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What drives environmental practices of SMEs?

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Abstract:

The objective of this paper is to develop a better understanding of how and why small and medium-sized enterprises (SMEs) engage in environmental practices. Two types of environmental practices are distinguished: practices related to production processes (*greening processes*) and practices related to products and services (*greening product and service offerings*). Despite a growing literature on socially responsible behavior of large firms, the role of SMEs remains underexposed. This neglect of SMEs is not justified because of the substantial impact of SMEs on the economy and the natural environment. By using unique data for almost 9,000 SMEs across 12 sectors in 38 countries, we study the influences of firm, sector and country characteristics on SMEs' environmental behavior. Our results suggest that different characteristics have dissimilar influences on both types of environmental practices such as the type of customers served and the stringency of environmental legislation at the country level. Moreover, the dominant idea that small firms are reluctant to invest in environmental practices is clearly more nuanced: size indeed matters however only when greening processes are concerned.

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1. Introduction

There is a growing focus on the role that businesses play on the preservation of the environment (Bansal and Roth 2000; Hart 1995; Porter and Van der Linde 1995). Despite an emerging literature on the role of large firms, the role of small and medium-sized enterprises (SMEs) remains underexposed (Perrini 2006; Spence and Rutherford 2003; Worthington and Patton 2005). This neglect of SMEs is not justified given the substantial impact of SMEs on the natural environment with estimates of 60% to 70% of total pollution being produced by SMEs (Aragón-Correa et al. 2008; European Commission 2010). Addressing the environmental impact of SMEs requires a solid understanding of what drives individual SMEs to engage in environmental practices. Due to a lack of this understanding, policies are often based on insights from large firms assuming that SMEs are miniaturized versions of corporate firms (Aragón-Correa et al. 2008; Perrini et al. 2007).

The objective of this paper is to develop a better understanding of the extent of environmental practices by SMEs and the conditions under which SMEs engage in such practices. Two types of environmental practices are distinguished: engagement in greening processes and in greening product and service offerings.

We formulate hypotheses about the influences of firm, sector and country characteristics on SMEs' environmental behavior. Unique large-scale harmonized data for almost 9,000 SMEs across 12 sectors in 38 countries are used to test the hypotheses. These data from 2012 are retrieved from the Flash Eurobarometer survey on "SMEs, resource efficiency, and green markets" (no. 342) that was conducted on behalf of the European Commission.

This study makes several contributions. *First*, we investigate firm-level characteristics and factors related to the sector and country of the firm that may determine SMEs' environmental behavior. Our approach is in sharp contrast with existing studies that use data for single countries (Perrini et al. 2007; Uhlaner et al. 2012) and/or single industries (Masurel 2007; Worthington and Patton 2005).

Second, by taking two types of environmental behavior of SMEs into account, we investigate whether the conditions under which SMEs engage in environmental practices differ across types of practices. We address the call to consider multiple environmental practices when assessing firm behavior (Halme and Laurila 2009; Hockerts and Wüstenhagen 2010; Uhlaner et al. 2012).

Third, we take a stakeholder perspective (Freeman 1984) to formulate our hypotheses and to explain our results. Although this perspective has proven its value in CSR literature (Clarkson 1995; Wood 1991), it has received little attention in regards the behavior and decision-making processes of smaller firms.

The findings reveal that the three levels of analysis – firm, sector, country – are relevant in explaining the environmental behavior of SMEs. In addition, it turns out to be important to distinguish between the types of environmental practices. That is, the type of customers served and stringency of environmental legislation only affect SMEs' engagement in greening product and service offerings whereas firm size is related to greening processes. Additional findings are that SMEs active in process-intensive or tangible sectors and SMEs that receive financial support are likely to adopt both environmental practices.

This paper is structured as follows. We describe the main concepts used in our study in section 2. The hypotheses are formulated in section 3 whereas section 4 describes our methodological set-up and the data. The results are presented in section 5, followed by a discussion and concluding remarks in section 6.

2. Environmental practices and SMEs

The present paper focuses on environmental practices of SMEs.¹ Environmental practices include activities undertaken by firms aimed at reducing the impact of their operations and their products and services on the environment (Gadenne et al. 2009; Uhlaner et al. 2012). Examples of these activities are minimizing waste, saving on resources, recycling, and offering organically produced or eco-designed products. Environmental practices are closely related to concepts such as sustainable development, sustainable entrepreneurship and corporate social responsibility (CSR). A description of each concept is given below.

Sustainable development refers to the development that “meets the needs of current generations without compromising on the ability of future generations to meet their own needs” (WCED 1987, p.43). Related to the business realm, sustainable entrepreneurship refers to business practice that puts economic, social and environmental goals on equal footing (so-called ‘triple bottom line’) and emerged from two separate research streams (Hockerts and Wüstenhagen 2010): social entrepreneurship (Dacin et al. 2010; Mair and Martí 2006; Zahra et al. 2009) and environmental entrepreneurship (Cohen and Winn 2007; Dean and McMullen 2007; York and Venkataraman 2010). Whereas environmental entrepreneurship refers to disruptive rather than incremental innovation brought about by entrepreneurs who discover and exploit economic opportunities related to environmental issues (Hockerts and Wüstenhagen 2010), environmental practices refer to any deliberate environmentally friendly activity undertaken by firms. Finally, CSR can be defined as instances where a firm goes beyond compliance and engages in actions that appear to advance a social cause (McWilliams and Siegel 2001; Rodriguez et al. 2006). CSR literature mainly concerns large firms (Perrini 2006; Quinn 1997) and the findings of these studies cannot be generalized to SMEs (Aragón-Correa et al. 2008; Spence and Rutherford 2003).

In sum, we consider environmental practices as practical operationalizations of these three related concepts (Uhlaner et al. 2012). Hence, we are interested in actual environmental behaviors of firms. In contrast to CSR that is defined relative to legislation, actual environmental behavior concerns all activities undertaken by SMEs that reduce the impact of their operations on the environment. We argue that this is appropriate in a cross-country setting since what is considered regulatory compliant varies across countries. In the present paper environmental practices concern practices related to production processes as well as product and service offerings (Halme and Laurila 2009; Hockerts and Wüstenhagen 2010; Nidumolu et al. 2009; Uhlaner et al. 2012).

¹ Enterprises with less than 250 employees are considered SME (European Commission 2012a).

With regard to the attitude of SMEs towards environmental practices, two contrasting views prevail in current literature. On the one hand, it is argued that SMEs – as compared to large firms – are reluctant to engage in environmental practices and perceive social responsibility as a burden and a threat. On the other hand, SMEs possess characteristics that may foster their engagement in environmental practices. We contend that these contrasting views may well be related to different types of environmental practices. More broadly, we hypothesize that the conditions under which SMEs engage in environmental practices differ across types of environmental practices. We draw on a stakeholder perspective to formulate hypotheses.

3. Background and hypotheses

Several theoretical perspectives have been applied to examine socially responsible behavior of firms. For example, the perspective of agency theory has been used by Friedman (1970) who states that the only responsibility of firms is to make profits while accepting the rules, laws and customs in a particular context (Garriga and Melé 2004). Resources spent on socially responsible activities are merely seen as a means to further the personal goals of the agent (managers) and are not in the interest of the principle (shareholders). McWilliams and Siegel (2001) propose a theory of the firm perspective (Jensen 1988) where socially responsible behavior is viewed as an investment and hence a means to maximize profits. From a resource-based view of the firm socially responsible activities can constitute a valuable resource at the firm's disposal serving as a source for competitive advantage (Russo and Fouts 1997; Aragón-Correa and Sharma 2003; Strike et al. 2006). Specifically related to SMEs, a social capital perspective has been put forward as a useful perspective explaining SMEs engagement in socially responsible behavior (Perrini 2006; Russo and Perrini 2010). For SMEs operating in a more informal and less structured setting, trust, norms and interpersonal relationships are highly relevant in small firm's decision-making processes.

Despite these and other theoretical perspectives that have been put forward, the stakeholder perspective dominates literature concerning large firms (Clarkson 1995; Donaldson and Preston 1995; Jamali 2008; McWilliams and Siegel 2001; Wood 1991). However, this perspective has received less attention in regards the environmentally responsible behavior and decision-making processes of smaller firms. Despite our acknowledgement that SMEs and large firms have different characteristics (Storey and Greene 2010) the idea that the expectations and interests of a wide variety of actors are of influence on strategic choices also applies to SMEs. Next, the stakeholder perspective is described and hypotheses are formulated accordingly.

3.1. Stakeholder perspective

Stakeholders can be defined as: “any group or individual who can affect or is affected by the achievements of the organization's objectives.” (Freeman 1984, p.25). In order to survive, grow and be successful, a firm must create value for its stakeholders such as employees, financiers, customers, government and suppliers. Stakeholder theory takes account of competing claims that different stakeholder groups have (Child 1972, 1997; Donaldson and Preston 1995; Ogden and Watson 1999) and as such, relates to strategic choices. Currently, it is widely accepted that strategic decision-making requires taking into account the expectations, interests and

competing claims of a wide variety of stakeholders (Van Marrewijk 2003). Stakeholder theory has been proven fundamental in explaining behavior and actions of firms with regards to social responsibility (Clarkson 1995; Wood 1991).

The group of stakeholders that has the greatest impact on the environmental strategy of a firm can be classified as the primary stakeholder group (Buysse and Verbeke 2003; Buzzelli 1991). This group consists of those stakeholders that maintain a formal relationship with the firm, such as employees, customers, suppliers, and shareholders. Primary stakeholders are directly relevant to the firm's survival, growth and profitability (Buzzelli 1991). Examples of primary stakeholder claims are customers who require environmental attributes to the products purchased, employees calling for safe workplace amenities, and investors applying environmental investment screens.

The group of secondary stakeholders includes regulators, competitors, support organizations, NGOs, communities, media and other institutional forces (Campbell 2007). This secondary group of stakeholders is relevant because they secure and enhance the firm's social legitimacy and play a crucial role in moving the firm toward engaging in sustainable behavior (Garriga 2004; Porter and Kramer 2006; Russo and Fouts 1997). Priority that is given to competing stakeholder claims is dynamic, varies over time, and depends on the issue considered (Buysse and Verbeke 2003; Mitchell et al. 1997). We contend that primary and secondary stakeholder groups exert different pressures on the types of environmental practices of firms.

3.2. Hypotheses

Firm size. Several studies indicate that firm size affects the environmental strategies of firms (Bianchi and Noci 1998). In line with Uhlaner et al. (2012) we contend that size differences are also relevant within the category of SMEs. Next we provide a brief overview of the main arguments.

Arguments suggesting a positive relationship between firm size and engagement in environmental practices dominate the debate: small firms are reluctant when it comes to socially responsible behavior. *First*, a presumed lack of resources characterizing SMEs (Aragón-Correa et al. 2008; Chen and Hambrick 1995) hinders them to respond to stakeholder claims (Lepoutre and Heene 2006; Uhlaner et al. 2012). *Second*, small firms' investments in environmental practices may be hard to justify from the viewpoint of scale economies and negligible market shares (Bianchi and Noci 1998). *Third*, due to their size small firms are less visible to media and public. Because small firms enjoy a certain degree of anonymity related to secondary stakeholders such as environmental activists, they are less likely to engage in environmental practices than large firms (Aragón-Correa et al. 2008; Bianchi and Noci 1998; Chen and Hambrick 1995).

So far, empirical evidence indeed points at a positive relationship between firm size and environmental practices (Perrini et al 2007; Uhlaner et al. 2012). However, no distinction has been made between types of environmental practices. This distinction is important because we hypothesize that the three arguments above are valid mainly for greening processes. Arguments that are not in favor of a positive relationship between firm size and environmental practices are expected to prevail when green product and service offerings are concerned. For example, small firms are assumed to be more innovative and less likely to be hindered by fear of cannibalizing market share of current product offerings (Aragón-Correa et al. 2008; Hockerts and

Wüstenhagen 2010). In addition, it is argued that a viable and effective strategy for small firms is to produce specialty products and services for niche markets (Lee et al. 1999; Lescure 1999). Hence, we formulate the following hypotheses:

Hypothesis 1a: Firm size is *positively* related to engagement in greening processes.

Hypothesis 1b: Firm size is *not* related to engagement in greening product and service offerings.

Tangibility of firm's business sector. Industry-specific circumstances pose different environmental threats and opportunities and, therefore, influence the environmental practices of firms including SMEs (Aragón-Correa et al. 2008; Perrini et al. 2007). For example, in process-intensive or tangible sectors such as construction or manufacturing economizing on resources fits business logic (Orsato 2006; Williamson 1991). High levels of impact on the environment not only generate opportunities to realize cost reductions but also offer the potential to generate competitive advantage by differentiating from other firms (Orsato 2006; Uhlaner et al. 2012). Furthermore, firms in process-intensive industries face high levels of processing costs and cause more environmental damage. These firms are, therefore, more likely to be closely monitored by primary and secondary stakeholder groups which makes them more likely to adopt environmental strategies (Williamson et al. 2006) as compared to firms in less process-intensive industries.

Although these arguments intuitively make sense, empirical evidence is scarce. For example, Graafland et al. (2003) studying a sample of Dutch firms find that firms in the metal manufacturing and construction sectors are more engaged in environmental practices than firms in the financial service sector and retail sector. Building on the terminology as used in Uhlaner et al. (2012) and Brand and Dam (2009) we formulate the following hypothesis:

Hypothesis 2: The tangibility of a firm's business sector is *positively* related to engagement in greening processes *and* greening product and service offerings.

Type of market served. In line with our previous argument on sector's tangibility, we suggest that the markets served are related to the type of environmental practice. From the stakeholder perspective we argue that firm's decision-makers will focus their environmental strategies towards those primary stakeholder groups that are most relevant to them. We hypothesize that firms that serve consumer markets are more likely to be associated with product innovation as a means to create competitive advantage (Orsato 2006; Porter and van der Linde 1995). With a growing concern for the environment, final consumers increasingly value the environmental attributes of products and services and are willing to pay a premium. For firms serving business markets in particular in the case of semi-finished products, it is more difficult to differentiate their product offerings to final consumers. Hence in the latter case return on additional investments in eco-design and eco-efficient product attributes is likely to be lower. Hence, we expect resource efficient activities to prevail in the case business markets are served. We formulate the following hypotheses:

Hypothesis 3a: Firms not selling directly to consumers are more likely to engage in greening processes than firms selling directly to consumers.

Hypothesis 3b: Firms directly selling to consumers are more likely to engage in greening product and service offerings than firms not selling directly to consumers.

External support. Financial and non-financial resources are crucial for any firm in order to start, grow and survive. One of the fundamental differences between large and small firms is their actual access to resources, in particular financial resources (Ang 1991; Berger and Udell 1998). Small firms often do not have enough financial resources to support their activities and investments and mainly rely on internal sources such as personal savings and retained profits whereas large firms have access to a wider range of resources including equity finance and term loans (Berger and Udell 1998). Next to a lack of financial resources, small firms are considered to lack the knowledge and skills to implement environmental practices, a lack that may be overcome by external support such as advice and assistance from public and private institutions. We expect that the providers of both financial and non-financial support exercise influence on the decision making processes. However, we expect small firm's commitment to providers of financial sources to be stronger than for providers of non-financial sources such as advice or assistance. The latter type of support is by definition less binding. Hence, we formulate the following hypothesis:

Hypothesis 4: Receiving external support is positively related to a firm's engagement in greening processes *and* greening product and service offerings. This relationship is stronger for external financial support than for external non-financial support.

Environmental legislation. A sharp increase in environmental regulation in the past four decades (United Nations 2012) points at a strong conviction that government intervention serves as an effective mechanism to curb environmental degradation. Whereas the effect of environmental legislation on firm performance has received considerable attention in literature (Russo and Fouts 1997) the impact on the extent and types of environmental practices has not (Halme and Laurila 2009). In addition, the debate is dominated by environmental behavior *relative* to legislation in terms of compliance. The distinction between proactive and reactive environmental strategies plays an important role in this context (Bianchi and Noci 1998; Buysse and Verbeke 2003). Several authors suggest that SMEs tend to adopt reactive strategies (i.e. not go beyond compliance) because proactive strategies require additional resources and skills (Bianchi and Noci 1998; Russo and Fouts 1997). However, the extent to which firms are compliant with environmental legislation ignores the stringency of regulation which is relevant in a cross country setting. Indeed, being compliant in Turkey may involve different effort than being compliant in Sweden. Given that we focus on actual environmental practices, we take account of the stringency of environmental legislation.

We expect that the stringency of environmental legislation has a stronger influence on the operational processes because *how* products and services are being produced is more liable for legislation than *what* is being produced. Put differently, it is easier for legislative institutions to address negative externalities such as 'greenhouse gasses' and waste resulting from actual operational processes than to convince firms to change the products and services they are offering. With few exceptions of products and services that are extremely harmful to the environment or

to the general public such as chemical weapons, it is more likely that legislative institutions focus on operational processes.

We formulate the following hypotheses:

Hypothesis 5a: Stringency of environmental legislation is *positively* related to a firm's engagement in greening processes.

Hypothesis 5b: Stringency of environmental legislation is *not* related to a firm's engagement in greening product and service offerings.

4. Data and method

4.1. Data source

To investigate SMEs' engagement in environmental practices we use information from the Flash Eurobarometer survey on "SMEs, resource efficiency, and green markets" (no. 342) which was conducted on behalf of the European Commission. In January and February 2012 telephone interviews were carried out with about 11,000 businesses in the 28 Member States of the European Union and an additional 2,100 in Albania, Iceland, Israel, Liechtenstein, Macedonia, Montenegro, Norway, Serbia, Turkey, and the United States. The survey covers businesses employing at least 1 person in the manufacturing (NACE C), retail (G), services (H/I/J/K/L/M) and industry (B/D/E/F) sectors. This Flash Eurobarometer survey is the first extensive survey on the topic of SMEs and green markets that includes relevant information on the green economy.

A description of the variables that are included in our analyses is given below. The exact definitions and some basic descriptive statistics of the variables can be found in Table 1.

4.2. Dependent variables

Greening processes. To measure their engagement in greening processes SMEs reveal their investments in resource efficiency as a percentage of annual turnover. We distinguish between no investments (0% of annual turnover), minor (1%-10%), substantial (11%-50%) and large (51% or more) investments.

Greening product and service offerings. The involvement in greening products and service offerings is measured in a similar way, ranging from no involvement at all to specific percentages of a firm's most recent annual turnover. We distinguish between no involvement (0% of annual turnover), minor (1%-10%), substantial (11%-50%) and large (51% or more) involvement in green products and services.

4.3. Independent variables

Firm size. We distinguish between micro firms (1-9 employees; reference category), small firms (10-49 employees) and medium-sized firms (50-249 employees). The present paper focuses on the environmental practices of SMEs and, therefore, excludes firms with more than 250 employees, resulting in a sample of 12,083 observations.

Sector tangibility. We follow the suggestions of Uhlaner et al. (2012) and Brand and Dam (2009) that the exploitation of natural resources and the capacity to have a negative impact on environment depend on the firm's sector in which it is active. We adopt a classification of the industry in terms of the tangibility of the

sector, distinguishing between (tangible) products, tangible services, and intangible services.

Tangible product sectors include manufacturing (NACE C) and construction (F), and also mining and quarrying (B), electricity, gas, steam and air conditioning (D), and water supply, sewerage and waste management (E). Tangible service sectors include wholesale and retail (NACE G), transportation and storage (H), accommodation and food service (I), and information and communication services (J). Finally, intangible service sectors include financial and insurance activities (NACE K), real estate activities (L), and professional, scientific and technical activities (M). Sectors that represent intangible services are treated as the reference category.

Type of market served. We use a categorical variable to take account of the type of market being served: the consumer market (reference category), the business market, or the public administration market. Combinations of these markets as well as markets that are not captured by this classification are included as separate categories.

External support. To evaluate the influence of external support on SMEs' engagement in environmental practices, we use two questions depending on the type of environmental practice. One question refers to SMEs' external support regarding greening processes: "Which type of external support does your company get in relation to its environmental actions?" The answer possibilities are no external support, non-financial external support (e.g., advice or other non-financial assistance from private consulting companies), and financial external support (e.g., grants, or private funding from banks, friends or relatives). The second question relates to the offering of green products or services: "Which type of external support does your company get for the production of its green products and services?" The same answer possibilities apply as for the first question on green processes. The category representing no external support will be used as the reference category in our regressions.

Environmental legislation. We include a country-specific measure of the stringency of environmental legislation, following Manderson and Kneller (2012), which captures differences in environmental policy across countries. The stringency of environmental legislation was obtained by assessing country experts' opinions about the question "How would you assess the stringency of your country's environmental regulations?" (Global Competitiveness Index 2012, World Economic Forum). Low values indicate lax regimes whereas a high value indicates that a country's environmental regulations belong to the world's most stringent. In our set of countries low values can be found for Montenegro, Romania, Bulgaria, United Kingdom, Turkey, and Greece (values below 4) and high values for Netherlands, Sweden, Denmark, Austria, Finland, and Germany (values above 6). Information is not available for Albania.

4.4. Control variables

Environmental practices. First of all, we control for each type of environmental practice in our regression models. That is, when explaining SMEs' involvement in greening processes we control for the fact whether SMEs are engaged in greening their product or service offerings, and *vice versa*. We expect a positive correlation between both types of environmental practices.

We include three additional control variables: firm age, a firm's proactive versus reactive behavior in terms of its compliance with environmental legislation, and the presence of an environmental management system.

Firm age. There is reason to assume that firm age influences the extent to which SMEs engage in environmental practices. On the one hand, Neubaum et al. (2004) suggest that the liability of newness, resource scarcity and persistent concerns about venture survival experienced by young firms could influence their ethical behavior in a negative way. On the other hand, Hockerts and Wüstenhagen (2010) suggest that young firms would be more susceptible to be involved in environmental practices.

Firm age is included as a categorical variable distinguishing between firms that have been in existence for 2 years at most (reference category), between 3 and 5 years, between 6 and 10 years, and more than 10 years.

Proactive versus reactive. Firms could show proactive or reactive behavior in terms of their compliance with environmental legislation. Firms are considered to adopt reactive strategies if they comply with environmental legislation whereas proactive strategies are carried out if firms go beyond environmental legislation where environmental concerns could even belong to a firm's top priorities (Bianchi and Noci 1998). A dummy variable capturing this proactive versus reactive typology is created with value 1 if firms go beyond environmental legislation and value 0 if firms comply with legislation but do not wish or are not able to go beyond.

Environmental management system (EMS) is a dummy variable that assesses whether a firm has implemented an EMS (value 1) or not (value 0).

5. Results

First we focus on the *extent* of environmental practices of SMEs. Table 2 shows the distributions of the two dependent variables for each country. A first observation is that many SMEs are involved in greening their processes. That is, only one tenth of all SMEs are not engaged in greening processes at all. The 0% belonging to the United States stands out, together with the high percentages of no engagement in some Eastern or Southeastern European countries such as Montenegro (39%), Estonia (34%), Macedonia (29%), Romania (27%) and Lithuania (21%). These percentages are in sharp contrast with the observation that on average more than two thirds of SMEs do not offer green products or services. Interestingly, the average investment in green products and services is rather high with 14% of all SMEs investing more than 10% of their turnover in greening their product and service offerings. High percentages with this respect are found in Northern European countries such as Norway (26%), Sweden (22%) and Finland (18%). Low prevalence rates of greening product and service offerings can again be observed in some Eastern and Southeastern European countries such as Montenegro (1%), Hungary (2%), Macedonia (6%), Bulgaria (7%), Croatia (7%), Albania (8%), Romania (8%), but also in Portugal (4%) and Turkey (4%).

Second we investigate the *conditions* under which SMEs engage in environmental practices by performing ordered logit regressions. The results are displayed in two tables: Table 3 provides the results of SMEs' engagement in greening processes whereas Table 4 focuses on greening product and service offerings.

Each table shows three model specifications. Model 1 tests Hypotheses 1, 2 and 3, and, therefore excludes the external support and environmental legislation variable. Country effects are controlled for by dummy variables. Model 2 tests Hypothesis 4 and adds the external support variable to the model specification. Note that this

variable is defined only for firms that engage in environmental practices which reduces the estimation sample, mainly for green products and services. Finally, Model 3 zooms in on the stringency of environmental legislation; this country-level variable replaces the country dummies included in Model 1 and 2.²

Model 1 in Table 3 suggests an inverted U-shape relationship between firm size and greening processes: small firms (10-49 employees) have a higher probability of engaging in greening processes than micro firms (1-9 employees) or medium-sized firms (50-249 employees). A firm's engagement in offering green products and services (Model 1, Table 4) is independent of firm size. We thus find partial support for Hypothesis 1a and full support for Hypothesis 1b.

As expected SMEs' commitment to be involved in process related environmental practices is highest in tangible sectors (Model 1, Table 3). With respect to greening product and service offerings (Model 1, Table 4) our results show a similar pattern. Hypothesis 2 is supported.

Model 1 of Table 3 shows that, relative to SMEs that sell directly to consumers, SMEs that sell to public administration are less likely to engage in greening processes. Furthermore, Model 1 of Table 4 shows that SMEs that serve the business market are less likely to offer green products and services than SMEs that serve the consumer market. Hypothesis 3a is not supported whereas Hypothesis 3b is supported.

Model 2 of each table adds the external support variable to the model specification. It appears that firms that receive external financial support are more likely to engage in greening processes or greening product and service offerings than firms that receive non-financial support or no external support at all. Therefore, Hypothesis 4 is partially supported.

Regarding a country's stringency of environmental legislation (Model 3) we find a significant positive association with greening product and service offerings. This result suggests that a stringent legislation encourages firms to actively take on environmental activities, but only in case of green products or services which is in contrast with Hypothesis 5.

When analyzing the results for the control variables, Table 3 and Table 4 provide consistent results for firm age, proactive versus reactive behavior, and the presence of an EMS. Firm age is consistently not related to environmental practices of SMEs. Firms that go beyond compliance in terms of environmental legislation are more likely to engage in environmental practices. An expected significant and positive relationship is found for EMS. Finally, the two types of environmental practices are related in the sense that each type enters the model specification significantly with a positive sign.

We perform some robustness checks.³ *First*, we use a different dependent variable to measure a firm's engagement in green processes, thereby focusing on the number of actions a firm undertakes to be more resource efficient rather than the currently used intensity in terms of annual turnover. This alternative dependent variable counts the number of resource efficiency activities that are carried out by the firm. Possible answers are "saving water", "saving energy", "using renewable

² The external support variable is excluded from Model 3 which makes the sample size only slightly smaller than in Model 1. This smaller sample size is caused by the exclusion of the Albanian SMEs for which the stringency of environmental legislation variable is not available.

³ The corresponding regression results are not shown here but are available from the authors upon request.

energy”, “saving materials”, “minimizing waste”, “selling scrap material to another company”, and “recycling”. A firm’s own suggestions are also recorded. We perform a Poisson count regression to investigate the determinants of the number of resource efficiency activities more closely. The results are in accordance with the current results as displayed in Table 3. An exception is the stringency of environmental legislation which is positively related to the number of resource efficiency activities.

Second, we perform multi-level (hierarchical) ordered logit regressions with a country-level random intercept to assess the influence of a country’s stringency of environmental legislation more adequately. The results for this country-level variable remain qualitatively similar as compared to the current results in Model 3 of Table 3 and 4.

Third, we replace the number of employees with annual turnover to measure firm size (Hypothesis 1). Again, an inverted U-shaped relationship is found between firm size and greening processes. SMEs with turnovers between 100.000 and 2 million euro are more likely to engage in environmental practices than the smallest (<100.000 euro) and the largest SMEs (>2 million euro).

6. Discussion and conclusion

This paper aims to understand how and why SMEs engage in environmental practices. We distinguish between two types of practices – *greening processes* and *greening product and service offerings* – and take a shareholder perspective to formulate hypotheses.

Regarding the extent of environmental practices, we observe that the majority of SMEs (90%) are involved in greening processes to some extent whereas nearly one third of SMEs (28%) offer green products or services. There exist highly “specialized” SMEs in the area of green products and services given the high average investment in this type of environmental practice. This is particularly true in some Northern European countries where the fraction of SMEs deriving more than 10% of their annual turnover from green products and services equals or exceeds 20%. Relatively low prevalence rates of both types of environmental practices can be observed for SMEs in the Southeastern and Eastern European region.

Our distinction between environmental practices related to operational processes and products and services is one of the distinguishing elements of the present paper. Results point at different conditions under which SMEs engage in both types of environmental practices. These differences are evident for firm size, the markets being served, and the stringency of environmental legislation.

Our results indicate that firm size matters only when resource efficient activities related to operational processes are concerned. As hypothesized, we do not observe a relationship between firm size and the extent to which green products and services are being offered. This suggests that small firms, despite scale disadvantages, justify R&D expenditures for green product development to serve an eco-niche that is too small for larger firms to be attractive (Bianchi and Noci 1998; Hockerts and Wüstenhagen 2010).

Regarding the markets served, our results show that customers have more influence on the extent to which SMEs engage in green products and services than on SMEs’ involvement in greening processes. Although a direct effect of customers seems to be absent in the case of greening processes, the existence of an indirect

effect is a fruitful path for future research. For example, ecological attributes of products and services often rely on their mode of production such as the production of organic food (Orsato 2006). A close relationship between ecological attributes of products and their mode of production is also motivated by a high correlation between the two dependent variables under investigation, i.e. greening processes and greening product and service offerings. Hence, the type of market served could influence engagement in greening processes in an indirect way via green attributes in products and services. Noteworthy with respect to markets served is that SMEs that serve exclusively to public administration are least likely to engage in greening processes. This calls for further research on the effectiveness of green public procurement that is seen as a powerful policy tool, in particular in the EU, to provide a strong stimulus for eco-innovation and a more resource-efficient economy (European Commission 2012b).

With respect to environmental regulation we also observe dissimilar influences on both types of environmental practices. We find that stringent environmental legislation has a positive influence on greening product and service offerings but no influence on greening processes. Stringent environmental legislation may well indicate that environmental issues are legitimized as a broad social goal. This legislation could then influence the demand for eco-products and, as a consequence, create opportunities for SMEs in terms of greening their product and service offerings. With respect to greening processes – while assuming that operational processes are more liable to environmental regulations than products and services – a ceiling effect may be at play. The ceiling effect suggests that imposed procurement regulations tend to result in lower ethical standards that firms set for themselves (Baden et al. 2009; Harwood and Humby 2008). Noteworthy in this respect is also that the number of actions a firm undertakes to be more resource efficient is positively related to stringent environmental legislation whereas the actual investment in resource efficient activities is not. The exact mechanisms behind our counterintuitive results call for further research. Furthermore, taking account of sector-specific legislation may provide interesting additional insights in this context. Relevant country-level characteristics to be included in future work are normative cultural aspects or the actual level of a country's environmental degradation.

Next to the dissimilar influences of the above-mentioned characteristics, we observe that the influences of external support and sector tangibility do not differ across both types of environmental practices. Interestingly, our results raise questions concerning the effectiveness of non-financial support: for both types of practices provision of external non-financial support is unrelated to small firm's environmental engagement. On the contrary, financial support seems to be more effective. However, we are limited in our possibilities to draw conclusions on the effects of specific types of financial support such as venture capital, bank investment, or public funding. The number of firms that receive these kinds of support are rather limited in our dataset.

To conclude, our study offers several take-home messages. *First*, it shows that the extent to which SMEs engage in environmental practices differs strongly across types of practices, and across firms, sectors and countries. *Second*, the study points at dissimilar influences of characteristics on types of environmental engagement. This also suggests that the influence of stakeholders differs across types of environmental practices. *Third*, the dominant idea that small firms are reluctant to invest in environmental practices because they perceive this as an additional burden is clearly more nuanced. A distinction between different types of environmental practices is of added value in this discussion. More research is needed to understand what the

influence is of different stakeholder groups on these types of environmental practices and, ultimately, to what extent this knowledge indeed contributes to a more sustainable society.

Table 1. Definitions and descriptives of dependent, independent, and control variables. Numbers represent % of entire sample belonging to a specific category.

Variable name	Categories/definition	%
<i>Dependent variables</i>		
Greening processes	- Does not engage in green processes (reference cat.)	10
	- 1%-10% of annual turnover	83
	- 11%-50% of annual turnover	6
	- More than 50% of annual turnover	1
Greening product/service offerings	- Does not offer green products/services (reference cat.)	72
	- 1%-10% of annual turnover	14
	- 11%-50% of annual turnover	7
	- More than 50% of annual turnover	7
<i>Independent variables</i>		
Firm size	1) Number of employees:	
	- 0-9 employees (reference cat.)	76
	- 10-49 employees	19
	- 50-249 employees	5
	2) Last year's turnover:	
	- <100k euro (reference cat.)	30
	- 100k-500k euro	35
	- 500k-2 million euro	22
Sector tangibility	- >2 million euro	13
	- Intangible services (reference cat.)	19
	- Tangible services	49
Type of market served	- Tangible products	32
	- Consumers only (reference cat.)	32
	- Other companies only	24
	- Public administration	2
External support (processes)	- Multiple markets	41
	- Other market not mentioned before	1
	- No external support in relation to envir. actions (ref. cat.)	69
	- Financial external support	16
External support (products/services)	- Non-financial external support	15
	- Financial external support	70
	- No external support in relation to envir. actions (ref. cat.)	13
Environmental legislation (country variable)	- Financial external support	17
	“How would you assess the stringency of your country's environmental regulations?”	Average: 4.91
	Source: Global Competitiveness Index, 2012 (World Economic Forum)	Stand. dev.: 0.90
		Minimum: 2.94
	Maximum: 6.44	
<i>Control variables</i>		
Firm age	- 2 year or less (reference cat.)	6
	- 3 to 5 years	9
	- 6 to 10 years	19
	- >10 years	66
Proactive versus reactive Environmental management system (EMS)	1 if firm goes beyond compliance; 0 otherwise	79
	1 if firm uses at least one EMS; 0 otherwise	19

^a Source: Flash Eurobarometer survey on “SMEs, resource efficiency, and green markets” (no. 342), 2012.

^b Sample consists of 8,767 observations. Numbers are weighted according to firm size and sector.

Table 2. Country averages greening processes and greening product/service offerings. Numbers represent % of national sample belonging to a specific category.

<i>EU Member State</i>	Obs.	Greening processes			Greening product/service offerings		
		Does not engage	1%-10% of annual turnover	>10% of annual turnover	Does not engage	1%-10% of annual turnover	>10% of annual turnover
Austria	252	6	89	6	65	12	23
Belgium	236	11	83	6	75	12	13
Bulgaria	271	15	76	8	77	16	7
Croatia	157	11	87	3	77	16	7
Cyprus	129	17	77	5	78	12	10
Czech Rep.	277	7	90	3	80	10	11
Denmark	288	15	82	3	68	16	16
Estonia	198	34	65	1	79	7	14
Finland	331	4	90	6	67	15	18
France	335	3	96	1	71	17	12
Germany	310	9	85	5	64	20	16
Greece	304	14	81	5	67	11	22
Hungary	256	7	85	8	88	10	2
Ireland	228	2	98	1	61	19	19
Italy	294	8	83	8	70	15	15
Latvia	282	15	79	6	77	9	14
Lithuania	288	21	72	7	77	13	10
Luxembourg	131	8	88	4	72	13	15
Malta	86	13	83	4	90	1	9
Netherlands	263	8	82	10	73	10	16
Poland	367	7	84	9	68	17	15
Portugal	254	0	88	12	77	19	4
Romania	269	27	65	8	86	6	8
Slovakia	309	6	89	5	69	15	15
Slovenia	320	12	71	18	62	15	23
Spain	307	2	93	6	75	14	12
Sweden	292	6	85	9	66	13	22
United Kingdom	312	2	94	4	67	16	16
<i>Non-EU Member State</i>							
Albania	74	12	85	3	82	10	8
Iceland	96	13	86	1	70	15	15
Israel	153	14	74	12	65	19	16
Liechtenstein	71	19	70	11	83	4	14
Macedonia	153	29	63	8	82	12	6
Montenegro	83	39	55	6	76	23	1
Norway	242	5	91	4	53	21	26
Serbia	150	17	77	5	79	11	10
Turkey	226	9	67	24	87	9	4
United States	173	0	90	10	61	25	13
Total	8,767	10	83	7	72	14	14

^a Source: Flash Eurobarometer survey on “SMEs, resource efficiency, and green markets” (no. 342), 2012.

^b The categories “11%-50% of annual turnover” and “More than 50% of annual turnover” of the two dependent variables are merged in this table.

^c Percentages are weighted according to firm size and sector.

Table 3. Ordered logit estimation results with *greening processes* as the dependent variable.

	Model 1		Model 2		Model 3	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Size: 0-9 empl. (ref)						
Size: 10-49 empl	0.28***	(0.07)	0.01	(0.10)	0.24***	(0.07)
Size: 50-249 empl.	0.13	(0.09)	-0.62***	(0.14)	0.09	(0.09)
Tangibility: intangible services (ref)						
Tangibility: tangible services	0.24*	(0.10)	0.26	(0.18)	0.22*	(0.10)
Tangibility: tangible products	0.53***	(0.10)	0.56***	(0.17)	0.56***	(0.10)
Market type: consumers (ref)						
Market type: other companies	-0.15	(0.09)	-0.14	(0.12)	-0.07	(0.09)
Market type: public administr.	-0.76***	(0.22)	-0.20	(0.32)	-0.61**	(0.21)
Market type: multiple markets	0.06	(0.08)	-0.10	(0.11)	0.07	(0.08)
Market type: other markets	-0.06	(0.30)	0.53	(0.34)	0.03	(0.30)
Support: none (ref)						
Support: non-financial			0.06	(0.12)		
Support: financial			0.78***	(0.11)		
Environmental legislation					-0.003	(0.03)
<i>Control variables</i>						
Green products/services: none (ref)						
Green products/services: 1%-10%	0.38***	(0.09)	0.02	(0.13)	0.40***	(0.09)
Green products/services: 11%-50%	0.59***	(0.12)	0.62***	(0.15)	0.56***	(0.12)
Green products/services: >50%	0.76***	(0.12)	0.96***	(0.13)	0.73***	(0.12)
Age: 1-2 years (ref)						
Age: 3-5 years	0.16	(0.20)	0.21	(0.26)	0.09	(0.20)
Age: 6-10 years	0.10	(0.18)	-0.11	(0.24)	0.06	(0.18)
Age: >10 years	0.14	(0.17)	-0.13	(0.22)	0.13	(0.17)
Proactive versus reactive	0.38***	(0.08)	0.21*	(0.10)	0.40***	(0.07)
Environm. management system	0.89***	(0.08)	0.30**	(0.10)	0.92***	(0.08)
Country dummies	YES		YES		NO	
Number of observations	8,767		8,101		8,693	
Pseudo R^2	0.07		0.09		0.05	

^a Estimated coefficients are shown together with standard errors (SEs) between parentheses. Estimated thresholds are not shown.

^b Ordered dependent variable *greening processes*: 1) Does not engage in green processes; 2) 1%-10% of annual turnover; 3) 11%-50% of annual turnover; 4) >50% of annual turnover.

*** p -value \leq 0.001; ** p -value \leq 0.01; * p -value \leq 0.05 (two-sided tests).

Table 4. Ordered logit estimation results with *greening product/service offerings* as the dependent variable.

	Model 1		Model 2		Model 3	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Size: 0-9 empl. (ref)						
Size: 10-49 empl	-0.01	(0.06)	-0.18	(0.09)	-0.02	(0.06)
Size: 50-249 empl.	0.004	(0.07)	-0.03	(0.11)	-0.01	(0.07)
Tangibility: intangible services (ref)						
Tangibility: tangible services	0.38***	(0.08)	0.12	(0.14)	0.36***	(0.08)
Tangibility: tangible products	0.32***	(0.08)	0.53***	(0.14)	0.30***	(0.08)
Market type: consumers (ref)						
Market type: other companies	-0.26***	(0.07)	0.65***	(0.12)	-0.28***	(0.07)
Market type: public administr.	-0.13	(0.18)	-0.13	(0.32)	-0.11	(0.18)
Market type: multiple markets	0.31***	(0.06)	0.28**	(0.10)	0.29***	(0.06)
Market type: other markets	-0.69*	(0.28)	-0.26	(0.51)	-0.60*	(0.27)
Support: none (ref)						
Support: non-financial			0.03	(0.11)		
Support: financial			0.40***	(0.10)		
Environmental legislation					0.19***	(0.03)
<i>Control variables</i>						
Greening processes: none (ref)						
Greening processes: 1%-10%	0.60***	(0.12)	-0.73***	(0.22)	0.64***	(0.12)
Greening processes: 11%-50%	1.14***	(0.15)	-0.25	(0.26)	1.11***	(0.15)
Greening processes: >50%	1.53***	(0.26)	1.43**	(0.46)	1.46***	(0.26)
Age: 1-2 years (ref)						
Age: 3-5 years	0.03	(0.16)	0.29	(0.26)	0.03	(0.16)
Age: 6-10 years	-0.05	(0.14)	0.15	(0.23)	-0.04	(0.14)
Age: >10 years	-0.09	(0.13)	-0.06	(0.21)	-0.07	(0.13)
Proactive versus reactive	0.58***	(0.06)	0.64***	(0.09)	0.58***	(0.05)
Environm. management system	0.38***	(0.06)	0.08	(0.09)	0.33***	(0.05)
Country dummies	YES		YES		NO	
Number of observations	8,767		2,506		8,693	
Pseudo R^2	0.04		0.06		0.03	

^a Estimated coefficients are shown together with standard errors (SEs) between parentheses. Estimated thresholds are not shown.

^b Ordered dependent variable *greening product and service offerings*: 1) Does not offer green products/services; 2) 1%-10% of annual turnover; 3) 11%-50% of annual turnover; 4) >50% of annual turnover.

*** p -value \leq 0.001; ** p -value \leq 0.01; * p -value \leq 0.05 (two-sided tests).

References

- Ang, J. S. (1991). Small business uniqueness and the theory of financial management. *Journal of Small Business Finance*, 1(1), 1-13.
- Aragón-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *Academy of Management Review*, 28(1), 71-88.
- Aragón-Correa, J. A., Hurtado-Torres, N., Sharma, S., & García-Morales, V. J. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of Environmental Management*, 86(1), 88-103.
- Baden, D. A., Harwood, I. A., & Woodward, D. G. (2009). The effect of buyer pressure on suppliers in SMEs to demonstrate CSR practices: an added incentive or counter productive? *European Management Journal*, 27(6), 429-441.
- Bansal, P., & Roth, K. (2000). Why companies go green: A model of ecological responsiveness. *Academy of Management Journal*, 43(4), 717-736.
- Berger, A. N., & Udell, G. F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance*, 22(6), 613-673.
- Bianchi, R., & Noci, G. (1998). Greening SMEs' competitiveness. *Small Business Economics*, 11, 269-281.
- Brand, M. J., & Dam, L. (2009). Corporate social responsibility in small firms—illusion or big business? Empirical evidence from the Netherlands. RENT 2009 conference, Budapest, Hungary.
- Buysse, K., & Verbeke, A. (2003). Proactive environmental strategies: A stakeholder management perspective. *Strategic Management Journal*, 24(5), 453-470.
- Buzzelli, D. T. (1991). Time to structure an environmental policy strategy. *Journal of Business Strategy*, 12(2), 17-20.
- Campbell, J. L. (2007). Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management Review*, 32(3), 946-967.
- Chen, M. J., & Hambrick, D. C. (1995). Speed, stealth, and selective attack: How small firms differ from large firms in competitive behavior. *Academy of Management Journal*, 38(2), 453-482.
- Child, J. (1972). Organizational structure, environment and performance: The role of strategic choice. *Sociology*, 6(1), 1-22.
- Child, J. (1997). Strategic choice in the analysis of action, structure, organizations and environment: retrospect and prospect. *Organization Studies*, 18(1), 43-76.
- Clarkson, M. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review*, 20(1), 92-117.
- Cohen, B., & Winn, M. I. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*, 22(1), 29-49.
- Dacin, P.A., Dacin, M.T., & Matear, M. (2010). Social entrepreneurship: Why we don't need a new theory and how we move forward from here. *Academy of Management Perspectives*, 24(2), 36-56.
- Dean, T. J., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of Business Venturing*, 22(1), 50-76.
- Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65-91.
- European Commission (2010). *SMEs and the Environment in the European Union*. Luxembourg: Publications Office of the European Union.
- European Commission (2012a). *Evaluation of the SME Definition*. UK: Center for Strategy & Evaluation Services.
- European Commission (2012b). *Green Public Procurement. A Collection of Good Practices*. Luxembourg: Publications Office of the European Union.
- Freeman, R. E. (1984). *Strategic planning: A stakeholder approach*. Boston: Pitman.

- Friedman, M. (1970). The social responsibility of business is to increase its profits. *The New York Times Magazine*.
- Gadanne, D. L., Kennedy, J., & McKeiver, C. (2009). An empirical study of environmental awareness and practices in SMEs. *Journal of Business Ethics*, 84(1), 45-63.
- Garriga, E., & Melé, D. (2004). Corporate social responsibility theories: Mapping the territory. *Journal of Business Ethics*, 53(1-2), 51-71.
- Graafland, J., Van de Ven, B., & Stoffele, N. (2003). Strategies and instruments for organizing CSR by small and large businesses in the Netherlands. *Journal of Business Ethics*, 47(1), 45-60.
- Halme, M., & Laurila, J. (2009). Philanthropy, integration or innovation? Exploring the financial and societal outcomes of different types of corporate responsibility. *Journal of Business Ethics*, 84(3), 325-339.
- Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of Management Review*, 20(4), 986-1014.
- Harwood, I., & Humby, S. (2008). Embedding corporate responsibility into supply: A snapshot of progress. *European Management Journal*, 26(3), 166-174.
- Hockerts, K., & Wüstenhagen, R. (2010). Greening Goliaths versus emerging Davids—Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship. *Journal of Business Venturing*, 25(5), 481-492.
- Jamali, D. (2008). A stakeholder approach to corporate social responsibility: A fresh perspective into theory and practice. *Journal of Business Ethics*, 82(1), 213-231.
- Jensen, M. C. (1988). Takeovers: Their causes and consequences. *The Journal of Economic Perspectives*, 2(1), 21-48.
- Lee, K. S., Lim, G. H., & Tan, S. J. (1999). Dealing with resource disadvantage: Generic strategies for SMEs. *Small Business Economics*, 12(4), 299-311.
- Lepoutre, J., & Heene, A. (2006). Investigating the impact of firm size on small business social responsibility: a critical review. *Journal of Business Ethics*, 67(3), 257-273.
- Lescure, M. (1999). *Small- and medium-size industrial enterprises in France, 1900–1975*. In K. Odaka, & M. Sawai (Eds.), *Small firms, large concerns: The development of small business in comparative perspective* (pp. 140–167). Oxford: Oxford University Press.
- Mair, J., & Martí, I. (2006). Social entrepreneurship research: A source of explanation, prediction, and delight. *Journal of World Business*, 41(1), 36-44.
- Manderson, E., & Kneller R. (2012). Environmental regulations, outward FDI and heterogeneous firms: Are countries used as pollution havens? *Environmental and Resource Economics*, 51(3), 317-352.
- Marrewijk, M. van (2003). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of Business Ethics*, 44(2-3), 95-105.
- Masurel, E. (2007). Why SMEs invest in environmental measures: Sustainability evidence from small and medium-sized printing firms. *Business Strategy and the Environment*, 16(3), 190-201.
- McWilliams, A., & Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective. *Academy of Management Review*, 26(1), 117-127.
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853-886.
- Nidumolu, R., Prahalad, C. K., & Rangaswami, M. R. (2009). Why sustainability is now the key driver of innovation. *Harvard Business Review*, 87(9), 56-64.
- Neubaum, D., Mitchell, M., & Schminke, M. (2004). Firm newness, entrepreneurial orientation, and ethical climate. *Journal of Business Ethics*, 52(4), 335-347.
- Ogden, S., & Watson, R. (1999). Corporate performance and stakeholder management: Balancing shareholder and customer interests in the UK privatized water industry. *Academy of Management Journal*, 42(5), 526-538.
- Orsato, R. J. (2006). Competitive environmental strategies: When does it pay to be green? *California Management Review*, 48(2), 127-143.
- Perrini, F. (2006). SMEs and CSR theory: Evidence and implications from an Italian perspective. *Journal of Business Ethics*, 67(3), 305-316.

- Perrini, F., Russo A., & Tencati, A. (2007). CSR strategies of SMEs and large firms. Evidence from Italy. *Journal of Business Ethics*, 74(3), 285-300.
- Porter, M. E., & Kramer, M. (2006). Strategy and society. *Harvard Business Review*, 84(12), 78-92.
- Porter, M. E., & Van der Linde, C. (1995). Toward a new conception of the environment-competitiveness relationship. *The Journal of Economic Perspectives*, 9(4), 97-118.
- Quinn, J. J. (1997). Personal ethics and business ethics: The ethical attitudes of owner/managers of small business. *Journal of Business Ethics*, 16(2), 119-127.
- Rodriguez, P., Siegel, D. S., Hillman, A., & Eden, L. (2006). Three lenses on the multinational enterprise: Politics, corruption, and corporate social responsibility. *Journal of International Business Studies*, 37(6), 733-746.
- Russo, A., & Perrini, F. (2010). Investigating stakeholder theory and social capital: CSR in large firms and SMEs. *Journal of Business Ethics*, 91(2), 207-221.
- Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal*, 40(3), 534-559.
- Spence, L. J., & Rutherford, R. (2003). Small business and empirical perspectives in business ethics: Editorial. *Journal of Business Ethics*, 47(1), 1-5.
- Storey, D. J., & Greene, F. J. (2010). *Small business and entrepreneurship*. Harlow, UK: Financial Times Prentice Hall.
- Strike, V. M., Gao, J., & Bansal, P. (2006). Being good while being bad: Social responsibility and the international diversification of US firms. *Journal of International Business Studies*, 37(6), 850-862.
- Uhlaner, L. M., Berent-Braun, M. M., Jeurissen, R. J., & de Wit, G. (2012). Beyond size: Predicting engagement in environmental management practices of Dutch SMEs. *Journal of Business Ethics*, 109(4), 411-429.
- United Nations (2012). UNEP Annual Report 2005.
- WCED: World Commission on Environment and Development (1987). *Our Common Future* (The Brundtland Report). New York, USA: Oxford University Press.
- Williamson, D., Lynch-Wood, G., & Ramsay, J. (2006). Drivers of environmental behavior in manufacturing SMEs and the implications for CSR. *Journal of Business Ethics*, 67(3), 317-330.
- Williamson, O. E. (1991). Strategizing, economizing, and economic organization. *Strategic Management Journal*, 12(S2), 75-94.
- Wood, D. J. (1991). Corporate social performance revisited. *Academy of Management Review*, 16(4), 691-718.
- Worthington, I., & Patton, D. (2005). Strategic intent in the management of the green environment within SMEs: An analysis of the UK screen-printing sector. *Long Range Planning*, 38(2), 197-212.
- York, J.G., & Venkataraman, S. (2010). The entrepreneur-environment nexus: Uncertainty, innovation, and allocation. *Journal of Business Venturing*, 25(5), 449-463.
- Zahra, S.A., Gedajlovic, E., Neubaum, D.O., & Shulman, J.M. (2009). A typology of social entrepreneurs: Motives, search processes and ethical challenges. *Journal of Business Venturing*, 24(5), 519-532.

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