁶ A good instrument must be correlated with the variable to
38 be measured and uncorrelated with the dependent variable.
39 Panel data allows researchers to use past values of potential
40 endogenous variables to construct such instruments. Lagged
41 variables are, on the one hand, correlated with the potential
42 endogenous variable (because performance variables show some
43 persistence across time) and, on the other hand, have low
44 correlation with the dependent variable. In our case, for example,
45 the instrument of CRP has low correlation with CFP because we
46 use the lagged residual of CRP after eliminating the correlation
47 due to intangibles as an instrument. That approach is similar
48 to and consistent with the generalized method of moments
49 (GMM) technique (Arellano and Bond, 1991), which tackles
50 both endogeneity problems in a dynamic setting by introducing
51 high-order temporal lags as instruments (Wooldridge, 2008).
52 Unfortunately, data on CRP was not available for a sufficient
53 number of years to allow us to use such an econometric method.

54 ⁷ Among growth sectors, there are: medicinal chemicals; elec-
55 tronic computers; telephone and telegraph apparatus; semicon-
56 ductors; TV and radio broadcasting stations; cable and other pay
57 television services.

Tests of hypotheses

58
59
60 *Mediation of intangibles in the instrumental*
61 *approach (Hypothesis 1a).* In Model 1 (available
62 upon request), we find that CRP positively influ-
63 ences innovation ($\beta = 0.14$; $p < 0.05$), human
64 capital ($\beta = 0.30$; $p < 0.01$), reputation ($\beta =$
65 0.38 ; $p < 0.01$), and culture ($\beta = 0.41$; $p < 0.01$).
66 Furthermore, as shown in Table 2, CRP is posi-
67 tively and significantly related to CFP ($p < 0.05$).
68 This relationship vanishes, however, when we
69 include intangibles as regressors and use the resid-
70 ual of CRP as an instrument. Specifically, Model
71 3A* shows that innovation, human capital, and cul-
72 ture are positively and significantly related to CFP
73 (all at $p < 0.01$), whereas CRP is not ($p > 0.10$).
74 Taken together, these results indicate that innova-
75 tion, human capital, and culture mediate the rela-
76 tionship between CRP and CFP, providing support
77 for Hypothesis 1a.

78
79 *Mediation of intangibles in the slack resources*
80 *approach (Hypothesis 1b).* Results for Model 1
81 (available upon request) indicate that CFP has
82 a positive effect on innovation ($\beta = 0.86$; $p <$
83 0.01), human capital ($\beta = 0.53$; $p < 0.05$), reputa-
84 tion ($\beta = 0.64$; $p < 0.05$), and culture ($\beta = 0.89$;
85 $p < 0.05$). Results provided in Table 2 (Model
86 2B) indicate that CFP has a positive impact on
87 CRP ($p < 0.01$). When intangibles are included in
88 the regression equation (Model 3B*), we find that
89 CFP has no effect on CRP ($p > 0.10$); whereas
90 innovation ($p < 0.05$), human capital, reputation,
91 and culture (all at $p < 0.01$) enhance CRP. Thus,
92 the results support Hypothesis 1b, which states
93 that intangibles mediate the relationship from CFP
94 to CRP.

95 Overall, our findings support the full mediation
96 of intangibles: when they are included in the esti-
97 mations, any statistically significant relationship
98 between CRP and CFP is no longer significant.
99 These results yield support for our Hypothesis 1c
100 on the existence of a *virtuous* circle connecting
101 both performance measures through intangibles.
102 Furthermore, inspection of other variables (Models
103 3A* and 3B*) indicates that financial performance
104 increases with financial resources (e.g., Hillman
105 and Keim, 2001) and decreases with physical
106 resources (e.g., Russo and Fouts, 1997) and size
107 (e.g., Hillman and Keim, 2001), whereas financial
108 resources and size improve CRP (e.g., McGuire
109 *et al.*, 1988).

Table 1. Means, standard deviations, and Spearman correlations^a

	Mean	S.D.	VIF	1	2	3	4	5	6	7	8	9	10
Corporate performance													
1. Financial performance	2.45	2.30											
2. Responsibility performance	44.99	12.71	1.26	0.07**									
Intangible resources													
3. Innovation	23.56	52.95	1.12	0.28***	0.08**								
4. Human capital	0.06	0.59	1.22	0.05	0.49***	0.01							
5. Reputation	0.01	1.03	1.13	0.07*	0.10***	0.01	-0.03						
6. Culture	0.01	1.01	1.08	0.16***	0.43***	0.01	0.11***	0.05					
Tangible resources													
7. Physical resources	0.38	0.38	1.19	-0.28***	0.02	-0.08**	0.13***	-0.02	0.02				
8. Leverage	21.18	17.52	1.19	-0.12***	-0.02	-0.21***	0.03	-0.11***	-0.05	0.12***			
9. Financial resources	0.09	0.15	1.12	0.05***	0.11***	0.11***	0.12***	0.06*	0.07	-0.09***	-0.12***		
Controls													
10. Size	3.48	1.31	1.22	-0.11***	0.13***	-0.25***	0.06	0.07***	-0.08*	-0.09***	0.07***	-0.03	
11. Risk	1.08	0.89	1.24	0.09***	-0.04	0.29***	-0.12***	-0.09**	-0.07*	-0.14***	0.01	-0.30***	-0.09***

^a Obs. = 696. We have considered only firms for which we had information on intangible resources. To control for industry influences, correlations are calculated using industry-adjusted measures for each variable by subtracting the industry mean calculated by excluding the focal firm from each firm's variable.

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$ (two-tailed test).

Table 2. Results of fixed-effects regression analyses: full sample ^a

	Corporate financial performance (CFP)		Corporate responsibility performance (CRP)	
	MODEL 2A	MODEL 3A*	MODEL 2B	MODEL3B*
<i>Corporate performance</i>				
CFP			0.6103*** (0.1260)	0.1073 (0.1901)
CRP	0.0141** (0.0064)	0.0083 (0.0121)		
<i>Intangible resources</i>				
Innovation		0.0306*** (0.0094)		0.2195** (0.1151)
Human capital		0.0214*** (0.0084)		0.3179*** (0.0366)
Reputation		0.0079 (0.0088)		0.0868*** (0.0302)
Culture		0.0143*** (0.0060)		0.1207*** (0.0176)
<i>Tangible resources</i>				
Physical resources	-0.2099*** (0.0428)	-0.3589*** (0.0736)	-0.1299 (0.1433)	-0.3724 (0.2800)
Leverage	-0.0088 (0.0136)	0.0259 (0.0205)	0.0545 (0.0515)	-0.0147 (0.0681)
Financial resources	0.0561*** (0.0109)	0.0411*** (0.0075)	0.0198 (0.0230)	0.1091** (0.0539)
<i>Controls</i>				
Size	-0.1720*** (0.0404)	-0.0939* (0.0569)	0.2731** (0.1461)	0.2377* (0.1529)
Risk	0.0106 (0.0077)	0.0225 (0.0204)	0.0270 (0.0542)	0.0611 (0.0673)
Country, year, sector	0.0064** (0.0032)	0.0179*** (0.0053)	0.1706*** (0.0228)	0.0963** (0.0315)
Constant	0.0232*** (0.0062)	0.0939 (0.0217)	-0.0324 (0.0235)	-0.0397 (0.0798)
R ²	0.1106	0.3947	0.1160	0.4188
F test	12.17***	18.76***	12.94***	25.11***
Number of observations	1204	696	1204	696

^a Standardized regression coefficients are shown in the table. Standard deviations are in parentheses

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$ (two-tailed test).

1 *Mediation of intangibles in growth sectors (Hypothesis 2)*. In unreported estimations for growth sectors (available upon request), we find that CRP is positively and significantly related in Model 1 to innovation resources ($\beta = 0.23$; $p < 0.05$), human capital ($\beta = 0.25$; $p < 0.01$), reputation ($\beta = 0.60$; $p < 0.01$), and culture ($\beta = 0.44$; $p < 0.01$); whereas CFP explains innovation ($\beta = 1.92$; $p < 0.01$), human capital ($\beta = 0.60$; $p < 0.05$), reputation ($\beta = 1.31$; $p < 0.10$), and culture ($\beta = 1.26$; $p < 0.01$). Furthermore, Table 3 indicates that CFP and CRP are related in both

directions when the intangibles are not included (Models 2A and 2B). When they are included, the residual of CRP is not related to CFP (Model 3A*) and the residual of CFP has no effect on CRP (Model 3B*). In addition, Model 3A* shows that innovation, human capital, and culture positively influence CFP (the first two at $p < 0.01$ and the latter at $p < 0.05$); and results for the Model 3B* indicate that CRP is explained in terms of innovation ($p < 0.05$) as well as human capital, reputation, and culture (all at $p < 0.01$), all of which provide evidence that, in high-growth industries,

Table 3. Results of fixed-effects regression analyses: growth sectors^a

	Corporate financial performance (CFP)		Corporate responsibility performance (CRP)	
	MODEL 2A	MODEL 3A*	MODEL 2B	MODEL3B*
<i>Corporate performance</i>				
CFP			0.8825*** (0.2314)	0.2883 (0.2696)
CRP	0.0206** (0.0092)	0.0011 (0.0207)		
<i>Intangible resources</i>				
Innovation		0.0413*** (0.0078)		0.3763** (0.1694)
Human capital		0.0262*** (0.0101)		0.3132*** (0.0477)
Reputation		0.0089 (0.0085)		0.0965*** (0.0365)
Culture		0.0082** (0.0039)		0.2068*** (0.0341)
<i>Tangible resources</i>				
Physical resources	-0.1966*** (0.0517)	-0.3416*** (0.1105)	-0.0799 (0.2096)	-0.0333 (0.3273)
Leverage	-0.0159 (0.0228)	0.0336 (0.0359)	0.0431 (0.0858)	-0.0163 (0.1174)
Financial resources	0.0167 (0.0221)	0.0752*** (0.0170)	-0.0197 (0.0457)	-0.0261 (0.0738)
<i>Controls</i>				
Size	-0.0732 (0.0674)	0.0468 (0.1583)	0.4088 (0.3132)	0.4617 (0.3426)
Risk	0.0200* (0.0116)	0.0079 (0.0431)	-0.1065 (0.0947)	-0.0923 (0.0917)
Country, year, sector	0.0113*** (0.0045)	0.0172** (0.0078)	0.2016*** (0.0384)	0.1000*** (0.0383)
Constant	0.0432*** (0.0075)	0.1002*** (0.0335)	-0.0125 (0.0302)	0.0111 (0.0941)
R ²	0.1153	0.2969	0.1732	0.4894
F test	5.23***	14.56***	7.84***	18.63***
Number of observations	744	408	744	408

^a Standardized regression coefficients are shown in the table. Standard deviations are in parentheses. Industry growth is defined as the annual increase in sales. Growth sectors are defined by comparing the industry growth, (double-digit SIC code), to the average rate for the corresponding country and year.

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$ (two-tailed test).

1 there is no direct relationship between CRP and
2 CFP, but a relationship mediated in both directions
3 through intangibles.⁸

4
5
6 ⁸ We have also replicated the results separating the sample of
7 growth sectors in terms of firm's size. Such a robustness check
8 addresses a possible criticism that the driver of the results for
9 growth sectors is firm's size given its high correlation with
10 growth (-35.57%). The results found (available upon request)
11 are pretty consistent between small firms (whose size is below
12 the median for the corresponding sector year and country) and
13 large ones (above that median) and independently, whether we
focus on growth sectors or for the overall sample. This is

To explore further whether industry growth
strengthens the *virtuous* circle, we compared these
findings with those for nongrowth sectors (see
Table 4). Results for mature industries show that

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evidence that although there are smaller firms in growth sectors,
this is not the driver that explains the results found. Similar
robustness evidence is found once we separate the sample of
growth sectors in terms of firm's age (available upon request),
eliminating the suspicion that the driver of the results in growth
sectors is that firms in such sectors are younger (although the
correlation between age and growth is only -5.49% in our
sample).

Table 4. Results of fixed-effects regression analyses: nongrowth sectors^a

	Corporate financial performance (CFP)		Corporate responsibility performance (CRP)	
	MODEL 2A	MODEL 3A*	MODEL 2B	MODEL3B*
<i>Corporate performance</i>				
CFP			0.5929*** (0.2322)	0.4529*** (0.2144)
CRP	0.0138** (0.0078)	0.0109 (0.0156)		
<i>Intangible resources</i>				
Innovation		0.0451 (0.0555)		0.2075 (0.1870)
Human capital		0.0205** (0.0121)		0.3481*** (0.0621)
Reputation		0.0163 (0.0153)		0.0694 (0.0446)
Culture		0.0148* (0.0085)		0.1175** (0.0633)
<i>Tangible resources</i>				
Physical resources	-0.2998*** (0.0564)	-0.3727*** (0.1275)	-0.3352 (0.7936)	-0.9574** (0.5530)
Leverage	-0.0117 (0.0161)	0.0390 (0.0275)	0.0723 (0.1337)	0.0016 (0.0630)
Financial resources	0.0438*** (0.0131)	0.0332*** (0.0085)	0.0158 (0.0692)	0.2061*** (0.0837)
<i>Controls</i>				
Size	-0.1769** (0.0776)	-0.1312** (0.0703)	0.4602** (0.2564)	0.3035** (0.1044)
Risk	0.0307 (0.0177)	0.0365 (0.0293)	0.0840 (0.1370)	0.1403* (0.0875)
Country, year, sector	0.0020 (0.0078)	0.0279*** (0.0077)	0.1216*** (0.0485)	0.0373 (0.0292)
Constant	0.0713*** (0.0147)	0.0713** (0.0402)	-0.1670 (0.8977)	-0.1660 (0.1518)
<i>R</i> ² within	0.1550	0.2381	0.1305	0.5364
<i>F</i> test	3.73***	4.78***	2.57**	12.51***
<i>Number of observations</i>	460	288	460	288

^a Standardized regression coefficients are shown in the table. Standard deviations are in parentheses. Industry growth is defined as annual increase in sales. Nongrowth sectors are defined by comparing the industry growth, (double-digit SIC code), to the average rate for the corresponding country and year.

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$ (two-tailed test)

1 the mediation of intangibles is weaker than for
2 their growing counterparts. In particular, results
3 for Model 1 (available upon request), indicate that,
4 while CRP is a significant variable explaining all
5 of a firm's intangibles—but at a lower significant
6 levels than in growth sectors—, CFP has only
7 a positive effect on innovation and human capi-
8 tal. Furthermore, an examination of Models 3A*
9 and 3B* shows that only human capital and cul-
10 ture have positive and significant influences on
11 both CRP and CFP. Such evidence for nongrowth
12

sectors suggests that the *virtuous* circle connecting
CRP and CFP operates through only one intangi-
ble: human capital.⁹ Meanwhile, in high-growth

⁹ There is no virtuous circle through culture because of the null effect of CFP on this intangible. An explanation of the importance of employees in improving both CRP and CFP in mature industries can be derived from the study of Jawahar and McLaughlin (2001). According to these authors, mature firms are often risk averse, characterized by excessive cash and low investment opportunities. In this context, mature firms, which generally have a well-defined culture and reputation, can be proactive only in enhancing CRP by spending resources in

1 industries, innovation and culture, in addition to
 2 human capital, mediate the relationship between
 3 CFP and CRP in both directions, providing support
 4 to Hypothesis 2.

7 **DISCUSSION AND CONCLUSIONS**

9 We have investigated the connection between CRP
 10 and CFP, exploring the role that intangibles play in
 11 mediating that relationship. Although recent meta-
 12 analyses have suggested that the CRP-CFP rela-
 13 tionship is somewhat positive, many researchers
 14 still claim that further work is needed to clarify
 15 the way in which CFP and CRP should be opera-
 16 tionalized, the direction of causality, or the omitted
 17 variables that intervene in the CRP-CFP linkage.
 18 Hence, the debate is open, and new models that
 19 give responses to these concerns are needed. This
 20 research provides an explanation for the CRP-
 21 CFP interface by analyzing the role of intangible
 22 resources.

25 **Intangibles and performance**

26 We argue that researchers have not considered the
 27 intervention of a firm's intangibles in the CRP-
 28 CFP linkage. RBV scholars have underlined the
 29 importance of intangibles as determinants of per-
 30 formance and this study extends that line of think-
 31 ing. Drawing upon the natural RBV (Hart, 1995)
 32 and stakeholder theories, arguments were devel-
 33 oped in this study to explain that profitable and
 34 socially responsible firms are capable, more so
 35 than irresponsible firms, of generating intangibles
 36 such as innovation, human capital, reputation, and
 37 culture. Hence, we hypothesized that intangibles
 38 mediate the relationship between CFP and CRP in
 39 both directions, giving rise to a *virtuous* circle that
 40 moves back and forth from CRP to CFP through
 41 investments in intangibles.

42 To test this hypothesis, we used the SiRi PRO™
 43 database, which allowed us to construct an index
 44 of CRP with clear advantages over other options,
 45 such as its international content, its multidimen-
 46 sional appraisal of a firm's CRP, and its weighting
 47 scheme, which makes SiRi's CRP scores close to
 48 cardinal measures facilitating comparisons among

51 training and development activities, and implementing incentive
 52 programs for their employees.

firms in different sectors. Concerning the econo- 58
 metric approach, we used a two-stage estimation 59
 that corrects for endogeneity concerns and for spu- 60
 rious correlations between both performance vari- 61
 ables. 62

63 Proceeding in this way, we found that CRP stim-
 64 ulates the development of intangibles related to
 65 innovation, human capital, reputation, and culture,
 66 which lead in turn to improved financial outcomes.
 67 Our results also support the opposite causal chain.
 68 Hence, there is no direct relationship between CRP
 69 and CFP—merely an indirect relationship medi-
 70 ated by a firm's intangibles. We interpret these
 71 findings in terms of a *virtuous* circle, in which
 72 any increase in one type of performance is trans-
 73 lated into an improvement in the other, if and
 74 only if new intangibles are developed. Finally, we
 75 found the mediation of intangibles to be stronger
 76 in growth industries than in nongrowth industries.
 77 This finding further demonstrates the robustness of
 78 our research model, as previous researchers (e.g.,
 79 Russo and Fouts, 1997) expected a strong direct
 80 linkage between CRP and CFP in growth sectors
 81 rather than a mediated relationship. 82

83 **Implications for research**

84 *An explanation for the dispersion of results.* Wood
 85 and Jones (1995) attributed the wide range of
 86 research results to a mismatch between CRP mea-
 87 surements and CFP. In our case, we developed the
 88 misspecification logic of McWilliams and Siegel
 89 (2000), proposing that these positive relationships
 90 between variations of CFP and CRP may be spu-
 91 rious, and simply the result of variations in intan-
 92 gibles. Our model also explains the neutral or
 93 negative relationships between CFP and CRP in
 94 previous studies (e.g., Hillman and Keim, 2001,
 95 for social issue participation as a proxy of CRP).
 96 When performance does not develop intangible
 97 resources or, worse, destroys them, neutral or neg-
 98 ative associations may emerge. Our study therefore
 99 emphasizes the importance of including intangi-
 100 bles like innovation, human capital, reputation, and
 101 culture in further studies of CFP-CRP linkages.
 102 Failure to control for these intangibles may explain
 103 some of the mixed findings that have occurred in
 104 the past. 105

106 *The virtuous circle: RBV and stakeholder theory*
 107 *formulations.* Our results have reinforced RBV
 108 theories of the firm by highlighting the importance
 109 110

1 of intangibles to explain differentials in both CFP
 2 and CRP. Furthermore, we have contributed to an
 3 explanation about the way in which intangibles
 4 are created and developed, specifically through our
 5 finding that CFP and CRP are determinants of
 6 this creation. Slack resources allow firms to invest
 7 in resources and capabilities that are necessary
 8 for successful adaptation to internal pressures for
 9 adjustment or to external pressures for change. In
 10 addition, investing in responsible activities devel-
 11 ops a capability for generating new products and
 12 improved processes, which has important conse-
 13 quences for employee motivation and morale, and
 14 is instrumental in creating high-commitment and
 15 participative cultures.

16 This research also enriches the stakeholder liter-
 17 ature. We posit that stakeholder management alone
 18 is not a means for achieving financial success and,
 19 conversely, that better CFP does not lead to better
 20 CRP. The development of intangibles is the key
 21 factor in improving both financial and responsibil-
 22 ity performance, forming the *virtuous* cycle.

23
 24 *The influence of contextual conditions.* Results of
 25 this research suggest that both the firm's capacity
 26 to generate intangible resources and the capability
 27 of these resources to improve performance are
 28 determined in the interplay with market forces.
 29 Specifically, we have provided evidence for the
 30 importance of the growth of an industry, showing
 31 that firms are more likely to form a *virtuous* circle
 32 connecting CRP and CFP through intangibles in
 33 high-growth industries, where some scholars (e.g.,
 34 Russo and Fouts, 1997) expected a stronger direct
 35 linkage from CRP to CFP. One could interpret
 36 these data to mean that forming such a *virtuous*
 37 circle requires decentralized organizations that are
 38 more likely to be formed in high-growth business
 39 environments (Aragón-Correa and Sharma, 2003).

40
 41 **Implications for practice**

42
 43 We suggest, congruently with the RBV, that man-
 44 agers need to turn their attention to the efficient
 45 management of a firm's intangible resources, par-
 46 ticularly its innovation, human capital, reputation,
 47 and culture, which are difficult resources for com-
 48 petitors to match.

49
 50 *Where to place investments?.* To improve stake-
 51 holder satisfaction, managers can invest slack
 52 resources in those activities that improve a firm's

53
 54
 55
 56
 57
 58 intangibles. There are various critical factors
 59 toward which investments should be placed
 60 order to improve socially responsible outcomes,
 61 including programs to improve organization cul-
 62 ture and generate greater loyalty among employ-
 63 ees, human resource practices that improve
 64 employee involvement and increase job attrac-
 65 tiveness, investments in technology that facili-
 66 tate product and process innovation, and credible
 67 reputation-building activities.

68 To improve shareholder value, managers must
 69 learn that markets value socially responsible com-
 70 panies if they accompany such activities with
 71 investments in intangibles that ensure the sus-
 72 tainability of socially responsible policies. On the
 73 other hand, irresponsible CRP that cut costs in
 74 order to improve CFP (e.g. activities in coun-
 75 tries with human rights abuses) may generate the
 76 opposite effect. Such practices have negative con-
 77 sequences on intangibles; they destroy employee
 78 loyalty and corporate culture and negatively affect
 79 external reputation and internal innovations. Intan-
 80 gibles are, therefore, the key elements that allow
 81 the *virtuous* circle of value creation to work along
 82 time.

83
 84 *How can the virtuous circle work through incen-*
 85 *tive setting?.* Given that managers' interests are
 86 not always oriented toward the adequate manage-
 87 ment of intangibles, an effective incentive scheme
 88 should align the interests of managers with invest-
 89 ments in intangibles if the *virtuous* circle is
 90 to work. Based on results demonstrating that
 91 both responsibility and financial performances are
 92 linked to intangible resource management, the pre-
 93 scription is to link managerial compensation to
 94 both CFP and CRP. This proposal is not free of
 95 criticism because such a design requires solid mea-
 96 sures of CRP in order to compensate adequately
 97 those managerial efforts favoring stakeholder-
 98 related activities (Tirole, 2001). We believe that
 99 measures like the SiRi score will soon tackle this
 100 problem.

101
 102 **Limitations and future research**

103
 104 Qualifying these conclusions, we recognize some
 105 weaknesses in our study. First, although we believe
 106 that the SiRi database improves the measurement
 107 of CRP, it is not free from criticism. The CRP
 108 index of SiRi aggregates multiple social dimen-
 109 sions, for example, with no theoretical basis for

1 assuming that they are correlated (Waddock and
2 Graves, 1997a; Rowley and Berman, 2000). Our
3 measures of some of the intangible resources could
4 be seen as another limitation. Several scholars
5 have measured culture through the organizational
6 culture profile (O'Reilly, Chatman, and Caldwell,
7 1991) or innovation resources through number
8 of patents, product/process innovations, or scien-
9 tists—although Hitt *et al.* (1997) have demon-
10 strated that R&D intensity is positively related to
11 these other proxies. Furthermore, we have not con-
12 sidered in our research model the possibility that
13 other variables could intervene in the associations
14 among CRP, intangibles, and CFP. It is possible,
15 for example, that other dimensions of the business
16 environment (e.g., uncertainty [Aragón-Correa and
17 Sharma, 2003], or degree of competition [Bagnoli
18 and Watts, 2003]) moderate the causal links among
19 our model variables. An exploration of these issues
20 will be the subject of future research.

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APPENDIX 1. EXAMPLES OF THE WEIGHTING SCHEME FOR COMPUTING THE SCORE OF CRP

Sector	Company				
	Bank of America Financials	Microsoft Information tech.	Nike Textiles & apparel	ExxonMobil Energy	Procter & Gamble Household products
Community					
Sector weight	14.7%	17.6%	8.8%	14.7%	8.8%
Score	57.2	70.6	96.7	44.7	59.4
Customers					
Sector weight	14.7%	11.8%	8.8%	5.9%	11.8%
Score	22.9	52.5	64.2	45.5	44.3
Employees					
Sector weight	29.4%	35.3%	23.5%	26.5%	26.5%
Score	48.7	49.2	74.8	63.9	51.1
Environment					
Sector weight	35.3%	23.5%	35.3%	47.1%	47.1%
Score	52.6	43.3	61.6	29.3	39.2
Suppliers					
Sector weight	5.9%	11.8%	23.5%	5.9%	5.9%
Score	45.0	90.5	71.8	70.4	73.2
CRP index	47.3	56.8	70.4	44.1	46.8

1 **APPENDIX 2. MEASUREMENT ITEMS**
 2 **FOR INTANGIBLE RESOURCES**

3
 4 **Human resources**

5
 6 *Job satisfaction*

- 7
 8 1) The degree of employee satisfaction in compar-
 9 ison with the industry average.

10
 11
 12 *Training programs*

- 13
 14 2) The extent to which the company offers its
 15 employees training programs for improving
 16 their task efficiency.

17
 18
 19 *Profit sharing and participative programs*

- 20
 21 3) The importance of employee shared-ownership
 22 plans.
 23 4) The percentage of total workforce for which
 24 profit-sharing plans are in place.
 25 5) The percentage of workers affected by partici-
 26 pative management programs.
 27 6) The percentage of workforce affected by indi-
 28 cators related to illness, accidents, fines/
 29 penalties, and diversity.

Information about employees

- 33
 34
 35 7) A firm's commitment to achieving employee
 36 satisfaction through frequency of conducting
 37 satisfaction surveys by an external party.

38
 39 Each item is ranked on a five-point Likert scale,
 40 where 0 = non-existent; 1 = below the median;
 41 2 = median level; 3 = above the median; 4 =
 42 maximum.

43
 44 **Organizational culture**

45
 46 *Involvement*: measures how organizations
 47 empower and engage their people, build teams, and
 48 develop human capability.

- 49
 50 1) The degree of development of participative
 51 management programs. The extent to which the
 52 company has implemented programs such as
 53 an open-door policy, regular meetings between
 54 managers and employees, an employee com-
 55 mission, or a flat hierarchy.

56
 57 *Consistency*: comprises the degree to which 1)
 58 organizations have a set of core values such as an
 59 ethical code that guides member behavior, 2) orga-
 60 nizational members agree on critical issues and
 61 when they disagree the firm has mechanisms for
 62 reaching consensus, and 3) there is an alignment

1 of goals across functions and units of the organi-
 2 zation.
 3 2) The degree of detail in the business ethic code
 4 of conduct.
 5 3) The degree of detail in a system for collective
 6 dialogue with various stakeholders.
 7 4) The company has a detailed code of con-
 8 duct covering community, customers, employ-
 9 ees, environment, and supplier issues.
 10 *Adaptability*: the capability of the organization
 11 1) to recognize the needs of customers and 2) to
 12 transform these needs into new products.
 13 5) The degree of comprehensiveness and regular-
 14 ity of customer satisfaction surveys.
 15 6) The degree to which stakeholders' issues are
 16 systematically taken into account by the R&D
 17 department in new product development.
 18 *Mission*: identifies whether or not an organiza-
 19 tion has 1) a clear mission that gives meaning and
 20 direction to the work of its members and 2) clear
 21 policies to meet its objectives.
 22 7) The company has a detailed written corporate
 23 statement that covers issues of stakeholders.
 24 That statement includes mission, vision, and
 25 values, and it is in place for at least 50 percent
 26 of operations.
 27 8) The degree of development of a company's
 28 public reporting in its policies regarding stake-
 29 holders. A policy on stakeholder issues should
 30 have the following features: 1) applies
 31 company-wide or to at least 50 percent of total
 32 activity and 2) a formal written statement.
 33
 34 Each item is ranked on a five-point Likert scale,
 35 where 0 = nonexistent; 1 = below the median in
 36 detail and/or development; 2 = median level; 3
 37 = above the median in detail and/or development;
 38 4 = maximum.

39
 40 **APPENDIX 3. A TWO-STAGE**
 41 **ESTIMATION PROCEDURE**
 42

43 The method outlined by Baron and Kenny (1986)
 44 requires the estimation of the following three
 45 regression models:
 46

$$\begin{aligned}
 &Intangible_{it} = \alpha^1 + \beta_{CRP}^1(CRP)_{it} \\
 &\quad + \beta_{CFP}^1(CFP)_{it} + \beta_{PR}^1 \\
 &\quad (Physical\ resources)_{it} + \beta_L^1(Leverage)_{it} \\
 &\quad + \beta_{FR}^1(Financial\ resources)_{it}
 \end{aligned}$$

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$$\begin{aligned}
 &+ \beta_S^1(Size)_{it} + && \text{(Model 1)} && 58 \\
 &+ \beta_{Risk}^1(Risk)_{it} && && 59 \\
 &+ \beta_{mIntan}^1(Mean[Intangible])_{it} && && 60 \\
 &+ (\eta^1)_{it} + (\varepsilon^1)_{it} && && 61 \\
 &CFP_{it} = \alpha^{2A} + \beta_{CRP}^{2A}(CRP)_{it-1} && && 62 \\
 &+ \beta_{PR}^{2A}(Physical\ resources)_{it} && && 63 \\
 &+ \beta_L^{2A}(Leverage)_{it} && && 64 \\
 &+ \beta_{FR}^{2A}(Financial\ resources)_{it} && && 65 \\
 &+ \beta_S^{2A}(Size)_{it} + && \text{(Model 2A)} && 66 \\
 &+ \beta_{Risk}^{2A}(Risk)_{it} && && 67 \\
 &+ \beta_{mCFP}^{2A}(Mean[CFP])_{it} && && 68 \\
 &+ (\eta^{2A})_{it} + (\varepsilon^{2A})_{it} && && 69 \\
 &CFP_{it} = \alpha^{3A} + \beta_{CRP}^{3A}(CRP)_{it-1} && && 70 \\
 &+ \beta_I^{3A}(Innovation)_{it} && && 71 \\
 &+ \beta_{HC}^{3A}(Human\ capital)_{it} && && 72 \\
 &+ \beta_R^{3A}(Reputation)_{it} && && 73 \\
 &+ \beta_C^{3A}(Culture)_{it} && && 74 \\
 &+ \beta_{PR}^{3A}(Physical\ resources)_{it} && \text{(Model 3A)} && 75 \\
 &+ \beta_L^{3A}(Leverage)_{it} && && 76 \\
 &+ \beta_{FR}^{3A}(Financial\ resources)_{it} && && 77 \\
 &+ \beta_S^{3A}(Size)_{it} && && 78 \\
 &+ \beta_{Risk}^{3A}(Risk)_{it} && && 79 \\
 &+ \beta_{mCFP}^{3A}(Mean[CFP])_{it} && && 80 \\
 &+ (\eta^{3A})_{it} + (\varepsilon^{3A})_{it} && && 81 \\
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 \end{aligned}$$

47 where *Mean[Intangible]* and *Mean[CFP]* are the
 48 means of each intangible resource and CFP, respec-
 49 tively, for the corresponding sector, year, and
 50 country, and are calculated excluding the focal
 51 firm; η is the fixed-effect term that approaches
 52 the time-invariant unobservable heterogeneity; and ε is
 53 a random-noise residual. Importantly, as suggested
 54 in previous literature (e.g., Waddock and Graves,
 55 1997a), CRP is lagged one period in order to tackle
 56 endogeneity problems, as explained in Footnote 6.
 57

To establish mediation (Hypothesis 1a), three
 conditions must hold:

$$\begin{aligned}
 &1) \beta_{CRP}^1 > 0; \quad 2) \beta_{CRP}^{2A} > 0; \quad \text{and } 3) \beta_{CRP}^{3A} = 0, \\
 &\text{while } \beta_I^{3A} > 0, \beta_{HC}^{3A} > 0; \beta_R^{3A} > 0; \beta_C^{3A} > 0.
 \end{aligned}$$

1 Testing Hypothesis 1b is formally equivalent to
 2 the above strategy, but replacing CRP by CFP and
 3 *Mean[CRP]* by *Mean[CFP]*.

4 In estimating mediation models like ours, Baron
 5 and Kenny (1986) mentioned the emergence of
 6 an econometric problem with the estimates of the
 7 main independent variable and the mediator, as
 8 they are correlated by construction. This prob-
 9 lem results in an overestimation of the effect of
 10 the main independent variable (CRP in Hypothesis
 11 1a; CFP in Hypothesis 1b) and an underestima-
 12 tion of mediator variables in Models 3A and 3B.
 13 Baron and Kenney (1986: 1177) have suggested
 14 that some form of two-stage estimation or struc-
 15 tural modeling procedure would provide a possi-
 16 ble solution. Adopting this idea, we followed a
 17 two-stage procedure for refining the estimation of
 18 Models 3A and 3B. In the first stage of our pro-
 19 cedure, we estimate two equations that correspond
 20 to the specifications given in Models 3A and 3B,
 21 excluding the main independent variable:

$$\begin{aligned}
 23 \text{ CFP}_{it} &= \alpha^{4A} + \beta_I^{4A}(\text{Innovation})_{it} \\
 24 &+ \beta_{HC}^{4A}(\text{Human capital})_{it} + \beta_R^{4A}(\text{Reputation})_{it} \\
 25 &+ \beta_C^{4A}(\text{Culture})_{it} + \beta_{PR}^{4A}(\text{Physical resources})_{it} \\
 26 &+ \beta_L^{4A}(\text{Leverage})_{it} + \hspace{10em} \text{(Model 4A)} \\
 27 &+ \beta_{FR}^{4A}(\text{Financial resources})_{it} + \beta_S^{4A}(\text{Size})_{it} \\
 28 &+ \beta_{Risk}^{4A}(\text{Risk})_{it} \\
 29 &+ \beta_{mCFP}^{4A}(\text{Mean[CFP]})_{it} + (\eta^{4A})_{it} + (\epsilon^{4A})_{it}
 \end{aligned}$$

$$\begin{aligned}
 33 \text{ CRP}_{it} &= \alpha^{4B} + \beta_I^{4B}(\text{Innovation})_{it} + \beta_{HC}^{4B} \\
 34 &(\text{Human capital})_{it} + \beta_R^{4B}(\text{Reputation})_{it} \\
 35 &+ \beta_C^{4B}(\text{Culture})_{it} + \beta_{PR}^{4B}(\text{Physical resources})_{it} \\
 36 &+ \beta_L^{4B}(\text{Leverage})_{it} + \hspace{10em} \text{(Model 4B)} \\
 37 &+ \beta_{FR}^{4B}(\text{Financial resources})_{it} + \beta_S^{4B}(\text{Size})_{it} \\
 38 &+ \beta_{Risk}^{4B}(\text{Risk})_{it} \\
 39 &+ \beta_{mCRP}^{4B}(\text{Mean[CRP]})_{it} + (\eta^{4B})_{it} + (\epsilon^{4B})_{it}
 \end{aligned}$$

$$\begin{aligned}
 51 &+ \beta_{FR}^{4B}(\text{Financial resources})_{it} \\
 52 &+ \beta_S^{4B}(\text{Size})_{it} + \beta_{Risk}^{4B}(\text{Risk})_{it} \\
 53 &+ \beta_{mCRP}^{4B}(\text{Mean[CRP]})_{it} + (\eta^{4B})_{it} + (\epsilon^{4B})_{it}
 \end{aligned}$$

54 With such coefficients, we compute the follow-
 55 ing instruments as the part of the performance that
 56 is not explained by the intangible resources:
 57

$$\begin{aligned}
 58 \text{ Residual CFP}_{it} &= \text{CFP}_{it} - [\beta_I^{4A}(\text{Innovation})_{it} \\
 59 &+ \beta_{HC}^{4A}(\text{Human capital})_{it} + \beta_R^{4A}(\text{Reputation})_{it} \\
 60 &+ \beta_C^{4A}(\text{Culture})_{it}] \\
 61 \text{ Residual CRP}_{it} &= \text{CRP}_{it} - [\beta_I^{4B}(\text{Innovation})_{it} \\
 62 &+ \beta_{HC}^{4B}(\text{Human capital})_{it} + \beta_R^{4B}(\text{Reputation})_{it} \\
 63 &+ \beta_C^{4B}(\text{Culture})_{it}]
 \end{aligned}$$

64 In the second stage, we replace CRP and CFP
 65 of Models 3A and 3B with their instruments—
 66 *Residual CFP* and *Residual CRP*, respectively—
 67 which, as explained in the main text, are also
 68 lagged by one period to prevent reverse causal-
 69 ity problems. Resulting models are denoted as
 70 3A* and 3B*. If we denote as β^{3A*} and β^{3B*} the
 71 new coefficients estimated in the second-stage esti-
 72 mation of Models 3A* and 3B*, our mediation
 73 Hypothesis 1a holds if the three conditions defined
 74 above are satisfied by using β^{3A*} instead of β^{3A} in
 75 the third condition. Similarly, to prove the media-
 76 tion of intangibles in the relationship from CFP to
 77 CRP, our Hypothesis 1b, the corresponding three
 78 conditions defined above must hold, using β^{3B*}
 79 rather than β^{3B} in the third condition.
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