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ANALYSIS

Can capital markets respond to environmental policy of firms? Evidence from Greece

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ABSTRACT

In this study we attempt to evaluate the stock value of Greek firms, which apply systems of environmental management in the light of systemic risk. Risk is examined empirically with the help of conditional volatility models of investment in environmental friendly firms. The empirical analysis relies on financial econometric models, which determine the underlying conditional volatility. We find that improved environmental management system and environmental performance result in reductions in firms' beta. Specifically, our empirical estimates show evidence of volatility clustering, short- and long-run persistence of shocks to the returns of the market and asymmetry in the leverage effect between negative and positive shocks to returns. Finally, the macroeconomic factors proposed and included in the analysis have no statistical significant influence on the beta estimates in almost all cases.

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1. Introduction

Nowadays environmental cost steadily increases and more and more firms, whose capitals are concentrated on environmental products and services, make their appearance. This raises the question whether business environmental policy and the systems of environmental management are being attuned or opposed to the evolution of the shareholder value. In order to give an answer to this question we have to analyze and find out what is being projected as evaluation of shareholder value indexes. Firms or companies, as far as their relation to the environment is concerned, are based mainly on the establishment of a flexible legal system, which is capable to promote the environmental

harmonization and the effective application of the legal provisions. The latter is in accordance to direct and objective information towards the mass of share-hold market (shareholders–stakeholders), which expresses interest in locating enterprises with preferential discounted future business value.

The improvement of the pre-mentioned relation will encourage the mass of business community to re-establish its relation to the environment. In addition, the improvement of the above relation and the financial effectiveness of every firm are directly and indirectly influenced by the capital market and the formation of the stock value within. At the same time, based on a different prospective, environmental management and policy are closely related to the modern

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strategy of firms, due to the fact that they aim towards better financial results. In other words, environmental management is associated with increasing rate of environmental strategy and becomes its organic part.

Due to these reasons, the question of compliance of the operation of capital market with the environmental dimension of business strategy arises. The scientific community already deals with the issue of how it is possible that the two superficially controversial aspects of “stock value” and “environmental policy and management” can be finally related, at the level of strictly business strategy as well as at the level of capital market operation. The question that emerges is in what way could the conditions that can effectively lead a capital market network towards a perfect function consist of conditions related to environmental management. If the answer is positive then the two areas of business strategy evolution could have mutual and compatible goals even at the level of environmental strategy. In that case, the capital market and the microeconomics system of each firm could affect each other, with mutual gain, contributing to the achievement of environmental policy and management’s goals.

Our research mainly tries to highlight that the recognition of relativity of corporate environmental policy and management with the configuration of shareholder value is required to be incorporated into a horizontal aspect of environmental policy. This has to take place with all the manifestations of component elements, which constitute the operation mechanism of capital market under efficiency conditions. The reduction of in question relativity in its horizontal dimension will elect the necessity for planning a model (Horizontal equilibrium model), which will interpret the peculiarity that the application lends from the corporate environmental policy in the light of general important macroeconomic and microeconomic factors that prevail in the capital market they negotiate.

For the first time, we try to relate environmental policy, management planning and the stock value for the case of Greek companies. Using a sample of 11 Greek companies verified in the Athens Stock Exchange Market and applying adequate econometric techniques we reach a number of interesting conclusions with the associated policy implications. At the same time we apply a number of diagnostic tests in order to justify and check the validity of the proposed models. Companies that make a reference for their environmental policy in the annual financial report or publish an annual social report seem to have a reduction in their beta estimates especially in sectors that influence heavily the environment. Macroeconomic factors seem to be insignificant in almost all cases.

The structure of the paper is organized as follows. Section 2 reviews the existing literature. The data and the methodology adopted are presented in Section 3 while Section 4 discusses the empirical results extracted in the study. The Final section concludes the paper.

2. Materials studied

Up to now research dealt with two different approaches trying to discover and reveal the relations of interdependence of corporate environmental policy and firms’ shareholder value and capital market in general. The *upside approach* aims to

analyze on one hand the influence of the incorporation of environmental policy and systems of business strategy with the direct effect on the level of conditions that form the shareholder value of firms (Blumberg et al., 1997; Schaltegger and Figge, 2000). On the other hand, the *downside approach* focuses on the financial and technical analysis of firms, which respond to the stock market, from an outside approach. It relates the Stock Exchange performance of firms in order to find the supernormal profits that the recognition of the applied environmental policy adds to the changes of stock value.

The most important result is that an increasing environmental sector performance has a significantly positive influence on the shareholder value. Feldman et al. (1997) suggest that environmental improvement is recognized by the investing community and leads to a real decrease of business expected risk (lower beta), which comes together with a rise of stock market value of about 5%. According to Ziegler et al. (2002) an increasing environmental sector performance has a significantly positive influence on the shareholder value, but in contrast, an increasing social sector performance has a negative influence on the average monthly stock returns. In the new era of environmental policy and innovation the ‘Win-Win’ theory (Porter and Linde, 1995; Halkos and Evangelinos, 2002) support that the distinctive environmental regulations and the proper financial tools open the way to innovation, increase the productivity of inputs, decrease the total production cost, improve the value and offer a comparative advantage to the firm that works within a competitive environment.

But Hart and Ahuja (1996) pointed out that firm’s effort on restraining pollution by reducing emission of pollutants is opposed to firms’ net profit for a period of one to two years after the beginning of environmental management and as a result, firms with high levels of emission seem to have higher profit. According to Palmer et al. (1995), Reinhardt (1999a,b) if it is to pay to be green then firm’s engagements in a voluntary measure beyond compliance ought to be guided by consumers and investors performance that are not necessarily captured by regulations. Dowell et al. (2000) find that firms adopting a single stringent global environmental standard have much higher market values.

Capital Market value of state firms consists of an estimated future obligation, which relates to environmental performance. A connection between corporate environmental policy and effectiveness is the risk associated with the investment, which is determined in the capital market, and could as well be characterized as ‘environmental recognition’ and inhere in these two approaches (upside and downside). This is accomplished through the acceleration of information procedures and in time distribution to shareholders and their consultants as well as the domestic and international Institutional Investor. Researcher’s (Gentry et al., 1997; Reed, 1998) points out that the majority of investing community can, under proper information, accept the fact that environmental performance constitutes an important index for the definition of stock value. Yamashita et al. (1999) examining the relationship between environmental conscientiousness scores and stock returns find that the US capital markets have only weakly rewarded environmentally conscientious companies.

Researchers also find that the decrease in stock price is comparable in dollars value to the fines and penalties issued

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