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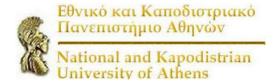**Τμήμα Οικονομικής Επιστήμης, Τμήμα Βιολογίας**

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Does sustainable performance pay off in Pharmaceutical Industry? Evidence from US firms.

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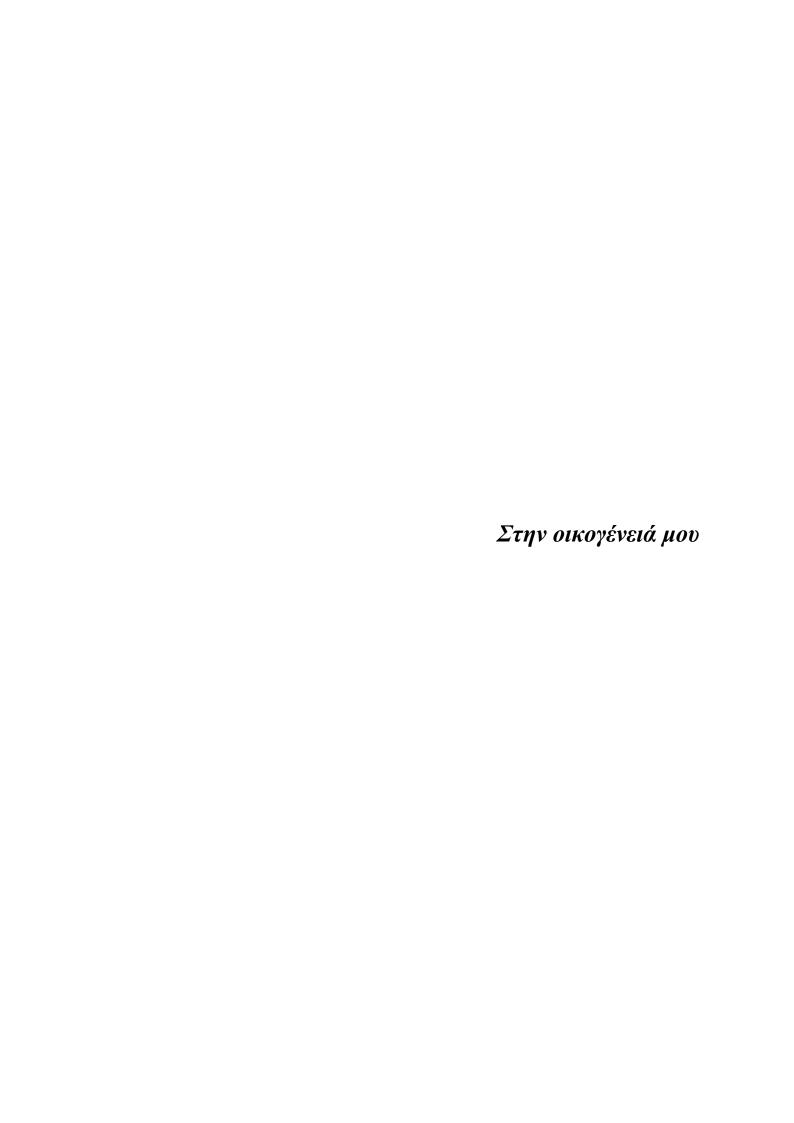**Department of Economics, Department of Biology**

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Does sustainable performance pay off in Pharmaceutical Industry? Evidence from US firms.

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Piraeus, Greece, February 2021

Στην οικογένειά μου

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Σημαντικοί Όροι: ESG, Firms Performance, Tobin's Q, RRI

Περίληψη

Στην παρούσα μελέτη εξετάζουμε τον αντίκτυπο της περιβαλλοντικής, κοινωνικής και διακυβερνητικής (ESG) πολιτικής στην αξία των επιχειρήσεων. Εκτελούμε μια συγκριτική ανάλυση της απόδοσης μεταξύ των εταιρειών με ESG στην αγορά ελέγχοντας τη δυναμική της αγοράς και τα συγκεκριμένα γνωρίσματα των εταιρειών. Η εμπειρική μας ανάλυση βασίζεται στις τιμές αγοράς και σε ετήσια χρηματοοικονομικά δεδομένα για 2189 εισηγμένες εταιρείες των ΗΠΑ από το 2007 έως το 2019. Επικεντρωνόμαστε στη συσχέτιση της απόδοσης και της βιωσιμότητας των εταιρειών ερευνώντας την επιρροή του ESG στο Tobin's Q των εταιρειών. Συμπεραίνουμε ότι οι επιχειρήσεις που αντιμετωπίζουν προβλήματα σχετικά με το ESG έχουν σημαντικά χαμηλότερη απόδοση σε σχέση με αυτές που δεν αντιμετωπίζουν. Τα αποτελέσματά μας μαρτυρούν ότι το ESG είναι ένας καθοριστικός παράγοντας για τις επιχειρήσεις προκειμένου να επιτύχουν αύξηση της απόδοσής τους.

Does sustainable performance pay off in Pharmaceutical Industry? Evidence from US firms.

Abstract

This research focuses on the impact of environmental, social, and governance (ESG) on firms' performance. We perform an analysis of ESG market profile controlling for market dynamics and firms' specific characteristics. Our empirical study is based on market prices and annual financial data for 2189 US listed companies from 2007 to 2019. We examine the relationship between sustainability and firms' performance by testing the impact of firms' ESG on firms' Tobins'Q. We find that firms with ESG issues have significant lower performance compared to those without. Our results indicate that ESG is an important determinant for firms, in order to increase their performance.

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1. <u>Introduction</u>

Sustainability is the path one should follow in order to balance the need to move forward economically without compromising the ability of future generations to meet their needs (WCED, 1987). Although the use of term sustainability is broad and difficult to precisely define, it is more than obvious that sustainability is not just about the environment. Originally, it affects directly the following interconnected pillars: environmental, economic and social.

In the business world sustainability supports long-term decisions not only focusing on the traditional Profit and loss statement. Over the last decade companies are requested to provide social benefits and to act responsibly considering the impact of their operations. Environmental, social and governance (ESG) is a tool that many researchers have used during the past years in order to evaluate the relation between firms' risk and performance. The first analysis of Friedman in 1970 shows that it was intensely believed that environmental investing beyond the legal standards would increase company's costs and would negatively reflect on its value. On the contrary, more recent studies show that ESG activities have a positive effect on a firm's value (Fatemi, Fooladi & Tehranian, 2015; Malik, 2015; Porter, 1991; Porter & Kramer, 2011; Porter & van der Linde, 1995; Roberts, 2004). For instance, such activities can boost the brand name and social reputation of the company, can make the firm an attractive employer of choice for conscious employees and can play a valuable role in the relationship with the stakeholders (Branco & Rodrigues, 2006). There are also some studies proofing either insignificant results (Horvathova, 2010) or positive but small and decreasing effect (Orlitzky, Schmidt, & Rynes, 2003).

Big multinational companies through the last years invest in ESG and capitalize the benefits of this policy by using the green reports in order to improve their reputation and to comply with the global regulations. A study conducted by KPMG in 2011 reveals that in 1996 only 300 companies were reporting CSR activities globally, when 18 years later, in 2014 more than 7000 companies were reporting CSR activities worldwide. However, the ESG disclosure is still heterogeneous (Ioannou & Serafeim, 2016) so, to reflect the impact of ESG on a firm's value it is crucial to first investigate the reasons behind the disclosure. ESG activities may be done in order to balance an environmental harm caused by production or operating activities of a company (Brown & Deegan, 1998; Cho & Patten, 2007). Another

perspective is understating ESG activities in order not to threaten the investors for cost reasons.

This study focuses on the reasons and effect of ESG factors on a pharmaceutical company's performance and valuation. The core responsibility of pharmaceutical companies is to improve access to affordable medicine for patients. That means developing sustainable production methods with lower raw material consumption, lower GHG emissions, less chemical pollution in air and water, not wasting water and residuals (Stegemann, 2016; Klatte et al., 2017). Moreover, with the development of genomic information and higher data density the pharmaceutical industry plans patient-tailored and personalized products suitable for individual therapies within the next decades.

As this strategy demands years of R&D and effective action plans, the pharmaceutical industry fulfills the standards by adapting in ESG regulations. Some years ago, pharma companies started adapting in the concept of sustainability. Historically, many studies have examined the motivation of CSR policies and there are many theoretical frameworks explaining why pharma companies engage in CSR, such as legitimacy and stakeholder theories (Freeman, 1984; Deegan, 2002; Price, 2004). Previous research suggests that organizations that do not operate in accordance to community expectations will be penalized. Stakeholder theory focuses a lot on the role of external and internal stakeholders "that affect and are affected by the accomplishment of organizational purpose" (Freeman, 1984) and this approach shows how a company fits to the social context and how it affects the stakeholders (employees, stockholders, customers, suppliers, financiers).

Our study contributes to the literature by shedding light in the effect of sustainability on firms' performance on the pharmaceutical industry. In our knowledge, this is the first research that focuses on this significant phenomenon.

Pharmaceutical companies need to be ethical and develop effective healthcare strategies and services not only in developed economies but also in developing ones. For instance, in developed countries there has been a lot of research upon what kind of CSR activities are performed and the results are related to social and environmental effect of the industry, when in developing countries not much research has been conducted (Azim and Azam, 2013).

2. **Theory and hypothesis development**

2.1.   Literature review

The results of existing literature show the profound impact of ESG on a firm's performance, reputation and the position in the market. On the one hand, researchers like Friedman (1970) proved that ESG increased company expenses when the management was only interested in making profits. Fisher-Vanden & Thorburn (2011) and Lyon, Lu, Shi, & Yin (2013) also claimed that investors avoid companies with expensive environmental preservation practices because they need to sacrifice their short-term earnings for long-term revenues. For Bolton, Scheinkman, and Xiong (2006) seems that the real value of ESG spending depends mostly on the type of the investors; if they are interested in short-term stock price increase, they will seek for short-term earnings instead of ESG spending even taking the risk of lowering the long-term value. Thus, in many cases short-term shareholders encourage the management to make shortsighted decisions. For Froot, Perold, and Stein (1992) the real value of ESG for all types of shareholders depends on the asymmetric information: short-term investors have access to very detailed daily trading activities instead of long-term activities such as ESG projects.

On the other hand, Fatemi et al. (2015) and Malik (2015) pointed out the positive relationship between ESG and firm's performance as the investors tend to favor companies with significant awareness and initiative on sustainability matters. Investors believe that ESG matters, such as climate change, employees' diversity and fair vendor relationships affect a firm's value (Dunn, Fitzgibbons & Pomorski, 2018). More specifically, long-term investors benefit from high ESG spending companies as such activities play an important role in business performance· so they avoid selling their shares in case of short-term underperformance or poor earnings per share. The main reason behind this behavior is that ESG activities tend to create a shock on the firm's fame and this is the factor that affects the share price or even the value of the enterprise. Krüger (2015) also analyzed market reactions to changes of firms' CSR activities. He found significantly negative responses to negative incidents and slightly negative responses to positive incidents. Thus, shareholders avoid the

risk of not abiding by the regulations and they increase their profits having gained comparative advantage over the competitors at the end of the day (Fatemi & Fooladi, 2013).

The empirical study of Aras & Crowther (2008) recorded the correlation between ESG and non-financial areas like efficient energy consumption and environmental protection-conscious production techniques. It is also proved that employees sensitive to sustainability tend to prefer working for companies with ESG expenditure and CSR disclosure and remain with them while being more productive (Bhattacharya, Sen, & Korschun, 2008). Moreover, as consumers are getting more and more sustainability-conscious they turn to goods produced by companies that are aligned with ESG principles (Albuquerque, Durnev, & Koskinen, 2015; Ramlugun & Raboute, 2015). Last but not least, Hsu (2012) and Cahan, Chen, Chen, & Nguyen (2015) highlighted the importance of ESG on a firm's brand name, goodwill and risk management.

On the contrary, other researchers document the correlation between ESG and pure financial factors. Studies conducted within late '00s showed that the two variables are negatively correlated, as in most of the cases ESG was considered to be an expense for the companies or regulatory obligation rather than a valuable investment (Brammer, Brooks, & Pavelin, 2006). However, recent theories underline the positive effect of ESG expenditure on a firm's financial data (Bajic & Yurtoglu, 2017; Dimson, Karakas, & Li, 2015; Eccles, Ioannou, & Serafeim, 2014; Fatemi et al., 2015).

Literature focuses mainly on analyzing the behavior of private sector in the area of ESG as the funding of such activities has always been a subject of dispute. The United Nations Conference on Trade and Development (UNCTAD, 2018) estimated that public sector would invest every year between 2015 and 2030 less than $1 trillion dollars on ESG out of the total investment of $5-$7 trillion dollars. Thus, a gap of $6 trillion per year is created that needs to be funded by the private sector either by enterprises or by private investments.

Both studies of Kolk et al. (2018) and Kourula et al. (2017), recording the relationship between multinational firms and sustainability, documented that from the three pillars of ESG social contribution draws mostly the attention of firms. This comes as a result of their own operations that tend to affect mainly the society in different ways such as poverty or inequalities (Witte & Dilyard, 2017). In addition, environmental issues also concern companies as society awareness and regulations grow bigger. Brooks & Oikonomou (2017) and De la Cuesta & Valor (2013) argued that companies are prone to performing ESG

activities in case a regulatory agency enforces them to do so. Simpson and Akyeampong's (2014) research confirms the above mentioned findings as they stated that entities operating in an environmental-friendly sector will immerse in ESG more than others. Renneboog et al (2008) pointed out the great importance of governance aspect of ESG as it deals with matters like corporate transparency, responsibility, efficiency and engagement. As Kim et al. (2014) stated, socially responsible enterprises will face positive effect on their results having reduced their costs and financial risks, having ethical or moral behavior, strong corporate reputation and loyal customers. Schönherr et al. (2018) admitted that if a company adopts the SDGs in their strategic plans, they will create a win-win situation for both shareholders and firms management team. The development or improvement of infrastructure and technology would increase shareholders' value when at the same time would reestablish confidence in the private sector in combination with lawfulness for managers.

This study focuses on the evaluation of ESG impact on pharmaceutical companies' performance. Although many enterprise managers verify the significance of ESG in the long term, they still face the pressure to distribute profits to shareholders in the short term. Thus, they come to the question how to allocate the resources in order not only to support ESG but also to deliver returns to investors (Donoher, 2018). Pharmaceutical sector is highly linked to all pillars of ESG as it is considered to be a key-player that promotes healthy living within a sustainable environment without corruption or discriminations.

It has been detected by James (1978) the need that pharmaceutical industries have to consider society and social issues to their long-term corporate strategic. Society can influence funds allocation as well as prices and profits controls through organized pressure groups, in case of public disappointment with the way that companies operate. The reprioritization of social concerns has brought to light new aspects of life, except from the pure economic demands, such as quality of life, equal drugs distribution or fair treatment of employees. The public has been always kept an eye on pharmaceutical industries as drugs and vaccines are improving quality of life, but the most important factor here is that of drugs safety. It is known and widely accepted that using drugs and vaccines might have adverse effects varying from mild to severe under specific circumstances. The testing of medicines prior to public release can guarantee the safety and control of adverse effects of the drugs. Another major social concern is related to drugs prices (Journal of Medical Marketing: Device, Diagnostic and Pharmaceutical Marketing, 2008) which affect the equal distribution between nations.

Society is afraid that companies overcharge for their products, making it difficult for poor people to afford and to have access to medicines when needed. That drives governments to take controlling actions and pressure the industry to reduce their prices and profits. The same source also emphasizes the role of pharmaceutical firms as employers. Gray et al. (2001) proved that companies, in the context of CSR practices, pay great attention to and tend to disclose HR information like number of employees, compensation, employees' diversity (gender, nationality, religion, political etc.) and relations, equal opportunities for professional development and trainings.

Over the last twenty years scientists, regulatory bodies and the European Commission have recognized pharmaceutical industry waste as one of the biggest challenges for nature. Firstly, medical waste is quite dangerous due to high toxicity of the chemicals or of the radioactive substances (Yasir, 2017). This kind of waste comes most of the times from isolation rooms for contagious patients, remnants of bacteria, disinfection processes, blood and other pharmaceutical residues. But, the main impact results from the Pharmaceuticals and personal care products (PPCPs), because no-one can foresee how this waste will behave when combined with other chemicals existing in the environment. Some PPCPs waste substances are so infectious that even in low concentration, can cause a big harm either in the soil or in the water. Consequently, if it takes a long for these substances to be biodegraded or they are not biodegraded at all, they will end up in the food chain and finally in our meals. Secondly, apart from the land pollution, there has been a great concern already since 1999 for the water contamination (Daughton & Ternes, 1999). Feminization of fish living in the Wastewater treatment plant (WWTP) outfalls was related to the pharmaceutical waste found within the river water (Larsson et al., 1999). After this event, a study conducted some years later surprisingly revealed that the water pollutants, including PPCP substances, have contaminated 80% of 139 U.S. streams (Kolpin et al., 2002). A few researchers also documented that pharmaceuticals were detected in drinking water (Webb et al., 2003) and in hospital wastewater (Suarez et al., 2009). Above mentioned findings raised public awareness on the environmental issues so governments took actions putting in place a regulatory framework for Environmental Risk Assessment (ERA) of pharmaceutical products. Human medications like antibiotics, analgesics and anticancers as well as veterinary products like antibiotics and parasiticides are supposed to be highly environmentally hazardous. Thus, European legislation obliges pharmaceutical companies to perform an ERA before launching new

products – either human or veterinary – in order to assess the probable risks of the environment during the pre-approval phase. ERA establishes two methods for the evaluation; the risk-based and the hazard-based (Küster & Adler, 2014). If the substances are recognized as risk, mitigation measures are applied so as to moderate the amount emitted to the environment, which is also disclosed with the product information. On the contrary, if the substances are recognized as hazard, products must not penetrate into the environment and thus no mitigation measures are required.

Corporate governance is a trendy topic within pharmaceutical industry during the last years and a crucial part for the firms' performance and value (Alon Brava et al, 2006). The specifications of pharmaceutical industry emerge from the three points of innovation and corporate governance within the sector, according to Ramirez & Tylecote (2004): novelty, visibility and appropriability of innovation. New products are protected by patents and as long as patents are valid medications prices are high, so that to cover either shareholders' returns or R&D spending. When the patents expire, generics are produced with lower selling prices resulting in decrease of earnings. Therefore, pharmaceutical companies need to launch new medications on a regular basis in order to maintain their value and profitability. The emergence of Information and communication technologies (ICT) and Biotechnology play an important role on R&D processes compared to the past practices. The increased competition within the sector pushes pharmaceutical firms to enter new therapeutic areas and markets, to refresh product portfolio and to use new technologies, which make the industry to have high level of novelty. Compared to other sectors, innovation in pharmaceuticals is really visible. Shareholders, brokers and investment analysts have access to very detailed corporate information, like firm's capital, R&D and operating expenses, active substance and ingredients (shared within the patents), new technologies used, and partnerships between the firm and other companies or universities. Furthermore, pharmaceutical companies often disclose the new products they have in pipeline and at what stage of clinical trial they lie, because the more close to the launch a new product is, the more the operating expenses to promote it are invested in order to ensure its successful entry into the market. However, the biggest challenge for pharmaceutical firms is the distance between when the money is invested and when the pay-off comes, as traditionally it takes around ten years for a drug to complete the clinical trials phase and to be approved. Considering also the general health and

economic environment, pharmaceutical industries must be really careful which projects they will give the green light to and which they predict to be a waste of money.

2.2. Hypothesis development

In general, when companies use means to protect their intellectual property, they tend to embrace innovation projects that eventually will deliver more earnings to shareholders. Pharmaceutical sector, where patents are widely used, is a highly innovative industry and collaborations with other pharmaceutical or biotechnology companies in the field of R&D are encouraged. The investment on developing a new pharmaceutical product is extremely expensive due to the cost occurred during the discovery phase, the time-consuming pre-clinical and clinical trials, the experiments failures and the complexity in production (Grabowski, 2002). Thus, firms need to ensure that the billions invested will pay back in sales.

According to Levin et al. (1987) and Cohen et al. (1997), protecting innovation with patents will provide pharmaceutical industries with the competitive advantage to be first in the market and grab a major market share or even the leader position increasing their profitability radically. The average needed cost for a new drug has been estimated at $800 million dollars and that's why pharmaceutical investment on innovation has been asymmetrically focused on products related to diseases affecting the developed countries and especially countries with low price controls (Mohan, Puranik, Sagar, Sreenivasa & Chakrapani Rao, 2014). From all the above, we make a testable hypothesis that firms acquire competitive advantage and increase their performance through ESG (*H1*).

3. __Data and methodology__

3.1.   Sample construction

The data we used to drive our empirical analysis is based on market prices and annual financial data for 2189 US listed companies and were retrieved from the Center for Securities Research (CRSP) and Compustat, respectively. Further information on ESG came from the RepRisk database from 2007 to 2019. In table 1 we describe the dependent and independent variables used in the estimation model.

Table 1: Variables explanation

VARIABLES	DESCRIPTION
Tobin's Q	The dependent variable is defined as the share of market value of a company to its assets' replacement cost. This variable measures a firm's performance.
RRI	The RepRisk Index (RRI) is an algorithm that assesses the risk exposure of companies related to ESG issues. It is calculated based on various factors such as the influence of the source of information, the frequency and timing of criticisms and the severity of the criticism. It takes values from 0 (lowest) to 100 (highest).
ln_age	The natural logarithm of the number of years that a company operates, starting from the incorporation day.
leverage	A dummy variable that takes value 1 if a company has borrowed capital (has debt) as a funding source to finance assets and value 0 if it hasn't.
R&D_at	R&D expenses weighted with total assets.
ln_pat	The natural logarithm of the patents that a company has.
ln_trademarks	The natural logarithm of firms' trademarks per year.
sales_growth	Measures the sales growth in %.
log_sale	The natural logarithm of companies' sales.
ln_advertising	The natural logarithm of companies' advertising expenses.
pharma	A dummy variable that takes value 1 if a company belongs to pharma sector and value 0 if it doesn't.

3.2. Summary statistics

Table 2 documents the summary statistics of the dependent and independent variables. On the average in our sample Tobin's Q is 3.42 and firms' sustainability issues (RRI) are 7.345 in a scale of 0 to 71.33 with the lower the indicator, the less the ESG issues.

For the rest of control variables, on the average in our sample, the natural logarithm of firms' age (*ln_age*) is 3.14 years of operation and the mean of dummy leverage is 0.84, which suggests that firms have quite high debt. Additionally, the average value research and development expenses to total assets (*R&D_at*) is 9.5%. Regarding firms' innovation, we find that in our sample on average the natural logarithm of patents (*ln_pat*) is 0.78 and the natural logarithm of firms' trademarks (*ln_trademarks*) is 0.45 in a scale of 0 to 9.27 and 0 to 5.92 respectively. The firms of our sample have a negative sales growth equal to 4.7% on average during the examined years and the mean of natural logarithm of sales (*log_sales*) is $7.07 million dollars. Lastly, on average firms' advertising expenses (*ln_advertising*) and firms' participation in pharmaceutical industry (*pharma*) are $1.3 million dollars and 0.05% respectively.

Table 2: Summary statistics

VARIABLES	(1) N	(2) mean	(3) SD	(4) min	(5) max
RRI	20,596	7.345	10.70	0	71.33
ln_age	20,610	3.139	0.924	0	5.455
leverage	20,610	0.838	0.368	0	1
R&D_at	11,081	0.0954	1.272	0	93.09
ln_pat	20,610	0.783	1.565	0	9.268
ln_trademarks	20,610	0.451	0.850	0	5.916
sales_growth	18,651	-0.0470	6.147	-810.1	10.28
Tobin's Q	18,866	3.424	98.29	0.125	12,253
log_sale	19,745	7.065	2.149	0	13.16
ln_advertising	20,610	1.323	2.018	0	9.306
pharma	20,667	0.0547	0.227	0	1

This table includes summary statistics for 2189 US firms of our sample. It provides the total number of observations (N), mean, standard deviation (SD), minimum and maximum.

4. <u>Econometric setup and estimation strategy</u>

In this thesis we examine the relationship between pharma companies' performance and sustainability, by testing the impact of RRI on firms' performance (*H1*). We use the estimation model described below, in order to test our hypothesis (*H1*) that firms ESG issues (RRI) have a negative effect on firms' performance:

$$\text{Tobin's Q} = a_0 + a_1 RRI_{it} + a_2 Controls_{it} + e_{it} \qquad (1)$$

where *t* and *i* are year and firm respectively and ε_{it} is i.i.d. error term. The dependent variable is the firms' performance captured by Tobin's Q. In our model, we include a rich set of control variables defined as follows: (i) The natural logarithm of firms age *(ln_age)* in order to capture firm market establishment, (ii) The share of firms' research and development expenses to total assets (*R&D/Total assets*), (iii) The natural logarithm of the number of patents and trademarks to capture the innovation of firms, (iv) The share of sales growth ((*Sales Year$_t$ / Year$_{t-1}$)-1)* and the natural logarithm of the sales in order to control for profitability trend. (v) The natural logarithm of advertising expenditure to control for marketing policies, for leverage and pharma *(dummy_leverage)* and *(dummy_pharma)* as in Gompers (1995), Li (2008). All regressions include industry and firms fixed effects.

5. <u>Results</u>

In table 3 we present the estimations for our econometric model. In column (1) we detect that RRI is significant at the 1% level and has negative correlation with firms' performance in the pharmaceutical industry. This indicates that an increase of 1% of ESG issues will decrease firms' market performance by 5.6%. This finding confirms our claim that pharmaceutical companies should act consciously, in order to secure their good performance since environmental (protect the ecosystems), social (donations, equal access to medicine) and governance (R&D, patents) strategy can directly affect the fame of the company and the equity of stakeholders. At the same time, in columns (2) and (3) we use a cross term of the dummy variable *(pharma)* and RRI to capture the effect of RRI on pharmaceutical industry compared to the other industries of our sample. The results show that ESG issues have higher impact on pharma industry compared to others industries by 1.6% for firms with R&D and 11.7% for firms with patents, results that are in line with our baseline estimations.

Furthermore, in column (1) the share of research and development expenses over total assets *(R&D_at)* is significant at the 1% level and positively related to Tobin's Q. This finding indicates that an increase in the share of R&D expenditure over total assets by 1% will increase firms' performance by 7.41%. The same result in column (2) further supports the argument that the higher the R&D investment, the better for the firm's valuation.

Table 3: Econometric estimations

VARIABLES	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q
RRI	-0.056***	0.004	0.027***
	(0.014)	(0.002)	(0.009)
pharma		0.134	3.475***
		(0.170)	(1.121)
c.RRI#c.pharma		-0.016**	-0.117***
		(0.007)	(0.044)
log_sales	-0.316	-0.045*	-0.346***
	(0.301)	(0.026)	(0.077)
sales_growth	-0.021	-0.009	0.006**
	(0.036)	(0.027)	(0.003)

ln_age	2.067	-0.036	-0.026
	(1.581)	(0.023)	(0.034)
R&D_at	7.412***	7.325***	
	(0.318)	(0.278)	
ln_trademarks	0.127	0.089***	0.016
	(0.183)	(0.017)	(0.025)
ln_advertising	0.032	0.069***	0.093***
	(0.083)	(0.008)	(0.010)
leverage	-0.343	-0.524***	-1.217***
	(0.323)	(0.070)	(0.172)
ln_pat			0.058**
			(0.027)
Total effect RRI		-0.002	-0.003
Constant	-1.920	2.559***	5.209***
	(4.360)	(0.178)	(0.559)
Observations	924	10,356	18,164
R-squared	0.981	0.944	0.33
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

This table includes (Panel OLS) regression results with robust standard errors on the effect of companies' ESG on companies' performance. All estimates include industry and firms fixed effects. * indicates significance at the 10% level, ** at the 5% level and *** at the 1% level.

6. **Conclusion**

The main result of this study is that firms with ESG issues have lower performance compared to the ones without, within pharmaceutical industry. Our research proves that companies which adopt sustainability policies are more efficient and profitable most likely because they are adaptable in the modern business world and they follow the social changes. When they operate in this way, firms are acceptable by the society and they create loyal customers, employees and partners generating an important advantage over the competitors.

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