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Preface

We are very excited to be able to organize the **2nd year of ARSA** conference during 2. – 6. December, 2013 at **www.arsa-conf.com**.

We were honored by receiving top rated papers from distinguished scholars from all over the world. Despite excellent work of scientific committee, not all submitted articles were published. Altogether 96 articles were presented by the scientists from 29 countries.

As expected, our conference has been an intellectual hub for academic discussion for our colleagues in the various scientific areas. Participants found valuable opportunity for presenting new research, exchanging information and discussing current issues. We believe that this conference proceeding and our future conferences will improve further the development of knowledge in proposed scientific fields.

All accepted articles have been reviewed by experts from the specific research fields. I would like to thank all presenters, participants, board members, reviewers and I am looking forward to seeing you all again at the upcoming ARSA conference.

Anton Lieskovsky
Anton Lieskovsky
Conference Coordinator
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December, 2013

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Motives for Voluntary Environmental Investments

Sladana Pavlinovic

Faculty of Economics

University of Split

Split, Croatia

sladjana.pavlinovic@efst.hr

Abstract—We analyze firm motives and market outcomes of voluntary environmental investment. The most prominent motives are signaling, cost reduction and green consumers. Unexpected motives are labor market performance and proactive firm behavior to the government regulation. The interrelation between motives needs to be taken into consideration because the partial effects may cancel out.

Key words- *Environmental investment, corporate environmental responsibility, green consumers, signaling*

I. INTRODUCTION

It is evident that almost all economic activities produce negative environmental externalities. Agriculture pollutes water and it significantly contributes to the emission of greenhouse gasses to the atmosphere. Industrial production impacts the environment through considerable energy consumption, use of chemicals, and finally, waste production part of which is hazardous waste as well. Transportation is one of the main sources of air pollution and emission of greenhouse gasses. There numerous examples of devastating impacts of tourism activities on natural habitats and endangered species. In fact, [1] states that the relationship between local inhabitants and tourism can be modeled as a conflict game. Although the tourism activities bring considerable revenues, at the same time they reduce the value of the natural resources. On one or other way, all the mentioned sectors can be considered as polluting.

Negative impact of economic activities on environment and society motivated evolution of the concept of sustainable development. The society became aware of environmental problems which motivated the firms to consider impacts of their business practices on environment [2]. Moreover, in order to tackle the negative environmental externalities of the polluting sector, the firms are encouraged to undertake efforts to reduce such impacts. The encouragement may come from the government instruments (regulatory, economic or voluntary), or from the consumer consciousness. Regulatory instruments refer to the emission standards and other environmental requirements proscribed by different government regulations. These regulations usually incorporate fines for non-commitment with the regulation. Economic instruments for environmental protection refer to taxes and charges for environmental degradation, waste disposal or the use of the natural resources. Also, they incorporate subsidies for the environmentally friendly activities. This set of instruments does not prohibit or impose certain type of behavior but it stimulates it or de-stimulates it through monetary or other material incentives or disincentives. The

third class is composed of instruments which are voluntary implemented by the firm itself. Environmental certification schemes are one type of such instruments. These schemes may be designed by the firm, independent certification body, or by the government. However, in any case, the firm freely chooses to enter into such schemes. Also, it is important to emphasize that voluntary environmental management systems do not need to be certified. Namely, [3] state that environmental management systems may be proactively introduced in order to adjust in the most efficient ways to an environmental regulation. Thus, voluntary environmental management systems enable firms to implement the most cost-effective method of pollution reduction which is not possible to reach through environmental regulations and taxes which are mostly uniform across heterogeneous producers. Furthermore, reference [4] mentions that government may sometimes sponsor such voluntary pollution reduction programs. However, they find that negative relationship between such programs and latter success of environmental patent applications.

Therefore, various instruments for environmental protection may be implemented. The agricultural producers may voluntary reduce the use of nitrates and pesticides or to follow other practices of organic farming. The manufacturers are motivated to modify the business practices in order to decrease gas emission. The hotels introduce various measures by which the energy and water consumption, and waste production is reduced, and at the same time they stimulate their guests to use the sustainable local transport modes. All the mentioned pollution reduction measures to make the business less polluting are costly, independently of the sector. However, it is evident that many firms undertake such measures voluntary, although they often hidden, and not visible. For instance, there are many examples voluntary environmental actions undertaken by tourism industry ([7]).

As it is noted in [5], we witness an increasing trend in the reduction of industrial pollution. Firms make considerable investments in adoption of less-polluting technologies. The voluntary environmental investments and environmental managements systems are often incorporated within broadly used term *corporate social responsibility*. In fact, [6] define corporate social responsibility (CSR) as “environmentally friendly actions not required by law, also referred to as going beyond compliance, the private provision of public goods, or voluntary internalizing externalities”. As examples of voluntary actions of managers to reduce environmental impact, [7] mention the tour operators initiative for sustainable tourism development, implementation of ISO 14001 and EMAS, and collaborations and partnership for sustainability.

Also, public dimension of voluntary environmental investments need to be emphasized. Thus, [8] differs consumer-benefit programs from social-benefit programs. The later denotes features which contribute to the common social goals, such as environmental pollution reduction, endangered species and ecosystems protection, crime and poverty reduction, etc. The social-benefit programs represent a form of a corporate social responsibility.

II. THE MOTIVES

The voluntary environmental investments leave puzzled most of economists since firm is expected to maximize the profits of its shareholders [9]. Thus, as pointed out by [10], nowadays dominant view is that the investors take into consideration the financial effects only, the social and environmental concerns belong to government. However, [2] emphasizes that environmental investments become attractive for firms due to the raised environmental consciousness of consumers and global community. Therefore, here we present various motives which encourage firm to undertake voluntary environmental investments. Since environmental economics has been evolving rapidly, we focus on the most recent literature on environmental investments.

A. Signalling

Voluntary environmental investments may be observable or unobservable. If they are unobservable, the firm may decide to implement an eco-certificate or set price in order to signal its environmental responsibility. On the contrary, if voluntary environmental investments are observable, then they can be used to signal some other property of the firm, such as quality.

As it is pointed out by [7], sometimes we may observe the voluntary environmental measure done by the firms due to the signaling effect. The firm may want so signal some attributes by undertaking voluntary emission reduction measures.

According to [3], firm may be motivated to green its business practices in order to signal to the consumers, other firms and regulatory bodies that the firm acquires good environmental practices. The motive for introducing environmental management practices may be the cost reduction and signal to supply chain partners. On the other hand, a motive for certification may be better perception by the consumers and regulators. Quality of environmental management practices is difficult to observe by other parties, so that it represents a significant information asymmetry. For this reason firms may decide to certify an environmental management system such as ISO 14 000. According to [3] eco-certificates may signal the actual environmental management system to the consumers, but in that case the signal is stronger in case of small firm than larger because of the significant fixed cost of certifying.

Here, we have to distinguish the motive for signaling environmental investments from the signaling effect or outcome of environmental investment. Namely, some authors mention that firm may signal its pollution reduction activities through prices.

It is mentioned in [5] that cleaner technology is usually not observable, so that it has to be signaled to the consumers through price. Furthermore, beside environmental attributes, the consumers may be interested in product quality attributes as well. Thus, a firm may want to signal both, green attributes and quality, through price.

As [5] points out, although the public bodies use to collect the information about pollutants (e.g. Croatian public bodies established the register of pollutants, but which is far from complete. That is, many important polluting firms are missing in the register), the information is not easily available and it is far from satisfying the needs of conscious consumers. In other words, the consumers lack information about environmental activities of the firms.

For this reason, the firms with cleaner technology tend to differentiate from the polluting using different signaling mechanism ([5]), one of which is a price.

Reference [12] offer a novel finding that high environmental performance is signaled through a high price, conditional on the increasing cost of pollution abatement. He also point out that the eco-labels might be misleading and unreliable so that price may still be an important signal of environmentally friendly business practices. He considers that the consumers are willing to pay more for cleaner product, so that the clean production is a product attribute.

Authors in [11] explored the effect of the signaling on environmental taxation. The assumptions are vertical and horizontal information asymmetry in an oligopolistic setting with two-period model where the polluting firm incurs lower costs of production than the clean firm.

B. Improvement of economic performance and cost reduction

Reference [8] finds that the hotels introduce environmental management programs in order to improve economic performance. A weak positive relation between economic and environmental business performance is identified in [13], so that preventive and pollution control measures are associated with increasing economic results. This motivates the question about the relationship between the environmental performance and quality.

Reference [6] emphasizes that proliferation of green products depends on the competition forces in the market for the brown product. If the competition in the brown market is high, then the consumers gain a considerable surplus by consuming the brown good. Some firms may want to present as green in order to differentiate them and to reduce the competitive pressures.

The authors in [6] question the assumption that the environmental provision at the firm level is costly. In fact, some emission reduction measures may be also cost reducing, such as energy or water saving and reuse, which is also emphasized by [2], [12] and [13]. Furthermore, some hotels gained considerable marketing and financial improvements by introducing sustainable business practices and by imposing them as well on their suppliers. And vice versa, as [5] notes, the pollution might be correlated with other production inefficiencies.

C. Stock market

In [8] it is explored why firms sacrifice their profits and they consider if the firm should undertake such an action, considering that it should maximize the returns of its shareholders. The reasons may be the shareholder welfare, or competitive pressures.

The motivation for pollution reduction may come from an increase in market returns (the stock-holders reward green firms). In [5] it is also mentioned that investors consider allocation of their wealth between savings, charitable donations and shares of a socially responsible firm, so that corporate social responsibility may increase the market value of a firm.

An analysis of environmental investments starting from the Smith view of collective action is undertaken by [9]. The managers should maximize the shareholder welfare. However, it has been noted that taking voluntary actions may improve even the financial performance. I.e. if the firm does not undertake socially desirable actions, it may be perceived as lower expected earnings. The reasons are improvement of capabilities, reputational advantages, hazard risk reduction, etc. However, even if a firm applies some environmental management practices this is usually far from doing substantial changes. Thus, a significant gap remains between what is done and what should be done in order to improve environmental state. An impediment for the managers to undertake an environmental investment may be the misperception of the stock market. This return may be long term beneficial, but if it incurs short term losses, then the stock market may react negatively.

D. Green consumers

Authors [5] also point out that increased share of green consumers motivates the firms to introduce social corporate responsibility programs. Environmental investments may also be related to the better firm performance if the green consumers dominate in the market ([14]). Also [15] studied a tourist reaction to the information provided online. They find that the purchase intention is influenced by the beliefs about the corporate social responsibility. It is well known that heterogeneity of consumers in terms of quality preferences may induce signaling by price ([16]). Analogously, environmental preferences heterogeneity may induce signaling by price as well. One may ask if, from the social welfare point of view, it is better to have a homogeneous or heterogeneous population of consumers.

E. Reputation

There are many examples where firms make voluntary environmental friendly efforts, such as environmentally friendly input, packing or distribution. Authors in [17] point out that this may occur because the firm wants to improve its image and increase its reputation, which is also recognized by [13]. Building the reputation is close to the models of signaling in terms that in both classes of models firm type is given, and the aim is to signal the firm type. A rather simple presentation of a reputation model is provided in [19]. Furthermore, we could compare voluntary environmental investments (such as

environmentally friendly inputs, packing and distribution) to dissipative advertising. The last is a source of signaling in [20].

F. Proaction to government regulation

Government regulation affects adoption of environmentally friendly technology in particular if the plants are new [14]. Also, the firms sometimes act proactively to the government regulations ([15]). Sometimes environmentally friendly activities serve as a substitute for lobbying and advocating against the low pollution regulations. According to [3], some firms acquire environmental management systems in order to efficiently adjust to the environmental regulation, and for this reason they do not certify their environmental management system by a third party. If the firm certifies its environmental management system, it may be the case that the firm wants to signal its activities to the regulator. For example, inspector may select among the potential targets for a visit based on the possession of a certificate. Also, sometimes public bodies offer procurements advantages to the firms who possess an ISO 14000 certificate. So, the firm may be motivated to certify its environmental management practice in order to avoid inspectors or to perform better at the procurement.

G. Labour market

According to [6], corporate social responsibility improves perception of the firm by its potential and current employees. Once environmentally friendly employees are hired by the firm, they continue to apply environmentally friendly practices. Thus, CSR enable labor market screening.

III. ISSUES: LACK OF INFORMATION AND UNRELIABILITY OF CERTIFICATES

The problem is always a reliability of the standard, in terms that the consumer does not know exactly what stands behind a particular label. Despite this problem with labeling, the firms continue to undertake social corporate responsibility programs.

Contributing to the discussion about the reliability of the eco-certificates, [3] finds that uncertified plants had greater emission reduction than certified plants. Also, weaker environmental performers are more likely to possess an ISO 14000 certificate.

Instead of considering the disclosure and signaling of environmental management practices, [21] consider the motivation of a firm to disclose its environmental risky behavior. They suggest that when the stakeholders are more interested and if the information provision is relatively cheap, the firm should provide detailed information about environmental risk.

IV. CONCLUSION

At first glance, voluntary environmental investments seem as an irrational firm behavior if one assumes that the firm is a profit maximizing entity. Without abandoning this standard view on firm behavior, we identified various motives for voluntary environmentally friendly practices. On one hand, firms may undertake environmental investment due to the signaling and reputation, costs reduction or demand of green

consumers. On another hand, the reasons may be more unexpected such as proactive act which prompts the government regulation and employees' perception. It is very likely that in the reality some of these motives act together, so that it would be necessary to explore if there is a possibility that their effects cancel out. Furthermore, since the quality of implementation and application of environmental management systems is strongly dependent on the motives for such measures, the government intervention should be designed in such a way to foster desirable, and impede undesirable motives. Environmental investment which at the same time reduce the production costs are certainly profoundly implemented, while the environmental investment intended for signaling to consumers and regulatory bodies may be superficial and without real intention to reduce negative environmental impact of business activities.

Based on this literature review, we propose following directions for future research. Firstly, the price signaling based on green investments may arise due to the cost difference or due to the heterogeneous preferences of consumers toward green products. Thus, it is necessary to contrast these two price signaling effects of environmental investments.

Secondly, existence of a heterogeneous consumer population some consumers are green fosters signaling by price, it is not clear if this mechanism still persists if all the population is green. That is, is heterogeneity a necessary condition for price signaling?

Thirdly, some authors identified a positive relationship between environmental investments and economic performance. It would be interesting to explore if an increase in environmental investment is correlated with an increase in product quality. Namely, [22] explored the existence of the separating equilibrium where high quality vine producers adopt organic farming norms. If the unit costs of organic viticulture are increasing in quality, then the separating equilibrium does not exist.

Fourthly, voluntary environmental investments may be compared to dissipative advertising which are used to signal quality. Thus, voluntary environmental investments may serve to signal high quality.

Finally, in this paper we consider the recent literature on environmental investments. However, it would be interesting to review the past literature on this topic and to check if there was a significant shift in mechanisms and motives which fostered voluntary environmental investments.

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