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WHEN MORE IS NOT BETTER: COMPLEMENTARITIES, COSTS AND CONTINGENCIES IN STAKEHOLDER MANAGEMENT

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Instrumental stakeholder theory has largely emphasized the positive effects of investing in stakeholder cooperative relationships in an additive, linear fashion in the sense that the more investments the better. Yet investing in stakeholders can be very costly and the effects of these investments in firm performance are subject to complex internal complementarities and external contingencies. In this article we rely on set-theoretic methods and a large international dataset of 1,060 multinational companies to explore theoretically and empirically some of the complementarities, costs and contingencies likely to arise in stakeholder management.

INTRODUCTION

One perennial and still unresolved question in *instrumental* stakeholder theory (Donaldson and Preston, 1995) is whether a one-dollar investment in a stakeholder group returns more or less than one dollar in benefit to the firm (Harrison, Bosse, and Phillips, 2010). This question has been extensively investigated over the last 40 years with some contradictory findings (Margolis and Walsh, 2003; Orlitzky, Schmidt, and Rynes, 2003). The heterogeneity of empirical results obtained to date urges researchers to develop better theoretical propositions and research methods to study this link (Mackey, Mackey, and Barney, 2007; Margolis and Walsh, 2003).

While instrumental stakeholder theory states that firms that invest in their stakeholders are in a better condition to create economic value than industry rivals with adversarial stakeholder relationships (Donaldson and Preston, 1995; Hillman and Keim, 2001; Jones, 1995), there are, we argue, some boundary conditions that make this oversimplified picture more complex. We seek to identify some of these boundary conditions. Previous research has addressed this issue before (e.g., Agle, Mitchell, and Sonnenfeld, 1999; Harrison *et al.,* 2010), but our analysis specifically focuses on the *complementarities* existing between stakeholder investments, the *costs* associated to these investments and some main *contingencies* that mediate their effect on firm performance.

First, we posit that the relationship between stakeholder investments and firm performance does not follow a simple monotonic function; there are potential complementarities and trade-offs between investments in several stakeholder groups that have not been fully investigated in the literature. Indeed, one recurrent criticism to stakeholder theory seems to be the lack of explicit trade-offs between different stakeholder groups and, more generally, the absence of explicit boundary conditions in the theory (Jensen, 2002).

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Second, investing in stakeholders is costly (Barnett and Salomon, 2006; Mackey *et al.,* 2007). As such, managers can unwisely overinvest in some stakeholders because they actually overestimate the bottom line impact to the firm of these stakeholders' contributions. These costs impose some upper bound to the benefits a firm can obtain from investing in its stakeholders.

Finally, the number of possible contingencies between investments in stakeholders and firm performance are too many. Investments in stakeholders are profitable in some industries but not in others (Bansal and Roth, 2000; Rehbein, Waddock, and Graves, 2004; Strike, Gao, and Bansal, 2006), they are profitable only for some particular firm strategies (Berman *et al.,* 1999) or their marginal effects may vary across national legal systems (Aguilera and Jackson, 2003; Williams and Aguilera, 2008).

In this article, we seek to further explore theoretically and empirically some of the *complementarities*, *costs* and *contingencies* likely to arise when managers invest in the various stakeholders of the firm. In the next section we propose some lower and upper limits to effective investments in stakeholder groups and explore some main contingencies in the stakeholder management-firm performance relationship, some of which have been discussed in previous studies but are revisited in this article using set-theoretic methods (STM) on a large sample of 1,060 international firms. The article concludes with a discussion of the main contributions and limitations of our research.

BOUNDARY CONDITIONS TO THE STAKEHOLDER MANAGEMENT-FIRM PERFORMANCE LINK: COMPLEMENTARITIES, COSTS AND CONTINGENCIES

The theoretical connection between stakeholder management and firm performance can be traced back to the "inducements-contribution" model of Barnard (1938), which was further developed by Herbert Simon (1947). Barnard and Simon argue that preserving the inducements-contribution equilibrium is a necessary condition to ensure cooperation within the firm and sustain effectiveness in the long run. Along similar lines, the influential work of Freeman (1984) reinforces the early intuition of Barnard-Simon by consolidating the term "stakeholder" and by defining it as any group that influences or is influenced by the achievement of the company's objectives. Implicit in Freeman's definition is the idea that stakeholders are necessary for the firm to achieve its goals and, at the same time, the achievement of these goals and its consequences do have an impact on stakeholders' willingness to contribute to the firm's success (Harrison *et al.,* 2010).

Drawing from this research tradition, modern instrumental stakeholder theory posits that a history of fair and balanced distribution of value among relevant stakeholders is a condition *sine qua non* for obtaining superior performance (Freeman, 1984; Harrison *et al.,* 2010). If the inducements procured by the organization become out of balance—e.g., one stakeholder receives from the firm too much value relative to other stakeholder groups—then the theory predicts that stakeholders will modify their level of contribution to the organization in order to restore the equilibrium. The adjustment process can be roughly summarized as follows: "An actor's ratio of perceived outcomes from and inputs to a cooperative effort must match the outcomes/input ratio of relevant similar others in order to be perceived as fair. Otherwise, actors will adjust either inputs or outcomes until the perceived ratios are equal" (Adams, 1965). We now have ample empirical evidence that confirms Adam's early observation (Bosse, Phillips, and Harrison, 2009: 450–452).

More recently, and from a different angle, the resource-based view (Barney, 1991) provides a solid foundation for understanding in more specific terms how and when resources and capabilities controlled by a stakeholder will be able to create value for the firm. The resource-based view ascribes most rent to resources and capabilities such as knowledge that are embodied in individuals that can be referred to as stakeholders of the firm (Coff, 1999). All else equal, the more firm-specific, causally ambiguous and socially complex the resources and capabilities controlled by a stakeholder are, the higher the potential for value creation.

One main implication of the above is that *primary* stakeholders are in better conditions than widely defined stakeholder groups (i.e., *secondary* stakeholders) because the formers' interaction with the firm is more firm-specific and socially complex (Berman *et al.,* 1999; Hillman and Keim, 2001). A *primary* stakeholder group is one without whose continuing participation the corporation cannot survive as a going concern (Clarkson, 1995). Primary stakeholder groups typically comprise shareholders

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and investors, employees, customers and suppliers. By contrast, *secondary* stakeholder groups are defined as those who affect or are affected by the corporation but are not engaged in transactions with it and are not essential for its survival (Clarkson, 1995). The media and a wide range of special interest groups (e.g., environmental groups) are usually considered secondary stakeholders under this definition.

Previous research has found that building better relations with primary stakeholders generally leads to increased financial returns because they help firms develop intangible but valuable assets that can become sources of competitive advantage (Hillman and Keim, 2001). For instance, investing in stakeholder relations may lead to increased customer or supplier loyalty, reduced employee turnover, or improved firm reputation, which, in turn, have been found to lead to improved financial performance (Ogden and Watson, 1999; Waddock and Graves, 1997). By contrast, investing in secondary stakeholders or in wider social issues not related to the firm's direct relationship with primary stakeholders has been argued to not create so much value for shareholders (Berman *et al.,* 1999), and it may even be negatively related to firm performance (Hillman and Keim, 2001).

In sum, combining instrumental stakeholder theory and RBV arguments, we posit that the connection between stakeholder management and firm performance should be stronger for primary stakeholders because they own firm-specific resources and capabilities and are more related to the daily economic activities of the firm (Clarkson, 1995; Coff, 1999). Furthermore, we argue, based on Barnard's inducements-contributions equilibrium, that successful firms must *necessarily* invest a "minimum" in their primary stakeholder groups because without their continuing participation the firm cannot survive as a going concern (Clarkson, 1995). The following discussion of complementarities, costs and contingencies takes into account both the notion of stakeholders' inducements-contributions balance and the distinction between primary and secondary stakeholder groups.

Stakeholder complementarities

The complementarity-based approach to organization design (Aoki, 2001; Milgrom and Roberts, 1990, 1995) introduces a new perspective to the study of stakeholders' contributions to the firm. A complementarity is a relation between elements whereby the value of element A is higher when element B is present and vice versa (Milgrom and Roberts, 1995). Under a complementarity approach, the impact of a stakeholder in value creation is not likely to be produced in isolation but rather *jointly* with other stakeholders. For instance, the value of a supply chain formed by highly committed contractors is likely to be higher when, at the same time, the firm has highly qualified and engaged employees who are able and willing to optimize that chain. To the extent that value creation is a collective endeavor that requires the participation of multiple stakeholders, each stakeholder contribution is complementary to other stakeholders' contributions, in the same sense that right and left shoes are complementary: they work best when used together.

The presence of complementarities predicts that simultaneous investments in primary stakeholders are more effective than individual, isolated investments. At the same time, because primary stakeholders are essential to the survival of the firm (Clarkson, 1995), a minimum investment in these stakeholders is a necessary condition if the firm and its stakeholders are to create joint value. Not keeping this minimum investment will result, we argue, in low performance. Hence, firms that maintain a well-balanced allocation of resources among the various primary stakeholders will enjoy higher performance, all else equal. Combining these three nuclear ideas of stakeholders' inducements-contributions balance, primary-secondary stakeholders and complementarities, we propose:

> I. *Law of stakeholder core balance: A minimum investment in each primary stakeholder is a necessary condition for achieving high firm performance.*

The law of stakeholder core balance establishes a first lower boundary condition to stakeholder theory: high-performing organizations have to invest necessarily a minimum *in every* relevant stakeholder group and firms who fail to do so are precluded from showing high performance. Some empirically testable propositions can be derived from the law of stakeholder core balance:

> *Hypothesis 1a: For most firms, a minimum investment in every single primary stakeholder is a necessary condition for observing high firm performance.*

Hypothesis 1b: For most firms, the absence of a minimum investment in any single primary stakeholder is a sufficient condition for not observing high firm performance.

Hypothesis 1a states a necessary—albeit not sufficient—condition for high performance. Having invested a minimum in each relevant stakeholder group does not guarantee high performance but it is a *sine qua non* condition for performance. Hypothesis 1b states a sufficient—albeit not necessary—condition for not observing high performance.

As a corollary to Hypotheses 1a and 1b, we argue that investments in non-primary stakeholders are not sufficient by themselves to lead to high or low performance and only in combination with the minimum required investments in primary stakeholders may these investments produce any positive effect on firm performance.

Stakeholder costs

If complementarities impose a lower boundary condition—i.e., minimum necessary investments in primary stakeholders—costs bring in some upper limits to infinite increases in firm performance. Critics of stakeholder theory point out that it is costly and time-consuming for a firm to engage with all relevant stakeholders (Friedman, 1970; Jensen, 2002). If investing in stakeholders had no attached costs to the firm, then all firms would do so (Harrison *et al.,* 2010). All these additional costs detract from the bottom line and can therefore put stakeholder-oriented firms at a competitive disadvantage compared with rivals who do not engage in such practices (Barnett and Salomon, 2006; Friedman, 1970; Jensen, 2002; McWilliams and Siegel, 2000). Moreover, there is some empirical evidence that externally imposed social responsibility may negatively impact both profits and long-term social benefits (Miles, Munilla, and Covin, 2002). According to these critics, there might be a monotonic negative relationship between investing in stakeholders and firm performance.

However, a strict negative relationship between stakeholder management and performance is hard to sustain categorically given the myriad of empirical studies finding a positive relationship (Margolis and Walsh, 2003). Rather, we posit that this relationship can be better described as a logarithmic function—i.e., diminishing marginal returns—where the costs of initial investments in primary stakeholders are likely to be more than offset by the augmented profits due to stakeholders' increased contributions to the firm, but, at the same time, as investments in a stakeholder increase, there is a higher likelihood of overallocation of firm resources to that stakeholder. In the latter case, the marginal costs can be proven to be much larger than the increased profits to the firm (Harrison *et al.,* 2010).

In addition, societal expectations have been argued to play their role in causing decreasing marginal returns on a firm's investment in stakeholders. As a company increasingly invests in its stakeholders, the expectations of the agents involved in the transaction with the firm will also increase (Barnett, 2007). Mohr, Webb, and Harris (2001) argue that as firms increase their CSR activities, their rivals feel pressure to increase theirs as well, since some consumers prefer to buy from the most socially responsible firm. As a result, if all competitors offer increased CSR standards, the differentiation provided by the CSR investment will be lower and firms will be forced to upgrade their CSR efforts once again, which will require, in turn, higher investments, creating in this way a vicious circle (Barnett, 2007). Therefore, if the costs required to meeting those rising expectations increase at a higher rate than the firm's ability to meet them, the returns on the firm's efforts in regards to its stakeholders will be marginally decreasing.

In extreme cases, the diminishing marginal returns can become negative returns when stakeholder investments are proven to be too costly. In these situations, managers can unwisely overinvest in some stakeholders that, simply, are not so valuable to the firm (Freeman, 1984; Harrison *et al.,* 2010). Hence, we posit that investments in any single stakeholder may be detrimental for firms' financial performance when this investment trespasses a sufficiently high upper bound.

II. *Law of decreasing marginal returns to stakeholder investments: There are decreasing marginal returns, and beyond some point, negative returns, to marginal increases in investments in any single stakeholder group.*

The law of decreasing marginal returns to stakeholder investments establishes an upper bound in the amount a firm can profitably invest in a stakeholder group. From this law the following two testable hypotheses can be derived:

Hypothesis 2a: For most firms, the absence of very high investments in every single primary or secondary stakeholder is a necessary condition for observing high firm performance.

Hypothesis 2b: For most firms, a very high investment in any single primary or secondary stakeholder is a sufficient condition for not observing high performance.

Stakeholder contingencies

Within the lower and upper bounds defined by the law of stakeholder core balance (I) and the law of decreasing marginal returns to stakeholder investments (II) respectively, it is possible to identify some contingencies affecting the effectiveness of stakeholder investments. There are at least three main contingencies often discussed in the literature: firm strategy, industry features and the national-legal system where the firm operates.

First, the strategy followed by the firm is likely to interact with investments made on stakeholders, amplifying or reducing the impact of the latter (Berman *et al.,* 1999; Hull and Rothenberg, 2008; Waddock and Graves, 1997). Berman *et al.* (1999: 502) use Hambrick's (1983) differentiation-low cost operational construct finding that stakeholder relationships moderate the relation between firm strategy and performance. Second, previous research has studied industry influences on stakeholder management (Bansal and Roth, 2000; Rehbein *et al.,* 2004; Strike *et al.,* 2006). For instance, Rehbein *et al.* (2004) found some evidence that shareholder activists are more likely to target companies producing problematic products and where environmental concerns exist (e.g., forest, paper, rubber) and that firms in specific industries such as textiles or heavy manufacturing are being targeted based on poor employee- and community-related practices. Lastly, the comparative legal and institutional analysis has shown that there are significant differences across countries in the level of adoption of stakeholder-oriented policies and the levels of legal enforcement (Aguilera and Jackson, 2003; Kolk, 2003; Williams and Aguilera, 2008). These national differences are likely to have an impact on the effectiveness of investments in stakeholders.

III. *Law of contingent performance: The optimal investment in a stakeholder (within the lower and upper bounds) is contingent to firm strategy, industry features and national/legal factors.*

While a full discussion of all the contingencies that may affect the relationship between stakeholder management and firm performance is beyond the scope of this article, in the empirical section we consider the impact of three selected contingencies that have been examined in the literature: industry differentiation, firm innovation strategy and the national-legal system where the firm operates.

Industry differentiation

The impact of a firm's investment in a particular stakeholder is mediated by the particular strategic positioning of the firm (Berman *et al.,* 1999). One main argument is that successful investments of a firm in its stakeholders allow firms to differentiate themselves from competition (Klein and Dawar, 2004; Reinhardt, 1998; Waddock and Graves, 1997). However, a firm's effort to differentiate itself through above-average stakeholder investments may be mediated by the level of differentiation in the firm's industry (Hull and Rothenberg, 2008; McWilliams and Siegel, 2000). As such, we would expect the added differentiation provided by these superior stakeholder investments to be less effective when the firm competes against highly-differentiated competitors. By contrast, the potential of stakeholder management to differentiate a firm from competition is arguably higher in an otherwise minimally differentiated industry (Hull and Rothenberg, 2008).

Hypothesis 3: For most firms, particular combinations of investments in primary and secondary stakeholders above industry average in low differentiation industries are sufficient to observe high performance.

Firm innovation

Innovation is another way firms attempt to differentiate themselves (Hull and Rothenberg, 2008). Empirical evidence suggests that innovative firms are likely to make high investments in stakeholders and, at the same time, that these investments

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have no significant effects on the performance of these innovative firms (Hull and Rothenberg, 2008; McWilliams and Siegel, 2000; Rothenberg and Zyglidopoulos, 2007). Companies with superior, highly innovative products need offer little other reason for customers to choose them. Innovate companies may need a minimum investment in stakeholders in order to meet basic industry standards (Miles *et al.,* 2002), but these investments, while necessary to be in the "pack", do not constitute by themselves a sufficient condition leading to above industry firm performance. By contrast, previous research found that less innovative firms are able to successfully differentiate themselves by investing in stakeholders above industry average levels, as long as their products are of acceptable quality and comparable to those of the competition (Mackey *et al.,* 2007; Siegel and Vitaliano, 2007). In this regard, particular combinations of stakeholder investments may successfully differentiate the firm and constitute a sufficient condition for superior performance.

Hypothesis 4: For most firms, particular combinations of investments in primary and secondary stakeholders above industry average in low innovation firms are sufficient to observe high performance.

National/legal system

CSR comparative studies found that European and Japanese corporations have significantly higher corporate social responsibility levels than U.S. corporations driven partly by tougher EU and Japanese regulation that requires higher standards, particularly in the U.K. (Kolk, 2003; Williams and Aguilera, 2008). If investments in stakeholders are imposed—i.e., legal enforcement—then most of the firms in that country/legal system will make these investments, thus limiting the potential of these investments to successfully differentiate a firm and, in turn, to drive high performance. Despite this, in these highly regulated CSR contexts, these stakeholder investments are likely to be necessary conditions to high performance because all firms are legally enforced to make such investments and failing to do often involves costs and risks to the firm.

Hypothesis 5: For most firms, investments in primary and secondary stakeholders above industry average in strongly regulated CSR countries are a necessary condition to observe high performance.

RESEARCH METHODOLOGY

Set-theoretic methods: formalizing the hypotheses through Boolean algebra

The consideration of complementarities, costs and contingencies requires a research method that allows for the analysis of complex configurations and multiple interaction effects. For this reason we rely on set-theoretic methods (Ragin, 2008). Set-theoretic methods (STM) are increasingly used in strategic management, partly because of recent methodological improvements such as the possibility of using *fuzzy* sets and the newer possibilities to apply statistical tests using STATA (Longest and Vaisey, 2008) or R (Thiem and Dusa, 2013), something that we do in this paper. STM pros and cons and the differences with other econometric techniques have been extensively discussed before (Fiss, 2007, 2011; Ragin, 2008) and, thus, we only discuss the main issues here.

Standard research methods based on regression analysis and multivariate techniques such as cluster and factor analysis, although allowing for the analysis of interaction effects, have been argued to present some limitations when dealing with complex configurations (Fiss, 2007). STM differ from correlational approaches in that they do not disaggregate cases into independent, analytically separate aspects but, instead, treat configurations as different types of cases. To examine these different configurations, STM use Boolean algebra, a notational system that permits the algebraic manipulation of logical statements. Instead of using interaction effects, clustering algorithms, or deviation scores, a set-theoretic approach uses Boolean algebra to determine which combinations of variables combine to result in the outcome in question—i.e., *conjunctural causality*.

Set-theory uses set-subset connections rather than correlations between the variables in order to establish empirical links between the conditions. The difference between "correlation" and "subsetness" is important. While correlations are based on the covariance of the variables studied, set-subset connections are based on the degree of membership in sets and subsets. If set X is contained in set Y, then X is sufficient for Y. By contrast, if set Y is contained in set X, then X is necessary for Y. In extreme cases two variables can be perfectly uncorrelated and still show a strong sub-subset connection as insightfully shown by Ragin (2008: 17). Thus, one

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main advantage of using set-subset connections is the possibility to distinguish between necessary and sufficient conditions. The equivalent in set-theoretic methods to the correlation matrix is the sufficiency and necessity matrix that we report in the next section. A causal condition is said to be *necessary* if the outcome can be observed if and only if such condition is present. By contrast, a causal condition is said to be sufficient if the presence of the condition implies the presence of the outcome. Expressed this way, the notions of sufficiency and necessity are deterministic, and thus not very compatible with the complexity of social sciences. However, it is possible to express them in a probabilistic way more suitable to empirical tests (Ragin, 2000: 108–112), giving way to a notion of "statistically necessary" and "statistically sufficient" conditions.

In order to compute the empirical strength of statistically necessary and sufficient conditions, researchers rely on *consistency* and *coverage* measures ranging from 0 to 1 (Ragin, 2008). The calculation of fuzzy set-theoretic consistency and coverage is done as follows:

$$\textit{Consistency}\,(X \subseteq Y) = \sum \min\left(x_i, y_i\right) / \sum x_i$$
$$\textit{Coverage}\,(X \subseteq Y) = \sum \min\left(x_i, y_i\right) / \sum y_i$$

where X_i is the degree of membership of individual i in configuration X and Y_i is its degree of membership in outcome Y.

Consistency indicates how closely a perfect subset relation is approximated. A consistency of 1 indicates a perfect subset relation—i.e., X is fully contained in Y. It can be roughly thought of as the significance score in regression analysis. A consistency above 0.75 is generally accepted as a valid threshold in empirical studies (Fiss, 2011) and it is the one we use in this article. Probabilistic tests can be applied to check for statistical significance (Ragin, 2000: 108–112). We use a Wald test (which uses an F distribution) implemented in STATA to find out which observed consistency scores are significantly greater than the benchmark value of 0.75 (Longest and Vaisey, 2008).

Coverage assesses the degree to which a cause or a causal combination accounts for instances of an outcome. Once the consistency between two sets has been ascertained, then, the coverage roughly measures the overlap between then. The higher the overlap the higher the coverage. The coverage can be roughly thought of as a measure similar to an R-square in regression analysis, allowing the researcher to evaluate the empirical relevance of the solutions found.

We apply these STM notions to formalize the five hypotheses using Boolean algebra. Hypothesis 1a sustains that *for most firms, a minimum investment in every single primary stakeholder is a necessary condition for observing high firm performance*. This statement can be formalized as follows:

$$K_{>MIN} * L_{>MIN} * S_{>MIN} * C_{>MIN} \rightarrow P\,(Y) \qquad \text{(Necessary condition)}^{1}$$

where * denotes the Boolean operation "AND", "→" denotes the logical implication operator and each capital letter represents a causal condition: K accounts for investments in capital providers; L investments in employees; S investments in suppliers; C investments in customers and P (Y) accounts for high (very high) financial performance.

In terms of STM, K, L, S and C connected by the operator "AND" indicate that a firm necessarily has to belong to the set of firms that fulfill these four minimum conditions simultaneously in order for the outcome to be present. The subscript ">MIN" indicates the degree of membership to the set imposed by Hypothesis 1a. While the minimum required investment may change across different environments, we operationalize this threshold by using an objective criterion based on the distribution percentiles (see Table 1). The transformation of a variable into a fuzzy set requires a crossover point to separate membership from non-membership in the set and, in addition, two more anchors: one for full membership and another for full non-membership (Ragin, 2008: 29–34). Thus, we chose an arguably sufficiently lower bound, the 25th percentile, to set the *crossover point* for minimum investment in a stakeholder group. In addition to the crossover

[1] As discussed earlier, we use the term "necessary condition" to refer always to a "statistically necessary condition" and "sufficient condition" to refer always to a "statistically sufficient condition". A necessary condition implies that the outcome is a subset of the causal conditions:
$P\,(Y) \subseteq K_{>MIN}*L_{>MIN}*S_{>MIN}*C_{>MIN}$
By contrast, a sufficient condition would imply that the causal conditions are a subset of the outcome:
$K_{>MIN}*L_{>MIN}*S_{>MIN}*C_{>MIN} \subseteq P\,(Y)$
For simplicity, we place the causal conditions always on the left and the outcome on the right, indicating in brackets when the hypothesized condition is necessary and when it is sufficient.

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Table 1. Fuzzy sets calibration

Variable	Set	Lower bound condition	Intermediate conditions	Upper bound condition
		Complementarities • Primary-secondary stakeholders • Inducements-contributions balance	*Contingencies* • Strategy • Industry • Legal/national	*Costs* • Diminishing marginal returns • Increasing expectations
		Minimum ">MIN" Crossover point: 25th percentiles	*Median ">MED"* Crossover point: 50th percentiles	*Maximum ">MAX"* Crossover point: 75th percentiles
Primary stakeholders				
Capital providers	**K**	60.7	69.9	77.8
Employees	**L**	38.7	48.3	58.6
Suppliers	**S**	45.0	46.1	57.8
Customers	**C**	49.9	61.5	72.6
Secondary stakeholders				
Environmental groups	**E**	31.3	42.4	55.6
Local communities	**O**	38.5	52.1	66.0
Contingencies				
Industry differentiation	**D**	1.0	1.6	3.9
Firm innovation	**I**	0.01	1.7	7.1
National/legal	**N**		1 = US / 0 = EU	
High performance				
ROEaj (lagged)	**P**			
Very high performance		−10.11	0.00	9.62
ROEaj (lagged)	**Y**			

point, the threshold for *full non-membership* was set at the first percentile and the upper bound threshold for *full membership* was set at the 50th percentile. Robustness checks to these selected thresholds are discussed later in the article.

We operationalize financial performance using the industry-adjusted ROE lagged one year (ROEaj) and defined as net income over total firm equity to control for possible industry effects on firm performance (Rumelt, 1991). Following Fiss (2011), we use two alternative definitions of high performance. "High performance" (P) has been calibrated using the 25th, 50th and 75th percentiles of the ROEaj distribution for full non-membership, crossover point and full membership respectively. "Very high performance" (Y) has been calibrated using the 50th (full non-membership), 75th (crossover) and 99th (full membership) percentiles of the same distribution.

All calibrations have been done using the indirect method described by Ragin (2008). In the Results section we discuss the sensitivity of our findings to alternative operationalizations such as industry-adjusted ROA (net income over total firm assets).

Similarly to Hypothesis 1a, all the other hypotheses can be formalized using Boolean algebra. Thus, Hypothesis 1b can be formalized as:

$$\sim K_{>MIN} + \sim L_{>MIN} + \sim S_{>MIN} + \sim C_{>MIN} \rightarrow \sim P\,(\sim Y)$$

(Sufficient condition)

where + denotes the Boolean operation "OR" and ~ signals "negation" or absence of that causal condition. For example, the condition $\sim L_{>MIN}$ means "absence of a minimum investment in employees". Put another way, $\sim L_{>MIN}$ signals that the company is below the 25th percentile in terms of employee investments. Similarly, ~P and ~Y denote that the performance is below the 50th and 75th percentiles respectively. The Boolean operator "OR" (+), connecting each of the conditions, implies that each condition can sufficiently lead to the outcome separately, as stated by Hypothesis 1b.

Hypothesis 2a can be formalized as:

$$\sim K_{>MAX} * \sim L_{>MAX} * \sim S_{>MAX} * \sim C_{>MAX} * \sim E_{>MAX} * \sim O_{>MAX} \rightarrow P\,(Y)$$

(Necessary condition)

where the subscript ">MAX" indicates that the investment in each of the stakeholders is above a sufficiently high upper bound. Consistent with the thresholds used for "MIN", we use the distribution percentiles to define the "MAX" upper bound. We use the 75th percentile for the crossover point, the 50th percentile for full non-membership and the 99th percentile for full membership (Table 1).

Hypothesis 2b can be formalized as:

$$K_{>MAX}+L_{>MAX}+S_{>MAX}+C_{>MAX}+E_{>MAX}+O_{>MAX}\rightarrow\sim P\,(\sim Y)$$

(Sufficient condition)

Hypothesis 3 can be formalized as:

$$C_{>MED}*S_{>MED}*L_{>MED}*K_{>MED}*E_{>MED}*O_{>MED}\rightarrow P_{LD}\left(Y_{LD}\right)$$

(Sufficient condition)

where the subscript ">MED" indicates that the investment in each of the stakeholders is above the median of the distribution in its industry (i.e., 50th percentile) and P_{LD} (Y_{LD}) account for high (very high) ROEaj in low differentiation (LD) industries. Since Hypotheses 3, 4 and 5 lie within the lower and upper bounds, scores above the 75th percentile were excluded. In line with previous works (Hull and Rothenberg, 2008; McWilliams and Siegel, 2000), we use the industry advertising expenses to sales ratios and budgets published annually by Schonfel & Associates as a surrogate measure of industry differentiation. A total of 56 six-digit GICS (Global Industry Classification Standard) different industries were considered in the analysis with a median advertising-to-sales ratio of 1.6 percent. Thus, we use the 1.6 percent crossover point to classify industries into high and low differentiation (Hull and Rothenberg, 2008; Siegel and Vitaliano, 2007). We show the combination of all the six conditions as sufficiently leading to high performance above, but, as Hypothesis 3 states, in the empirical test we expect to find only particular combinations of K, L, S, C, E and O leading to high performance in low differentiation industries.

Hypothesis 4 can be formalized as:

$$C_{>MED}*S_{>MED}*L_{>MED}*K_{>MED}*E_{>MED}*O_{>MED}\rightarrow P_{LI}\left(Y_{LI}\right)$$

(Sufficient condition)

where P_{LI} (Y_{LI}) account for high (very high) performance within the population of low innovation firms. Consistent with previous strategic management works, we use R&D intensity defined as R&D expenses over total sales for each firm to distinguish innovative from non-innovative firms in the population (Fiss, 2011: 405; Hull and Rothenberg, 2008; McWilliams and Siegel, 2000). The median of the R&D intensity distribution is 1.7 percent in our sample and this is the crossover point used to separate the two groups. As before, we show all the six stakeholder groups above, but in the empirical test we expect to find only a reduced group of particular combinations leading to high performance (Hypothesis 4).

Lastly, Hypothesis 5 can be formalized as:

$$C_{>MED}*S_{>MED}*L_{>MED}*K_{>MED}*E_{>MED}*O_{>MED}\rightarrow P_{EU}\left(Y_{EU}\right)$$

(Necessary condition)

where P_{EU} (Y_{EU}) accounts for high (very high) performance within European companies, which we assume to be affected by stronger CSR regulation than U.S. firms (Kolk, 2003).

Data and measurements

The data used in the study comes from several sources. Data regarding stakeholder management was compiled by *Sustainalytics* (SiRi Group), an independent consulting firm that periodically monitors and evaluates more than 2,000 international firms from 27 different countries in terms of their social, environmental and governance performance. Sustainalytics is a global firm that comprises other national databases such as the Kinder, Lydenberg and Domini ratings (KLD), which have been widely used and validated in previous academic research (Hull and Rothenberg, 2008; McWilliams and Siegel, 2000; Waddock and Graves, 1997). The universe of companies includes the global MSCI index and some large international firms included in local indexes such as DAX 30, IBEX, CAC 40, and so on. Thus, the population being analyzed mainly covers the largest publicly-owned international corporations and the validity of our results must be circumscribed to this well-defined universe of firms.

Sustainalytics carries out detailed profiles of the monitored companies and analyzes them on the basis of their informative procedures, policies and

Table 2. Necessity and sufficiency matrix and descriptive statistics[a]

Variable	Mean	S.D.	P	K	L	S	C	E	O
1. ROEaj (P)	−9.15	77.03	**1.000**	0.738	0.602	0.470	0.445	0.285	0.414
2. Capital providers (K)	69.20	12.06	0.552	**1.000**	0.595	0.494	0.448	0.310	0.412
3. Employees (L)	49.16	13.99	0.576	0.761	**1.000**	0.607	0.532	0.409	0.528
4. Suppliers (S)	51.59	15.02	0.550	0.772	0.742	**1.000**	0.548	0.465	0.550
5. Customers (C)	62.23	15.54	0.550	0.741	0.687	0.579	**1.000**	0.420	0.490
6. Environment (E)	43.83	15.52	0.585	0.850	0.875	0.815	0.697	**1.000**	0.721
7. Community (O)	52.41	18.16	0.606	0.807	0.808	0.688	0.581	0.515	**1.000**

[a] We report the mean and the S.D. of the original variables. Necessity scores are displayed above the matrix diagonal (upper right corner) and sufficiency scores below the diagonal (lower left corner). The sufficiency and necessity scores reported correspond to the sets derived from the original variables. All necessity and sufficiency scores in Table 2 correspond to the 50th percentile calibration ">*MED*". Although not reported here due to space constrains, there are other necessity and sufficiency matrixes, similar to the one shown in Table 2, for the "MIN" and "MAX" calibration of the sets underlying all the analyses reported in this article.

guidelines, management systems and other data of interest. Basically, the information is extracted from financial accounts, documentation provided by the company, international databases, media reports, interviews with the principal interest groups and from permanent contact with company managers. A company is thus evaluated according to about 200 points of information that cover the four main primary stakeholder groups (capital providers, employees, customers and suppliers) and two major secondary (local communities and environmental groups). Sustainalytics analyzes all the information gathered and produces a final proprietary *aggregate score* for each stakeholder group ranging from 0 to 100, which is reported and updated annually as new information for each firm becomes available. A score of 100 indicates that the firm would meet all the criteria laid out by Sustainalytics, while the contrary is true for a score of 0. The descriptive statistics of these scores for each stakeholder group are reported in Table 2. We used these scores as surrogate measures of "stakeholders investments."

In addition to the data provided by Sustainalytics, we collected company data from OSIRIS and COMPUSTAT databases. We collected data on firm performance (ROE, ROA), financial statement data items, industry and country. Advertising data per industry was collected from Schonfel & Associates[2]. All the data analyzed correspond to 2008 and 2009. Excluding companies with missing data for those two years yielded a final sample of 1,060 firms for which all data were available.

RESULTS

All the results and analysis presented in this section have been computed with STATA using a command called *fuzzy* which uses the Quine-McCluskey algorithm to logically reduce the configurations (Longest and Vaisey, 2008).

Table 2 shows the descriptive statistics of the main variables as well as the necessity and sufficiency matrix. The necessity-sufficiency matrix is equivalent to the correlational matrix in regression analysis and all the results presented in this section are derived from it. Necessity scores are displayed above the matrix diagonal (upper right corner) and sufficiency scores below the diagonal (lower left corner). The necessity and sufficiency scores range from 0 to 1, 1 being the maximum necessity/sufficiency score. For instance, if we use ROEaj as the outcome to be explained, "employees" have a necessity score of 0.602, meaning that investing in employees above the 50th percentile in isolation does not constitute a necessary condition to superior ROEaj—i.e., it is below the 0.75 benchmark. Similarly, "employees" have a sufficiency score of 0.576, meaning that investing in employees above the 50th percentile in isolation does not constitute a sufficient condition to superior ROEaj. Similar observations can be made for any other stakeholder group in Table 2.

Although Table 2 only displays the sufficiency and necessity scores for the 50th calibration ("MED"), an emerging pattern can be observed where the primary stakeholders K (0.738), L (0.602), S (0.470) and C (0.445) present substantially higher necessity scores than secondary ones E (0.285) and O (0.414), suggesting that investments

[2] http://www.saibooks.com/

Table 3. Lower bound necessary conditions Hypothesis 1a

	H1a: $K_{>MIN}*L_{>MIN}*S_{>MIN}*C_{>MIN} \rightarrow P\ (Y)$			
	Necessary conditions			
	High performance (P)		Very high performance (Y)	
Crossover: 25th percentile	Consistency	F-statistic	Consistency	F-statistic
Capital providers ($K_{>MIN}$)	0.930	525.26***	0.952	410.27***
Employees ($L_{>MIN}$)	0.857	105.29***	0.925	258.15***
Suppliers ($S_{>MIN}$)	0.739	2.27*	0.838	42.68***
Customers ($C_{>MIN}$)	0.733	n/c[a]	0.821	20.79***
Environment ($E_{>MIN}$)	0.595	n/c	0.713	n/c
Community ($O_{>MIN}$)	0.659	n/c	0.744	n/c
$K_{>MIN}*L_{>MIN}$	0.805	22.10***	0.885	96.69***
$K_{>MIN}*L_{>MIN}*S_{>MIN}$	0.651	n/c	0.801	16.95**
$K_{>MIN}*L_{>MIN}*C_{>MIN}$	0.639	n/c	0.759	2.67*
$K_{>MIN}*L_{>MIN}*S_{>MIN}*C_{>MIN}$	0.607	n/c	0.751	2.33*
$K_{>MIN}*L_{>MIN}*S_{>MIN}*C_{>MIN}*E_{>MIN}$	0.454	n/c	0.573	n/c
$K_{>MIN}*L_{>MIN}*S_{>MIN}*C_{>MIN}*E_{>MIN}*O_{>MIN}$	0.409	n/c	0.520	n/c
$K_{>MIN}*E_{>MIN}*O_{>MIN}$	0.497	n/c	0.615	n/c
$E_{>MIN}*O_{>MIN}$	0.512	n/c	0.627	n/c

[a] n/c: no consistent at the 0.75 level. The consistency score is already below the 0.75 threshold (F-statistic < 0).
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$

in K, L, S and C may be more necessary for high performance. Sufficiency scores are generally low and homogenous across all the six stakeholder groups, ranging from 0.550 for suppliers and customers and a maximum of 0.606 for local communities.

Table 3 shows the lower bound necessary conditions (Hypothesis 1a). We show the consistency scores for both individual stakeholders as well as for several combinations of stakeholders. Unless indicated, all coverages obtained in all tables were high and above 0.2. The F-statistic (Wald test) for each consistency score and the significance levels are shown in Table 3.

The results in Table 3 provide some support to Hypothesis 1a, in as far as very high performance (Y) is concerned. The consistency for $K_{>MIN}*L_{>MIN}*S_{>MIN}*C_{>MIN}$ is 0.751 (p-value < 0.10). This indicates that minimum investments in these four primary stakeholder groups are necessary for very high performance. In the case of high performance (P), although the coefficient for $K_{>MIN}*L_{>MIN}*S_{>MIN}*C_{>MIN}$, is not statistically consistent at the 0.75 level, each stakeholder group in isolation displays highly consistent scores ($K_{>MIN} = 0.930$, $L_{>MIN} = 0.857$, $S_{>MIN} = 0.739$ and $C_{>MIN} = 0.733$), all of them significant with the exception of $C_{>MIN}$ by a narrow margin. Interestingly, there seems to be a core configuration $K_{>MIN}*L_{>MIN}$ that is significantly consistent, with the other remaining conditions ($S_{>MIN}$, $C_{>MIN}$, $E_{>MIN}$, $O_{>MIN}$) acting as peripheral conditions around this nuclear bundle.

Table 4 shows the lower bound sufficient conditions (Hypothesis 1b). Our results support Hypothesis 1b when very high performance (~Y) is used—i.e., the absence of a minimum investment in any single primary or secondary stakeholder seems to be sufficient to not observe very high performance. However, the absence of $K_{>MIN}$, $L_{>MIN}$, $S_{>MIN}$ or $C_{>MIN}$ is not sufficient to not observe high performance (~P). We find several combinations above the 0.75 threshold for ~P, although only two configurations ($\sim K_{>MIN}*\sim L_{>MIN}*\sim S_{>MIN}*C_{>MIN}$ and $\sim K_{>MIN}*\sim L_{>MIN}*S_{>MIN}*C_{>MIN}$) whose consistencies (0.799 and 0.794) are statistically higher than this benchmark (p-value < 0.10).

Tables 5 (Hypothesis 2a) and 6 (Hypothesis 2b) show the upper bound necessary and sufficient conditions respectively. Our results fully support Hypotheses 2a and 2b only for very high performance (Y), suggesting that the costs of overinvesting in stakeholders are significant, although probably not so high so as to prevent some firms from performing well at some basic level (P). In particular, overinvestments in capital providers and suppliers do not seem to be harmful to high performance (P). In the case of very high performance, it is a necessary condition that a firm does

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Table 4. Lower bound sufficient conditions Hypothesis 1b

	H1b: $\sim K_{>MIN} + \sim L_{>MIN} + \sim S_{>MIN} + \sim C_{>MIN} \rightarrow \sim P\ (\sim Y)$			
	Sufficient conditions			
	~High performance (~P)		~Very high performance (~Y)	
Crossover: 25th percentile	Consistency	F-statistic	Consistency	F-statistic
~Capital providers ($\sim K_{>MIN}$)	0.662	n/c[a]	0.908	78.14***
~Employees ($\sim L_{>MIN}$)	0.651	n/c	0.927	286.36***
~Suppliers ($\sim S_{>MIN}$)	0.602	n/c	0.902	298.32***
~Customers ($\sim C_{>MIN}$)	0.578	n/c	0.887	180.05***
~Environment ($\sim E_{>MIN}$)	0.576	n/c	0.880	226.46***
~Community ($\sim O_{>MIN}$)	0.597	n/c	0.879	184.73***
$\sim K_{>MIN} + \sim L_{>MIN} + \sim S_{>MIN} + \sim C_{>MIN}$	0.579	n/c	0.877	234.15***
$\sim K_{>MIN} + \sim L_{>MIN} + \sim S_{>MIN} + \sim C_{>MIN} + \sim E_{>MIN} + \sim O_{>MIN}$	0.557	n/c	0.856	168.67***
$\sim K_{>MIN} * \sim L_{>MIN} * \sim S_{>MIN} * \sim C_{>MIN}$	0.778	0.66	0.962	106.46***
$\sim K_{>MIN} * \sim L_{>MIN} * \sim S_{>MIN} * C_{>MIN}$	0.799	2.82*	0.985	455.95***
$\sim K_{>MIN} * \sim L_{>MIN} * S_{>MIN} * \sim C_{>MIN}$	0.786	1.29	0.972	166.31***
$\sim K_{>MIN} * \sim L_{>MIN} * S_{>MIN} * C_{>MIN}$*	0.794	2.93*	0.984	420.73***

[a] n/c: no consistent at the 0.75 level. The consistency score is already below the 0.75 threshold (F-statistic < 0).
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$

not overinvest in stakeholders beyond the MAX (75th percentile) threshold. Table 6 confirms these results, as it shows how companies that overinvest in any single primary or secondary stakeholder over the 75th percentile threshold are excluded from the set of very highly performing firms—the configuration $K_{>MAX} + L_{>MAX} + S_{>MAX} + C_{>MAX} + E_{>MAX} + O_{>MAX}$ has a consistency of 0.867 ($p < 0.01$).

Tables 7–9 show the results for industry differentiation, innovation and national/legal system contingencies respectively. In Tables 7 and 8 we follow the notation introduced by Ragin and Fiss (2008). We distinguish core (parsimonious solution) from peripheral conditions (complex solution). We only report the combinations whose consistency is statistically higher than 0.75. The minimum frequency threshold used was 2.

In Table 7, we used the 50th percentile of the advertising-to-sales ratio distribution to split the population into two groups: firms within low (LD) and firms within high differentiation (HD) industries. Solution 1LD (cons = 0.861) indicates that coordinated investments above the median in employees, suppliers, customers and local communities are associated with high performance in low differentiation industries, lending some support to Hypothesis 3. At the same time, as a contrast, we also test whether some combinations lead to high performance in high differentiation industries. We found two such combinations: 1HD (cons = 0.856) and 2HD (cons = 0.854). In configuration 1HD there is apparently strong complementarity between investments in suppliers, environmental groups and local communities, meaning that simultaneous and coordinated investments in these three stakeholders are more effective. Configuration 2HD is similar to 1HD but there is substitution effect between employees ($L_{>MED}$) and environmental groups ($E_{>MED}$). Thus, high performing firms competing in high differentiation either invest above the median in the former or the latter group but not in both groups at the same time. Nevertheless, their relatively low coverage (1HD: 0.035; 2HD: 0.038) suggests that such cases represent specific instances in a rather small group of firms—i.e., they are relatively rare in the economy. In general, the low coverages reported in Table 7 suggest that there are other paths leading to high performance different from the ones shown in the table. We did not find any consistent solution for very high performance (Y) at the 0.75 consistency level.

In Table 8 we split our population into low (LI) and highly innovative (HI) firms using the 50th percentile of the R&D intensity distribution. Solution 1LI (consistency = 0.848) supports Hypothesis 4: low innovation firms that simultaneously invest above the median in capital providers, employees, suppliers and customers are able to achieve high performance. The absence of $E_{>MED}$ and $O_{>MED}$

Table 5. Upper bound necessary conditions Hypothesis 2a

	H2a: $\sim K_{>MAX}*\sim L_{>MAX}*\sim S_{>MAX}*\sim C_{>MAX}*\sim E_{>MAX}*\sim O_{>MAX} \rightarrow P\ (Y)$			
	Necessary conditions			
	High performance (P)		Very high performance (Y)	
Crossover: 75th percentile	Consistency	F-statistic	Consistency	F-statistic
~Capital providers ($\sim K_{>MAX}$)	0.714	n/c[a]	0.822	24.74***
~Employees ($\sim L_{>MAX}$)	0.788	9.80***	0.877	96.57***
~Suppliers ($\sim S_{>MAX}$)	0.761	0.74	0.855	52.73***
~Customers ($\sim C_{>MAX}$)	0.858	97.74***	0.912	181.51***
~Environment ($\sim E_{>MAX}$)	0.853	88.86***	0.903	168.36***
~Community ($\sim O_{>MAX}$)	0.776	4.28**	0.870	80.26***
$\sim K_{>MAX}*\sim L_{>MAX}$	0.599	n/c	0.769	2.11*
$\sim K_{>MAX}*\sim L_{>MAX}*\sim S_{>MAX}$	0.535	n/c	0.681	n/c
$\sim K_{>MAX}*\sim L_{>MAX}*\sim S_{>MAX}*\sim C_{>MAX}$	0.496	n/c	0.645	n/c
$\sim K_{>MAX}*\sim L_{>MAX}*\sim S_{>MAX}*\sim C_{>MAX}*\sim E_{>MAX}*\sim O_{>MAX}$	0.463	n/c	0.610	n/c
$\sim E_{>MAX}*\sim O_{>MAX}$	0.732	n/c	0.829	28.75***
$\sim C_{>MAX}*\sim E_{>MAX}$	0.769	2.58*	0.844	42.25***

[a] n/c: no consistent at the 0.75 level. The consistency score is already below the 0.75 threshold (F-statistic < 0).
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$

Table 6. Upper bound sufficient conditions Hypothesis 2b

	H2b: $K_{>MAX} + L_{>MAX} + S_{>MAX} + C_{>MAX} + E_{>MAX} + O_{>MAX} \rightarrow \sim P\ (\sim Y)$			
	Sufficient conditions			
	~High performance (~P)		~Very high performance (~Y)	
Crossover: 75th percentile	Consistency	F-statistic	Consistency	F-statistic
Capital providers ($K_{>MAX}$)	0.576	n/c[a]	0.895	255.47***
Employees ($L_{>MAX}$)	0.557	n/c	0.897	191.38***
Suppliers ($S_{>MAX}$)	0.570	n/c	0.895	193.45***
Customers ($C_{>MAX}$)	0.605	n/c	0.902	144.72***
Environment ($E_{>MAX}$)	0.607	n/c	0.896	149.67***
Community ($O_{>MAX}$)	0.555	n/c	0.897	192.97***
$K_{>MAX} + L_{>MAX} + S_{>MAX} + C_{>MAX} + E_{>MAX} + O_{>MAX}$	0.542	n/c	0.867	213.83***

[a] n/c: no consistent at the 0.75 level. The consistency score is already below the 0.75 threshold (F-statistic < 0).
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$

are peripheral conditions (small circles in Table 8) and their presence or absence seems to be relatively unimportant in low innovation firms. We test, as a contrast, whether there are consistent sufficient conditions for highly innovative (HI) firms. We found five consistent solutions (1HI−5HI) leading to P_{HI}. While these five solutions vary in content, together they suggest that highly innovative firms do not need to necessarily invest in the four primary stakeholders and that investments in two or three stakeholders—mainly combinations of $S_{>MED}$ with either $K_{>MED}$ or $L_{>MED}$—suffice to achieve high performance. Interestingly, we find some common patterns among HI firms. For instance, investments in suppliers ($S_{>MED}$) are more associated with high performance than investments in customers ($C_{>MED}$) across the five configurations. This is consistent with the argument that companies with the best new products and services need offer little other reason to customers to choose them (Hull and Rothenberg, 2008: 783), while, at the same time, these highly innovative firms critically rely on their supply chains and supplier relationships to be able to offer those innovative products or services. Again, there is some evidence of complementarity effects between investments in suppliers and

Table 7. Contingencies: industry differentiation

	H3: $C_{>MED}*S_{>MED}*L_{>MED}*K_{>MED}*E_{>MED}*O_{>MED} \rightarrow P_{LD}$ (Y_{LD})		
	Sufficient conditions for high performance[a]		
	Low differentiation	High differentiation	
Crossover: 50th percentile	1LD	1HD	2HD
Capital providers ($K_{>MED}$)		⊗	⊗
Employees ($L_{>MED}$)	●	⊗	•
Suppliers ($S_{>MED}$)	●	●	●
Customers ($C_{>MED}$)	●	⊗	⊗
Environment ($E_{>MED}$)	⊗	•	⊗
Community ($O_{>MED}$)	●	●	●
Consistency	0.861	0.856	0.854
Raw coverage	0.084	0.035	0.038
Unique coverage	0.084	0.038	0.016
Overall solution consistency	0.861	0.865	
Overall solution coverage	0.084	0.051	

[a] No sufficient conditions were found leading to very high performance (Y_{LD}/Y_{HD}).
Black circles ● indicate the presence of a condition, and circles with ⊗ indicate its absence. Large circles indicate core conditions; small ones, peripheral conditions. Blank spaces indicate "don't care."

Table 8. Contingencies: innovation

	H4: $C_{>MED}*S_{>MED}*L_{>MED}*K_{>MED}*E_{>MED}*O_{>MED} \rightarrow P_{LI}$ (Y_{LI})					
	Sufficient conditions for high performance[a]					
	Low innovation	High innovation				
Crossover: 50th percentile	1LI	1HI	2HI	3HI	4HI	5HI
Capital providers ($K_{>MED}$)	●	⊗	⊗	●	•	•
Employees ($L_{>MED}$)	●	●	•	⊗	⊗	●
Suppliers ($S_{>MED}$)	●	●	•	●	●	●
Customers ($C_{>MED}$)	●	⊗	⊗	⊗	⊗	⊗
Environment ($E_{>MED}$)	⊗	⊗	•	⊗	●	⊗
Community ($O_{>MED}$)	⊗	⊗	•	⊗	•	•
Consistency	0.848	0.856	0.868	0.880	0.875	0.875
Raw coverage	0.054	0.043	0.063	0.068	0.081	0.085
Unique coverage	0.054	0.013	0.023	0.032	0.034	0.032
Overall solution consistency	0.848			0.861		
Overall solution coverage	0.054			0.201		

[a] No sufficient conditions were found leading to very high performance (Y_{LI}/Y_{HI}).
Black circles ● indicate the presence of a condition, and circles with ⊗ indicate its absence. Large circles indicate core conditions; small ones, peripheral conditions. Blank spaces indicate "don't care."

investments in employees (1HI, 2HI, 5HI)—e.g., a sophisticated supply chain is more profitable when the firm has a highly committed workforce. Despite this, 3HI and 4HI firms can reap the benefits of a sound supply chain with less committed employees. We did not find any consistent solution for very high performance (Y) at the 0.75 consistency level.

Lastly, consistent with comparative CSR literature (Kolk, 2003), we split the population into two groups in Table 9: European firms (strong CSR regulation) and U.S. firms (soft CSR regulation). Then, we calibrate the ROEaj (P_{EU} and P_{US}) using the 25th, 50th and 75th percentiles of these two distributions. Similarly, we use the 50th, 75th and 99th percentiles to calibrate very high performance in these two groups (Y_{EU} and Y_{US}). Although the consistency scores are not significant at the 0.75 level and thus Hypothesis 5 is not fully supported

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Table 9. Contingencies: national/legal system[a]

	H5: $C_{>MED}*S_{>MED}*L_{>MED}*K_{>MED}*E_{>MED}*O_{>MED} \rightarrow P_{EU}$ (Y_{EU})			
	Necessary conditions for high performance			
	EU		U.S.	
Crossover: 50th percentile	Consistency	F-statistic	Consistency	F-statistic
Capital providers ($K_{>MED}$)	0.640	n/c[b]	0.779	n/c
Employees ($L_{>MED}$)	0.771	n/c	0.531	n/c
Suppliers ($S_{>MED}$)	0.640	n/c	0.392	n/c
Customers ($C_{>MED}$)	0.633	n/c	0.354	n/c
Environment ($E_{>MED}$)	0.495	n/c	0.184	n/c
Community ($O_{>MED}$)	0.518	n/c	0.384	n/c

[a] For simplicity, we only report the results for high performance (P_{EU}/P_{US}). The results for very high performance (Y_{EU}/Y_{US}) show no significant changes and for this reason we do not show them in Table 9.
[b] n/c: no consistent at the 0.75 level. The consistency score is already below the 0.75 threshold (F-statistic < 0).
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$

by the data, the consistency scores are always higher in the case of European firms with the only exception of capital providers. This last result can be explained by the fact that corporate governance regulations seeking to protect shareholders are much stronger in the U.S. than in Europe (La Porta *et al.,* 2000). Indeed, European firms score, on average, between 5 and 20 KLD points higher than U.S. firms in all stakeholder groups except in capital providers (K), where U.S. firms score almost five points higher.

Sensitivity analysis and robustness

We conducted several robustness checks to verify that the results shown hold under different calibrations of the sets and different performance measures. First, we conducted sensitivity analyses to examine whether our findings are robust to the use of alternative specifications of the causal conditions, using a different coding for K, L, S, C, E and O. Specifically, we varied the crossover points between ±10 percentile points for all six stakeholder groups. For example, we tested if our results were robust if the MIN crossover point of 0.25 was changed to 0.35 or 0.15. Similar tests were done for the MED and MAX crossover points of 0.5 and 0.75 respectively. No substantive changes are observed in terms of the relations depicted in Tables 3–9. Second, as shown in Tables 3–9, we test our hypothesis against two different operationalizations of firm performance using the 50th (high performance) and 75th percentile (very high performance). Although the statistical significant scores vary from one to another operationalization, the consistencies and the relationships found were quite supportive of our hypotheses under both measures. Finally, in addition to ROEaj we used another often used performance metric in strategic management research: industry-adjusted ROA. We used one- and three-year lag for both dependent variables. The results, albeit with small differences, do not differ much from the consistency and coverage scores shown in Tables 3–9, confirming once again the robustness of the results presented.

CONCLUDING DISCUSSION

When it comes to stakeholder investments, more is not always better. In fact, less can be better, under some boundary conditions. In this article, we purported to show that given the existence of complementarities, costs and contingencies, any attempt to find a simple monotonic relationship between investments in stakeholders and firm performance seems to be futile. Contrary to conventional wisdom, one salient and bad act by a company will not necessarily damage its financial performance, or an enduring reputation will not overshadow all acts good or bad. According to the results provided in this article, stakeholder investments are more effective when done simultaneously across all the relevant stakeholder groups, when there are no disproportionally high investments in isolated stakeholder groups beyond some upper bound and when strategy, industry and legal/national conditions are taken into account.

The lower bound conditions explained by the presence of complementarities combined with the notion of primary stakeholders and the inducements-contributions balance (Barnard, 1938; Clarkson, 1995; Freeman, 1984) impose some necessary minimum investments in stakeholders upon all those firms with (very) high performance. Our findings point out the critical importance of the cumulative effect of complementary investments in several stakeholder groups, which in turn facilitates producing superior products and services, thereby increasing firm performance.

The upper bound conditions are justified by the existence of substantial costs attached to stakeholder investments (Barnett and Salomon, 2006; Friedman, 1970; Jensen, 2002). Our empirical results provide further evidence that such costs are significant in large multinational companies and that overinvestments in stakeholders above a sufficiently high upper bound are likely to lead to underperformance.

Lastly, several contingencies determine the conditions for optimal stakeholder investments within the lower and upper bounds. For instance, within low differentiation industries, the cumulative effect of firms' investments in employees, suppliers and customers can give firms a competitive edge. Similarly, firms suffering from low innovation levels can alternatively leverage their sets of stakeholder relationships to build a competitive advantage in the marketplace. Although in this paper we selectively test three of all potential contingencies—industry differentiation, innovation and national-legal system features—our results clearly suggest the necessity to further extend the number of contingencies mediating the relation between stakeholder management and firm performance, distinguishing between necessary and sufficient conditions when possible.

The previous findings need to be interpreted with caution. The question of whether an investment in a stakeholder is too high or too low is relative and in many instances it is difficult to capture with precision. In extreme cases of "over or under investments," the concept of complementarity that emanates from our results needs to be considered more broadly. For example, Zappos' extreme customer service and Apple's extreme innovation and product quality may far outstrip the minimum necessary for very high performance, but when combined with the configuration of how they treat other stakeholders—see Tables 7 and 8—it may be a source of competitive advantage and higher performance.

Beyond the specific results found in this study, this article contributes to stakeholder theory literature by analyzing the relationship between stakeholder investments and firm performance in a more comprehensive, non-linear way, where the interdependencies between stakeholder groups, the costs of stakeholder-related investments and strategic contingencies are more fully taken into account. In this regard, the application of STM done in this article may prove to be useful to future researchers in this field because they overcome some of the traditional challenges related to the study of *conjunctural causality*—e.g., when several elements are combined to achieve their effects. In addition, by using STM we provided a more refined analysis of the necessary and sufficient conditions of high performing firms. Further, STM allow for the analysis of causal asymmetry—i.e., the conditions leading to high performance are different from those leading to very high performance, as shown in Tables 3–9. For instance, the absence of a minimum investment in a primary stakeholder is a sufficient condition for not observing *very* high performance but is not a sufficient condition for not observing high performance (see Table 4). In combining a new theoretical approach ingrained in the stakeholder view of strategy and a novel methodology, this study represents a step toward building a more complete understanding of the relationship between the investments firms make in their stakeholders and the financial returns of such investments.

The current study also presents some limitations. First, while STM have gained more attention in academic research (Thiem and Dusa, 2013), there are still ongoing debates about the robustness and inferential power of these methods (Fiss, 2007; Ragin, 2000). In this sense, the results presented in this paper should be strictly circumscribed to the population of international publicly-owned firms monitored by Sustainalytics. While STM allow for a more detailed account of necessary and sufficient conditions than is frequently found in management research, it does so using the notion of *statistical* necessity and sufficiency, which could be verbalized as "almost always necessary" and "almost always sufficient" (Ragin, 2000: 110). In addition, STM are normally applied to cross-sectional samples, and reverse causality issues must be addressed. In this study we introduce several lagged performance variables (lagged ROE and ROA) to alleviate this concern. Future research may replicate our study using different time periods to check whether our set-theoretic results are robust over time.

Second, the data used to measure stakeholder investments come from Sustainalytics. While this data has the advantage of being calculated by disinterested researchers using all available data on more than 200 aspects of stakeholder management, it is debatable whether there are better ways to measure stakeholder investments over such a large sample of international firms (Margolis and Walsh, 2003). Nevertheless, the results presented in this article can be directly compared to most of the previous research in this field that has relied on similar data to measure stakeholder management (e.g., Hull and Rothenberg, 2008; McWilliams and Siegel, 2000; Waddock and Graves, 1997).

Third, our study extensively relies on the primary-secondary stakeholder distinction frequently used in the literature (Clarkson, 1995; Hillman and Keim, 2001). Yet, there are other determinants of stakeholder salience based on power, legitimacy and urgency (Agle *et al.,* 1999; Mitchell, Agle, and Wood, 1997) widely discussed in instrumental stakeholder theory that may affect or be affected by the complementarities, costs and contingencies investigated in this article.

Fourth, the contingencies affecting the relationship between stakeholder investments and firm performance are studied in this article with an exploratory purpose. Clearly, there are many other potential contingencies that need to be considered and that go beyond the scope of this article. Future research could investigate more elaborated contingencies and additional theoretical mechanisms connecting stakeholder investments and firm performance, including aspects such as market conditions, barriers to imitation or resources and capabilities controlled by the firm, among others. Additional firm-specific data is required to more fully characterize these configurations.

Lastly, we rely on accounting measures of financial performance (ROE, ROA). Additional research could investigate whether alternative measures of performance such as Tobin's Q or other market-based metrics show the same patterns observed in the current article. Regardless of the performance metric used, if stakeholders have substantial bargaining power, it is likely that they are able to appropriate some of the value jointly generated with the firm, so that the incremental performance is not shown in observable performance metrics (Coff, 1999). In those cases, researchers may benefit from wider measures of *total* value creation (e.g., Garcia-Castro and Lieberman, 2012).

In conclusion, in addition to exploring some boundary conditions in instrumental stakeholder theory, this study shows how a more detailed examination of necessary and sufficient conditions—rather than only statistical correlations—can be done in a probabilistic, non-deterministic way, compatible with the limitations of social sciences (Grandori and Furnari, 2008; Ragin, 2000). Because the necessary conditions leading to firm performance are likely to be different from the sufficient conditions, our understanding of the stakeholder management-firm performance link can be largely improved if researchers distinguish between the two, both in their theoretical propositions and their methodological designs.

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