Electronic Working Paper Series
ESDES-Recherche

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n° 2014-05

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CSR, innovation, and firm performance in a sluggish growth context: A firm-level empirical analysis

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Abstract

The few studies that analyze the impact of a combined strategy of innovation and corporate social responsibility (CSR) on firm performance mostly focus on financial performance. In contrast, the current study considers the simultaneous impact of technological innovations (product and process) and CSR on firm growth, which provides a measure of medium-term economic performance. With a sample of 213 firms and a two-step procedure, this study reveals the differentiated effects of strategic versus responsive CSR behavior on the two technological innovation types, as well as the effect of the two innovation types on growth. The findings thus indicate that firms with strategic CSR achieve growth through both their product and process innovations.

Keywords: CSR, Economic performance, Growth, Innovation

Acknowledgments: We gratefully acknowledge the help provided by Dr. Serge Allegrezza, Director of STATEC (National Institute of Statistics and Economics of the Grand-Duché of Luxembourg), who provided access to the SBS data. We also thank Wladimir Raymond and colleagues at various seminars for helpful comments on prior versions of this article.

1. Introduction

Corporate social responsibility (CSR) integrates "social and environmental concerns to [firms'] business operations and in their interactions with stakeholders on a voluntary basis" (Commission of the European Communities, 2001, p. 6) and has, as one of its main benefits, the potential to drive innovation. For example, CSR strategies lead to enhanced technological innovation when integrated into firms' strategies (Bocquet et al., 2013), though empirical research offers contradictory results regarding their effects on financial performance (McWilliams and Siegel, 2001). Some studies indicate a positive link (Margolis and Walsh, 2003); others find a negative relationship (Gössling, 2011). This lack of empirical consensus regarding the relationship between CSR and firm performance reflects a wide array of research issues (McWilliams et al., 2006; Perrini et al., 2011). In particular, an overly strong emphasis on *financial* instead of *economic* performance and the use of different methods to measure social and economic performance (Arlow and Gannon, 1982; Aupperle et al., 1985; Cochran and Wood, 1984; Orlitzky et al., 2003) represent important flaws in prior empirical research. Furthermore, many factors indirectly influence the relationship between CSR and firm performance, so intangible resources such as innovation (Surroca et al., 2010), reputation, or competitive advantages through customer satisfaction (Saeidi et al., 2014) might be missing links that could help explain the relationship between CSR and financial performance more accurately.

In response to these research issues, we analyze the effects of both CSR and technological innovation on firm performance, measured as economic performance, or firms' growth. This perspective has the advantage of focusing on medium-term aspects of performance. Prior empirical literature already has established the positive effect of innovative implementations on the rhythm of firms' growth, thus validating Schumpeter's predictions (see a recent survey by Colombelli et al., 2013). But few studies address CSR and innovation together as determinants of firms' growth. This article seeks to integrate these two factors simultaneously by providing a deeper understanding of the relationship among CSR, innovation, and firm growth. On the basis of a review of literature on the link between CSR and firm performance, we enrich extant analyses by drawing on an evolutionary perspective. With this framework, we consider how distinct CSR behaviors (strategic versus responsive) and differentiated innovation types (product, process, or both) can affect firm growth.

We draw on data gathered from different surveys carried out in Luxemburg during 2006–2009. Our two-step procedure addresses several potential problems that could be encountered by introducing CSR and innovation concurrently. First, a probit model with instrumental variables enables us to analyze the effects of strategic versus responsive CSR behavior on technological innovation types (process, product, or both). Second, we introduce the predicted innovation variables in an ordinary least square (OLS) model to measure the effects of innovation types on firm growth.

The results indicate that innovation influences the relationship between CSR and firm growth, in certain conditions. Adopting a CSR strategy does not necessarily lead to innovation; only

firms that adopt strategic CSR behavior exhibit a higher probability to innovate (process and both process and product). In contrast, firms implementing responsive CSR behaviors face counterproductive negative consequences in terms of innovation. In a second step, we show that the predicted innovation variable has a positive impact on growth, though the size of this effect depends on the type of innovation. It is greater for process and complex innovators. We therefore clarify the relationship among CSR, innovation, and firm growth, which has been neither conceptually recognized nor empirically captured by prior research. To the best of our knowledge, this study is the first to examine this relationship by considering both types of CSR behavior (strategic versus responsive) and the types of technological innovation (process, product, or both).

The new insights into the relationship among CSR, innovation, and growth are particularly resonant for firms suffering from sluggish growth. Whereas prior research often relies on data from time periods when macroeconomic growth was consistent and persistent, many European economies currently are experiencing a regime of slow or sluggish growth that affects not only economic markets but also their firms' potential growth rate.[1] This persistent situation (i.e., since 2007) shows few signs of changing, making it crucial to consider these relation in the macro context of demand stagnancy for European firms.

The rest of this article is organized as follows: Section 2 provides an overview of previous research on the relationship between CSR and firm performance, as well as the potential influence of innovation in this relationship, establishing the foundation for our hypotheses and research model. Section 3 is devoted to the presentation of our data and empirical models. The data analyses and results follow in Section 4. In Section 5, we discuss the implications of our findings, some limitations, and avenues for further research.

2. Literature Survey

2.1. CSR and firm performance: Is innovation the missing link?

Growing literature deals with the economic consequences of corporate social responsibility (CSR) and its effects on financial performance. Although the results are sometimes contradictory (Chassagnon, 2013), most studies reveal a positive link (e.g. Margolis and Walsh, 2003; Gössling, 2011), even though the scale of this link exhibits great variance across studies (McWilliams and Siegel, 2000; McWilliams et al., 2006; Orlitzky et al., 2003). A major difficulty is that, unlike the one for corporate social performance (CSP),[2] no immediate measure exists for CSR. This difficulty expands for efforts to assess the impact of CSR on financial performance. Empirical research uses different measures, such as accounting-based and market-based measures (Guiral, 2012). McWilliams and Siegel (2001) posit that the lack of consensus across empirical studies might reflect model specification problems, such as omissions of R&D spending. A firm's innovation may play a role too (Hull and Rothenberg, 2008; Surroca et al., 2010). Surroca et al. (2010) suggest that intangible resources, such as innovation, represent the missing link that could explain relationships between CSR and financial performance. Furthermore, we cannot exclude co-evolution and loops between CSR

and performance (Preston and O'Bannon, 1997). Gössling (2011) cites R&D and risk as important factors that influence the relationship between CSP and financial performance.

Three main models coexist to describe the relation between CSR and economic performance (Gössling, 2011). Model 1, the "charitable firm model," asserts CSR induces no gains. Rather, CSR behavior is only costly, and firms do not expect any direct return. In Model 2, the "legitimacy/commitment model" (Gössling, 2011), firms implementing CSR are more profitable (all else being equal) due to external factors, such as better reputations (Lourenço et al., 2012), gains in legitimacy, and more market flexibility ("license to operate"), as well as internal factors such as manpower. In Model 3, the "strategic CSR model" (Porter and Kramer, 2006), CSR produces more business opportunities and more innovations, enabling the firm to build larger competitive advantages (and more growth) due to social progress. These firms redesign products, markets, and productivity in the value chain. This model is anchored in a CSR-driven innovation or strategic CSR innovation approach. The effect on competitive advantage is conditional on the strategic alignment of CSR with the firm's strategy (Burke and Logdson, 1981).

Drawing on the analysis provided by Burke and Logsdon (1996), we distinguish between two types of CSR: strategic and responsive. Strategic CSR is in line with the model 3 of Porter and Kramer (2006), in which CSR and the firm's core competences/resources are aligned. In the same vein, Midttun (2009) restricted the CSR concept to be part of its core business model, illustrating the potential advantages of core strategic CSR through case studies. However, responsive (or defensive in Midttun's [2009] terminology) CSR behavior has limited potential in terms of value creation. This idea is in line with the more general view expressed by Schumpeter (1947) regarding economic agents' behavior as "creative versus adaptive." Strategic CSR appears more creative; responsive CSR reflects more adaptive behavior.

To establish a link between CSR and innovation, we extend Porter and Kramer's (2006) demonstration of the impact of strategic CSR on value creation. The distinction between strategic and responsive CSR leads to divergent economic impacts (Lankoski, 2009). Systematic patterns in these differences depend on whether the challenge is to reduce a negative externality or generate a positive externality and whether the outcome benefits market or non-market stakeholders. Consistent with Miles and Snow's (1978) model, organizational performance depends on the degree of consistency (fit) that managers establish across strategic, organizational, and environmental elements. All dimensions should be aligned to create innovation, whatever the type. Firms that adopt a strategic orientation toward CSR are more innovative in terms of products and processes (XX, 2013). Internal fit does not mean simply the adoption of good practices, which may be both insufficient and poorly aligned with the firm's existing organization and thus could lead to a failure of established strategic routines and declines in performance (Porter and Siggelkow, 2008). A lack of alignment also can translate into barriers to innovation, which can produce a vicious circle when the firm cannot link its CSR practices with its strategy (Gallego-Alvarez et al., 2011). This lack of alignment in responsive CSR firms likely hinders their technological innovation.

2.2. Relationship among CSR, innovation, and firm growth

To the best of our knowledge, no previous study has dealt empirically with the relationship among CSR, innovation, and growth. Scholars suggest three main theoretical frameworks to study the potential role of innovation on firms' growth (Colombelli et al., 2013). Among these frameworks, the evolutionary approach appears particularly well suited to study the complex relationship of CSR, innovation, and growth at the firm level. The first investigation of determinants of firm growth stemmed from Gibrat's well-known law. This "law of proportionate effects" (Gibrat, 1931) indicates that firm size distribution is highly skewed, presumably following a log-normal function, so firm size follows a random walk. No deterministic factors explain differences in the extent of a firm's growth. Vast literature deals with the theoretical coherence and empirical relevance of this law (e.g., Cefis et al., 2007); it also has prompted greater attention following an application that showed that the rates of growth of large and/or old firms are often erratic and thus unpredictable (Geroski, 1999). For such firms, there should be no deterministic impact of innovation activity on the scale of their growth. However, Gibrat's law is at odds with recent empirical studies that reveal the existence and persistence of heterogeneity among firms in their performance (Colombelli and von Tunzelmann, 2010).

A second firm growth model, proposed by Jovanovic (1982), predicts disproportionate growth across firms on the basis of age, according to the inverse relationship between firm age and growth. This model reflects a neoclassical concept of firm-specific managerial efficiency (which can be interpreted in terms of human capital). Young firms do not know their efficiency level and learn through production experience. Some firms disappear, while others grow at a rate that decreases with age (for a given size) and with size (for a given age). Thus, younger firms grow faster than older firms (Jovanovic, 1982; Evans, 1987).

The third theoretical analysis of firm growth is anchored in an evolutionary approach (Nelson and Winter, 1982). Firms competing in the same market face uneven production costs, due to differences in their technological capabilities. The differential growth rate across firms in the same sector therefore is a consequence of heterogeneity in firms' levels of efficiency (or capabilities). Cefis and Marsili (2005), examining the effects of innovation on survival using data about Dutch manufacturing firms, show that firms benefit from an innovation premium that extends their life in the industry, independent of firm age or size. Process innovation in particular seems to have a distinctive effect on survival. Coad and Rao (2008) find, with a large sample of high-tech firms, that growth may or may not relate to innovation activity (i.e., patenting), but innovation is more crucial for "rapid-growth" firms. In the same vein, Cassia et al. (2009) provide evidence that universities' knowledge input and output are important determinants of UK entrepreneurial firms' growth. According to Ernst (2001), patent applications increase sales after a lag of two or three years, depending on the type of the patent system (national or European). That is, the effects of innovation on firm growth are not immediate but occur soon after an invention has been implemented. Corsino and Gabriele (2011) use new (and unique) data pertaining to semiconductor devices commercialized during 1998–2004 by producers around the world; at the corporate level, the most recent innovations significantly affect growth performance. When they conduct their estimations at the business

unit level, the influence of product innovations on business unit growth is even greater than that recorded at the corporate level. Demirel and Mazzucato (2010) study pharmaceutical firms between 1950 and 2008 and observe that the positive impact of R&D on firm growth is conditional on a combination of firm-specific characteristics, such as firm size, patenting, and persistence in patenting. Colombelli et al. (2013) instead merge three waves of the French Community Innovation Survey (1992–2004) and find that innovative firms (regardless of the type of innovation) grow more than non-innovative ones.

2.3. Research Model and Hypotheses

In line with Porter and Kramer (2006), we argue that the impact of CSR on technological innovation performance differs for strategic versus responsive CSR. The clear-cut distinction between product and process innovations has important implications for a better understanding of the determinants of innovation and for firms' competitive position (Weiss, 2003). Because product and process innovations are linked to different industry- and firm-level variables (Cabagnols and Le Bas, 2001; Damanpour and Gopalakrishnan, 2001), it is possible to build a set of hypothesis, related to product and process innovation, that reflect the types of CSR adopted, as our research model in Figure 1 details.

Damanpour and Gopalakrishnan (2001) argue that process innovation is reinforced by an organization's interest in quality control and re-engineering, but product innovation can be better explained by a more offensive strategy that aims explicitly to increase market share, win customer loyalty, and stay ahead of the competition. External interfaces also tend to be more prominent for product innovations, because firms seek opportunities and manage uncertainty that exist outside the firm (Cohen and Levinthal, 1989). The internal interface between the firm's sub-units instead is more prominent for product innovations, because both the implementation and search processes take place within the firm (see Cabagnols and Le Bas, 2001). Only a firm conducting dense, strategic CSR can manage internal and external links with other stakeholders. However, as noted previously, responsive CSR does not simply mean the adoption of "good practices" to improve efficiencies. A lack of alignment can translate into barriers to innovation that affect process innovations negatively. Therefore,

> Hypothesis 1. Firms that adopt strategic CSR are more prone to engage in product innovation (versus process innovation).
>
> Hypothesis 2. Firms that adopt strategic CSR are more prone to undertake complex (product and process) innovation
>
> Hypothesis 3. Firms that adopt responsive CSR exhibit relatively poorer technological innovation.

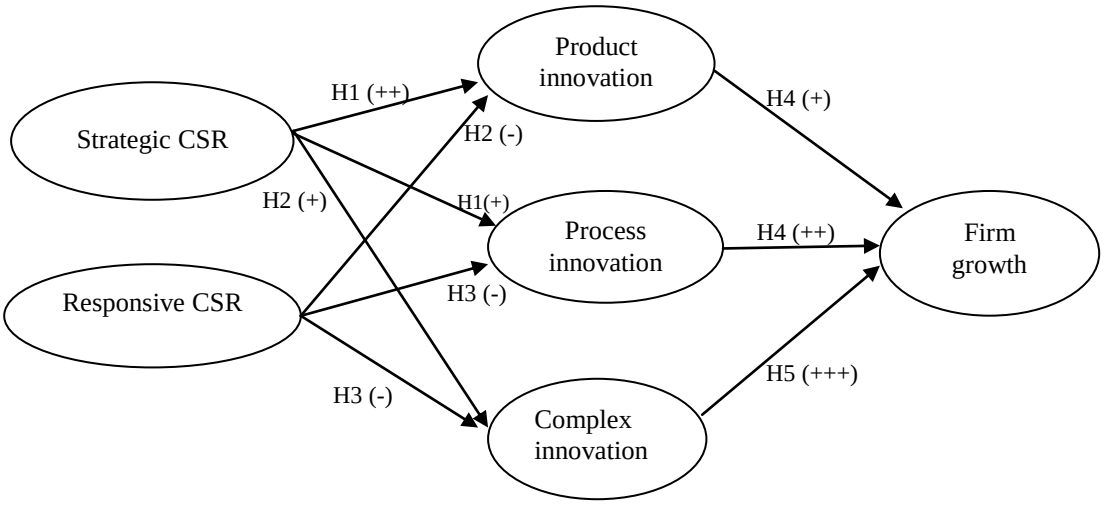
In line with various theoretical and empirical innovation studies (e.g., Colombelli et al., 2013), we assume that innovation has positive impacts on firm growth. With respect to the differential effects of the two types of innovation, a widely accepted trend reveals that process innovation strategies are associated with price competitiveness, whereas product innovation strategies are linked to technological competitiveness (Damanpour and Gopalakrishnan, 2001;

Pianta, 2006). Cost-reducing process innovation thus can increase the level of demand and turnover for the firm.

In turn, complex innovators should enjoy the positive effects of both types of innovation, whereas single types of innovators harvest the positive effect of only one type. Synergetic relations also might arise between improvements to products and improvements to processes. As Athey and Schmutzler (1995) show, returns on product innovations increase when the firm also implements a process innovation in the short term. Le Bas and Poussing (2014) also note that new knowledge generated by searching for product improvements might spill over to research projects that aim to improve processes, and vice versa. Because we expect a complex innovator to grow faster, we hypothesize:

> Hypothesis 4. The positive effect of process innovation on firm growth is greater than that of product innovation.
>
> Hypothesis 5. The positive effect of innovation on firm growth is greater for complex innovators than for single innovators.

Figure 1: Research model



3. Data and methods

3.1. Data

For our empirical analysis, we used data from three sources: two surveys conducted by CEPS/INSTEAD Luxembourg (Community Innovation Survey [CIS] and Corporate Social Responsibility Survey [CSR]) and an administrative data set (Structural Business Statistics, from the national institute for statistics and economic studies of the Grand Duchy of Luxembourg [STATEC]).

In Luxembourg, the 2008 CIS data were collected by CEPS/INSTEAD on behalf of STATEC, with the support of the European Commission (Eurostat), using face-to-face interviews among firms that had at least 10 employees (classified as 10–49 employees, 50–249 employees, or 250 employees or more). The final sample includes 615 firms. The second data set reflected

the results of the CSR survey carried out in Luxembourg in 2008 by the CEPS/INSTEAD. Similar to CIS 2008, firms with more than 10 employees, from all economic sectors, were included in this survey. Among the population of 3,296 companies in the national business register provided by STATEC, we built a sample of 2,511 firms with more than 50 employees, and we created a stratified random sampling procedure for firms with 10–49 employees. The data collection took place between mid-September and mid-December 2008, using a mailed questionnaire available in French and German (and English on request). We received 1,144 valid responses. The CSR survey collected 2008 data about firms' general characteristics and their integration of CSR into their corporate strategy, namely, whether the firm had adopted CSR in the period under observation (2006–2008) or planned to adopt CSR activities in the subsequent two years.

We merged the data of the two surveys. For this merged sample, we gathered data on the firms' turnover from by STATEC for the 2007–2009 period, in a structural business statistic context and in accordance with European Commission regulations. We deleted records if turnover data were missing for any one of the three years (35 firms). We also deleted the records of firms that indicated they had no employees (4 firms). To assess firm growth accurately, we needed to exclude firms that had experimented with mergers and acquisition. Such external growth transitions could either increase turnover, in the case of mergers, or decrease it if a firm were acquired by another firm. Because the effects (both positive and negative) generally are substantial in volume, we assumed that growth (loss) of more 20% in three years was due to a merger (acquisition). We considered these firms outliers and removed them from the sample (209 firms). Thus we obtained a final sample of 213 enterprises. To ensure representative results, the data were weighted on the basis of the number of firms per sector and employee size class.

In our sample, 42% of firms employed 50–249 people, 39% between 10–49, and 19% more than 250 people. We distinguished manufacturing (mining and quarrying, manufacturing, electricity, and gas and water supply) from service (wholesale trade, transport, storage and communication, financial intermediation, computer and related activities, architectural and engineering activities, and technical testing and analysis) industries, which represented 56% and 44% of firms, respectively.

In terms of CSR behavior and innovation, only 27% of firms had adopted CSR, and 14% expected to implement CSR practices in the near future. More firms (52%) had introduced one type (single innovators) of technological innovation (process or product), but less than 25% had introduced both process and product innovations (complex innovators). Firms that had introduced new or significantly improved methods of manufacturing or producing goods or services (process innovation) represented 46% of our sample, whereas firms that introduced new or significantly improved goods (product innovation) represented 45%. The proportion of firms engaging in innovative activity was greater among firms that had adopted CSR (28/57 = 49%) than among others (57/156 = 36.5%). Table 1 provides the descriptive statistics related to CSR and innovation behavior.

Table 1: Firm CSR and innovation behavior

	Do not innovate (1)	Innovate in product or process (2)	Innovate in process	Innovate in product	TOTAL (1 + 2)
Adopt CSR	29	28	5	22	57
Do not adopt CSR	99	57	39	46	156
TOTAL	128	85	44	68	213

3.2. Variables

Table 2 contains the definitions of all the variables and their descriptive statistics.

3.2.1. Dependent variables

The main dependent variable is firm growth, our proxy for firms' economic performance (Orlitzky et al., 2003; Roberts, 1992; Russo and Fouts, 1997). We measured growth in turnover between 2007 and 2009 in two ways. First, we computed growth for the overall time period using the variation of firm turnover in real price (DVCA79). Second, we calculated an average growth rate, to account for likely evolution during the overall time period. This variable is the arithmetic mean of the two-period growth rate (MOYDVCA79). Luxemburg experienced a recession during the study period, such that the rate of variation in the real gross national product (GNP) was 6.6% in 2007 but –0.7% in 2008; 2009 was marked by a severe recession (–5.6 %) (OECD, 2014). Over these three years, the national product trend was nearly flat. With respect to the firms in our sample, the average turnover growth rate for 2007–2009 reflected the overall national tendency (–0.02%). The study period also was characterized by very slow growth (or even recessions) in European economies in general; for the Europe 15 for example, the rate of variation was –0.2% during 2007–2011.

Table 2: Variables and descriptive statistics (n = 213)

Variable Acronym	Definition	Mean (Std. Deviation)	Min	Max
MOYDVCA79	Average growth between 2007 and 2009 using the arithmetic mean of the two-period rate of growth in real price (continuous variable)	-0.0005226 (0.23379)	-0.4202	2.7751
DVCA79	Growth between 2007 and 2009 using the variation of firm turnover in real price (continuous variable)	-0.02216 (0.43011)	-0.6789	5.1170
INPCS	Process innovation: the firm introduces new or significantly improved methods of manufacturing or producing goods or services (dummy variable)	0.46543 (0.46543)	0	1
INPDT	Product innovation: the firm introduces new or significantly improved goods (dummy variable)	0.45539 (0.49918)	0	1
INNO	Process innovation or product innovation (dummy variable)	0.52112 (0.50073)	0	1
COMPLEX	Process innovation and product innovation	0.24882 (0.43335)	0	1
CSR	Firms with CSR practices (dummy variable)	0.26760 (0.44375)	0	1
STRATEGIC	Firms with strategic CSR profiles (dummy variable)	0.10798 (0.31109)	0	1
RESPONSIVE	Firms with responsive CSR profiles (dummy variable)	0.15962 (0.36712)	0	1
PLAN_CSR	Firms plan to adopt CSR in the next two years (dummy variable)	0.14084 (0.34868)	0	1
NO_CSR	Firms don't adopt and don't plan to adopt CSR (dummy variable)	0.59154 (0.49271)	0	1
RDIN	The firm undertakes internal R&D activity	0.26760 (0.44375)	0	1

Variable Acronym	Definition	Mean (Std. Deviation)	Min	Max
EMPHI	Percentage of employees with higher education (including post-secondary college and university) (dummy variable)	0.25489 (0.30430)	0	1
MARCONC	The competition of the market is very intense (dummy variable)	0.58216 (0.49437)	0	1
SMALL	Total number of employees is 10–49 (dummy variable)	0.38967 (0.48882)	0	1
MEDIUM	Total number of employees is 50–249 (dummy variable)	0.417840 (0.49437)	0	1
LARGE	Total number of employees is more than 249 (dummy variable)	0.19248 (0.39518)	0	1
INORG	Organizational innovation: the firm introduces a new organizational method into its business practices (including knowledge management), workplace organization, or external relations (dummy variable)	0.54930 (0.49874)	0	1
INDUS	Belongs to the manufacturing sector (dummy variable)	0.44131 (0.49771)	0	1
WORLD	Most of the firm's turnover between 2006 and 2008 comes from outside the domestic market (dummy variable)	0.525822 (0.50051)	0	1

To assess the role of innovation in the relationship between CSR and firm growth, we considered a second set of dependent variables related to firm innovation. Four dummy variables measure the different types of technological innovation: INPCS if the firm introduces new or significantly improved methods of manufacturing or producing goods or services; INPDT if the firm introduces new or significantly improved goods; INNO if the firm introduces at least one of technological innovation (process or product); and COMPLEX if firm introduces both technological innovations (process and product). By distinguishing between single and complex innovators, we account for the idea that a complex innovator that can achieve product and process innovations jointly has an advantage in terms of its potential for creativity and new ideas, compared with more specialized firms (product or process).

3.2.2. Independent variables

The independent variables relate to firms' CSR profiles: strategic versus responsive. For Burke and Logsdon (1996), strategic CSR leads to value creation but requires firm alignment along five dimensions (centrality, proactivity, voluntarism, visibility, specificity). To determine which firms adopt strategic or responsive CSR profiles, we applied the method suggested by Bocquet et al. (2013). First, we operationalized CSR practices with nine variables, according to the five dimensions identified by Burke and Logsdon (1996). Second, we conducted a principal component analysis (PCA) on the CSR variables, which resulted in two distinct clusters. Cluster 1 (strategic CSR) comprises intensive CSR adopters, in terms of the number and intensity of the various types of CSR practices they undertake. Engaging in CSR not only is supported by the definition of clear economic objectives at the firm level but also requires the adoption of various formalized practices that reflect the firm's ability to incorporate a stakeholder's objectives into its business operations. In contrast, in cluster 2 (responsive CSR), firms are poor CSR adopters. They have not attained full CSR adoption, lack an asserted economic objective, do not clearly identify their stakeholders, and have not really succeeded in formalizing their CSR practices. We also introduce two dummy variables to account for firms that plan to adopt CSR or not (PLAN_CSR) and those that do not implement any CSR practices (NO_CSR).

We control for factors that explain innovation to isolate the pure effect related to CSR behavior. As mentioned previously, we adopt an evolutionary perspective, in the belief that the probability of innovation depends on a mix of firm-specific characteristics and sector configurations (Teece, 1986; Mairesse and Mohnen, 2010). We consider central drivers of the innovation process at the firm level (Dosi, 1988).

First, firm capabilities to achieve technological changes, including R&D capacity (Mairesse and Mohnen, 2005) and a well-trained workforce (Cohen and Levinthal, 1989), are important drivers of innovation. We included a variable for internal R&D (RDIN).[1] Because R&D expenditures cannot capture all innovation efforts, especially for smaller firms, we also considered the proportion of employees with a higher education degree (EMPHI), which offers a good proxy of firm-level human capital dedicated to innovation. Second, organizational arrangements and mechanisms, which favor the search and implementation of technological advances, are key determinants of technological innovation (Le Bas et al., 2014; Mothe and Nguyen, 2012; Haned et al., 2014; Mothe et al., 2014). We aggregated diverse organizational practices into a single variable, to measure the introduction of (at least) one new or significantly improved organizational practice (INORG). Third, incentives to innovate stemming from the strength of the competition represent another driver (Covin et al., 1999; Ozsomer et al., 1997). We included a dummy variable (MARCONC), which equals 1 when competition in the firm's market is very intense and 0 otherwise.

We also introduced a set of control variables. Size matters for innovation (see Russo and Fouts, 1997; Wagner, 2010) because large firms have more resources to invest in technological activities and exploit external opportunities (Cohen, 1995). They also tend to be better organized to protect their innovations and capture the associated rents (Teece, 1986). We accounted for these effects with a size measure (SMALL: 10–49 employees, MEDIUM: 50–249 employees, LARGE: more than 249 employees, in line with European classifications). In the second analysis step (link with growth), we also used a variable (WORLD) to account for the importance of turnover from outside the domestic market, because the link between internationalization and growth is well established. Finally, studies of CSR and innovation often include the sector of activity (e.g., Gallego-Alvarez et al., 2011), so we used INDUS to control for this variable (manufacturing/services).[2]

3.3. Methods

We aim to measure the impact of innovation on the growth of the firm when it adopts CSR behaviors. A common method would place the two focal variables (innovation and CSR) on the right side of a growth rate equation. However, such an empirical strategy could create a collinearity issue. To avoid this bias, we assess the impact of CSR on firm growth using a two-stage model. In a first step, we assess the effects of the CSR decision on the propensity to

[1] This instrumental variable meets two necessary conditions: relevance (i.e., it is correlated with the endogenous variable) and orthogonality (i.e., it is uncorrelated with the error term of the second equation).
[2] We emphasize the relationship between firm age and growth but cannot introduce this dimension in our model, because this information unfortunately is not available.

innovate (with control variables), using four probit models for each type of innovation. In line with Crépon et al. (1998) and Hashi and Stojcic (2013), we introduce instrumental variables. In a second step, we estimate the relationship between technological innovation types and firm growth, by introducing the predicted innovation variables as explanatory variables in the model that explains the rate of variation in turnover. The model is an OLS specification, because turnover variation is a continuous variable. To obtain proper standard errors (Guan, 2003; Stock et al., 2002), we used bootstrapping (Camponovo and Otsu, 2011) and performed 3000 replications.

4. Results

Tables 3 and 4 present the estimation results. The models related to the determinants of innovation show that firms implementing strategic CSR exhibit a higher probability to innovate in their technological process (Model 3), in both processes and products (Model 4 in Table 3). There is no significant impact on product or process innovation (Model 1) or on pure product innovation (Model 2). In addition, responsive CSR behavior has a significant negative effect on the probability of introducing all types of innovation, in line with previous results that suggest responsive CSR constitutes a barrier to innovation (Bocquet et al., 2013). When we exclude the type and consider only whether the firm undertakes CSR, this last variable has no significant effect. Analyzing CSR by the type of CSR chosen by the firm thus adds value to the model. These results partially corroborate H1 (i.e., strategic CSR has a positive effect on process innovation but no effect on product innovation) and confirm both H2 and H3.

With respect to the effects of the other explanatory and control variables, firms implementing organizational innovation indicate a higher probability of being technological innovators. The factors linked to the firm's knowledge base (RDIN, EMPHI) are also significantly positive. However, RDIN has no effect in Models 3 and 4. The competition variable exhibits a positive and significant effect on innovation (Cabagnols and Le Bas, 2001). Small firms have a lower propensity for process innovations and of being complex innovators. The sector variable is significantly positive.

Table 3: Probit model: Determinants of the probability to innovate

First step: Correction of endogeneity bias				
	Model 1	Model 2	Model 3	Model 4
	INNO	INPDT	INPCS	COMPLEX
STRATEGIC	0.03157 (0.15326)	0.12053 (0.14924)	**0.77318***** **(0.14086)**	**0.91070***** **(0.14431)**
RESPONSIVE	**-0.96686***** **(0.13334)**	**-0.65336***** **(0.12962)**	**-0.86916***** **(0.14062)**	**-0.55682***** **(0.14138)**
PLAN_CSR	0.13159 (0.14089)	**0.26811*** **(0.14162)**	0.07973 (0.14502)	**0.28895*** **(0.15202)**
NO_CSR	REF.	REF.	REF.	REF.
INORG	**1.28339***** **(0.09114)**	**1.13301***** **(0.09145)**	**1.21264***** **(0.09652)**	**1.20766***** **(0.10700)**
RDIN	**2.46347***** **(0.24552)**	**2.25908***** **(0.19331)**	-0.05188 (0.11244)	0.09851 (0.11308)

EMPHI	**0.69792*** (0.13637)**	**0.99522*** (0.13542)**	**0.68231*** (0.13476)**	**1.00331*** (0.13858)**
MARCONC	0.07284 (0.08594)	**0.20641** (0.08754)**	**0.15502* (0.08352)**	**0.28405*** (0.08909)**
SMALL	-0.13254 (0.10524)	-0.02979 (0.10695)	**-0.50736*** (0.09964)**	**-0.45480*** (0.10461)**
MEDIUM	REF.	REF.	REF.	REF.
LARGE	-0.13959 (0.23260)	-0.20435 (0.22462)	-0.19789 (0.17974)	-0.23067 (0.18373)
INDUS	**0.32344*** (0.10479)**	**-0.09660 (0.11040)**	**0.66105*** (0.10020)**	**0.33680*** (0.11008)**
CONST.	-1.13699*** (0.13621)	-1.43601*** (0.14036)	-1.38325*** (0.13732)	-1.81413*** (0.15208)
Pseudo R^2	0.3452	0.3523	0.2320	0.2549
Log likelihood	-646.75145	-630.12602	-672.47296	-605.87269
Number of Observations	213	213	213	213

Notes: Standard deviations are in brackets. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

The OLS estimation for the second step (Table 4) shows that technological innovation, whatever its type, always has positive impacts on firm growth,[3] even if the impact is only slightly significant (10%). Recall that the innovation variable is a predicted variable, derived from the first step in the estimated model, so it accounts for the likely effect of CSR.

Two other aspects deserve attention. The effects of the predicted probability to implement process innovation (Model 7) and to implement both process and product innovations (Model 8) on growth are greater than the effects of the predicted probability to implement product innovation (Model 6) and to implement product or process innovations (Model 5). Both Hypotheses 4 and 5 are supported by our estimations, consistent with the growth rate definition and recent literature (e.g., Colombelli et al., 2013). Therefore, cost-reducing process innovations can increase the level of demand for products in the current period and result in higher growth. The effect of technological competitiveness on growth instead is less immediate. Coad and Guenther (2013) show that the timing of the economic effects of product innovation is complex, and Mairesse and Robin (2009) reveal a similar result derived from French CIS data. Process innovation is the main determinant of labor productivity (and there is no effect of product innovation).

When an important share of the firm's turnover comes from world markets (dummy WORLD), the growth rate is significantly lower. This result is coherent with the depression that affected the world economy after the financial crisis of 2008. We posit that firms with important foreign markets were more affected by the worldwide recession.

Table 4: Determinants of firm growth (OLS)

Second step: Correction of the endogeneity bias				
	Model 5	Model 6	Model 7	Model 8
	MOYDVCA79	MOYDVCA79	MOYDVCA79	MOYDVCA79
INNO_PREDICT	**0.10692* (0.06078)**	**0.10492* (0.06116)**	**0.15610* (0.08329)**	**0.13892* (0.08149)**
INDUS	0.02479 (0.02766)	0.03650 (0.02820)	0.01678 (0.02659)	0.03418 (0.02840)

SMALL	0.02799 (0.04025)	0.02570 (0.04071)	0.04654 (0.04280)	0.03977 (0.04234)
MEDIUM	REF.	REF	REF.	REF.
LARGE	0.05797 (0.04930)	0.05438 (0.05018)	0.07827* (0.04761)	0.07034 (0.04720)
WORLD	**-0.13529*** (0.03918)**	**-0.13594*** (0.03948)**	**-0.13477*** (0.03911)**	**-0.13416*** (0.03946)**
CONST.	-0.04226 (0.03717)	-0.03671 (0.03580)	-0.05231 (0.04756)	-0.03949 (0.04391)
Adj. R^2	0.1518	0.1504	0.1519	0.1450
Number of Observations	213	213	213	213

Notes: Standard deviations are in brackets. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

5. Discussion and Conclusion

In this article, we have examined the relationship between CSR and firm performance by explicitly accounting for the often neglected role of innovation (Luo and Bhattacharya, 2006; Surroca et al., 2010). Unlike previous studies that focus on financial performance, we consider firm growth, as a measure of medium-term economic performance. This approach enables us to address a fundamental trait of firms, namely, their capacity to be durably viable in their competitive environments. Combining strategic management theory of CSR and the evolutionary approach of growth, our findings confirm that innovation has a significant role in determining the relationship between CSR and firm growth.

We contribute to prior literature by revealing two sides of CSR through innovation. In line with Luo and Bhattacharya (2006), our results show that previous research has been somewhat overly enthusiastic about the positive benefits of CSR; it has also a "dark side" that generates negative outcomes. These authors attribute the negative returns to a trade-off between investments in CSR versus the firm's core competencies, such as innovation, which should receive higher strategic priority than CSR initiatives. They also note that firms that are less innovative in meeting stakeholders' needs may send a negative signal of incorrect or opportunistic strategic choices that degrades their legitimacy and performance. In contrast, highly innovative firms can generate positive market value from CSR, given that their stakeholders' needs have been successfully satisfied. In a more recent contribution, Luo and Bhattacharya (2009) also show that the simultaneous pursuit of CSR, advertising, and R&D may be financially detrimental, because it increases firm idiosyncratic risk. They caution that pursuing all these strategic goals simultaneously is particularly difficult, if not impossible, because most firms experience resource limits.

We provide further evidence of the "dark side" of CSR but argue it is more a question of the context in which firms pursue their strategic goals than of goal quantity. This dark side of CSR should lead to negative effects on performance, but we find instead that it has direct negative consequences only for innovation, probably due to the insights provided by our two-step model. In particular, the costs of CSR may be lower than its benefits, depending on the type of CSR strategy (responsive versus strategic), which affects a firm's innovation. That innovation in turn generates different economic returns to CSR.

Our study reveals not only the role of innovation in the relationship between CSR and firm growth but also the conditions that lead to a potential trade-off between innovation and CSR initiatives. A responsive CSR strategy has negative impacts on the propensity to undertake various types of technological innovations; strategic CSR behavior favors innovative probability (in process and in both process and product). Therefore, firms that have fully integrated CSR into their business strategies perform better in terms of innovation and economic performance. In particular, process and complex innovators that benefit from strategic CSR experience more growth. These results support the conjecture suggested by Porter and Kramer (2006) regarding the potential value creation related to strategic CSR. Our findings confirm the need "to consider proactive management as an instrument that enables organizations to maintain dynamic alignment with their general business environment" (Ortiz Avram and Khüne, 2008, p. 3), to innovate, and thus to generate higher economic returns from CSR.

With respect to the impact on firm growth, our results are weakly significant. They might be subject to a limitation in the sense that the time period in which we calculated growth was characterized by quasi-stagnation in the country under observation (Luxemburg) and for many of the firms in our sample. To what extent did this phenomenon affect our results? Garcia-Quevedo et al. (2014), performing a growth analysis for UK firms during the same time period, show that the lack of trust in the macro-conditions of demand prevented firms from engaging in innovative activities. The macroeconomic context in the Europe 15 nations strongly altered the conditions associated with tracking firm growth drivers. It also increased the difficulty of finding determinants of firm growth, by blurring the causal links among CSR, innovation, and growth.

This study is subject to other limitations. First, we only tested the effect of innovation on the CSR–firm performance link. Other intangible resources that might mediate or moderate this relationship should be included together in future empirical studies. Second, we used a strategic measure of CSR to distinguish two firm profiles (responsive versus strategic). This approach had the virtue of reflecting whether the firm had integrated all CSR components (environmental, social, economic) into its strategic vision or not. However, an interesting extension could test for the existence of complementarity or substitution effects across CSR components (Cavaco and Crifo, 2014). Third, the characteristics of the sample represent a limitation. An in-depth analysis of innovations' complementarity would be more feasible with a larger sample. The analysis is cross-sectional and could invoke reverse causality, such that innovative firms enter in a virtuous cycle in which growth, generated by innovation, allows them to invest more in innovation. To deal with this limitation, panel data or data that include the implementation dates for innovation and CSR would be useful. Fourth, other non-technological innovations, such as marketing, organizational, or business model innovations, might have effects. Fifth, researchers might consider a direct effect of CSR on firm growth, beyond the indirect effect through firm innovative behaviors. Finally, adding another three-year time period would provide a means to test for the effects of CSR and innovation in a more longitudinal way, providing some possible explanations of the causal effects. It also

would ensure a lag between the dependent variable and the regressors, which could produce more significant coefficients and effects.

From a managerial perspective, this study confirms the importance of CSR as a strategy that favors innovation and firm growth. Moreover, it specifies that all CSR strategies do not lead to the same benefits; the outcome depends on their implementation. Strategic CSR, because it ensures the dynamic alignment of CSR activities with the firm's general business strategy, is likely to meet stakeholders' medium-term expectations. Managers who are keen to implement CSR initiatives therefore should incorporate this strategic dimension. Otherwise, they could be penalized, in terms of both their innovation and their economic returns.

Notes

[1] García-Quevedo et al. (2014) show, with a panel of Spanish firms, that deteriorated demand conditions have strong negative effects on R&D investments.
[2] CSP is more directly applicable (see Gössling, 2011). Different measures for CSP have been suggested, such as investment in pollution control equipment, treatment of women and minorities, or relations with customers (Waddok and Graves, 1997).
[3] We obtained similar results when we measured growth as the variation of firm turnover in real prices (DVCA79).

References

Arlow, P. and Gannon, M. (1982). Social Responsiveness, Corporate Structure and Economic Performance. *Academy of Management Review* 7(2), 235-241.

Athey, S. and Schmutzler, A. (1995). Product and process flexibility in an innovative environment, *Rand Journal of Economics*, 26(4): 557–574.

Aupperle, K. E., Carroll, A. B. and Hatfield, J. D. (1985). An empirical examination of the relationship between corporate social responsibility and profitability. *Academy of Management Journal* 28(2): 446-463

Burke, L. and Logsdon, M. (1996). How corporate social responsibility pays off. *Long Range Planning* 29(4), 495-502.

Cabagnols, A. and Le Bas, C. (2001). The Determinants of the Type of Innovative Behaviour at the Firm Level. In A. Kleinknecht and P. Mohnen (eds), *Innovation and Firm Performance: Econometric Explorations of Survey Data*, (pp. 112-149). Palgrave, New York.

Camponovo, L. and Otsu, T. (2011). *Robustness of Bootstrap in Instrumental Variable Regression*, Cowles Foundation Discussion Paper n°1796, http://cowles.econ.yale.edu/P/cd/d17b/d1796.pdf

Cassia, L., Colombelli, A. and Paleari, S. (2009). Firms' growth: Does the innovation system matter? *Structural Change and Economic Dynamics* 20(3), 211-220.

Cavaco, S. and Crifo, P. (2014). CSR and financial performance: complementarity between environmental, social and business behaviours. *Applied Economics* 46(27), 3323-3338.

Cefis, E. and Marsili, O. (2005). A matter of life and death: innovation and firm survival. *Industrial and Corporate Change* 14(6), 1167-1192.

Cefis, E., Ciccarelli, M. and Orsenigo, L. (2007). Testing Gibrat's legacy: A Bayesian approach to study the growth of firms. *Structural Change and Economic Dynamics* 18(3), 348-369.

Chassagnon, V. (2013). Towards a Social Ontology of the Firm: Emergence, Reconstitution, Organisation, Institution and Power. *Journal of Business Ethics*, DOI: 10.1007/s10551-013-1849-1

Coad, A. and Guenther, C. (2013). Processes of firm growth and diversification: theory and evidence, SPRU Working Paper Series 2013-11, SPRU.

Coad, A. and Rao, R. (2008). Innovation and firm growth in high-tech sectors: A quantile regression approach. *Research Policy* 37(4), 633-648.

Cochran, P. L. and Wood, R. A. (1984). Corporate social responsibility and financial performance, *Academy of Management Journal* 27(1), 42-56.

Cohen, W. (1995): "Empirical Studies of Innovative Activity" in P. Stoneman (ed.) Handbook of the Economics of Innovation and Technological Change. Blackwell Handbooks in Economics.

Cohen, W. M. and Levinthal, D. A. (1989). Innovation and Learning: The Two Faces of R & D. *The Economic Journal* 99(397), 569-596.

Colombelli, A. and von Tunzelmann, N. G. (2010). The persistence of innovation and path dependence. In Antonelli, C. (ed.), *The System Dynamics of Technological Change*, Edward Elgar, Cheltenham.

Colombelli, A., Haned, N. and Le Bas, C. (2013). On firm growth and innovation: Some new empirical perspectives using French CIS (1992-2004). *Structural Change and Economic Dynamics* 26(C), 14-26

Commission of the European Communities (2001). *Green Paper "Promoting a European Framework for Corporate Social Responsibility"*. COM 366 final, Brussels.

Corsino, A. and Gabriele, R. (2011). Product innovation and firm growth: evidence from the integrated circuit industry. *Industrial and Corporate Change* 20(1), 29-56.

Crépon, B., Duguet, E. and Mairesse, J. (1998). Research Innovation and Productivity: An Econometric Analysis at the Firm Level. *Economics of Innovation and New Technology* 7(2), 115-158.

Covin, J. G., Slevin, D. P., and Heelewy, M. B. (1999). Pioneers and followers: competitive tactics, environment and firm growth. Journal of Business Venturing, 15, 175-210.

Damanpour, F. and Gopalakrishnan, S. (2001). The dynamics of the adoption of product and process innovations in organizations, *Journal of Management Studies*, 38(1): 45–65.

Demirel, P. and Mazzucato, M. (2010). *Does Market Selection Reward Innovators*? April. Mimeo. FINNOV project.

Dosi, G. (1988). Sources, Procedures, and Microeconomic Effects of Innovation. *Journal of Economic Literature* 26(3), 1120-1171.

Ernst, H. (2001). Patent applications and subsequent changes of performance: evidence from time-series cross-section analyses on the firm level. *Research Policy* 30(1), 143-157.

Evans, D. S. (1987). Tests of Alternative Theories of Firm Growth. *The Journal of Political Economy* 95(4), 657-674.

Gallego-Alvarez, I., Prado-Lorenzo, J. M. and Garcia-Sanchez, I. M. (2011). Corporate social responsibility and innovation: A resource-based theory. *Management Decision* 49(10), 1709-1727.

García-Quevedo, J., Pellegrino, G. and Savona, M. (2014). Reviving demand-pull perspectives: the effect of demand uncertainty and stagnancy on R&D strategy, SPRU Working Papers. May.

Geroski, P. (1999). The Growth of Firms in Theory and in Practice. Centre for Economic Policy Research, Working Paper n° 2092, London.

Gibrat, R. (1931). *Les inégalités économiques*. Librairie du Recueil, Paris.

Gössling, T. (2011). *Corporate Social Responsibility and Business Performance. Theories and Evidence about Organizational Responsibility*. Tilburg University, The Netherlands

Guan, W. (2003). From the help desk: Bootstrapped standard errors. *Stata Journal* 3(1), 71-80.

Guiral, A. (2012). Corporate social performance, innovation intensity and financial performance: Evidence from lending decisions. *Behavioral Research In Accounting* 24(2): 65-85.

Haned, N., Mothe, C. and Nguyen, U. (2014). Firm persistence in technological innovation: The relevance of organizational innovation. *Economics of Innovation and New Technology*, forthcoming.

Hashi, I. and Stojcic, N. (2013). The impact of innovation activities on firm performance using a multi-stage model: Evidence from the Community Innovation Survey 4. *Research Policy* 42(2), 353-366.

Hull, C. E. and Rothenberg, S. (2008). Firm performance: the interactions of corporate social performance with innovation and industry differentiation. *Strategic Management Journal* 29(7), 781-789.

Jovanovic, B. (1982). Selection and evolution of industry. *Econometrica* 50(3), 649-670.

Lankoski, L. (2009). Differential economic impacts of corporate responsibility issues. *Business & Society* 48(2), 206-224.

Le Bas, C. and Poussing, N. (2014). Are complex innovators more persistent than single innovators ? An empirical analysis of innovation persistence drivers. *International Journal of Innovation Management* 18(1), 1-21.

Le Bas, C., Mothe, C. and Nguyen, U. (2014). The differentiated impacts of organizational innovation practices on technological innovation persistence. *European Journal of Innovation Management*, forthcoming.

Le Bas, C., Poussing, N. and Haned, N. (2010). Innovation, leadership technologique et comportements de responsabilité sociale. Une exploration sur données d'entreprises. *Economies et Sociétés* n° 12, série W, 1363-1386.

Lourenço, I. C., Callen, J. L., Branco, M. C. and Curto, J. D. (2012). The Value Relevance of Reputation for Sustainability Leadership. *Journal of Business Ethics* 104(8), 417-428.

Luo, X. and Bhattacharya, C. B. (2006). Corporate Social Responsibility, Customer Satisfaction, and Market Value. *Journal of Marketing* 70(4), 1-18

Luo, X. and Bhattacharya, C. B. (2009). The Debate over Doing Good: Corporate Social Performance, Strategic Marketing Levers, and Firm-Idiosyncratic Risk. *Journal of Marketing* 73(6), 198-213.

Mairesse, J. and Mohnen, P. (2005). The Importance of R&D for Innovation: A Reassessment Using French Survey Data. *The Journal of Technology Transfer* 30(2), 183-197.

Mairesse, J. and Robin, S. (2009). Innovation and productivity: a firm-level analysis for French Manufacturing and Services using CIS3 and CIS4 data (1998-2000 and 2002-2004): http://congres.afse.fr/docs/2010/ 543572jmsr_ep2009.pdf]. 28.03.2011

Mairesse, J., and Mohnen, P. (2010). Using innovation surveys for econometric analysis. Working Paper 15857. National Bureau of Economic Research (NBER), Cambridge, MA.

Mansfield, E. (1962). Entry, Gibrat's law, innovation and the growth of firms. *American Economic Review* 52(5), 1023-1051.

Margolis, J. D. and Walsh, J. P. (2003). Misery Loves Companies: Rethinking Social Initiatives by Business. *Administrative Science Quarterly* 38(3), 268-305.

McWilliams, A. and Siegel, D. (2000). Corporate Social Responsibility and Financial Performance: Correlation or Misspecification? *Strategic Management Journal*, 21(5), 603-609.

McWilliams, A. and Siegel, D. (2001). Corporate Social Responsibility: A Theory of the Firm Perspective. *Academy of Management Review* 26(1), 117-127.

McWilliams, A., Siegel, D. and Wright, P. (2006). Corporate social responsibility: Strategic implications. *Journal of Management Studies* 43(1), 1-18.

Miles, R. E. and Snow, C. C. (1978/2003): Organizational Strategy, Structure, and Process, Stanford University Press, California.

Mothe, C., and Nguyen, U. (2012). Non-technological and technological innovations: Do services differ from manufacturing? An empirical analysis of Luxembourg firms. *International Journal of Technology Management* 57(4), 227-244.

Mothe, C., Nguyen, P. and Nguyen, U. (2014). Complementarities in organizational innovation practices: evidence from French industrial firms. *Economics of Innovation and New Technology*, forthcoming.

Nelson, R. R. and Winter, S. (1982). *An Evolutionary Theory of Economic Change*. The Belknap Press, Cambridge, MA and London.

Orlitzky, M., Schmidt, F. L. and Rynes, S. L. (2003). Corporate Social and Financial Performance: A Meta-analysis. *Organization Studies* 24(3), 403-441.

Ortiz Avram, D. and Kühne, S. (2008). Implementing Responsible Business Behavior from a Strategic Management Perspective: Developing a Framework for Austrian SMEs. Journal of Business Ethics 82(2), 463-475.

OECD (2014). Luxembourg statistical profile: Key tables from OECD. DOI: 10.1787/20752288

Ozsomer, A., Calantone, R. and Di Benedetto, C. A. (1997). What Makes Firms More Innovative? A Look at Organizational and Environmental Factors. *Journal of Business and Industrial Marketing* 12(6), 400-416

Perrini, F., Russo, A., Tencati, A. and Vurro, C. (2011). Deconstructing the Relationship between Corporate Social and Financial Performance. *Journal of Business Ethics* 102(1), 59-76.

Pianta, M. (2006). Innovation and Employment. In: J. Fagerberg, D. Mowery and R. Nelson, (eds.). *The Oxford Handbook of Innovation*,; (pp. 568-598). Oxford University Press, Oxford.

Porter, M. E. and Kramer, M. R. (2006). The link between competitive advantage and corporate social responsibility. *Harvard Business Review* 84(12), 78-92.

Porter, M.E. and Siggelkow, N. (2008). Contextual Interactions within Activity Systems and Sustainability of Competitive Advantage, *Academy of Management Perspectives* 22(2), 34-56.

Preston, L. E. and O'Bannon, D. P. (1997). The corporate social-financial performance relationship. *Business and Society* 36(4), 419-429.

Roberts, R. W. (1992). Determinants of corporate social responsibility disclosure: An application of stakeholder theory. *Accounting, Organizations and Society* 17(6), 595-612.

Russo, M. V. and Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal* 40(3), 534-559.

Saeidi S. P., Sofian S., Saeidi P., Saeidi S. P., and Saaeidi, S. A. (2014). How does corporate social responsibility contribute to firm financial performance? The mediating role of competitive advantage, reputation, and customer satisfaction. *Journal of Business Research*, DOI: 10.1016/j.jbusres.2014.06.024.

Stock, J. H., Wright, J. H. and Yogo, M. (2002). A survey of weak instruments and weak identification in generalized method of moments. *Journal of Business & Economic Statistics* 20(4), 518-529.

Surroca, J., Tribò, J. A. and Waddock, S. (2010). Corporate Responsibility and Financial Performance: the Role of Intangible Resources. *Strategic Management Journal* 31(5), 463-490.

Teece, D. J. (1986). Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy* 22(2), 112-113.
XX (2013).
Waddock, S. and Graves, S. (1997). The Corporate Social Performance-Financial Performance Link. *Strategic Management Journal* 18(4), 303-319.
Wagner, M. (2010). Corporate social performance and innovation with high social benefits: a quantitative analysis. *Journal of Business Ethics* 94(4), 581-594.
Weiss, P. (2003). Adoption of product and process innovations in differentiated markets: the impact of competition, *Review of Industrial Organization*, 23: 301–314.