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Export behaviour and innovation: a challenge to be met by cooperatives

Mercè Sala-ríos
University of Lleida

Mariona Farré-perdiguer
University of Lleida

Abstract

This study examines cooperatives' export behaviour. The aim is to determine the direct effect of cooperatives' size, innovation and experience on export intensity and whether there are any indirect effects. We use Path analysis to evaluate causal relationships. We find that innovation is a key factor to improve export intensity, whereas size displays an indirect effect only, and experience exhibits a negative relationship.

1. Introduction

The relationship between firms' characteristics and exporting has been widely analysed since Bernard & Jensen, (1995) first looked into it. The most common conclusions are that this relationship exists and that exporting firms exhibit better performance than non-exporting ones (Girma et al., 2004). This paper focuses on this field of analysis. Specifically, we are interested in analysing the relationship between export intensity and some characteristics of Spanish work cooperatives in the manufacturing sector.

Cooperatives have a long tradition in Spain. They have shown themselves to be an alternative organizational model capable of coping with economic downturns better than capitalist firms are (Calderón and Calderón, 2012; Díaz and Marcuello, 2010; Guzmán et al., 2020; Monzón, 2012). Cooperatives' principles and values go beyond the maximization of profit and confer on them a democratic commitment that enhances their role as drivers of the diffusion of social innovation processes (Gallego-Bono and Chaves-Avila, 2020). However, one of the challenges to be faced is that of surviving in a globalized and competitive market. Within this context, exporting becomes a strategic survival process. In this study, we wonder whether the characteristics that the literature highlights as being important for understanding the export behaviour of capitalist firms are also important for understanding the export behaviour of cooperatives. This will allow us to make some reflections on what role public policies should play to promote the internationalization of cooperatives.

In a previous analysis (Author, 2021), we analysed the relationship between cooperatives' export behaviour and size. The results obtained made us suspect that some chains of cause-effect might exist between variables that were not captured by the methodology used. The aim of this work is to overcome that limitation. We use Path analysis to determine the effect of independent variables (cooperatives' size and experience) on the dependent variable (export intensity) by using an intermediate variable (innovation).

2. Working hypotheses

Among the main characteristics that scholarly research highlights as determinants of export intensity are firms' innovation processes, experience and size. However, as the link is not solely direct (Coad et al., 2016), our working hypotheses are inferred from the relationships noted below.

Many studies have found that innovation has a strong positive impact on exports (Becker and Egger, 2013; Caldera, 2010; Damijan et al., 2010; Freixanet and Churakova, 2018; Monreal-Pérez et al., 2012). Innovation improves productivity and allows firms to transform their intention to export into the capacity to export (Ayllón and Radicic, 2019; Máñez-Castillejo et al., 2009). Thus, our first working hypothesis is:

H1: Innovation has a positive and significant effect on export intensity

Something that is frequently deemed a stylized fact is that the larger the firm size, the greater the export intensity. However, empirical studies have yielded contradictory results, although the most widely held conclusion is that there is a positive relationship (Bandick, 2020; Calof, 1994, 1993; Celebic et al., 2020; Dhanaraj and Beamish, 2003; Majocchi et al., 2005; Moini, 1995; Reis and Forte, 2016). In addition, large firms tend to find it easier to obtain financing

and recruit, hire and retain R&D staff, which makes them more efficient and better performing in terms of innovation (Abdu and Jibir, 2018; Messeni Petruzzelli et al., 2018). The second and third hypotheses are:

H2: Size is a determinant of export intensity

H3: Size is a determinant of innovation

We expect experience to display a positive relationship with export intensity. If annual export profits were the same for younger and older firms, then younger firms would receive smaller returns upon entering the export market because they face higher risk of failure (Bernard and Jensen, 1999; Madrid and García, 2004). The fourth and final hypothesis is:

H4: There is a significant positive relationship between experience and export intensity

3. Sample and methodology

We use a Spanish firm-level panel dataset spanning 26 years (1991–2016) focusing on Spanish work cooperatives in the manufacturing sector. The dataset comes from the Encuesta sobre Estrategias Empresariales (ESEE), which is produced annually by the Fundación SEPI under an agreement with the current Spanish Ministry of Finance.

Export intensity is measured through the export-to-total sales ratio. The indicator of size used is the cooperatives' employment (log Employment). Experience is assessed by the cooperatives' age (log Age). Innovation is measured as total expenditure on R&D plus imports of technology, over total sales (in %).

To analyse our dataset, we use Path analysis, a multivariate method that enables the verification of causal model adjustment and the identification of the direct and indirect contribution of independent variables that explain the variability of the dependent variable. Path analysis is a straightforward extension of multiple regression models. Its aim is to provide estimates of the magnitude and significance of hypothesised causal connections between sets of variables.

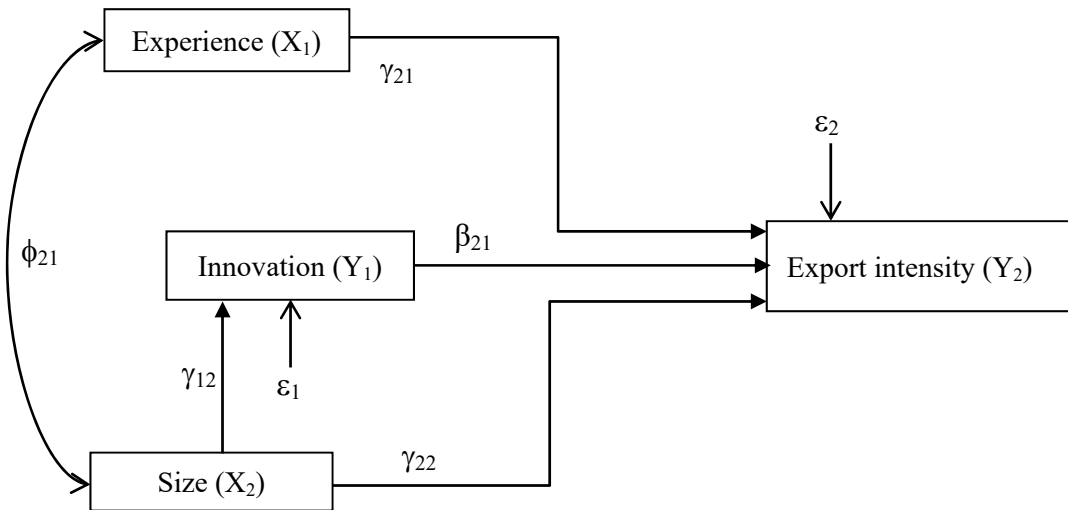
Previous studies on the relationship between export performance and firms' features have usually applied regression analysis. This modelling suffers from a certain simplicity in its structure when several explanatory variables are in turn explained by others, thus constituting chains of cause-effect that evidently better fit the nature of the phenomena. The advantage of applying Path analysis is that the links between variables can be considered simultaneously. This method clarifies correlation and indicates the strength of a causal hypothesis.

As is customary, we use a diagram to represent the hypothesized model. To adequately represent the model, some conventions must be followed:

- The relationship between variables is indicated by an arrow.
- The covariation between variables is represented by a bidirectional arrow.
- Direct effects are those that one variable directly has on another.
- Indirect effects occur when the relationship between two variables is mediated by one or more variables.
- There is a spurious effect between two variables when the covariation between the two is due to a common cause.

Given these conventions and our working hypotheses, Figure 1 depicts our model.

Figure 1. Diagram of Path Analysis



The structural equation model is:

$$Y_2 = \beta_{21}Y_1 + \gamma_{21}X_1 + \gamma_{22}X_2 + \varepsilon_2$$

$$Y_1 = \gamma_{12}X_2 + \varepsilon_1$$

4. Results

Figure 2 and Table 1 show the Path analysis results. The model displays an adequate goodness-of-fit (Table 1). The chi-square is not significant. The null hypothesis is that the model fits perfectly. The p-value ($p = 0.284$) is greater than 0.05, which means that the null hypothesis cannot be rejected and the model's goodness-of-fit is adequate. The root mean square error of approximation (RMSEA) value is less than the recommended 0.08 cutoff, and the p-value is above 0.05, again indicating a well-fitting model. The comparative fit index (CFI) and the Tucker–Lewis index (TLI) are close to the expected 0.95 (CFI = 1.00, TLI = 0.998), respectively. The standardized root mean square residual (SRMR = 0.011) is also good and below its 0.08 cutoff. The R² values are 0.322 for export intensity and 0.065 for innovation. The value for export intensity is acceptable, but for innovation it is very low. Both suggest that there are more variables affecting export intensity and innovation.

Figure 2. Diagram of Path Analysis: Results

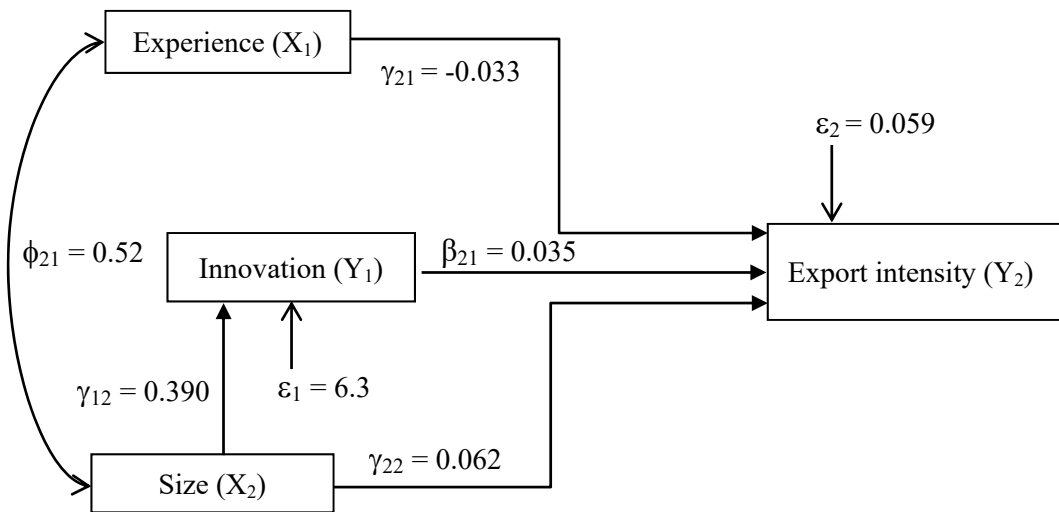


Table 1. Results model analysis

		Model	
Dependent variable: Export intensity (Y ₂) R ² = 0.322		Coefficient ¹	P> z
H1: Innovation (Y ₁)		0.035*** (0.003)	0.000
H2: Size (X ₂)		0.062 (0.006)	0.101
H4: Experience (X ₁)		-0.033* (0.013)	0.011
Dependent variable: Innovation (Y ₁) R ² = 0.065		Coefficient	P> z
H3: Size (X ₂)		0.390*** (0.054)	0.000
Indirect effect			
Dependent variable: Export intensity (Y ₂)		Coefficient	P> z
Size (X ₂)		0.014*** (0.002)	0.000
Fit statistics			
Likelihood ratio			
chi2_ms(1)		1.146	
p > chi2		0.284	
chi2_bs(5)		339.755	
p > chi2		0.000	
Population error			
RMSEA		0.014	
90% CI, lower bound		0.000	
upper bound		0.099	
pclose		0.623	
Baseline comparison			
CFI		1.000	
TLI		0.998	
Size of residuals			
SRMR		0.011	
CD		0.235	

1. Std. Err. In parenthesis; * p<0.05; ** p<0.01; *** p<0.001
Source: STATA

H1: Innovation has a positive and significant effect on export intensity

The model shows a positive and significant relationship between innovation and export intensity. This result supports Hypothesis 1 and is in line with other empirical studies focusing on capitalist firms (e.g., Falk & de Lemos, 2019; Iyer, 2010; Pla-Barber & Alegre, 2007; Reis & Forte, 2016) or on Spanish firms (e.g., Ayllón & Radicic, 2019; Caldera, 2010; Donoso & Martín, 2008; Monreal-Pérez et al., 2012).

H2: Size is a determinant of export intensity

The value of the coefficient is positive but is not significant. This leads us to note that cooperatives' size does not affect export intensity, so H2 is rejected. The relationship we are dealing with has been extensively analysed in the literature. The most important fact is that there is no agreement across the studies. Some confirm a positive relationship between the two variables yet others do not support this hypothesis and, in a smaller number of studies, a negative relationship is even reported (for a literature review, see, e.g., Alshiqi, 2020; Bonaccorsi, 1992; Calof, 1994; Ha, Holmes, & Le, 2020; Hernández, 2020).

H3: Size is a determinant of innovation

The relationship between cooperatives' size and innovation is positive and significant. This provides support for hypothesis 3. In addition, the indirect effect of size on export intensity, i.e., the effect acting through innovation, is also positive and significant. Therefore, factors relating to size, such as economies of scale, resource availability and greater capacity for collecting information (Majocchi et al., 2005; Verwaal and Donkers, 2002; Wagner, 2001, 1995) do not have a direct impact on export intensity, but have an indirect effect by having an impact on innovation.

H4: There is a significant positive relationship between experience and export intensity

Our results do not confirm that there is a positive relationship between cooperatives' experience and export intensity. Hypothesis 4 is not fulfilled. Studies focusing on Spanish capitalist firms such as Alonso & Donoso, (2000) and López & Serrano, (2020) are in disagreement with this because they found a positive relationship. However, we can find other works that cast doubt on the impact of experience on the growth of export intensity and instead believe that the youth of companies can be fundamental, especially within a context of market globalization (Pla-Barber and Alegre, 2007).

5. Conclusion and discussion

The findings of this study indicate that the determinants of cooperatives' export intensity do not differ from those of capitalist firms. We have pointed out that innovation is a key factor to improve export intensity. However, size does not have a significant direct effect although it does have an indirect effect through innovation. Younger cooperatives show better export intensity results than older ones, which seems to agree with recent results supporting the positive correlation between younger Spanish cooperatives and entrepreneurship (Guzmán et al., 2020). From a policymaker's viewpoint, it is necessary to point out that, besides the

subsidies that currently exist in Spain to promote projects for the creation, modernization and employment of cooperatives, cross-cutting measures need to be implemented. On the one hand, such measures would help to promote and preserve the principles and values of cooperatives and, on the other, would help to improve competitiveness in international markets. This should avoid the process of degeneration that some studies link to cooperatives' internationalization processes (Bretos et al., 2018; Bretos and Errasti, 2017; Guzmán et al., 2020; Leite and Duaibs, 2017).

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