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DO ENVIRONMENTAL-RELATED STANDARDS CONTRIBUTE TO SUCCESSFUL RECRUITMENT?

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ABSTRACT

Thanks to an original database on French firms, we show that voluntary environmental-related standards improve the recruitment for professional and non-professional employees. This finding suggests that, beyond environmental considerations, human resources management can drive registration.

Key words: environmental-related standards, recruitment.

Les normes environnementales contribuent-elles à améliorer le recrutement ?

Résumé

Á partir d'une base de données originale d'entreprises françaises, nous montrons que l'adoption volontaire de normes environnementales permet aux entreprises d'améliorer le recrutement des salariés qualifiés ou non qualifiés. Au-delà des considérations environnementales, ce résultat indique que la gestion des ressources humaines peut pousser les entreprises à rechercher la certification.

Mots-clefs : *normes environnementales, recrutement.*

1. INTRODUCTIVE REMARKS AND RELATED LITERATURE

In a well-known contribution, the Nobel laureate in economics Milton Friedman (1970) argued that 'there is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game'. Nevertheless, the empirical evidence shows that numerous firms exhibit their voluntary social responsibility commitments. This evidence is notably reflected in the sizeable economics literature devoted to the adoption of voluntary environmental-related approaches (Nakamura *et al.*, 2001; Anton *et al.*, 2004; Grolleau *et al.*, 2007). Interestingly, even Friedman conceded that 'it may well be in the long run interest of a corporation that is a major employer in a small community to devote resources to providing amenities to that community or to improving its government. That may make it easier to attract desirable employees (emphasis added by the authors), it may reduce the wage bill or lessen losses from pilferage and sabotage or have other worthwhile effects.'

In line with the Porter hypothesis, several scholars have emphasized possible economic and environmental benefits resulting from well-crafted voluntary initiatives (Porter and van Der Linde, 1995; Reinhardt, 2000). Among economic benefits, a relatively neglected area is whether and how environment-related standards improve human resource management. For example, the multinational corporation, Dole Food Co. Inc. reported that 'key benefits [of adopting environmental management systems] include strong employee motivation and loyalty which translates into reduced absenteeism and improved productivity'[1]. In the same vein, Grolleau *et al.* (2007, see also Darnall *et al.*, 2000) showed that ISO 14001 registration among French agrofood firms was mainly driven by the desire to improve human resource management. Among the several dimensions of human resource management likely to be affected by the adoption of environmental-related standards, recruitment is an excellent candidate. The aim of this paper is to investigate whether recruitment is enhanced when a firm has adopted environmental-related standards. Such an enhancement implies that environmental standards deliver more than environmental benefits and that firms can strategically use them for their ability to generate win-win opportunities.

Attracting top candidates may be easier for firms known for environmental stewardship compared to non-environmentally friendly firms. McKinsey (1991, quoted by Gladwin, 1993) surveyed 403 senior executives from around the world and found that 68% of them think that 'organizations with a poor environmental record will find it increasingly difficult to recruit and retain high caliber employees'. To explain this evidence several authors argue that people prefer working for companies they regard as ethical and responsible, in firms that fit the image they would like to give to themselves (Frank, 2003; Akerlof and Kranton, 2005). For instance, assuming that individual utility increases with their altruistic behavior, Frank (2003) contends that if the wages in two companies are the same, there would be an excess supply of applicants to the socially responsible company. In equilibrium, the less altruistic jobs are expected to offer a compensating wage premium. Therefore, altruistic individuals are likely to accept lower wages, and thus allow the firm to balance the cost of its socially responsible operations. Frank's (2003) survey results show that 88 percent of socially concerned respondents would prefer a job for the American Cancer Society rather

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1 Anonymous, 2001, Dole Reports Motivation, Health and Safety, and Productivity Benefits from ISO 14001. ISO Management Systems—The International Review of ISO 9000 and ISO 14000, December, 56-58.

than for Camel Cigarettes with an average compensating wage premium of about $ 24,000 per year.

A related argument can be found in the conceptual framework proposed by Margolis (1982), where individuals have two utility functions, one motivated by egoistic considerations and the other motivated by altruistic considerations. Their behavior depends therefore on the trade-off between these two functions. Environmental standards by their nature call for the altruistic utility function. Indeed, individuals would prefer socially responsible companies to reduce their cognitive dissonance, i.e., attenuate the possible intrinsic conflict between their employees' preferences (such as earning a high wage) and their citizens' preferences (such as clean environment). Moreover, from the firm's viewpoint, the individual's behavior or aspirations in a given domain (for example, protecting the environment) could be an indicator of his behavior in another domain (for example, working harder which in turn increases profitability) (Porter and Kramer, 2006). Consequently, we test whether ceteris paribus environmental-related standards improve companies' recruitment[2].

The remainder of this paper is organized as follows. Section 2 presents the data and model specification. The results are provided and discussed in section 3. Section 4 concludes and suggests policy and managerial implications.

2. DATA AND MODEL SPECIFICATION

The data is extracted from the French Organizational Changes and Computerization's 2006 survey. While the survey questionnaire was not originally designed to investigate our question, it offers an unexpected opportunity to investigate on a large number of firms whether being registered for environment-related standards contributes to successful recruitment. This survey was performed by researchers and statisticians from the National Institute for Statistics and Economic Studies, the Ministry of Labor and the Center for Labor Studies. Firms were interviewed on the economic goals of organizational change. The question about recruitment was stated as follows: 'Do you have difficulties in recruiting?' Two categories of employees are distinguished: (1) professional employees other than computer specialists, and (2) non-professional employees. For each category of employees, the surveyed firms had to answer either on a 4-point scale, ranging from 'no difficulties' to 'very high difficulties', or choose 'no recruitment'[3].

The dependent variables, denoted PROFESSIONAL EMPLOYEES and NON-PROFESSIONAL EMPLOYEES, are binary variables equal to 1 if the firm has no or weak problems of recruiting professional and non-professional employees, respectively. To test the main hypothesis of the paper, that is, environmental-related standards improve companies' recruitment ceteris paribus, we use the variable denoted STANDARDS, which is a binary

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2 One can argue that if the less altruistic jobs are expected to offer a compensating wage premium, while altruistic individuals are likely to accept lower wages, and if the wage reflects this sufficiently, less altruistic jobs with higher wages are indifferent to altruistic jobs with lower wages to the employees. If environmental-related standards improve companies' recruitment process, this can indicate that the wage does not sufficiently adjust to difference in between less altruistic jobs and altruistic jobs. The wage adjustment can be imperfect notably because intrinsic motivations cannot always be translated into monetary tradeoffs (Frey, 1994).

3 More details about the design and scope of this survey are available on www.enquetecoi.net.

variable equal to 1 if the firm was registered according to one of the following standards, *i.e.*, ISO 14001 standard, organic labelling or fair trade, in 2006[4].

Several factors that are likely to influence the recruitment serve as control variables. First, the firm size is likely to influence the recruitment of employees. Among other advantages, bigger firms frequently have more financial resources, more human resources, have access to various recruiting channels and can offer better promotion opportunities or services, resulting in being more attractive to job seekers, compared to smaller firms (Atkinson and Storey, 1994). The effect of firm size, broadly considered, is tested through the variables SIZE (number of employees), GROUP (belonging to a group) and NETWORK (belonging to a business network such as a franchise network).

Second, firms registered for the ISO 9001 standard might experience fewer difficulties in recruiting employees. The ISO 9001 standard can deliver benefits likely to motivate potential employees such as increased participation in decision-making procedures and improved job satisfaction. Consequently, if potential employees are only sensitive to the effects resulting from these organizational improvements and insensitive to the environmental effects, then the adoption of an environmental standard in addition to a quality standard will not improve the recruitment process. This effect is tested using two variables: ISO9 2003 (registration according to the standard ISO 9001 in 2003) and ISO9 2006 (registration according to the standard ISO 9001 in 2006).

Third, exporting firms might experience less difficulty in employees' recruitment (EXPORT). Since the contribution of Bernard and Jensen (1995), several empirical studies showed that average wages in exporting firms are higher than in non-exporting firms from the same industry and region (for a recent review of the literature, see Schank *et al*., 2007). Without purporting to be exhaustive, the theoretical explanations for the exporter wage premium can be found either in the 'higher-wages-reduce-turnover' variant of efficiency wage theories (Yellen, 1984) or in the insight that 'firms with high export shares might have experienced relatively favorable foreign demand shocks, and have raised wages to attract a relatively large workforce in response' (Schank *et al*., 2007).

Finally, the ease of recruitment is likely to vary across sectors[5]. Some sectors are more attractive than others for a variety of reasons such as better wages and better working conditions compared to a similar position in another sector. Some sectors can also benefit from the fact that job seekers prefer working for companies they regard as corresponding to their values and expectations. The sector effect is tested using the variable ACTIVITY. According to the French Nomenclature, we consider 11 sectors: agrifood, consumption goods, cars and equipments, intermediate goods, energy, construction, commercial, transport, financial and real-estate activities, services for firms and services for individuals.

The variables used in estimation, their definitions and sample statistics are presented in Table 1. No problem of multicolinearity has been detected (Appendix).

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4 Unfortunately, we cannot distinguish between these three standards, since they were put together under the same name in the survey.

5 We do not formulate predictions regarding which sectors experience more or less difficulties in recruiting employees. Despite its interest, this issue is beyond the scope of this paper.

Table 1:
Definition of variables and sample statistics

Variable	Definition	Mean	Standard deviation
Dependent variables			
PROFESSIONAL EMPLOYEES	Problems in recruitment of professional employees	0.41	0.49
	Dummy variable (=1 if no or weak)		
NON PROFESSIONAL EMPLOYEES	Problems in recruitment of non-professional employees	0.62	0.48
	Dummy variable (=1 if no or weak)		
Independent variables			
STANDARDS	Registered for ISO 14000, organic labeling or fair trade	0.05	0.21
	Dummy variable (=1 if registered in 2006)		
SIZE	SMALL (20 TO 199 employees)	0.69	0.46
	MEDIUM (200 TO 499 employees)	0.15	0.35
	BIG (more than 500 employees)	0.16	0.37
GROUP	Belonging to a group	0.59	0.49
	Dummy variable (=1 if yes)		
NETWORK	Belonging to a network	0.83	0.37
	Dummy variable (=1 if yes)		
ISO9 2003	Certified with ISO 9000	0.46	0.50
	Dummy variable (=1 if certified in 2003)		
ISO9 2006	Certified with ISO 9000	0.41	0.49
	Dummy variable (=1 if certified in 2006)		
EXPORT	The firm exports a part of its products	0.46	0.50
	Dummy variable (=1 if market is European (25 countries) or international (out of European Union))		
RELOCATION	Relocation abroad of a part of the business	0.06	0.23
	Dummy variable (=1 if yes)		
ACTIVITY	The main activity of the firm		
	11 dummy variables (=1 if agrifood, consumption goods, cars and equipments, intermediate goods, energy, construction, commercial, transport, financial and real-estate activities, services for firms and services for individuals, respectively)a		

a: Because of the table's length we do not report sample statistics for these variables.

Interestingly, previous studies (*e.g.*, Arora and Cason, 1995; Nakamura *et al*., 2001; Grolleau *et al*., 2007; Arimura *et al*., 2008) show that the firm size, ISO 9001 registration, exportation and the main activity of a firm are positively related to participation in environmental-related standards such as ISO 14001. Therefore, these variables may have indirect effect through the variable STANDARDS as well as a direct effect. Thus, in order to take into account potential endogeneity, that is, identifying the direct and indirect effects, and address the self selection bias due to potential unobservable variables, we apply a bivariate probit model (Greene, 2003). The model relies on a simultaneous estimation approach in which the factors that determine a firm's environmental registration are estimated simultaneously with the factors that determine recruitment. The two equations are jointly estimated using maximum likelihood.

Our observed variables, Y_1 and Y_2, corresponding respectively to environmental-related standards and recruitment are defined by:

$$Y_1 = 1 \quad if \quad Y_1^* > 0,$$
$$Y_1 = 0 \quad otherwise. \tag{1}$$

$$Y_2 = 1 \quad if \quad Y_2^* > 0,$$
$$Y_2 = 0 \quad otherwise. \tag{2}$$

Y_1^* and Y_2^* are latent variables influencing the probability of registration with environmental-related standards and employees' recruitment, respectively. We consider the following bivariate probit model:

$$\begin{cases} Y_1^* = \alpha_1 + \beta_1 X_1 + \mu_1 \\ Y_2^* = \alpha_2 + \beta_2 X_2 + \gamma Y_1 + \mu_2 \end{cases} \tag{3}$$

where X_1 is a vector of exogenous variables including a constant firm's characteristics (SIZE, GROUP, NETWORK, ISO9 2003, ISO9 2006, EXPORT, RELOCATION and ACTIVITY). The variable RELOCATION refers to whether the firm has relocated a part of its business abroad. It represents an instrumental variable which guarantees the identification of the model and helps to estimate correlation coefficients (Maddala, 1983). Indeed, in order to identify the bivariate probit, we need an additional variable that will explain the probability of environmental-related standards but not relevant to explain recruitment[6]. Several rationales can explain why relocation affects adoption of environmental-related standards. For example, achieving scale economies by applying the same standard in all production units and not being suspected to relocate in pollution havens can drive firms to adopt environmental-related standards (Grolleau and Mzoughi, 2005). In other words, it is used as an exclusion restriction. X_2 includes the same set of variables as X_1 (SIZE, GROUP, NETWORK, ISO9 2003, ISO9 2006, EXPORT and ACTIVITY). β_1, β_2 and γ are slope coefficients to be estimated. Finally, α_1, α_2, μ_1 and μ_2 are the intercepts and disturbance terms for the two equations, respectively.

Residuals of these two equations follow a normal bivariate law with zero means and a covariance matrix that writes, after normalizations to 1 of the diagonal elements, as follows:

$$\begin{pmatrix} \mu_1 \\ \mu_2 \end{pmatrix} \rightarrow N(0, \Sigma) \text{, where } \Sigma = \begin{pmatrix} 1 & \rho_{12} \\ \rho_{12} & 1 \end{pmatrix}$$

In estimating the interrelationship, a bivariate probit model produces 'rho' from the first portion of model estimation. Since rho represents a non-linear function of the variables in the first portion of model estimation, the second portion is identified even without instrumental variables via the normality assumption for the probit model (Greene, 2003). When rho is

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6 Statistically, the variable RELOCATION was not a significant determinant of recruitment.

statistically different from zero, the probability that a relationship exists between environmental-related standards and recruitment, simultaneous estimation procedures are essential to appropriate estimation.

3. RESULTS AND DISCUSSION

Bivariate probit estimation results are presented in Tables 2 and 3, together with goodness-of-fit measures (Maximum-Likelihood estimation). To better interpret the sensitivity of the probability of recruitment improvement with respect to explanatory variables, we also report marginal effects. As it is common for discrete variables, the marginal effect is calculated as the difference between the probabilities estimated at the sample means when the dummy variable takes the values of 1 and 0, respectively.

Table 2:
Bivariate probit estimates of the effect of environmental-related standards
on recruitment of professional employees

Variables		STANDARDS			PROFESSIONAL EMPLOYEES		
		Estimate	z-value	Marginal effect	Estimate	z-value	Marginal effect
Intercept		1.69***	-18.48	-	0.33***	-5.21	-
STANDARDS		-	-	-	0.64***	4.02	0.04**
SIZE	MEDIUM	0.20***	4.35	0.04***	0.19***	4.77	0.09***
	BIG	0.61***	14.22	0.15***	0.22***	4.56	0.13***
GROUP		0.09**	2.35	0.02**	0.13***	4.58	0.06***
NETWORK		-0.28***	-5.54	-0.06***	0.22***	5.65	0.08***
ISO9 2003		0.18***	2.92	0.03***	-0.08	-1.54	-0.02
ISO9 2006		0.93***	14.06	0.20***	-0.17***	-2.79	-0.03
EXPORT		0.13***	3.38	0.03***	0.17***	5.80	0.08***
RELOCATION		0.26***	4.21	0.06***	-	-	-
Likelihood ratio		-10209.748					
WaldChi2(36)		2289.83***					
Rho		-0.32					
Wald test of rho=0 Chi2(1)		10.63***					
Number of observations		10010					
Number of registered firms		1752					

(*), (**), (***) indicate parameter significance at the 10, 5 and 1 per cent level, respectively. Marginal effects are computed at the sample means. The marginal effects calculated from the two simple probits.

Model significance was determined by evaluating the Wald chi-square values for each of the two models. The Wald chi-square statistic was significant for both models. The results also illustrate that the variable STANDARDS is endogenous, as denoted by the Wald test of rho. Moreover, using a Rivers-Vuong test (not reported) we find that the presence of endogeneity cannot be rejected since the residuals are significant for professional and non-professional employees. Several versions of the model have been estimated to investigate the robustness

of results to the omission of some variables. The main results remain unchanged. The variables SIZE, GROUP, ISO9 2003, ISO9 2006 and EXPORT are significant. Belonging to a network was found to have a negative impact on environmental-related standards registration. Two sectors (intermediate goods and energy) are more sensitive to the registration of environmental-related standards.

Table 3:
Bivariate probit estimates of the effect of environmental-related standards
on recruitment of non-professional employees

Variables		STANDARDS			NON-PROFESSIONAL EMPLOYEES		
		Estimate	z-value	Marginal effect	Estimate	z-value	Marginal effect
Intercept		1.64***	-18.20	-	0.25***	3.68	-
STANDARDS		-	-	-	0.84***	3.05	0.02*
SIZE	MEDIUM	0.28***	3.68	0.04***	0.15***	2.91	0.05***
	BIG	0.59***	13.07	0.15***	0.06***	0.84	0.05***
GROUP		0.05	1.30	0.02**	0.15***	4.53	0.05***
NETWORK		-0.31***	-5.75	-0.06***	0.12***	2.67	0.02***
ISO9 2003		0.19***	2.98	0.03***	-0.10	-1.54	-0.01
ISO9 2006		0.94***	13.60	0.19***	-0.13***	-1.41	-0.01
EXPORT		0.11***	2.84	0.03***	0.12***	5.37	0.07***
RELOCATION		0.25***	3.74	0.06***	-	-	-
Likelihood ratio		-7634.5654					
WaldChi2(36)		2044.76***					
Rho		-0.45					
Wald test of rho=0 Chi2(1)		5.34**					
Number of observations		8995					
Number of registered firms		1374					

(*), (**), (***) indicate parameter significance at the 10, 5 and 1 per cent level, respectively. Marginal effects are computed at the sample means. The marginal effects calculated from the two simple probits.

The main hypothesis of the paper, that is, environmental-related standards have an impact on recruitment, is confirmed for professional and non-professional employees. This result is consistent with that of several studies (*e.g.*, Grolleau *et al.,* 2007) which showed that improvement of human management resources is one of the major drivers of environmental management systems registration. Interestingly, marginal effects show that the hypothesis is less supported for non-professional employees, which may indicate that they do not pay attention to environment-related standards as professional employees may do, or are not in a position to express their possible environmental preferences, especially because of the high unemployment rate in France for these kinds of jobs. Moreover, the result for professional staff is consistent with several studies stating that well-educated individuals are more likely to exhibit environmentally friendly preferences (*e.g.*, Thompson and Kidwell, 1998). This result can indicate to registered firms to more publicize their environment-related commitment in circles of well-educated people rather than adopting a 'one-size-fits-all' approach.

The control variables SIZE, GROUP, NETWORK and EXPORT were significant, as expected. In other words, big firms, firms who belong to a group or a network, and exporting firms have less problems in recruiting employees. The variables ISO9 2003 and ISO9 2006 are not significant. This surprising result can be explained by the divergence between promises and real impacts of adopting an ISO 9001 standard. Several authors (*e.g.*, Lasfargues, 1994) argue that ISO 9001 rarely delivers the expected benefits and the adoption process reduces employees' autonomy and flexibility, impedes creativity because of formal procedures, is red tape generating and time-consuming and frequently constitutes a source of stress at the workplace, especially at audit times. If job seekers are informed about these presumed real effects of ISO 9001, they may be less interested to apply to firms where the standard is implemented. Furthermore, the variable ACTIVITY (not reported in Tables 2 and 3) was significant for 4 sectors of activity: cars and equipment goods, intermediate goods, construction, and financial and real-estate activities. This result can be explained by the fact that usually in those sectors employers use more 'word-of-mouth' (that is, informal) recruitment methods –*via* relatives, friends, current employees and people already known as workers at other firms (*e.g.*, suppliers/competitors) (Goodman *et al.*, 1998). An implication of this result could be that sectors/firms seeking highly professional employees are more likely to benefit from adopting environmental-related standards than the others, notably in terms of facilitated recruitment.

4. CONCLUDING REMARKS

Our empirical investigation shows that environmental-related standards can deliver benefits beyond environmental considerations such as contributing to successful recruitment. Policymakers and supporters of voluntary standards can emphasize this benefit in order to encourage firms to adopt these initiatives. This finding suggests new ways of achieving the Porter hypothesis promises. Our main result opens a new door for a refined and broader assessment of the effects of environmental voluntary approaches. A promising issue is to investigate how and the ways by which environmental-related standards affect other dimensions of human resource management. These various dimensions are likely to interact (*e.g.*, recruitment, wage level, employees' morale) and resulting tradeoffs deserve more academic attention (Frank, 2003). In addition, the effect of environmental-related standards should be further examined taking into account the temporal dimension, by verifying whether employees 'reward' differently long-term and short-term commitment to environmental issues.

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Appendix :
Pearson correlation coefficients (As for Tables 1 and 2, we do not report results concerning the variable ACTIVITY)

	Professional employees	Non Professional employees	Standards	Small	Medium	Big	Group	Network	ISO9 2003	ISO9 2006	Export	Relocation
Professional employees	1.00	-	-	-	-	-	-	-	-	-	-	-
Non Professional employees	0.35	1.00	-	-	-	-	-	-	-	-	-	-
Standards	0.01	0.03	1.00	-	-	-	-	-	-	-	-	-
Small	-0.16	-0.12	-0.11	1.00	-	-	-	-	-	-	-	-
Medium	0.07	0.06	0.05	-0.62	1.00	-	-	-	-	-	-	-
Big	0.14	0.09	0.09	-0.66	-0.18	1.00	-	-	-	-	-	-
Group	0.11	0.07	0.07	0.32	0.16	0.25	1.00	-	-	-	-	-
Network	0.04	-0.00	0.02	-0.10	0.06	0.07	0.12	1.00	-	-	-	-
ISO9 2003	0.02	0.05	0.17	-0.26	0.13	0.20	0.23	0.13	1.00	-	-	-
ISO9 2006	0.02	0.04	0.09	-0.26	0.13	0.21	0.23	0.13	0.88	1.00	-	-
Export	0.10	0.06	0.07	-0.16	0.09	0.12	0.18	0.21	0.23	0.24	1.00	-
Relocation	0.03	0.01	0.04	0.13	0.07	0.09	0.12	0.08	0.10	0.11	0.19	1.00