

Article

Is Sustainable Performance Explained by Firm Effect in Small Business?

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Abstract: To what extent a firm's resources (firm effect) and the structure of the sector (industry effect) are sources of a firm's competitiveness has been debated for years in strategic management. Most of the empirical studies carried out have focused on large firms and have used static performance measures, and in them the firm effect generally outweighs the industry effect. This research contributes to this debate in trying to verify whether the competitive advantage that relies on the firm's resources is sustainable, especially in small firms. We used a sample of almost 15,000 Spanish firms to test the impact that the firm and the industry effects have on sustainable performance, for both small and large firms, applying hierarchical linear modelling with a variable measured through time-varying parameters. Our results confirm the absolute importance of the firm effect on sustainable organizational performance, regardless the firm size, and show that, even though the industry effect has little weight in explaining sustainability, it is significantly higher in the case of small firms. This means that managers must concentrate efforts on providing their firm with the necessary resources to achieve a competitive advantage while choosing a good sector to position itself.

Keywords: sustainable performance; resource-based view; small business; firm effect; hierarchical linear modelling

1. Introduction

There is increasing debate among private and public organizations, countries, managers, and governments when trying to define what is understood by a sustainable firm [1]. In parallel, when the intention is to evaluate organizational performance, it is also possible to identify the same pattern of behavior considering a sustainable approach in the broad sense [2,3]. This can adopt the form of heterogeneous indicators: among others, social [4], environmental [5], corporate citizenship [6], or financial [7]. Despite this interest in sustainable performance evaluation, the main challenge for companies lies in the heterogeneity of indicators and the absence of a sufficiently standardized and shared proposal [8].

We believe that in order to fulfill its responsibilities to the environment and to the different stakeholders, the organization must, above all, be profitable, so it must develop a competitive advantage.

The drivers of profitability have been a subject of research for decades [9–11]. In strategic management attention has been traditionally focused on this issue from two different perspectives: the one that has to do with the firm effect and the one that refers to the industry effect as the main source of a firm's competitiveness. Proponents of the industry effect, from the Industrial Organization [12], emphasize the importance of the structure of the sector as the key driver of profitability. On the side of

the firm effect, from the Resource Based View of the Firm (RBV), it is argued that profitability will be explained by the possession and/or control of the strategic resources that each organization has [13].

From the debate held based on these two positions it is generally accepted that both effects should condition, to a greater or lesser extent, the formulation of the competitive strategy and define the achievement of a sustainable competitive advantage. Although the empirical evidence is mixed and both the firm and the industry effects are explanatory of a certain part of the organizational performance, in general it is observed that the firm effect is more significant.

Regarding the measurement of organizational performance in the cited literature, the variables used as proxies are diverse, for example, among others, return on assets [14–24], return on replacement assets [25], subjective indicators [26,27], sales growth [28], corporate social performance [29], Tobin's Q [30], economic value added [31], market share [32], net profit margin [33], and economic profit [31]. In most cases, they have been approached as static measures.

The firm can maintain long-term above-average profits if the competitive advantage is sustainable [34]. However, there is some empirical evidence of the transitory nature of competitive advantage [35]. This temporality is also predicted by the Austrian School of Economics [36], or the hypercompetitive strategy model [37]. Other scholars found that profit levels tended to converge towards the mean, but that the highest-performing firms converged more slowly, and some of the high-performing firms' profitability even increased over time [38].

While there have been numerous theories and empirical studies related to competitive advantage and its effects on profitability, most of them examine limited periods of time, and almost none have considered the important issue of the dynamics of the sustainability of the rewards of competitive advantage over a long time. Specifically, if it is possible to achieve a competitive advantage, it should be possible to observe the sustainability of that advantage over time.

On the other hand, from the aforementioned studies it can be said that size is a variable not sufficiently tested. Only authors such as [14,32] in the United States, and [26,28,39] in the European Union have addressed this issue. Furthermore, when studying groups of firms according to size separately, heterogeneous results are obtained. Likewise, it is derived that there is also no homogeneity regarding the criterion that allows firms to be classified as small, medium, and large.

As will be discussed in Section 3.1 about the description of data, we seek to focus especially on small-sized organizations—a vast majority in the EU productive fabric—versus larger organizations, traditionally with different idiosyncrasy. That is why we adopt in this work a dichotomous vision of firm size, small versus large, both conceptually and empirically.

Consequently, the purpose of this paper is to test in a sample of Spanish firms the impact that the firm and the industry effects have on sustainable performance, for both small and large firms. Specifically, our research questions can be synthesized as follows: can we affirm that, when using an indicator of sustainable economic performance, the obtained results are similar to those of previous studies with static performance indicators? Furthermore, do they differ in small businesses and in large organizations?

By doing so this work enriches the existing literature in different ways. First, despite the massive research and intense debate that has addressed the firm and industry effects [40] and the growing literature on the sustainability of organizations [3,41], hardly any tests with sustainable performance indicators have been carried out. Traditionally, firm performance has been measured in relation to a specific year, so it has not been verified whether the competitive advantage is sustainable over time or is only a temporary advantage.

Second, although size is a widely studied variable in strategic management, both as a cause and/or an effect, only a few studies have considered samples with different organizational sizes [28,32]. Here we perform individual tests for large and small firms. Likewise, in a complementary way, a review is carried out of the factors that could cause large and small firms to present significantly different behaviors, and whether the competitive advantage is sustainable over time.

Finally, our results are suitable to complement and enrich the firm and industry debate, providing an indicator of sustainable economic performance for different firm sizes, allowing the generalization of the implications and conclusions that emerge from the results.

Regarding the structure of this work, first, a literature review is carried out for both the theoretical background and empirical evidence of the firm effect. Furthermore, a short review of sustainable performance, competitive advantage, and size is included. The third section contains the empirical study, with a description of the chosen sample and the model specification and estimation. The fourth section presents and discusses the results of the model test. Finally, the fifth section includes conclusions, limitations, and suggested future lines of research.

2. Literature Review

2.1. Theoretical Roots

The widely disseminated Resource Based View [13] is without a doubt the theoretical perspective closely linked to the firm effect. It considers that the heterogeneity of the resources available to firms determines their differences in profitability regardless of the sector where they compete [42]. The isolation mechanisms [43] that prevent the imitation of resources by competitors allow these returns to be sustainable over time.

The Resource Based View has its origin in [44] and was coined by [45]. It has made significant contributions to the study of the mechanisms that underlie firm profitability. According to this approach, intra-sectoral differences in performance have their origin in an asymmetric distribution of resources between organizations. Among the resources, intangibles stand out, which are usually invisible and do not form part of the firm's financial statements [46]. These resources are rooted in the history of the organization and have been accumulated over time [47]. Among others, we can highlight knowledge [48,49], leadership [50,51], and business culture [52]. The Resource Based View considers that the profitability of the most competitive firms are, in reality, Ricardian rents derived from the possession of superior resources [53], that is, valuable, rare (scarce), inimitable, and irreplaceable resources [54], which create a competitive advantage that is difficult to replicate. Thus, the intra-sectoral dispersion of economic profitability is maintained as long as the heterogeneity of the resources that a firm possesses persists [44], which in turn depends on the existence of isolation mechanisms [43]. Therefore, heterogeneity (imperfect resource markets) and imperfect mobility of resources are the cause of diversity in the behavior of firms, thus conditioning their profitability, even among organizations in the same industry. The endowment of resources must contribute to the value perceived by the client and allow the firm to differentiate itself from the competitors in an exclusive way. From this point of view, it can be concluded that to compete with guarantees, the most relevant thing is not where to compete, but how to compete [53–56].

2.2. Firm Effect: Empirical Evidences

The literature review reveals that there is enough evidence to support the claim that the firm effect is significant and that, generally, it outweighs the industry effect in explaining organizational performance. This is relevant because of the emphasis placed on the importance of the structure of the sector as the key driver of profitability from the Industrial Organization (IO). Such prevalence can be observed in research carried out using databases of both US [15–18,20,22–24,29,30,33,57,58] and European Union data [19,21,26,28,31,39], regardless of the statistical technique and the performance indicator used. As for the statistical techniques chosen to test specific models, these usually are variance component analysis (VCA) [14,32,39,59], analysis of variance (ANOVA) [21,22,58,60], hierarchical linear modelling (HLM) [29,30,61–64], ordinary least squares linear regression (OLS) [25,65–68], or structural equation modelling (SEM) [69].

2.3. Sustainable Performance

Both non-profit and for-profit organizations debate about how to accomplish more sustainable organizations. In the academic field the growth in research on this topic is exponential. The debate is addressed from heterogeneous perspectives and integrates multiple stakeholders' views [2,3]. As an example, a recent work with a holistic approach recommends an integrative framework of indicators within five dimensions: economic, environmental, societal, workplace, and external [41].

The study of organizational performance using economic and/or financial indicators, from a dynamic/sustainable approach, is not new. In fact, there is a rich body of literature with roots in the Industrial Organization proposing a set of indicators that allow the capture of intertemporal effects [25,70,71]. In many of these studies their starting point is the pioneering work of [72]. It proposes autoregressive models to capture the movements of returns and their higher or lower convergence level in the long term.

Likewise, from the RBV, another group of scholars have considered in their research the sustainable nature of organizational performance [73–75]. The dynamic vision of performance, in strategic management research, is also linked to sustainable competitive advantages [34,76–78]. For example, as shown by [79] in a study of 25 years with a sample of 6772 firms in 40 industries, very rarely is it possible to keep a persistence of superior economic performance over time.

2.4. Competitive Advantage and Size

The size-profitability relationship has been a recurring subject in strategic management research with contradictory results [80,81]. The economic literature [82,83] and the empirical research [84] consider that large firms have sufficient resources to achieve a competitive advantage. However, the small business can also develop a competitive advantage that allows it to obtain above-average rents. This line of work has not been covered in sufficient depth in the RBV, so it is convenient to address it.

The competitive advantage of a small business can reside in a certain specific excellence or correspond to a specific technology [85]. Small organizations, having limited resources, must focus on a reduced but defined activity for a niche. This requires being aware of changes in the environment and knowing the productivity of its resources [85]. On the other hand, studies and empirical evidence suggest that, while large organizations tend to be better at incremental innovations and possibly faster at adopting external technology, it is more likely that small firms could be the source of the greatest advances [86]. In this sense, it is found that opportunities for small organizations tend to be greater in the early stages of the product life cycle, when economies of scale are relatively unimportant, market shares are unstable, and entry and failure rates are high [87]. This is so because small firms seem to have certain advantages over the large ones [88]. They have flatter organizational structures, with short and direct lines of communication between different levels, which streamlines decision-making [89]. Small organizations are more flexible, so they develop a greater capacity for assimilation and response to change [90]. Larger firms can get caught up in bureaucracy, while smaller organizations have more freedom, more motivation, and usually more commitment [91]. In general, small firms compensate for the downsides of a small scale in various ways [92]. First, by exploiting its greater flexibility; second, outsourcing activities where scale is critical for efficiency; and third, avoiding the motivation and coordination problems that often plague large organizations.

Some research highlights that small organizations are the ones that have contributed the most to create new products [93]. They also find evidence that the percentage of R&D over income is higher in small firms [94], which is why they manage to gain competitive advantages through their innovative activity [95]. Access to new technologies linked to the internet allows small firms to compete in an increasingly open market, increase collective learning, and better adapt to the environment [96]. Small organizations can face resource scarcity through cooperative agreements to achieve competitive advantages [97]. On the other hand, small and large firms operate in different market segments [28], the former in a niche and large organizations in the majority market.

3. Materials and Methods

3.1. Description of Data

In the present work a sample of 14,976 Spanish firms has been used with data covering the period 1995–2004, taken from the “Sistema de Análisis de Balances Ibéricos” (SABI, Bureau van Dijk) database. The sample is made up of manufacturing and services firms with a wide geographic scope, including organizations from all the autonomous Spanish regions. Sectoral representation is broad although not uniformly distributed, given that just two sectors, industrial manufacturing and trade, provide 60.2% of the total number of firms. See in Table 1 the distribution of firms in broad industries.

Table 1. Industry sample composition.

	NCEA Rev. 1.1 (One Digit)	(%)
A	Agriculture, hunting and forestry	1.8
B	Fishing	0.4
C	Mining and quarrying	0.8
D	Manufacturing	25.4
E	Electricity, gas and water supply	0.4
F	Construction	15.8
G	Wholesale and retail trade	34.8
H	Hotels and restaurants	3.1
I	Transport, storage and communications	4.7
J	Financial intermediation	0.2
K	Real estate, renting and business activities	10.1
M	Education	0.4
N	Health and social work	0.4
O	Other community, social and personal services activities	1.7

The criterion used to classify firms in industries was the National Classification of Economic Activities (NCEA), to a 3-digit disaggregation level. The criterion used to segment organizations into two size groups, that we have called small and large, was considering all firms with less than 50 workers as small and the rest as large. As a result, 12,777 firms were classified as small (85%) and 2199 as large (15%). For the definition of size we chose only the number of employees because it is the criterion set by the General Direction of Industry and Small and Medium Enterprises (Government of Spain) in the yearly statistics developed by the National Statistics Institute, and because it is frequently used as the sole criterion for firm size in the empirical literature.

At this point an explanation is particularly important. The European Commission (EC) basically uses a combination of three criteria to distinguish firm sizes: staff headcount, turnover, and balance sheet total. Considering the number of employees, micro-enterprises are those with less than 10, small enterprises are those with 11 to 49, medium-sized enterprises are those with 50 to 249, and large enterprises are those with 250 or more. We seek to focus on small-sized organizations, a vast majority in the EU productive fabric, and we generically call them “small”, understanding that these are all the organizations included in both EC micro and small categories (that is, enterprises with less than 50 persons). They far outweigh the rest, the medium-sized and large enterprises. The size of the organizations of either of these two groups is significantly greater than that of the enterprises of the other two. We have grouped these larger companies (EC medium-sized and large categories, that is, enterprises with 50 or more persons) in a second category that we generically call “large”.

Although our vision of firm size is, therefore, dichotomous (small versus large), we can distinguish in our sample the four sizes established by the EC in terms of number of employees. Thus, it is made up of 44.5% of micro-enterprises, 41% of small, 11% of medium-sized, and 3.5% of large enterprises. If we compare these proportions with those that on average could be found in Spain in our 10-year time period in each of those categories (87.7% micro-enterprises, 10.5% small, 1.5% medium-sized, and 0.3% large enterprises), a certain bias is observed in our sample when it comes to representing

the population: micro-enterprises are underrepresented while the others appear overrepresented. This bias is due to the content of the database used and to the fact that we required the firms to have complete financial data of the 10 years of the time period, which left out of the sample a number of firms, mainly micro-enterprises. This explains that the weights in our sample for both created categories (85% small and 15% large) approach but are not equal to those of the population they represent (98.2% small and 1.8% large).

The chosen data period deserves a brief explanation as well. It begins in 1995, the first year of compilation of statistical information regulated by the Spanish General Direction of Industry and Small and Medium Enterprises. We took this year as the starting point of a research line on the firm and industry effects of Spanish firms. This year is also the first one of a decade of continuous growth of the Gross Domestic Product (GDP) in Spain, which covers an expansive phase of an economic cycle, but with two remarkably different growth patterns: strong during the first half (1995–1999) and moderate during the second one (2000–2004). That decade is our sample period and we did not extend it to avoid dealing with a recession stage since there is empirical evidence of mixed results studying firm and industry effects when considering periods of growth and recession [24].

3.2. Model: Specification and Estimation

Our model intends to explain the sustainable performance of firms. Despite its limitations [98], one of the performance indicators most frequently used in literature related to industry and firm effects is the return on assets (ROA) [29]. In this paper, ROA will also be the basic measurement for the estimates related to the sustainable performance of firms. More precisely, sustainable performance is defined as the impact of past profitability (R_{it-1}) on current profitability (R_{it}). It is measured as the coefficient (β_i) that allows establishing the relationship between the profitability of the present period and that of the previous period:

$$R_{it} = \alpha_i + \beta_i R_{it-1} + e_{it} \quad (1)$$

where:

- R_{it} is the ROA of firm i in year t
- α_i indicates the time-independent basic or average profitability of firm i
- R_{it-1} is the ROA of firm i in year $t-1$
- β_i indicates the effect of the past profitability of firm i on its current profitability. If $\beta_i > 0$ it means sustainability in the maintenance of the profitability. If $\beta_i < 0$, the profitability is decreasing, which makes the firm not sustainable. If $\beta_i = 0$, there is no relationship between past and current profitability, which means no sustainability
- e_{it} is the error term.

Thus, for any firm i , the sustainable performance of i will result from estimating the above regression with values $t = 1996, 1997, \dots, 2004$ and $t-1 = 1995, 1996, \dots, 2003$. In this way, the influence that the profitability of one period has on that of the following one throughout the decade will be observed. This eliminates the year/time effect of the sustainable performance measurement.

Here we propose a model which seeks to explain the sustainable performance of firms by means of the industry and the firm effects. We test the model using the entire sample of firms and two subsamples: small and large firms. In order to estimate the relative importance of each effect hierarchical linear modelling is used [29,40,62]. Formally:

$$\beta_i = \gamma_0 + u_0 + (\gamma_1 + u_1)Size_i + u_i \quad (2)$$

where:

- $Size_i$ is a dummy variable indicating firm i 's size, with value 1 if the firm has less than 50 employees and value 0 in other case

- γ_0 is the basic average sustainability common for all the firms (fixed effect)
- u_0 is the random global industry effect
- γ_1 is the contribution that small firms make over that of large firms on sustainability (fixed effect)
- u_1 is the random contribution that small firms make over that of large firms to the industry effect
- u_i is the random effect of firm i .

Consequently, the variance of u_0 accounts for the importance of industry in general for sustainability, and the variance of u_1 gives an idea of how much more the small firms contribute to the industry effect on sustainability compared to large firms.

4. Results and Discussion

First, we analyzed sustainability separately for each firm size covered in our sample. Thus, we estimated beta coefficients in Equation (1) for small, large, and all firms. The average values taken by this indicator of sustainable performance are, respectively, 0.458, 0.467, and 0.460. These values are significant, but a comparison of means test indicates that they are not different, as shown in Table 2.

Table 2. Comparison of means test for performance sustainability by size.

Firms	β_i	Standard Error	z	$P > z $	[95% Confidence Interval]	
All	0.460	0.00956	48.1	0	0.4413915	0.4788883
Large	0.467	0.01024	45.68	0	0.4475892	0.4877208
Small	0.458	0.01108	41.35	0	0.4365411	0.4799879

Next, we tested the model proposed in Equation (2). Results in Table 3 show that the weight of the industry effect explaining the variability of the performance sustainability is similar for both small (5.30%) and large (2.84%) firms, although that of the small ones doubles the observed in large firms. Comparatively, the firm effect, despite the limitation of its calculation, has a much greater influence on the variability of the performance sustainability, for both small (94.70%) and large (97.16%) firms. Despite the fact that the dependent variable used in this study is different, the greater weight of the firm effect versus the industry effect when explaining the variance of performance is aligned with most of the literature [14,23–25]. This gives an answer to our first research question since a vast majority of previous studies has been carried out with static performance indicators.

Table 3. Variance decomposition of performance sustainability by size.

Effect	Small Firms		Large Firms		All Firms	
	Variance	%	Variance	%	Variance	%
Industry	0.0149814	5.30	0.0041061	2.84	0.0113821	4.36
Firm	0.2677152	94.70	0.1406031	97.16	0.2498375	95.64
Total	0.2826966	100.00	0.1447092	100.00	0.2612196	100.00

Regarding our second question research about potential differences between large and small firms, the results show that, despite the lower weight of the industry effect in explaining the performance sustainability, that effect is significant, and the values of the confidence intervals in Table 4 suggest that the industry effect is more important in small firms than in large firms. Thus, although when measuring sustainability we found no difference according to size, results in Table 4 may be interpreted as an indication that sustainable performance can be explained somewhat differently in large and small companies. This finding suggests that small firms might follow a different way from the large ones to generate a competitive advantage that can lead them to obtain an above-average performance persistent in time, and not merely temporary, as argued in Section 2.4.

Table 4. Random-effects parameters for the industry effect by size.

Firms	Estimate	Standard Error	[95% Confidence Interval]	
All	0.113821	0.002283	0.007682	0.016864
Large	0.004106	0.001548	0.001961	0.008598
Small	0.014981	0.002997	0.010122	0.022173

5. Conclusions

The present work is inserted in the debate that has existed for decades between two theoretical perspectives about the competitive advantage as a driver of above-average performance in the industry. One of them considers that the structure of the industry is the determinant of firm results. The other one reflects that the heterogeneity and imperfect mobility of resources are the cause of the competitive advantage that, in turn, provides the firm with a superior performance. The first perspective (IO) proposes what is known as the industry effect and the second one (RBV) defends what is known as the firm effect.

This paper mainly analyzed the firm effect on firm sustainability in terms of return on assets, presenting news regarding previous work. We made two original contributions: first, generalizing previous research on firm and industry effects, traditionally studied with profitability or other financial measures from a static perspective [40], to sustainability and, second, creating a variable measured through time-varying parameters [99] and proposing a new model to estimate the firm and industry effects. This research has been carried out with a sample of almost 15,000 Spanish firms—most of them small—in an expansive period of the country's economy.

There is a considerable amount of empirical evidence that verifies the firm effect as the main factor of competitive advantage and, therefore, as a catalyst for firms to obtain higher returns than the average of their competitors. These studies are essentially static, so competitive advantage can quickly dissipate. Therefore, it is necessary to prove that the competitive advantage that relies on the firm's resources is sustainable. On the other hand, the fact that most of the studies use samples of large firms led us to delve into this matter using a sample of firms of all sizes. Our results seem to prove that differences in performance among companies can be maintained for a long period of time. They confirm the absolute importance of the firm effect also on a sustainable organizational performance, regardless of the firm size. Not only large firms, as the abundant empirical evidence shows, but also small firms show differences in performance within the sectors analyzed, and this difference is mainly due to their resources and capabilities. In sum, the results of our study support the point of view of resources as a source of sustainable competitive advantage in both large and small firms.

With this approach we do not mean that we should forget about the sector where the company competes [54]. Even though the industry effect has little weight explaining sustainability, it is significantly higher in the case of small firms. This means that managers must concentrate efforts on providing the firm with the necessary resources to achieve a competitive advantage while choosing a good sector to position itself. Other interesting implications for practitioners derive from these findings. The importance of the RBV as a theoretical framework for studying the differences in competitiveness of firms is highlighted once again, and even more so in the case of small firms. Obtaining, therefore, superior rents in small firms will depend on their ability to deploy those strategic resources that contribute to obtaining sustainable competitive advantages. Each small firm is different depending on the endowment of resources and the way in which they are used, which will mean that those that are better endowed if they choose a good sector in which to compete will have greater possibilities of obtaining superior rents.

The limitations that arise in this study are open gates to future research. The fact that most of the studies point towards the firm effect as a determinant of competitiveness does not really clarify the specific sources of competitive success. The logical step will be to try to study the resources that constitute a source of competitive advantage in firms. What resources should firms develop: knowledge,

industrial property, or managerial capacity, among others highlighted by empirical evidence? It would also be interesting to know the different resources the firms count on in order to achieve competitive advantage. On the other hand, it is necessary to know the sector in which various types of resources can have a greater influence on organizational performance. Some other limitations found in this type of research point to the need for an adequate definition of the limits and definition of the sector. The NCEA used in this study, or the standard industry classification (SIC), assign firms to certain industries. These systems classify firms based on their production process, not considering different market segments, which may be relevant for classifying industries. The definition of industry is the subject of debate, so the firm effect must be interpreted with caution. On the other hand, our data do not allow distinguishing between corporations and business units, so the industry effect can be underestimated. What factors constitute the industry effect and the firm effect deserve future research.

Additional limitations may come from the data characteristics. On the one hand, the selected sample period only covers an expansive stage of the economic cycle. Although 10 years is a reasonable length for a time series, a longer series (i.e., 20 years or more) including expansion and contraction periods would be desirable to analyze them separately, in order to favor the generalization of the results. On the other hand, we have made two size groups: small (less than 50 workers) and large (50 or more workers). It would be interesting to separate the medium-sized from the large companies. There is evidence that medium-sized companies have difficulty to achieve a competitive advantage, as they have disadvantages compared to small and large. Additionally, what about micro-enterprises versus small companies?

Finally, the firm and industry effects confirm the importance of two theoretical frameworks in explaining the above-average firm performance. Other perspectives may be equally adequate, such as the transaction cost theory, the knowledge view, or the dynamic capabilities view, among others. In sum, this line of research remains completely open.

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