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IS THERE A LINK BETWEEN FIRMS' EXPORT ACTIVITY AND ECONOMIC PERFORMANCE IN A SMALL OPEN ECONOMY? EVIDENCE FROM GREECE

Abstract:

Even though most of the export benefits inter alia refer to high productivity and profitability, the question is whether these performance indicators have been improved solely as a result of export activity or not. As such, in this study, we investigate whether and to what extent export activity could strengthen overall firm performance in terms of the aforementioned crucial measures, productivity and profitability. Moreover, we attempt to determine the impact of the crisis during the recession when firms seek new ways in order to increase and exploit their competitive advantage through exporting activity. As Greece is a very appealing case study due to the recession, we pooled micro-level data from Greek firms operating in all sectors of economy from 2005 to 2017. After extensive research of the literature, the most widely used financial and non-financial variables have been collected for each firm. By using the GMM model approach, the results indicate that high export intensity might strengthen the productivity and profitability of firms, especially if they are young, large in size and they operate in traditional industry sectors.

Keywords:

Export performance, Economic growth, Financial measures, Greek financial crisis, Panel data, Productivity, Profitability

JEL Classification: F23, L25, M21

1 Introduction

Export activity is being examined due to its key role in achieving sustainable growth of firms in the current environment of globalized markets. Even though exporting is not the only way to internationalization (Furlan and Grandinetti, 2011; Wright and Dana, 2003), it still is the most widespread and often the only way of operating abroad (Dana and Wright, 2009; Grandinetti and Mason, 2012; Majocchi and Zucchella, 2003) for a large number of firms, especially SMEs. Some of the export benefits that have been mentioned in international literature include economies of scale, lower production costs, higher productivity, employability, less dependence on the domestic market and viability (Wakelin, 1998; Basile, 2001; Lages and Lages, 2004).

The crucial question that raises here is "whether the export activity further improves the economic performance of the export champions". Relevant literature suggests that a crucial requirement for every firm that attempts to successfully enter foreign markets is presenting high economic performance (Diamantopoulos and Schlegelmilch, 1994; Park et al., 2010). So, economic performance is a factor that significantly influences the decision to export. In particular, there is a clear trend in literature which supports the argument that only the already profitable and productive firms can achieve an increase in exports after entering international markets (Lawless, 2009; Clerides et al., 1998; Bernard and Jensen, 1999). Moreover, a number of cross-country studies using panel data locate a positive correlation between export trade and growth performance (Sachs and Warner, 1995). In turn, other studies suggest that firms that start to export do not necessarily need to have any competitive or financial advantage in advance (Bellone et al., 2010). More specifically, making an overall assessment of the relevant literature, we conclude that the answer to whether export activity may improve firm productivity and profitability has been rather inconclusive.

The present study aspires to cover a remarkable research gap in recent emerging literature (Leonidou et al., 2007; Sousa et al., 2010; Chen et al., 2016). Firstly, the lack of a comprehensive theoretical framework for determining export intensity or performance is a barrier against integrating empirical findings from different studies into a common knowledge base (Aulakh et al., 2000; Morgan et al., 2004). Subsequently, we investigate whether and to what extent export activity could strengthen overall firm performance in terms of productivity and profitability. This is an especially important issue in times of crisis where domestic markets are shrinking, and corporate profit margins are severely restricted. Therefore, we also capture crisis effects given that few studies have examined the relationship between export performance and overall firm performance of firms in turbulent times. Especially during the recession, firms seek new ways in order to increase and exploit their competitive advantage using the least possible resources (Katsikeas and Morgan, 1994). Indicative of the aforementioned point are the findings of Berthou et al. (2015) showing that in times of crisis, the positive growth rate of exports of highly productive firms contributed to an easier current account adjustment of "stressed" European economies. From this point of view, Greece is a very attractive case study as the local economy has lost one quarter of both productive wealth and jobs during the recent crisis. So, our study adds value to the relevant literature in the context of a small open crisis economy.

The rest of the paper is structured as follows. Part 2 presents the theoretical background, whereas Part 3 analyzes the empirical model and the data sample. In Part 4, the descriptive and empirical analysis are being shown followed by some concluding remarks.

2 Theoretical background
2.1 Measurement of Export Performance

Export performance is mentioned as one of the key success factors of the firms which operate in international markets. Shoham (1996) has generally defined export performance as the result of a firm's actions in export markets. Even though a growing body of literature has addressed the topic, still there is not a globally accepted conceptual and operational framework regarding export performance (Cavusgil and Zou, 1994; Shoham, 1998).

Most researchers connect the export performance to objective and factual indicators, such as financial measures expressed in figures or percentages (Ural, 2009; O'Cass and Weerawardena, 2009; Sousa et al., 2008). Export sales volume (Das, 1994; Evangelista, 1994), export sales growth (Kaynak and Kuan, 1993; Shoham, 1996), export market share (Fraser and Hite, 1990), export profit growth (Shoham, 1996), export sales to total sales, the ratio of export sales to the number of workers involved in the export process (Diamantopoulos and Schlegelmilch, 1994), return on assets, return on investments are only a few of the financial indicators that are widely used to measure export success.

However, other studies measure export performance on a scale that combines objective and subjective indicators (Cavusgil and Zou, 1994). Due to the existence of several constraints related to the exclusive use of financial variables, they develop non-financial measures determined through a more subjective approach (Evangelista, 1994; Madsen, 1989). These subjective measures mainly include qualitative indicators such as the belief that characterizes the company's management (Raven et al., 1994), the perceived satisfaction by the "goal achievement" (Cavusgil and Zou, 1994; Katsikeas et al., 1996) or the measurement of any discrete element in which the export success story is based on. Sousa (2004) has tried to approach the export performance by measuring 50 unique dimensions, whereas Katsikeas et al. (2000) addressed 42 relevant indicators. Such indicators are selected according to data availability, level or time frame of assessment as well as the researcher's professional orientation (export department, financial department, etc.) (Beleska-Spasova, 2014). So, the above studies underline the multidimensional nature of export performance.

2.2 Does Export Performance influence overall firm Economic Performance?

Do firms become more robust due to exports (Arnold and Hussinger, 2005)? Scholars reveal many differences between exporters and non-exporters when examining firm's total performance (Wagner, 2007; Wagner, 2012a). Such differences can be found *inter alia* in productivity, profitability, wages and probability of surviving (Bernard et al., 1995). A number of studies suggest that future exporters have most of the desirable characteristics several years before entering the foreign market (Bernard and Jensen, 1999). Moreover, a large body of empirical evidence shows that businesses with low productivity do not necessarily achieve an increase in it when entering foreign markets (Greenaway and Kneller, 2003; Greenaway et al., 2007; Delgado et al., 2002; Castellani, 2002). In turn, some scholars haven't reached a clear conclusion on the possible contribution of exports to economic performance (Wagner, 2007), whereas very few studies have been reported in the context of emerging economies (Raghunath and Rose, 2016).

On one hand, several results show that exporters appear to have higher labor productivity and employability, and, in general, they perform better when compared to non-exporters (Gibson and Pavlou, 2017). Moreover, they show economies of scale, lower production costs, sustainability (Basile, 2001), whereas they are likely to be more resilient to external shocks (Bandick, 2010; Varum and Rocha, 2011) but, most importantly, they manage to limit their dependence on domestic markets (Lages, 2004). Furthermore, export intensity (calculated as foreign sales to total sales) has a strong positive impact on the firm's profitability (Kongmanila and Takahashi, 2009), especially on return on assets. A research conducted in the UK in the form of a survey indicates that exporting is positively connected to profitability (Kneller and Pisu, 2010). Qian and Li (2013) show that internationalization on assets, equity and sales appear to have a positive impact on firms' profitability. Exporters' boosted profitability is also attributed to the international competition that forces exporting companies to minimize their costs and expenditures (Okuyan, 2013). Additionally, several results examining firms on the basis of their productivity, revealed that more productive enterprises are achieving larger market shares, while less productive firms are shrinking and eventually exiting the target markets. Consequently, there is a productivity gap between exporting and non- exporting firms. Also, more productive firms manage to expand, to afford the sunk cost and to eventually start exporting.

On the other hand, several researches reveal that exporters are less profitable than non-exporters (Helpman et al., 2004). Fixed costs which derive from a company's activity in foreign markets are one of the main causes of its failure, alongside the additional cost arising from the wages that eliminate the advantage generated from the productivity in export (Vogel and Wagner, 2009). Additionally, exporters are suffering from extra transport costs, price adaptation, product adaptation and market research. These costs might get companies, especially the ones with low levels of productivity, excluded from foreign markets. Further, they appear to be paying higher wages than non-exporters (Schank et al., 2007). Also, Georgopoulos and Glaister (2017) claim that export trend does not necessarily lead to a higher economic performance, suggesting that exporters are likely to face serious competition challenges in international markets, whereas robust firms don't necessarily succeed in further increasing their performance after launching export activity (Isgut, 2001).

A different approach to the subject (Fryges and Wagner, 2010) suggests that the effects of exporting activity on the overall company profitability is dependent on the export intensity. In particular, when there is an increase in a company's foreign sales to total sales ratio, there is a consequent increase in profit as well which reaches its peak when the ratio is at 49%, but starts to diminish past that point. Additional expenditures and increasing labor cost deriving from the exporting activity are indicated as the main reasons for this behaviour.

It becomes obvious from the above that, for variables "profitability" and "productivity", it is not clear whether we should take into consideration the possible threshold of export intensity that determines how persistent a firm is in its exporting activity. This motivates us to examine further.

3 Data and Methodology

3.1 The case of Greece

Although Greece is officially ranked among other developed OECD countries, many researchers approach it as a developing or emerging economy in their studies. This is a stance deriving from issues such as the "collapsed" GDP, the high unemployment rate, the bureaucracy, tax evasion and public sector corruption that characterize the Greek economy. Additionally, according to reports given by the Bank of Greece (2014), the deficit of the general government exceeded 9,8% of GDP, most remarkably in 2008, resulting in Greece's inclusion in the Excessive Deficit Procedure in April 2009. Meanwhile, the government debt as a percentage of GDP increased, reaching 112,9% the same year.

During the previous 3-year-term, Greece's balance of trade was reportedly at a rather low level, below -10% of GDP. More specifically, in 2008 it fell to a low of just -15% of GDP, being the last year in which balance remained this low. After the beginning of the 2009 global recession, it took an upward trend. Especially over the next 7 years, balance of trade showed the most significant increase in the last 40 years when it peaked at -0,81% of GDP. In fact, even though entrepreneurship suffered the most from the financial crisis, annual growth rate of exports maintained 30% of GDP from 2010 to 2015, establishing a rather balanced trade.

Unfortunately, despite the partial trade recovery, the export performance remained weak with Greek exporters failing to gain in competitiveness in spite of the sharp reduction in labor costs over the recession. In addition, Greece's exports of high technology products as a share of total exports maintained a very low level of 4.3% during the last decade, ranking last among EU28 member states in 2017.

3.2 Data Source

Our sample was created using micro-level data from Greek firms between the years 2005 and 2017. This period consists of two sub-periods, that is the expansion period (2005-2009) and the recession that started in late 2009, in the aftermath of the global financial crisis of 2007–2008.

Data was retrieved from ICAP's Greek database, which includes the business data and the financial statements (balance sheet, cash flows) from Greek firms operating in all sectors of

economy. ICAP database is the most widely recognized directory for companies in the Greek market and constitutes a successful and reliable pool of information that contains all important companies of the entire economy. Resulting from the data pool above, an unbalanced unique Panel Dataset was created with 3718 observations in total (286 firms x 13 years = 3718 observations). In particular, we have randomly selected a unique sample of 286 manufacturing firms from 26 sectors (Table 1). These sample firms exhibit the following features: 143 of them are exporters and 143 are non-exporters, 194 firms operate in traditional industries and 92 in Hi-Tech industries, and 193 firms are located in urban areas while the other 93 in rural areas. Lastly, the processing of the aforementioned data was carried out using "EViews" statistical software.

Table 1 Sample's Size, Export and Sales by industry for the years 2005 - 2017

ISIC	Industry	Obs	Sales (million €)	% Export Value
Traditional sub-total		**194**	**64,547**	**39%**
15	Nutrition	54	25,046	25%
15	Beverages	14	6,460	17%
26	Non-metallic Mineral Products	12	5,556	22%
25	Rubber-plastics	18	5,265	55%
1	Agricultural Products	16	5,043	72%
25	Miscellaneous Industrial Products	8	3,368	73%
17	Textile Products	12	2,856	70%
21	Paper & Products	10	2,803	35%
16	Tobacco Products	2	2,723	76%
18	Clothing-underwear-accessories	12	1,892	37%
10	Mine-mining-salks	10	1,891	62%
20	Wood-cell	8	584	58%
36	Furniture	4	438	37%
18	Leather-fur	6	257	38%
18	White Fabrics - Fabrics	4	244	75%
19	Shoes-leather Goods	4	120	37%
High Tech sub-total		**92**	**51,702**	**54%**
28	Metallurgical Products	11	18,488	72%
33	Medicines-cosmetics-detergents	10	12,834	41%
31	Electrical Equipment	8	4,815	44%
24	Chemical-gas - Colors - Explosions	11	4,234	37%
27	Steel Products And Construction	8	4,113	52%
35	Means Of Transport	10	3,341	40%
21	Editions - Printing - Graphic Arts	8	1,636	49%
29	Machinery	14	1,482	72%
31	Electrical Appliances - Lighting	8	744	42%
Grand Total		**286**	**116,235**	**46%**

3.3 Variables

Utilizing the framework of the Contingency theory we combine firm-specific characteristics with environmental factors in order to capture the firm's ability to comply with internal and external influences (Hultman et al., 2011). Many studies follow the contingency paradigm in which an exporter should develop a strategy based on both external and internal environmental factors that contribute to the firm's export performance in order to achieve superior export performance (Robertson and Chetty, 2000; Yeoh and Jeong, 1995; Cavusgil and Zou, 1994).

After an extensive research of the literature available, the most widely used (thus, most relevant) financial and non-financial variables have been collected for each firm. Therefore, in order to answer our research question, we collected the following firm data:

a) firm-specific characteristics, namely "Global Index" in terms of "Labor Productivity" and "ROE", "Age", "Total Assets", "Location", "Export Activity",

b) industry-specific characteristics, namely "Sector" and

c) one country-specific characteristics, that is "Crisis".

Each of the above (as defined more thoroughly in Table 2) can be used for the estimation of the employed model that we'll be discussing further below.

Table 2 Definitions of the indicators included in the analysis

#	Indicator Name	Definition
1	**Global Index**	A compound performance indicator calculated as 0.5 * ROE + 0.5 * Labor Productivity (natural logarithm of the change in GI for each year using 2005 as a fixed base-year)
2	Labor Productivity	Sales divided by the Total Number of Employees (Natural logarithm)
3	ROE	Net Earnings divided by Total Equity in percentage
4	Age	Difference between year of observation and firm's year of establishment
5	Total Assets	Total Assets (Natural logarithm)
6	Location	Indicates location type as a binary variable: 1=urban, 0=other
7	Sector	Indicates sector type according to the technological impact as a binary variable: 1=Hi-Tech, 0=Traditional
8	Crisis	Indicates the recession as a binary variable: 1=2010-2017 (memorandum time period), 0=2005-2009 (growth period)
9	Export Activity	Indicates exporting activity as a binary variable: 1=Exporters (Export Sales / Total Sales ≥ 50%), 0=Non-Exporters (Export Sales / Total Sales < 50%)

Note: Indicator in bold is the dependent variable

3.4 Data Analysis Method

Since we have retrieved data where variables have been measured for the same firms at multiple points in time, we need special techniques for analyzing them. Therefore, a Dynamic Model-Panel, the Generalized Method of Moments (GMM) is selected, since it has been widely employed in many empirical studies examining the impact of exporting on productivity (Bigsten and Gebreeyesus, 2009; Van Biesebroeck, 2005). GMM is a method that estimates robustly the covariance matrices of the parameters while addressing potential endogeneity in the data (Garcia-Herrero, Gavila, and Santabarbara, 2009; Vieira and MacDonald, 2016). Further, Van Biesebroeck (2007) shows that system GMM provides the most robust estimates in the presence of measurement errors and technological heterogeneity, which are typical to many developing countries scenarios.

A more dynamic specification of the GMM methodology is adopted by including a lagged dependent variable for each model (Fiordelisi and Molyneux, 2010; Athanasoglou, Brissimis, and Delis, 2008) in order to rationalize the sample (Funke and Ruhwedel, 2001). In addition, a lagged

dependent variable by one year is included to deal with the belief that economic performance does not adjust instantaneously in changes. Finally, the one–step GMM estimator is employed, corrected for serial correlation and time variances in the disturbances by using the White period robust coefficient variance method. White's heteroskedastic-consistent standard errors allows us to obtain unbiased standard errors (White, 1980).

Data pre-processing. In order to identify possible outliers in our dataset, we have reviewed our variables using boxplot graphical visualization. We have identified and labelled a number of outliers in variable "ROE" and, in order to deal with them we apply the winsorization transformation at a 5% significance level. Furthermore, the data normalization technique of the natural logarithm has been applied on variables "Total Assets" and "Labor Productivity".

3.4.1 The structure of the Model

Dependent variable. For the needs of our model, we introduce a compound performance indicator based on labor productivity and profitability due to their impact on companies' total economic performance (Tangen 2003; Ferrando et al., 2015; Gibson and Pavlou, 2017). This decision to use a compound indicator is based on numerous researches that have presented a valid connection between productivity, profitability and export activity. More precisely, Tavares-Lehmann and Costa (2015) address a premium productivity and profitability for Portugal exporters in their study, whereas Papadogonas and Voulgaris (2005) presented that labor productivity growth of Greek firms is closely relevant to export orientation among others. Furthermore, scholars argue that total economic performance should be relevant to the utilization of a multi-dimensional group of performance measurements - an argument widely accepted by leading enterprises, as well (Bourne et al., 2003).

Regarding the variable of Labor Productivity (LP), it is measured by the natural logarithm of the sales divided to the total number of employees (Varum and Rocha, 2011) since relatively low labor costs might boost export performance, especially in a labor-intensive economy (Liu and Shu, 2003). The important fluctuation of the variable in the Greek economy over time (Georgopoulos and Glaister, 2017) justifies further its use as an independent variable in our model.

In addition, the firm's profitability is taken into account by using the Return of Equity (ROE) variable, which is calculated as a percentage of net earnings to total equity. Even though profitability is a performance aspect, it has not been empirically examined by scholars specialized in international trade (Mayer and Ottaviano, 2007).

Thus, our dependent variable named "Global Index" (GLOBAL) assumes an equal contribution of ROE and Labor Productivity and is defined as (1):

$$GLOBAL \ = \ 0.5 * ROE + 0.5 * logLP \qquad (1)$$

In addition, a more dynamic approach has been adopted by using the natural logarithm of the change (Δlog) in Global Index for each year.

Explanatory variables. An explanatory variable named "EXPORT ACTIVITY" has been introduced. A number of studies approach exports as a dummy variable by denoting the value of 1 for exporters and 0 for non-exporters by means of a cut-off value (e.g. 10%, the ratio of export sales to total sales). Other studies claim that presenting export activity with a continuous variable is more valid. Last, there are numerous scholars that indicate exports by classifying them into groups based on export dynamism (Makris et al., 2016). In this study, we focused on utilizing as cut-off value the 50% of total sales, due to a) the vague exporting profile of Greek Firms, b) the fact that a small ratio of exports do not record a substantial export activity. Makris et al. (2016) after examining a group of Greek firms, identified that as the rate of cut-off value increased, the model's predictability became higher. Thus, we classified as exporters these firms with more than 50% of their total sales stemming from export activity (Export Activity = 1) while the rest are

classified as non-exporters (Export Activity = 0). Additionally, we utilize the following control variables:

The Age-of-the-firm is frequently used in relative literature as an explanatory variable (Roberts and Tybout, 1997). Many empirical studies (e.g., EFIGE, 2010) on developed economies have shown that older firms are usually more efficient. In our study, we refer to Age (AGE) as the time period between the firm's founding year and the year of observation.

We evaluate the impact of a firm's Size on economic performance (Bernard and Jensen, 1999), by employing the Total Assets (TAS) variable, in its natural logarithm. The latter is relevant to the literature while an alternative measure is the number of employees. The choice of the appropriate variable depends on whether the firm is capital-intensive or labor-intensive. As regards the Greek economy, the fact is that during the past decades Greek firms swapped unskilled labor for capital and transformed from labor to capital intensive (Georgopoulos and Glaister, 2017).

In order to examine the environmental impact of a firm's physical location, we introduce the Location (LOC) variable, which, likewise, is treated as binary. It helps classify each firm to either "urban" or "other", depending on the firm's location. The use of location as an explanatory variable may justify the firms' export behavior since enterprises that are located close to transportation centers are more likely to succeed in exports (Zhao and Zou, 2002).

The variable of Sector (SEC) is utilized as a binary variable classifying firms in either "Hi-tech" or "Traditional" ones based on their technological impact. The former category (Hi-Tech) includes firms from the sectors of chemicals, pharmaceuticals, electronic equipment, electrical devices, machinery, metal industry, metal products, transportation, printing; all others have been classified as traditional. The aforementioned indicator is deemed crucial due to the argument that a healthy hi-tech business could be more productive and more efficient, therefore promoting growth in the company (OECD, 2016).

Greek crisis has been the major exogenous factor in the country during the period under investigation. Exports seem to have been increased since 2008 as a result of the firms' strategy (even though below the OECD average) to become less dependent on domestic consumption. As such, we are attempting to evaluate the impact of Greek crisis on total economic performance by introducing a variable named CRISIS that is a binary variable, in which zero (0) stands for the growth period between 2005 and 2009, and (1) represents the memorandum period between 2010 and 2017 dominated by economic turmoil.

Lastly, this model takes into account not only the current values of the explanatory variables, but also the lagged values (1 year) of the dependent variable Global Index.

Thus, the equation – EQ (2) is estimated while the conceptual framework is depicted on Fig. 1:

$$Y_{\Delta logGLOBAL} = c + \beta_1 AGE + \beta_2 logTAS + \beta_3 LOC + \beta_4 SEC + \beta_5 CRISIS$$
$$+ \beta_6 EXPORT\ ACTIVITY + \beta_7 \Delta logGLOBAL(-1) + \varepsilon \tag{2}$$

Fig. 1 Conceptual Framework of EQ
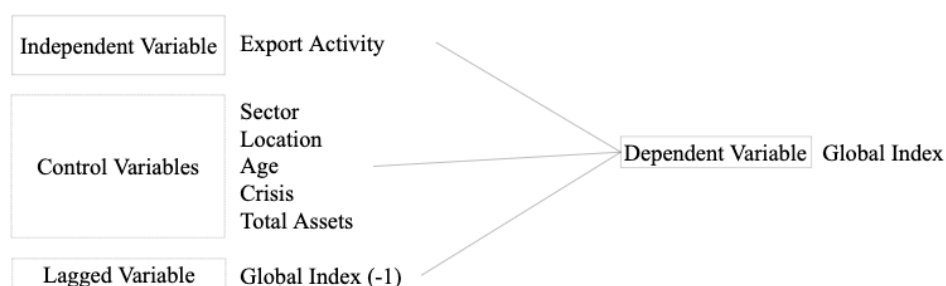
4 Descriptive and Empirical Analysis
4.1 Descriptive analysis
Table 3 Descriptive statistics of the variables

	Sub-Groups	Mean	Median	MAX	MIN	SD	P value
Global Index	EXP	6.050535	6.032334	8.168569	2.322426	0.531733	**0.0000**
	NON	5.981361	5.945702	7.653327	3.650611	0.44426	
Labor Productivity	EXP	325235.9	164010.7	10386744	104.9636	699872.1	**0.0000**
	NON	223668.3	140253.5	3524757	1964.667	294236.8	
ROE	EXP	0.011371	0.034578	26.80260	-29.59472	1.297447	0.4359
	NON	0.052921	0.038131	13.84589	-16.79962	0.661807	
Age	EXP	29.13829	27	129	0	18.77276	**0.0490**
	NON	31.3986	26	157	2	21.83776	
Total Assets	EXP	47655029	15731201	1.77E+09	42034	1.47E+08	**0.0022**
	NON	62618379	11158946	2.27E+09	211735	1.84E+08	
Export Activity (continuous var.)	EXP	0.7590	0.7650	1	0.5	0.1598	**0.0000**
	NON	0.1817	0.1500	0.48	0.01	0.1221	

Note: The last column presents test for equality of medians. Wilcoxon sign-rank test have been performed. Values in bold are statistically significant.

Table 3 shows the Descriptive statistics that address both independent and dependent variables of our model, after the exclusion of "dummies". For each separate group of firms (exporters and non-exporters), we have worked out the necessary statistics, namely mean, median, max, min, and standard deviation. In the examined period, both groups of firms displayed a level of almost 6% of total economic performance (as compound indicator "Global Index"). Also, exporters presented a higher Labor Productivity by almost 100.000 euros on average when compared to non-exporters, that is 1.5 times higher. Furthermore, ROE is marginally positive for non-exporters (0.05%) and exporters (0.01%) - For exporters presenting 29 years of activity, and non-exporters an average of 2 years longer than that. The exporters' size, in terms of total assets, was almost 47.6 million and they were exporting approximately the amount of 76% of their total sales in contrast to the 18% of non-exporters.

The last column of Table 3 reveals that the Wilcoxon signed-rank test shows statistically significant differences in many dependent and independent variables between exporters and non-exporters. Overall, all variables of our models exhibit statistically significant differences (at a 1% and 5% level), except from ROE.

Moving on to the next step, a covariance analysis of the Spearman rank-order test has been used in order to check any correlation between the explanatory variables. Table 4 verifies that our model doesn't suffer from multicollinearity issues as the correlation coefficients are very low mainly due to the fact that no Pearson coefficient is higher than 0.15.

Table 4 Spearman rank-order: Covariance Analysis of the independent variables

Correlation	Age	Total Assets	Labor Productivity	ROE
Age	1.000000			
Total Assets	0.046862	1.000000		
Labor Productivity	0.155137	0.065631	1.000000	
ROE	0.028179	-0.014680	0.133366	1.000000

Note: The dummies are excluded.

4.2 Empirical analysis – EQ

Table 5 Summarized results of the GMM estimator for EQ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Age	-1.21E-05**	5.92E-06	-2.026142	0.0428
Total Assets	0.000359***	8.24E-05	4.361718	0.0000
Location	-0.000330	0.000280	-1.178806	0.2386
Sector	-0000843***	0.000288	-2.926154	0.0035
Crisis	-0.000439	0.000432	-1.014709	0.3103
Export Activity	0.000747***	0.000262	2.853529	0.0044
Global Index (-1)	0.638619***	0.024588	25.97304	0.0000
C	-0.004493	0.001319	-3.405471	0.0007
R-squared	0.753483	Instrument rank		8
Adjusted R-squared	0.752898	Total panel observations		2958

Note: Index: *** at 1%; **at 5%; * at 10%

As far as the Model's findings are concerned (Table 5), we capture that the lagged dependent variable is strongly statistically significant (positive coefficient, 1% level), so, the use of the one-step GMM specification model is justified. Further, Export Activity has a strong performance impact (coefficient 0.0007, at 1% level). This finding fully supports the study assumption that exporters tend to perform better (in terms of productivity and profitability) than non-exporters and it is in line with previous studies that follow a similar methodology (Nikolaidis et al., 2010).

In addition, three of the control variables in our model (Age, Sector and Total Assets) play a significant role in Global Index (dependent variable). More precisely, younger firms as well as firms operating in traditional sectors present a better total performance than others (5% and 1% level correspondingly). This is probably indicative of the fact that younger firms might be more flexible to respond to challenging turbulent conditions. Additionally, the positive performance of traditional industries comes as no surprise since several studies have already attested the underwhelming presence of hi-tech companies in Greek industry (e.g. OECD, 2016).

Last but not least, our findings display that firm size (in terms of number of Total Assets) enhances overall firm performance in terms of profitability and productivity (at 1%). In turn, the analysis identifies a statistically insignificant correlation between Location and Global performance Index. Additionally, it shows that Crisis exercises an insignificant influence on total firm performance that is a rather surprising outcome needed further investigation.

5 Summary and Conclusion

This study examined the potential existence of a link between export orientation and overall firm performance, utilizing a firm-level dataset of the Greek industry over a period of 13 years (2005-2017) which includes the expansion (2005-2009) and the recession (2010-2017) periods. In this context, we responded to the main research question: Does export performance positively affect the firms' overall economic performance in terms of productivity and profitability? Our study utilized the one-step GMM specification and a high-level cut-off value of 50% which determines whether a firm can be addressed as «Exporter», or not. The most important findings showed us that firms with vigorous export activity might present higher overall performance in terms of productivity and profitability, especially if they are young and operate in traditional sectors.

The productivity gap between exporters and non-exporters indicates that policy-makers should take specific initiatives and measures in order to boost productivity and encourage internationalization of local firms. Also, given that firm-size was statistically significant in our model findings (in terms of total assets), policy makers should adopt different motivations and establish supporting tools specially designed for either SMEs or larger firms.

These findings might also indicate a two-way relationship between export performance and overall firm performance, and consequently emphasize the possible correlation between performance issues and exogenous conditions. In this context, the crucial issue of direction of causality between export activity and firm-level productivity and profitability should be approached in the future. Moreover, there should also be a further exploration of the R&D factor in order to research the possibility of its possible impact on export performance and total economic performance. Another possible aspect in future research would be to identify export barriers by running a survey that targets export managers, ISO issues, managerial commitment etc. Last but not least, a multi-country study that examines economies similar to Greece (such as Portugal, Spain and Italy) should be encouraged.

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