

Summary of final report

The impact of environmental policy on the competitiveness of Belgian industry



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I INTRODUCTION

Recent decades have seen the introduction of a host of new environmental regulations and international agreements aimed at making polluters pay for the damage they do to the environment. The application of the "polluter pays" and "precautionary" principles together with greater producer liability have combined to generate substantial additional costs for companies. Indeed, the cost of cutting pollution can often exceed 5% of total production costs. The concern now is that certain firms and industries may struggle to compete because many of their foreign competitors are not faced with equally stringent environmental regulations and standards. The goal of this research is to assess the impact of different environmental strategies at the corporate level, which are (at least partly) induced by environmental regulation, on the competitive position of firms. The focus of our research is on firms, rather than industries.

II GOALS AND OBJECTIVES

The main research question to be answered through this research project can be synthesized as follows:

‘Do public environmental policy measures reduce or improve the international competitiveness of industry?’

The original research proposal contained in the following five research objectives:

1. To implement a thorough review of the academic literature on the nature of the relationship between environmental regulation and the competitiveness of firms;
2. To analyse the impact of environmental regulation on the environmental management practices of firms, as well as the importance of regulatory pressures relative to other stakeholder pressures for the formulation of corporate environmental strategies;
3. To analyse the effectiveness and economic implications of different environmental management strategies;
4. To implement a case study in order to gain a better understanding of the cumulative impact of environmental regulation on the competitiveness of firms in a specific industry;
5. To formulate some policy recommendations with regard to a further strengthening of corporate environmental practices and the scope for regulatory initiatives at the European level.

The main goal of this research proposal is the design of a general evaluation procedure that will allow public policy makers to assess the impact on the competitiveness of firms. As a result, public policy makers will be informed regarding the sustainability of the public environmental policy measures they introduce.

III DATA SOURCES AND RESEARCH METHOD

The methodology used in this study to assess the linkages between environmental policy and industrial competitiveness is very appropriate for this type of research. On the one hand, the research structure is based on the international literature and similar studies that have been conducted at the international level. When designing the conceptual tool to evaluate the effectiveness of public environmental policy measures, recent concepts from the core-competence or the resource-based theory of the firm were included. It is argued in this study that firms may develop core competencies in the area of 'environmental strategy', which in the long run may lead to an improvement of their competitiveness.

IIIa Data sources

Empirical research in economics usually measures the costs of environmental regulation to firms by the costs of pollution control (See Jaffe et al, 1995 for an excellent review of this literature). The total costs of pollution control are defined as the sum of the annual depreciation on environmental investments (end-of-pipe or process-integrated), the operational costs of environmental investments (energy, raw materials, staff,..), the administrative costs associated with achieving environmental compliance, expenditures on R&D related to new environmental technologies, environmental taxes, fees and fines. The financial benefits and savings resulting from environmental investments need to be subtracted from this total in order to arrive at the net costs or true costs of environmental regulation.

This approach has several drawbacks. First of all, pollution control increasingly takes the form of process-integrated investments, in which case it is far more difficult to estimate the costs associated with the environmental component of the new production process. Second, the operational costs are also difficult to measure (usually, a fixed percentage is added to costs of environmental investments to account for them). Third, the savings due to better pollution control are usually not well known. Fourth, some benefits such as the gains resulting from a better public image cannot be quantified.

Probably as important a consideration is that these data are not readily available for Belgian firms. There is as yet no regulatory requirement to keep a separate account of environmental costs and benefits. As a result, most firms have no clear view on the net costs of pollution control.

In management research, other measures have recently been adopted to capture corporate commitments to pollution control. These include changes in the Toxic Release Inventory Index (Hart and Ahuja, 1996), environmental ratings (Russo and Fouts, 1997), self-reported environmental management practices (Sharma and Vredenburg, 1998; Judge and Douglas, 1998), and the uniform application of an environmental standard worldwide.

There is at present no Toxic Release Inventory Index in Belgium (the best that exists is an index for water pollution). Nor is there an independent environmental rating agency in Belgium. This left us with no other choice but to use self-reported data on environmental management practices. The advantage of this approach is that the researcher gains an understanding of the extent to which environmental regulation has translated into lasting organizational changes that reflect a strong commitment to reducing and preventing environmental problems.

Based on an extensive review of the environmental management literature, 9 criteria were selected to classify respondents according to their posture towards environmental issues. These included: (1) the development of green capabilities, (2) senior management commitment to environmental performance, (3) integration of environmental issues in strategic management, (4) participation of environmental managers in strategic planning, (5) employee training and participation, (6) the degree of functional coverage, (7) internal environmental reporting, (8) external environmental reporting, and (9) application of some form of life cycle analysis.

The data were gathered through a survey conducted in 1998 - 99 of the most polluting firms in Belgium. The firms included accounted for 80% of water pollution and solid waste production in 1998. The relevant governmental agencies in Belgium were contacted to obtain the coordinates of companies contributing significantly to water pollution or waste production. This resulted in a sample of 450 companies, heavily concentrated in the manufacturing sector.

These companies were then contacted in order to identify which manager was responsible for environmental issues and to solicit their cooperation in the survey which was subsequently sent to them. The research team provided the opportunity to all participating managers to obtain extensive guidance when filling in the questionnaire. A total of 198 usable responses were received by the authors.

IIIb Research method

The aim was to summarize the information on environmental management practices in such a way that it can be used in quantitative evaluation procedures. For this purpose, the 9 criteria mentioned above were subjected to a cluster analysis. This suggested a classification consisting of three environmental management strategies: (1) *reactive*, (2) *anticipatory*, and (3) *pro-active*. This solution yielded a clear separation along all 9 criteria. Cluster analysis does not result in an absolute score or measure of the extent to which an environmental strategy can be considered pro-active. Instead, it indicates that the environmental practices of some firms can be considered as more pro-active (or more reactive) relative to those of other firms.

The second research objective was addressed by relating this classification of firms to the perceived pressures exerted by regulators and other stakeholders. To measure the perceived importance of different stakeholders, managers were asked to rate on a Likert scale of 1 to 5 the influence of various stakeholder pressures on decisions related to environmental management, with 1 denoting no influence at all and 5 a very strong influence. The list of stakeholder pressures included: domestic and international customers, domestic and international suppliers, shareholders, employees, financial institutions, domestic and international rivals, the national and sub-national governments, local public agencies, international treaties and agreements, the media and environmental NGOs. It was verified empirically (using Multivariate Analysis of Variance or MANOVA) whether the perceived pressures exerted by the various stakeholders are affected by a firm's classification as a firm characterized by a reactive, anticipatory or pro-active environmental strategy. Simultaneously, this analysis indicated what the important stakeholder influences are in each stage of corporate greening.

With respect to the third research objective, an insight into the relative effectiveness was gained by linking the survey data to financial performance data. The latter were obtained from the annual statements and balance sheets of all participating firms, as collected by the National Bank of Belgium. Return on assets was selected as an indicator of financial performance, because it is the most commonly used measure of financial performance used in similar studies. The classification of firms according to their environmental management strategy was used to introduce 2 dummy variables (one for a pro-active strategy, one for a reactive strategy) into regression analysis. Other control variables included firms size, sales growth, industry growth, industry concentration ratio, capital intensity and advertising intensity and the ratio of own assets to total assets.

International co-ordination of environmental policy from an EU perspective

The main conclusion of this paper is that the co-ordination of environmental policy at the European and international levels offers a unique opportunity to simultaneously achieve economic growth driven by free trade and foreign direct investments, and substantial environmental protection. The harmonisation of environmental regulation in the European Union has caused the poorer member states to rise to the level of environmental protection prevailing in the richer ones. It has also partially prevented unilateral environmental regulations by member states from having a strong influence on individual firms, industries and the environmental quality of neighbouring States.

However, many member states have recently introduced additional instruments – mainly economic incentives – to regulate environmental pollution, and a harmonised use of such instruments at the level of the European Union is still in its early stages. A case study on the regulation of water pollution in Belgium was used to highlight some of the possible costs associated with an unco-ordinated use of economic incentives, in particular environmental taxes. In Belgium, water pollution through rivers is mainly a problem of asymmetric spillovers from the upstream region (Wallonia) to the downstream region (Flanders). However, the effluent taxes on water pollution, issued unilaterally by each region in 1990, do not internalise such externalities. A more strongly co-ordinated policy seems desirable but may need to be combined with side payments in order to be acceptable. Such a proposal would currently not gain much political support in Belgium where the more general issue of inter-regional transfer payments (e.g. as regards social security) has been the subject of a major debate between the Walloon and Flemish regions. The transboundary nature of water pollution is however not unique to Belgium, but common to all European countries. This problem of transboundary water pollution has already been addressed at the level of the European Union mainly by issuing common environmental quality standards. Yet, a broadening of the regulatory

instruments used by the European Union is necessary, as has recently been recognised by the Union itself.

This paper has also suggested that innovative 'green' thinking can contribute to sustainable economic growth through the development of a sector for environment friendly technologies and products. The European Union has endorsed this idea in its fifth Environmental Action Programme, and has adjusted the process of European environmental policymaking accordingly. The recent directive to encourage the re-use of packaging materials, which has developed in co-operation with industry, can be considered a step in the right direction. Yet, we found little evidence of green thinking in the Belgian case, suggesting that environmental policy in Belgium has not contributed much to green thinking or to the adoption of a long term perspective by business leaders on the economic opportunities generated by a green approach. A better co-ordination of environmental policy at the national level can provide an incentive for behavioural change. The European Union can also contribute to a change in attitude of managers vis-à-vis the environment both directly through its regulatory efforts and indirectly through competitive pressures from the single market.

Finally, this paper suggests that the European Union is increasing its co-operation with industry to develop new environmental regulations. As a result of this trend, recent environmental initiatives have taken the form of voluntary agreements. Many industrial sectors are dominated by a limited number of multinational enterprises. These firms can be expected to play an increasingly important role in shaping future European environmental policy. It was argued that most multinational enterprises would benefit from a European approach to environmental policy. However, the impact of European versus unilateral environmental regulation on MNE operations requires further in-depth research.

Environmental policy and corporate strategy in a small open economy

This paper identified the key determinants of proactive environmental management in a small open economy. These determinants include regulatory pressures, the pursuit of economic opportunities (i.e. the simultaneous pursuit of environmental and industrial performance), the valuation of good relationships with local communities in host countries and internal and

external stakeholder pressures. The paper focussed on the environmental strategies of MNEs in small open economies because of their strong involvement in highly polluting activities and their key role in the dissemination of new technologies and managerial practices across borders. One interesting finding is that the environmental practices of foreign MNEs appear to be superior to those of domestic firms in host countries, at least in the case of Belgium.

It appears that regulatory pressures exerted by the government of a small open economy have more impact on the strategic decisions of domestic companies than on the decisions of subsidiaries of foreign MNEs. Indeed, the research provides evidence that high perceived regulatory pressures induce domestic firms to adopt more proactive environmental management strategies. However, this conclusion does not extend to the case of subsidiaries of foreign MNEs. Therefore, this hypothesis could not be accepted in general. The hypothesis, which stated that subsidiaries of foreign MNEs implement environmental strategies in host countries based on regulations prevailing in their home country is also rejected, as environmental management strategies of MNE subsidiaries do not appear responsive to environmental pressures in the MNE's home country.

The perception that proactive environmental management leads to economic benefits (reputation effects, access to new markets, efficiency gains) was shown to contribute positively towards the greening of corporate strategies.

As regards the hypothesis, that internal and external stakeholder pressures constitute a moderately important element affecting the choice of a specific environmental management strategy, the strongest pressure comes from shareholders, for whom poor environmental performance implies increased investment risks. Moreover, it also appears that rivalry pressures may push MNEs towards the implementation of more proactive environmental management strategies in their affiliates. In addition, the paper's findings suggest that stakeholder pressures do not operate in isolation from each other: it is their joint effect that may raise a company's awareness of environmental issues, and motivates them to develop green FSAs. However, the joint impact of external stakeholder pressures does not appear to be as significant. Finally, the hypothesis is confirmed that the valuation of good relationships with host country actors stimulates subsidiaries of foreign MNEs to adopt stringent environmental standards worldwide was confirmed.

In sum, shareholder pressures and perceived economic opportunities are the key determinants of a proactive environmental strategy. In addition, Belgian firms respond to national and sub-national regulatory pressures when choosing between a reactive and a proactive environmental management strategy. However, government environmental regulations have less influence on the choice of an environmental strategy in the case of an MNE. This conclusion holds for both regulatory pressures prevailing in home and host countries. The chapter's findings suggest no role for strategic policy-making, whereby stringent environmental regulations would lead to first mover advantages internationally, and strengthen the competitiveness of specific domestic industries (cfr. Nehrt, 1996). Moreover, these results also show that the impact of national regulations, whether from home or host countries, on the behavior of MNEs is rather limited.

The impact of stakeholders on proactive environmental management

This paper has evaluated the impact of various stakeholders on corporate environmental management, with an empirical application to large polluting firms active in Belgium. The firms were classified according to their environmental management practices. Cluster analysis suggested a classification consisting of three environmental management strategies: (1) *reactive*, (2) *anticipatory*, and (3) *proactive*. Whereas many firms have already shifted from a reactive to an anticipatory environmental strategy, only a minority has adopted a proactive strategy.

Overall, regulators (central government and local public agencies) and international agreements were identified as the most important source of pressure inducing greater corporate environmental responsibility. It is doubtful that firms with a reactive environmental strategy would have considered environmental investments in the absence of any regulation. Moreover, the shift to an anticipatory environmental strategy appears to be motivated by a belief that prevention 'at the source' leads to lower pollution abatement and compliance costs.

Firms with a proactive environmental strategy do perceive regulatory pressures less strongly than firms with an anticipatory environmental strategy. This finding suggests that a shift to truly green strategies may be achieved more effectively through cooperative efforts between

industry and regulatory agencies than through conventional environmental policy (e.g. command and control measures, economic incentives). In fact, there is already a tendency for regulatory agencies to consult with industry before enacting or implementing new environmental rules, and a greater emphasis on voluntary regulation in most industrialized countries (Rugman, Kirton and Soloway, 2000). This tendency is also reflected in the post 1992 EU environmental policy. However, this voluntary approach needs to be combined with more a stringent enforcement of conventional regulation in order to also induce continuous improvements in corporate environmental performance within firms that do not view environmental issues as a priority.

This research supports the view that proactive environmental practices reflect a response to the changing norms and expectations of various stakeholders, other than regulators. However, not all stakeholders have been equally instrumental to proactive strategy. More specifically, the perceived contribution of business system stakeholders to the greening of strategic management, although clearly present, appears to be rather limited, when size and industry effects are accounted for. These findings are in contrast with Henriques and Sadorsky's (1996, 1999). The latter results suggested that shareholders and customers in particular contributed very substantially towards a more proactive environmental management approach. This discrepancy may be explained by two institutional elements. First, stock markets have traditionally not been a key source of funding in Belgium, as compared to Anglo-Saxon countries. Second, Belgian firms tend to specialize in the production of intermediate goods. Their lack of direct contact with final consumers may help explain their apparent insensitivity to green consumerism. However, the situation prevailing for Belgian firms could change in the future, if a number of trends observed in Canada also took place there. First, environmental NGOs could indirectly become more influential by targeting some of their lobbying efforts towards consumers and investors. Second, regulators could use market instruments more extensively in order to change consumption patterns in favour of green products. Third, regulators could also rely more on liability charges for environmental damage, and bring environmental risks associated with particular environmental practices more to the attention of investors. Fourth, regulators could introduce more stringent environmental reporting requirements, making it easier for stock markets to reward leaders and punish non-compliers.

Finally, environmental NGOs and the media are not perceived as more important by firms with a proactive environmental strategy as compared to firms with an anticipatory or reactive environmental strategy. Thus, environmental NGOs and the media are not viewed, at present, as instrumental to the development of green strategies. This may be explained by these stakeholders' key focus on criticizing firms during environmental crises. Hence, these stakeholders should start adopting a more constructive approach if their aim really is to improve corporate environmental practices.

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