Economics

The export strategy and SMEs employment resilience during slump periods

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The export strategy and SMEs employment resilience during slump periods

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Abstract

The Spanish economy was one of the most hit by the Great Recession among the euro area. It suffered a greater decrease in GDP (affecting especially internal demand). However, it suffered a greater increase in exports as regards pre-crisis years (the so-called Spanish "miracle"). Particularly, Spanish SMEs incorporation into exports has been spectacular since 2008. Further, this has coincided with a huge increase in unemployment in the country. Thus, our main objective in this paper is investigating for Spanish SMEs the moderating role of exports in job destruction associated with recessive contexts. In this paper, we obtain for SMEs that export participation helps compensate the decrease in the number of workers generated by a (domestic) downturn, and it increases their survival. Otherwise, SMEs survival is negatively affected by financial constraints, production costs and a recessive demand. Furthermore, the compensatory effect of exports on employment works in favor of permanent workers, meaning that the ratio of permanent to temporary workers increases for SMEs during recessive periods. Finally, we provide evidence that supports that SMEs participation in exports is also due to a reaction to the fall in domestic demand (the so-called "venting out" hypothesis).

Key words: Exports, recessive periods, job losses, SMEs, Spanish manufacturing.

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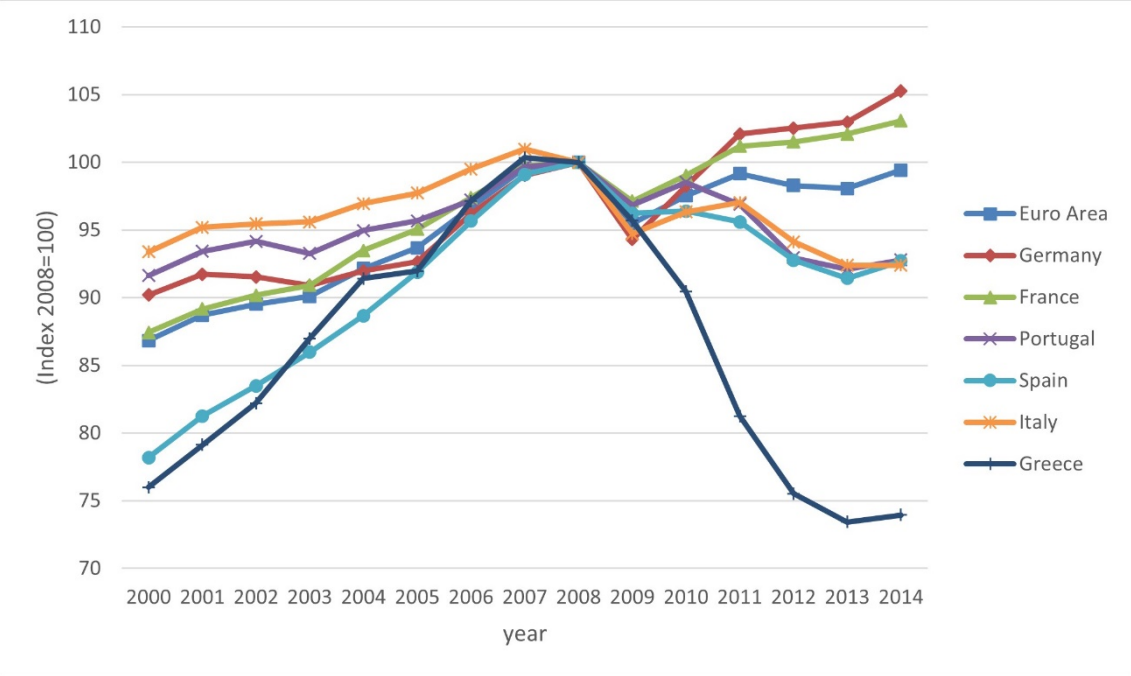
1. INTRODUCTION

Our main research question in this paper is whether, for SMEs, exporting helps mitigate job losses in periods of recession especially characterized by a slump in domestic demand. Given that to answer this question we take Spanish SMEs during the period 2000-2014 as a case study, this introductory section has two main objectives. First, to motivate why Spain is especially suitable and relevant to study this topic and, second, why do it especially for SMEs.

The Great Recession that started by late 2007 was an economic downturn that was global in nature but hit sharply countries in Southern Europe (Zamora-Kapoor and Coller, 2014; Goldstein, et al., 2013). In Figure 1[1] we provide evidence of the severity of this crisis by showing the evolution of Gross Domestic Product (GDP) for economies in Southern Europe (namely Portugal, Spain, Italy and Greece) as well as for France, Germany and the whole euro area along the period of analysis in this paper, 2000-2014.

FIGURE 1. Evolution of Gross Domestic Product (GDP).



Source: Data from AMECO-EU.

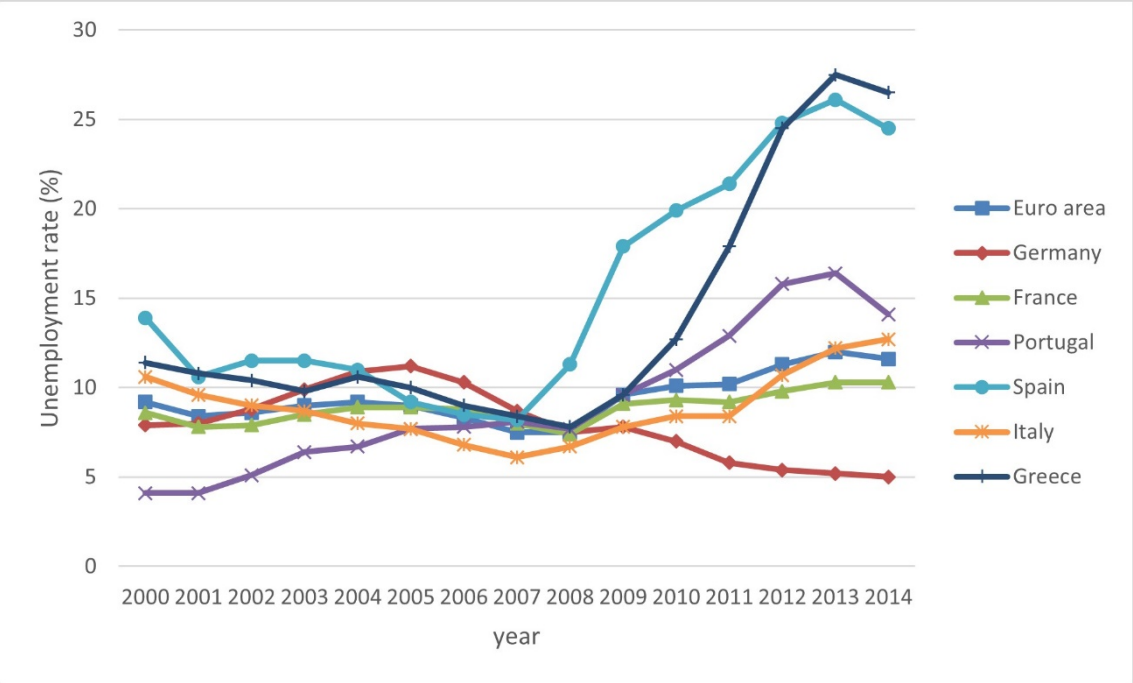
Until 2008 all countries saw how their GDP grew substantially, experiencing the so-called boom years. Nevertheless, in the ongoing years the GDP fell in all cases, heading the economies towards a recession. However, what is remarkable is that only the southern economies were unable to recover their precrisis levels. In 2014, the French GDP had grown by 3.07% in comparison with 2008, the German GDP was 5.26% larger and the GDP for the whole euro area was practically the same as in 2008. But in the case of the Southern European countries the

[1] We show together with the southern countries, the evolution of France and Germany since they are considered two major economies in Europe, and the euro area since it is the natural area of reference. The data has been retrieved from the AMECO database, European Commission (https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/macro-economic-database-ameco/ameco-database_en)

situation was completely the opposite. Neither Spain nor Italy, Portugal or Greece were able to recover from the crisis after 6 years.

Nonetheless, the financial crisis of 2008 had also a severe effect on the labor market, rising the unemployment rates in all countries as it can be seen in Figure 2.

FIGURE 2. Evolution of unemployment rates.



Source: AMECO-EU.

Before the crisis, all economies presented relatively low unemployment rates, being all below 10%. However, the crisis entailed a shock in the labor market for all economies, but its magnitude and impact differed widely across countries. In 2014 the scenarios for the different economies were very diverse. The best evolution took place in Germany, which was able to reduce its unemployment rate by 2.5 percentage points in comparison to the precrisis level. On the contrary, the euro area and France suffered a moderate increase, since the unemployment rate rose by 4 and 3 percentage points, respectively. A worse scenario was present in Italy and Portugal, where the unemployment rates doubled. But, in any case, the most worrying rates were in Greece and Spain, where they arrived to surpass the 25%.

Given this scenario, firms needed to adapt to these conditions, but when it comes to a recession, they could react differently. For instance, one view argues that firms with a superior enterprise risk management capability can cope better with downturns (Nair et al., 2014). Conversely, others point out the engagement in foreign trade as a way to deal with recessions (Geroski and Gregg, 1997; Mañez et al., 2020). Focusing on the last approach, it is interesting to see how exports have evolved during the boom and slump periods for the different economies mentioned above, so Figure 3 shows this evolution.

FIGURE 3. Evolution of exports.

Source: AMECO-EU.

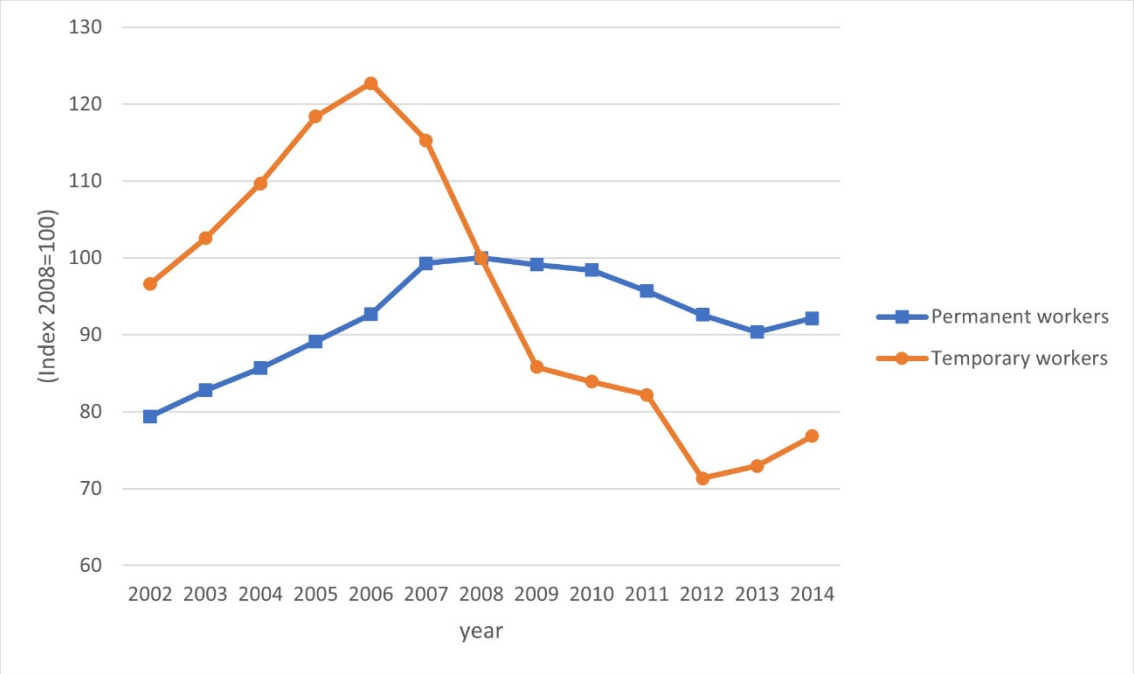
Exports were experiencing a positive trend until the crisis arrived. After 2008 they shrunk, but countries were able to recover the growing path rapidly. However, this growth was not equal for all economies. Italy arrived virtually to the precrisis level in 2014, and France only experienced a 6% growth. Germany and Greece managed to rise their exports by a 10% approximately, in line with the euro area. However, the outstanding increase took place in Spain and Portugal, where exports grew a 20% in comparison to 2008.

Thus, the only country hit severely by the crisis with a sharp fall in GDP, a high increase in the unemployment rate but with an important take off of its exports was Spain. Hence, this makes this southern economy an interesting country to analyze these phenomena and to study whether this increase in exports helped offset the problem of unemployment.

Unemployment has been pointed out as one of the most severe problems in Spain (Furió and Alonso, 2015). As shown in Figure 2, there was a general rise in unemployment rates in Europe, but the problem in Spain is more serious since it is structural and systematic. Several papers have analyzed deeper this Spanish problem, trying as well to identify the potential solutions (Royo, 2009; Verick, 2009). However, what is also noteworthy for Spain is the employment structure, which is characterized by the high number of temporary workers, traditionally associated with a higher degree of vulnerability and precariousness (López and Malo, 2015). To show this, Figure 4[2] shows how two different types of workers, permanent and temporary, were affected by the rise in unemployment after the crisis started.

[2] The data has been retrieved from the "Instituto Nacional de Estadística" (https://www.ine.es/jaxiT3/Tabla.htm?t=3961&L=0). Data was only available from 2002. The data of each year corresponds to the fourth quarter of the corresponding year.

FIGURE 4. Permanent and Temporary workers in Spain.

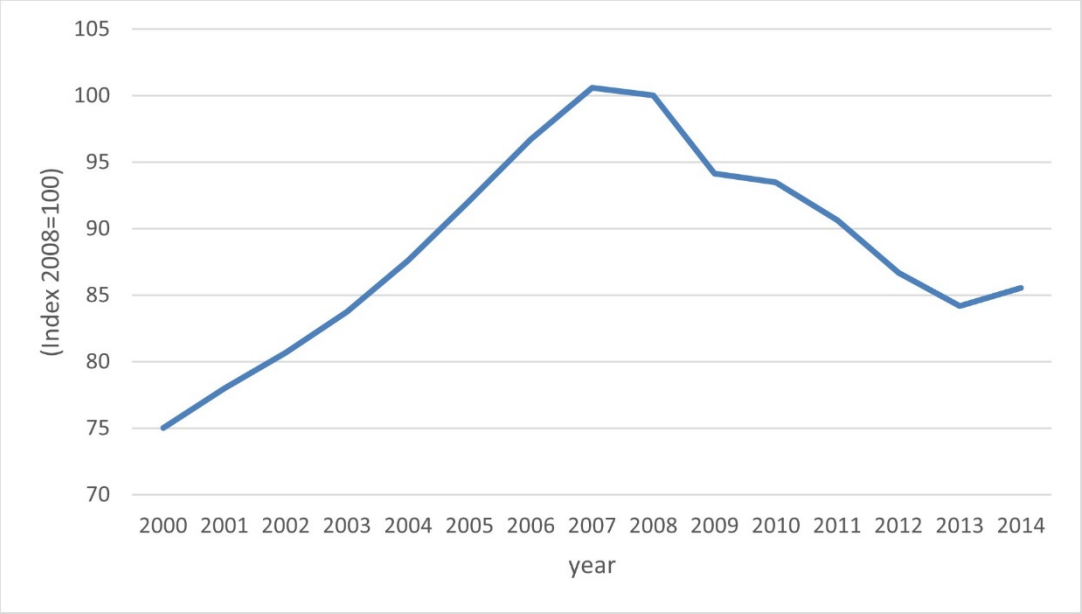


Source: Instituto Nacional de Estadística (INE).

As it can be seen, the evolution of temporary workers is more volatile. While the growth of this type of workers was notable before the crisis, being higher than the growth of permanent workers, it decreased considerably when the recession arrived. As a matter of fact, it fell by a 50% from 2006 to 2012, whilst the number of permanent workers was virtually the same. The intuition for this is that when a firm needs to face a crisis, it is easier to fire temporary workers, since the firing costs for the permanent ones could become a high burden for the firm. This implies a huge flow of temporary workers entering and going out of unemployment (Bentolila et al., 2009). Thus, it is not only interesting to analyze the link between exports and employment, but also to differentiate between workers under the two types of contracts.

Additionally, the spectacular growth in exports in Spain has been coined as the "Spanish miracle" (Eppinger et al., 2017), for which two possible explanations have been proposed. On the one hand, an increase in competitiveness due to supply-side factors, and, on the other hand, the so-called "venting out" hypothesis. The latter attributes the increase in exports (in their extensive and intensive margins) to a strategic response made by firms to face the fall in internal demand (Almunia et al., 2021). Thus, Figure 5 shows the evolution of internal demand in Spain, in order to see which was the impact when the recession came.

FIGURE 5. Evolution of Internal Demand in Spain

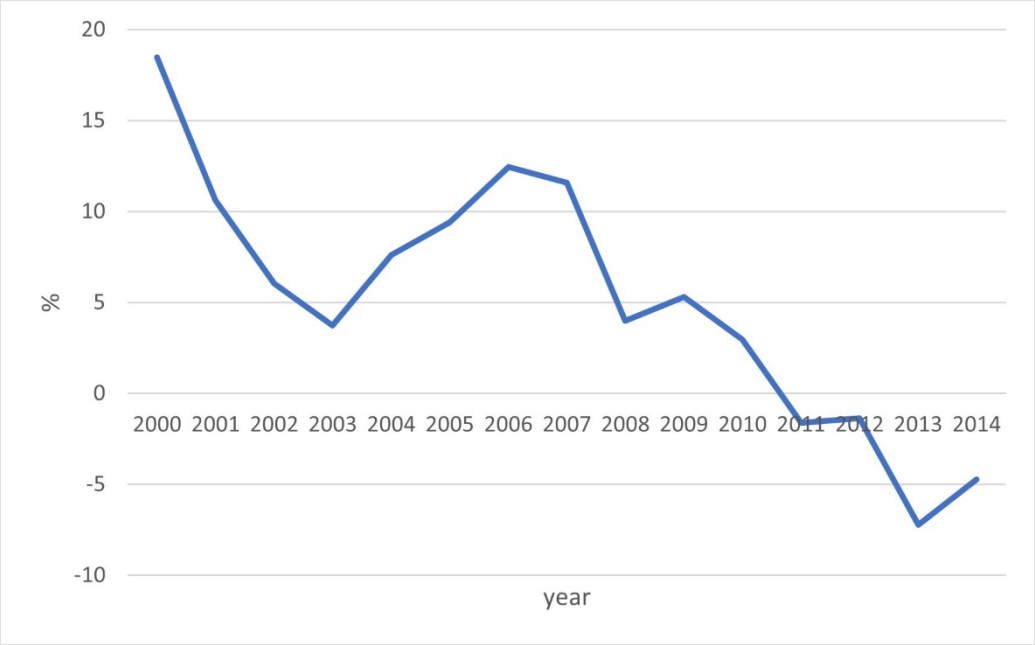


Source: AMECO-EU

As it can be seen, the internal demand was experiencing a positive trend before 2007, but it changed its path when the crisis arrived, being a 15% lower in comparison with the precrisis level. Thus, the "venting out" hypothesis may be a potential explanation for the increase in exports in Spain during the slowdown, as it was shown in other papers (De Lucio et al., 2019; Mañez et al., 2020; Almunia et al., 2021).

However, during our period of analysis (2000-2014), it is particularly important the fact that financial constraints became an important obstacle for firm performance. Thus, since financial constraints grew with the financial crisis, different papers have identified its negative impact on several aspects. For instance, constrained firms planned deeper cuts on employment (Campello et al., 2010) and, in the same way, financial constraints of domestic firms have a deterrent effect not only on their probability to export but also on their export intensity (Kim, 2019). We plot in Figure 6 the evolution of loans to nonfinancial institutions, so we can see how they fell when the crisis arrived.

FIGURE 6. Yearly growth of credit to nonfinancial institutions



Source: Bank for International Settlements[3]

As a matter of fact, the rate of growth of credit to nonfinancial institutions became negative in 2011, not being able to recover in 2014. This confirms the increase in financial constraints, so we cannot forget this phenomenon in our study, since it was a reality that became a problem for firms in the Spanish economy.

Furthermore, these phenomena of growth in exports, increasing unemployment, fall of internal demand and the rise in financial constraints differed according to the size of firms. To shed light on this direction, from now on we focus on microdata of Spanish manufacturing firms, since in the empirical analysis in this paper we use the firm-level panel data set provided by the Spanish Survey on Business Strategies (ESEE) for the period 2000-2014 (which includes a boom period and a recession period that coincides with the so-called Great Recession). The SEPI Foundation (associated to the Spanish Ministry of Finance) carries out the survey, which is representative of Spanish manufacturing. Using the information from this survey, we find that most of large firms in Spain are involved in export strategies, while the percentage of SMEs[4] that do so is much lower (see Table 1).

[3] Data comes from Bank for International Settlements, Total Credit to Non-Financial Corporations, Adjusted for Breaks, for Spain [QESNAM770A], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/QESNAM770A, August 26, 2021.

[4] SMEs means Small and Medium Enterprises, that is firms with 10-200 employees.

TABLE 1. Export Participation of Large firms and SMEs during the pre-slump and slump periods.

		Mean (%)
Large firms	Pre-slump	92.35
	Slump	93.66
SMEs	Pre-slump	51.36
	Slump	61.97

Source: Data from ESEE (Spanish Survey on Business Strategies, SEPI Foundation). Own elaboration. Pre-slump corresponds to the years 2000-2008. Slump corresponds to the years 2009-2014.

The number of Spanish large firms that export was more than 90% and, in the recession, this share was still that high, although it experienced a slight increase. Conversely, the situation for SMEs was different, since the percentage of firms in this group that export increased from 51.4% in the precrisis period to nearly a 62% in the slump period. Thus, the evolution of SMEs in terms of export participation is, at least, considerable and remarkable and reveals a relevant incorporation pattern to this internationalization strategy.

In addition, after the fall in internal demand previously shown in Figure 5, among SMEs the exporter firms were the ones presenting better results in terms of employment, as it is shown in Table 2.

TABLE 2. Employment for exporter and non-exporter SMEs during the pre-slump and slump periods.

		Mean	**Std. Dev.**
Exporter SMEs	Pre-slump	63.16	53.17
	Slump	67.54	53.52
Non-exporter SMEs	Pre-slump	30.74	32.78
	Slump	27.23	31.87

Source: Data from ESEE (Spanish Survey on Business Strategies, SEPI Foundation). Own elaboration. Pre-slump corresponds to the years 2000-2008. Slump corresponds to the years 2009-2014.

Thus, exporting SMEs seem to show greater resilience in terms of employment in a period of recession than non-exporting SMEs.

Likewise, being a SME has also implications when it comes to financial constraints, since their export or employment growth strategies, among others, may depend on access to financial resources. Additionally, SMEs generally face tighter resource constraints, becoming particularly tough when financial markets are volatile or unfavorable, as it happened during the crisis of 2008 (Bakhtiari et al., 2020). In Table 3, for the period analyzed by us in this paper, we show that large firms obtain cheaper bank financing than SMEs and that SMEs obtain, compared to large firms, more expensive bank financing during the recession period. This table offers the annual

deviation of the financial cost of the debt of firms with financial institutions with respect to the average cost paid by other firms in the same year.

TABLE 3. Financial costs (deviations with respect to the mean) for SMEs *versus* large firms during the pre-slump and slump periods.

		Mean	**Std. Dev.**
Large firms	All periods	-0.30	0.84
	Pre-slump	-0.21	0.76
	Slump	-0.50	0.95
SMEs	All periods	0.11	0.81
	Pre-slump	0.09	0.78
	Slump	0.13	0.84

Source: Data from ESEE (Spanish Survey on Business Strategies, SEPI Foundation). Own elaboration. Pre-slump corresponds to the years 2000-2008. Slump corresponds to the years 2009-2014.

To end with, several papers in the literature have investigated the role of exports on employment, identifying a positive impact. At an industry level, Feenstra et al. (2019) found that export job creation offsets the import job destruction in the United States, while Kiyota (2016) showed that in China, Indonesia, Japan, and Korea exports can create employment, although this effect is not limited to the export-industries but it may have an impact on industries that are not particularly export-oriented through vertical inter-industry linkages. On the other hand, at a firm-level, Lo Turco and Maggioni (2013) found evidence of the positive impact of internationalization on firm employment in Turkey, whilst Biscourp and Kramarz (2007) showed a positive relationship between exports and employment growth in France.

Conversely, with regards to the relationship between exports and unemployment, the literature has used aggregate data to find that the former can help reduce the latter. Dritsakis and Stamatiou (2018) showed that, for European countries, exports are not only important when it comes to promoting economic growth, but also to reduce unemployment. The same result is found for developing countries such as Malaysia (Subramaniam, 2008). Moreover, it has been even established that after the World War II, the boom in exports in the US played a strong and key role to prevent a significant rise in unemployment (Taylor et al., 2011).

Hence, it seems from previous studies that exports have a positive impact on employment, being a factor that helps mitigate the problem of unemployment. Nevertheless, the analysis is not widely done neither at a firm-level or for SMEs, nor for Spain. Furthermore, and as far as we know, there are no studies investigating the role of exports as moderators of job destruction in recessive contexts, especially when it comes to the Great Recession. Finally, we delve into the compositional effects on employment in relation to the different types of contracts (permanent and temporary), in order to eventually offer policy recommendations not only on how to mitigate the decline in employment after a shock but also on how to improve employment quality in terms of duration of contracts.

Thus, the main objective of this work is to investigate the role of export participation as a means for Spanish manufacturing SMEs to maintain employment in recessive periods in which domestic demand is depressed and external markets can pull employment. Furthermore, we also want to find out whether the effect of exports on SMEs employment affects the composition of their

workforce in terms of permanent *versus* temporary contracts. In addition, we are also interested in the determinants of the SMEs decision to participate in exporting paying special attention to both demand and supply factors (including access to finance). Finally, since we only observe employment and the export decision for those firms that survive, i.e. those that continue in operation in a given period, we follow Heckman (1979) to correct for SMEs survival in both our employment and export equations.

To anticipate the main results in this paper, we obtain that exporter SMEs not only have a higher level of employment than non-exporters, but they can also offset the employment destruction faced during a recessive period. This compensation acts in favor of permanent workers, meaning that the ratio of permanent to temporary workers increases during recessive periods. Thus, exporting SMEs show greater resilience in terms of employment when affected by a recession than non-exporters. In addition, SMEs use the export strategy as a means to avoid death and overcome periods of downturn in their domestic sales. Therefore, we throw new empirical evidence on the "venting out" hypothesis (de Lucio et al., 2019; Mañez et al., 2020; Almunia et al., 2021).

The remainder of the paper is organized as follows. In section 2, we briefly describe the database used in this work. Section 3 reports our empirical modelling and estimation results for the employment equation, the decision to export and firms' survival. Finally, section 4 concludes.

2. DATABASE

In this study, we use a firm-level panel data set obtained from the Spanish Survey on Business Strategies (ESEE) for the period 2000-2014. The selected period allows considering both the boom phase (2000-08), and the slump period that occurred after 2008. The ESEE is a yearly survey, carried out by the SEPI Foundation, which is representative (by industry and size) of the manufacturing sector in Spain. Firms are classified into 20 different sectors following the NACE-CLIO two-digit classification.

The sampling design of the ESEE is as follows. No firms with employees below 10 are included in the survey. Firms with 10-200 employees (SMEs) are randomly included, being about 5% of the population of firms within this size range in 1990. All firms bigger than 200 workers (large firms) are invited to contribute to the survey, with a participation of about 70% in 1990. To minimize attrition in the initial sample, important efforts have been conducted. Thus, annually new firms are incorporated with the same criterion of the base year to preserve the sample representativeness across time.[5]

In our work, as mentioned in the *Introduction*, we focus on SMEs since large firms seem to behave differently in terms of export participation. Furthermore, large firms are typically less financially constrained and less sensitive to demand conditions. Furthermore, we drop out all firms that do not provide information on the relevant variables used in our analysis. Therefore, after cleansing those observations, we have a main working sample of 18,764 observations that correspond to 2,906 firms.

[5] See https://www.fundacionsepi.es/investigacion/esee/en/spresentacion.asp for more details.

Finally, to obtain the firm's export status we use the following question from the survey: 'Indicate if the firm has exported this year (including exports to the European Union), either directly or through other firms in the same group'.

3. EMPIRICAL APPROACH AND ESTIMATION RESULTS

Export participation and SMEs employment resilience during recessionary periods particularly affecting domestic demand

To begin with, we estimate a baseline specification for the employment equation of a firm that does not yet distinguish workers by type of contract (temporary or permanent) nor does it allow export participation to play a specific role in situations of adverse demand. Hence, in this first specification, we use the log of firms' employment as the dependent variable in an equation where the main explanatory variables are a firm's export participation dummy, a variable capturing firms' demand conditions, and some controls. In particular, we estimate the following dynamic equation that relates the firms' number of workers with the firms' export participation strategy:

$$\log(Emp_{it}) = \beta_0 + \beta_1 \log(Emp_{it-1}) + \beta_2 Exp_{it-1} + \beta_3 RecessDemand_{it\text{-}1} + \gamma Z_{it-1} + s_j + \delta_t + u_{it} \qquad (1)$$

where $\log(Emp_{it})$ is the log of the number of workers of firm *i* in period *t* and $\log(Emp_{it-1})$ is its one period lagged value; Exp_{it-1} is a dummy variable that captures if the firm exported in period *t*-1. Therefore, β_2 measures the firm's employment premium from exporting. Firms' demand conditions are captured by a dummy variable ($RecessDemand_{it\text{-}1}$) that is constructed from an index of market dynamism provided by the ESEE. The index of market dynamism (that ranges from 0 to 100) is a weighted average of the recession, stability or expansion situation of the 5 most relevant different markets where firms operate. From this index, the dummy variable $RecessDemand_{it\text{-}1}$ is constructed as being equal to one when the index value is between 0 and 35. Doraszelski and Jaumandreu (2013) also use this information from the ESEE to proxy for the macroeconomic business cycle in Spain. They show that in the 1990s, this variable mirrors the macroeconomic cycle since, for instance, in growth periods firms tend to report that their markets are in expansion. Furthermore, we also corroborate this in our sample period in this paper since from 2000 to 2008 the percentage of firms declaring a recessive demand is 17.88%, while in the period 2008 to 2014 the percentage grows to 46.84%.[6] Furthermore, the recessive demand dummy is clearly dominated by the behavior of the internal demand, since even for exporters the percentage of domestic sales is 72%. Equation (1) also includes a vector Z_{it-1} of control variables at the firm level that comprises a measure of firms' financial restrictions and the log of firms' age. As for the variable of financial restrictions that firms may face, following Beneito et al. (2015) and Máñez et al. (2014), we construct, with information on the financial statements in the ESEE survey, a measure of the financial cost of firms' debt with financial

[6] The reason why in the employment regressions we use the dichotomous indicator of recessive demand instead of the continuous (from 0 to 100) recessive index is to easy interpretation of the cross product variables between the recessive demand (0/1) indicator and the firms' business strategy of exporting (also a dichotomous variable), which will appear in many of our specifications of the employment equation derived from the baseline in (1).

institutions. Although the financial crisis has gone hand in hand with a significant decrease in the average cost of debt, it was also characterized by a severe difficulty of access to credit (see Figure 6 for the decrease in the yearly growth rate of loans to non-financial institutions in Spain). Unfortunately, we do not have information in the survey to capture this firm's dimension of financial restrictions. Hence, even if we acknowledge, as in Almunia et al. (2021), that firms' financial restrictions could have being better captured by a firms' measure of credit rationing, similar to them, our assumption here is that firms facing higher costs of debt should be the ones who suffer most from credit restrictions. Given this assumption, we introduce in estimation a transformation of the firm's financial cost variable that consists on its *per* year deviation with respect to the average cost paid by other firms in the same year.[7] In addition, we also include in (1) a vector of time (δ_t) and sector dummies (s_j). Finally, u_{it} is a composite error term equal to $\alpha_i + e_{it}$, where α_i represents individual unobserved heterogeneity and e_{it} is an idiosyncratic error term. The reason why our specification in (1) is dynamic is being able to analyze persistence in firms' employment.

Since in this paper we are not only interested in firms' total employment but also in its composition as regards types of contracts (permanent or temporary), one of the departures from our baseline specification in (1) will consist of substituting total employment for the number of permanent or temporary workers in the firm.

Estimation results for equation (1) are presented in Table 4. Columns 1, 2 and 3 correspond to the firms' total number of workers, number of workers under permanent contracts and number of workers under temporary contracts, respectively. In addition, in columns 4, 5 and 6 our baseline specification in (1) is widen to include further among regressors the interaction term between the export dummy and the dummy variable for adverse demand conditions. The purpose of this extension is precisely to answer our main research question in this work, which is whether participating in the export market acts as a buffer against the adverse effects of the economic cycle on firms' employment. We wonder if exporting helps mitigate job losses in recessionary periods.

[7] We have also tried with the alternative measure of calculating the cost of debt deviation with respect to the average of the sector to which the firm belongs. In spite of results being qualitatively similar, we believe that our choice is more reliable since there may be sectors particularly affected by adverse borrowing conditions and this would not be reflected in a measure that uses sector averages for comparison.

TABLE 4. Export participation and SMEs employment resilience

Variables	(1) Total employment	(2) Permanent employment	(3) Temporary employment	(4) Total employment	(5) Permanent employment	(6) Temporary employment
$\log(\text{Total Employment})_{t-1}$	0.805***			0.804***		
	(0.028)			(0.028)		
$\log(\text{Permanent Employment})_{t-1}$		0.754***			0.753***	
		(0.029)			(0.029)	
$\log(\text{Temporary Employment})_{t-1}$			0.714***			0.714***
			(0.017)			(0.017)
Export_{t-1}	0.026***	0.040***	0.006	0.015**	0.030***	-0.005
	(0.006)	(0.007)	(0.026)	(0.007)	(0.008)	(0.031)
$\text{Recessive\_Demand}_{t-1}$	-0.042***	-0.037***	-0.134***	-0.063***	-0.057***	-0.160***
	(0.005)	(0.006)	(0.025)	(0.009)	(0.010)	(0.038)
$\text{Export}_{t-1} * \text{Recessive\_Demand}_{t-1}$				0.035***	0.032***	0.043
				(0.009)	(0.011)	(0.048)
$\text{Financial\_Restrictions}_{t-1}$	0.001	0.004	-0.002	0.001	0.004	-0.002
	(0.002)	(0.003)	(0.013)	(0.002)	(0.003)	(0.013)
$\log(\text{Age}_{t-1})$	-0.026***	-0.038***	-0.136***	-0.025***	-0.037***	-0.136***
	(0.005)	(0.005)	(0.019)	(0.005)	(0.005)	(0.019)
log(Tot. Employ.) Presample Mean	0.162***			0.162***		
	(0.024)			(0.024)		
log(Perm. Employ.) Presample Mean		0.182***			0.182***	
		(0.023)			(0.023)	
log(Temp. Employ.) Presample Mean			0.316***			0.316***
			(0.016)			(0.016)
Lambda cont. operation	-0.332***	-0.481***	-1.462***	-0.318***	-0.468***	-1.445***
	(0.058)	(0.064)	(0.235)	(0.057)	(0.063)	(0.233)
Constant	0.171***	0.348***	-0.101	0.173***	0.349***	-0.100
	(0.033)	(0.039)	(0.121)	(0.033)	(0.039)	(0.121)
N observations	18,764	18,764	18,764	18,764	18,764	18,764
N firms	2,906	2,906	2,906	2,906	2,906	2,906

Note: All estimations include industry and time dummies. Since all regressions include the estimated lambda term, we provide block-bootstrapped standard errors in parentheses. ***, **, and * mean significant at the 1 percent, 5 percent, and 10 percent level, respectively.

From a methodological point of view, for all specifications of equation (1) in Table 4 (baseline and extended versions) we tackle two econometric issues. The first is related to firms' unobserved heterogeneity (unobserved individual effects α_i), which may be correlated with regressors in (1) as simply by model construction they are correlated with the included lagged dependent variable among regressors. For this reason, when estimating (1) we control for correlated firms' unobserved heterogeneity using the correlated individual effects methodology developed by Blundell *et al.* (1999, 2002), which is applicable in both linear and nonlinear

models. Hence, we model the distribution of α_i conditional on the pre-sample mean of the dependent variable $\log\left(Employment_{i,Mean,0}\right)$ in the following way:[8]

$$\alpha_i = \alpha_0 + \alpha_1 \log\left(Employment_{i,Mean,0}\right) + \pi_i \tag{2}$$

where $\pi_i \left| \left(\log\left(Employment_{i,Mean,0}\right) \right) \sim Normal\left(0, \sigma_\pi^2\right) \right.$. Next, we add the variable $\log\left(Employment_{i,Mean,0}\right)$ among regressors in (1). This new regressor is calculated as the within firm mean of $\log\left(Employment_{i,Mean,0}\right)$ for the considered pre-sample years. Since our sample period for estimation starts at year 2000 and most of regressors are lagged one period to avoid potential simultaneity bias, we consider as pre-sample years 1997 and 1998. This method allows for correlation of firms' individual effects with regressors in (1). We observe at the bottom of Table 4 for all specifications that persistent firms' effects are relevant to explain firms' number of workers. Persistent firms' effects affecting positively employment might be indicative of higher quality or managerial ability. Notice that modelling in this way unobserved individual heterogeneity requires in (2) that the variable $\log\left(Employment_{i,Mean,0}\right)$ be replaced by $\log\left(Permanent\ Employment_{i,Mean,0}\right)$ or $\log\left(Temporary\ Employment_{i,Mean,0}\right)$ in the regressions where the dependent variables are the number of permanent or temporary workers, respectively.

The second econometric issue is related to the fact that we only observe employment conditional on firms surviving until period *t* and, hence, estimated coefficients in the employment equations may suffer from non-random attrition bias when, for instance, firms that survive are simultaneously more likely to export and have larger workforces. If this was the case, we would be facing an endogenous exit of firms from the market.

To consider this problem we implement a Heckman's (1979) two-stage selection correction. In a first stage, we estimate with a *Probit* model the probability of firms' survival until period *t* (from our sample period), conditional on their survival until period *t-1*. From the estimates of this survival equation (estimated with 20,607 observations corresponding to 3,095 firms), we construct the Heckman's lambda continuation in operation term (also known as the inverse Mills ratio). Next, in a second stage, we include this term among regressors in the employment equations.[9] At the bottom part of Table 4, we show for each one of the employment equations the estimated coefficients associated to the lambda selection correction terms. Their statistical significance is indicative of the need to include them in the employment equations to avoid bias caused by non-random attrition in our estimation sample.

In the *Probit* model we explain firms' continuation in operation until period *t* with the one period lagged regressors that follow: the firms' export status, the degree of firms' innovativeness as captured by the introduction of product or process innovation, the variable for the degree of

[8] Blundell *et al.* (1999) suggest that permanent individual effects might be captured by the entry pre-sample mean of the dependent variable, which acts as a sufficient statistic for unobserved firm heterogeneity.

[9] This term is generically calculated as the ratio of the density over the distribution function of a normal distribution ($\phi(Z\theta)/\Phi(Z\theta)$), in which the argument ($Z\theta$) is the index function from a *Probit* model with a generic vector of regressors *Z*.

financial restrictions that firms face, demand conditions as proxy by an index of market recession (which has been constructed as the opposite of the market dynamism index provided in the survey and, hence, now the closer to 100 the worse the market situation), some variables to proxy for changes in competitiveness due to supply-side factors such as log of labor productivity, log wage per worker or the percentage change in prices of intermediates, control variables at the firm level (such as a firm size dummy distinguishing between small and medium size firms and the log of age), time dummies and sector dummies.

The results from estimation of this auxiliary equation, the *Probit* model of firms' survival *versus* death, are in Table 5. The relevant findings obtained for this equation indicate that SMEs that export, are more productive or that introduce mainly process (but also product) innovation increase the likelihood of survival. On the other hand, SMEs that suffer more financial restrictions, face a more recessive market situation, pay higher wages per worker or suffer a greater increase in the prices of their intermediate inputs, reduce their chances of survival. Finally, foreign participation *per se* does not guarantee survival and we find evidence of positive duration dependence since the older a firm is the greater its prospects for survival.

TABLE 5. *Probit* estimates for SMEs continuation in operation

Variables	(1) $Continuation\ in\ operation_t$
$Export_{t-1}$	0.073**
	(0.033)
$Innov_{t-1}^{Product}$	0.070†
	(0.044)
$Innov_{t-1}^{Process}$	0.203***
	(0.036)
$Financial\_Restrictions_{t-1}$	-0.042***
	(0.015)
$Recessive\_Index_{t-1}$	-0.003***
	(0.000)
$\log(Average\_wage_{t-1})$	-0.418***
	(0.055)
$Intermediates\ price\ change(\%)_{t-1,t}$	-0.003†
	(0.002)
$\log(LabProd)_{t-1}$	0.161***
	(0.027)
$Foreign\ participation_{t-1}$	-0.079
	(0.055)
$Medium_{t-1}$	-0.018
	(0.036)
$\log(Age_{t-1})$	0.132***
	(0.019)
Constant	3.372***
	(0.461)
Log pseudo-likelihood	-4918.0454
$N\ observations$	20,607
$N\ firms$	3,095

Note. All estimations include industry and time dummies. Clustered robust standard errors are in parentheses. ***, **, and * mean significant at the 1 percent, 5 percent, and 10 percent level, respectively. † means slightly above 10 percent level (10.9% for the Intermediates price change variable and 11.5% for the Product innovation variable).

We will now comment on the results obtained for the main regressors in the employment equations (Table 4). In our specifications in columns 1, 2 and 3 we obtain that there is a high persistence (state-dependence) in the evolution of SMEs employment (the coefficient on the variable $\log\left(Employment_{it-1}\right)$ is positive and significant for total, permanent or temporary workers). The positive and significant estimates for β_2 (associated to the export decision in period *t-1* in expression (1)) for total and permanent employment suggest that exporting allows SMEs to maintain a higher level of employment. These rewards in employment are 2.6% for total employment and 4% for permanent employment. However, there is a non-significant effect of

SMEs export participation on temporary employment. Hence, exporting contributes to increasing the number of firm's workers, and since it seems to be more oriented to the hiring/consolidation of permanent workers, it contributes to the change in the composition of SMEs workforce by increasing the ratio of permanent to temporary workers. This can be interpreted as that exporting contributes to increasing the quality of contracts within the firm. Consequently, an exporting firm will tend to have a higher level of employment with a higher number of permanent contracts and a lower proportion of temporary workers compared to a non-exporting firm. In addition, for SMEs, facing a recessive demand has a negative impact on their level of employment in all cases (total, permanent or temporary employment). However, as expected, employment destruction related to recessive demand conditions is much larger for temporary employment. In particular, firms have a decrease almost four times greater in temporary contracts than permanent contracts, since being in a recessive period reduces the number of temporary workers by 13.4% and that of permanent workers by 3.7%. Total employment and, specially, temporary employment are much more sensitive to firms' recessive periods than to firms' exporting decisions. For the case of permanent employment, both effects are of a similar magnitude but with an opposite sing.

As already highlighted above, in this paper we are especially interested not only in the direct role of exports in employment but also in its particular effect during recessions. This leads us to add to our previous specifications the cross variable $Exp_{it-1} \times RecessDemand_{it\text{-}1}$. The estimation results of these widened regressions are provided in columns 4, 5 and 6 of Table 4. Interestingly enough, an exporting firm can offset around a half of the effect of a recessive period on employment destruction. This comes from the effect that exporting has on permanent employment in recessions, since no significant effect is found for temporary employment. In addition, for exporters in recessive periods there is an extra increase in the ratio of permanent to temporary workers. In particular, according to our results, SMEs exporters (in comparison to non-exporters) not only get higher total/permanent employment in good times (1.5% / 3.0% reward, respectively) but specially this advantage is reinforced when facing recessive demand conditions (1.5%+3.5%=5.0% / 3.0%+3.2%=6.2% reward, respectively). Hence, for SMEs, exporting during recessive periods helps offset the negative effect that a downturn in the cycle has *per se* in SMEs employment. This compensation acts for permanent employment and, therefore, favors the ratio of permanent to temporary workers.

As regards control variables in estimation, for financial restrictions no effect on employment has been found, either for permanent or temporary workers. This may be coherent with the fact of this variable only affecting employment through its indirect effect on firms' survival chances. The effect of firm age is negative and significant and may also suggest that once controlling for non-random selection determining continuation in operation, where age is a clear factor of firms' survival, the age variable in the employment equations might be capturing instead the effects of the product life cycle and its maturity.

Overall, which are the summary results from Table 4. First, there is persistence in employment both coming from state dependence and individual unobserved heterogeneity. Second, for SMEs, export activities have a positive effect on total employment that is especially relevant in bad times and that only occurs through permanent employment. Hence, there are compositional effects on employment from the export activity that work in the direction of increasing the ratio of permanent to temporary workers.

SMEs export strategy

For SMEs, we have obtained rewards in employment from exporting. Furthermore, these rewards from the export activity (versus non-exporters) have been reinforced during the most difficult part of the business cycle, helping exporters compensate for declining employment associated with poor demand conditions. In fact, all these effects come from the behaviour of permanent employment, which is also reflected in the total employment of firms.

Having said that, our objective in this section is to explain firms' export decisions in order to provide some political recommendations. We are especially interested in what encourages or discourages firms from carrying out this strategy. For this purpose, we present in Table 6 the results of a *probit* model that estimates this strategic firms' decision. Once again, we include pre-sample means of the dependent variable in the estimation equation to deal with correlated unobserved individual heterogeneity. In particular, we control for correlated unobserved individual heterogeneity through the method in Blundell et al. (1999, 2002). This implies inclusion among regressors of the pre-sample means $Exp_{i,Mean,0}$. Again, as we start estimation in year 2000 and regressors are lagged one period, we use as pre-sample period 1997 and 1998. In our preferred specification for the export decision in Table 6, we also correct for non-random attrition due to observability of SMEs export decisions only for firms continuing in operation. The inverse Mill's ratio (or Heckman's lambda bias correction term), already used in estimation of the employment equations and which relies on the firms' survival equation in Table 5, has been added as additional regressor in the export decision equation. Beyond that, we estimate by pseudo-simulated maximum likelihood the likelihood function of the following discrete choice equation (Roodman, 2011):

$$Exp_{it} = \begin{cases} 1 & if \quad \alpha + \theta_0 Exp_{it-1} + \theta_1 Innov_{it-1}^{Prod/Proc} + \theta_2 Financial\_Restrictions_{it-1} + \theta_3 Growth\_Dom\_Sales_{it-1,t} + \varphi C_{it-1} + \gamma Z_{it-1} + s_j + \delta_t + \varepsilon_{it} \geq 0 \\ 0 & otherwise \end{cases} \quad (3)$$

where θ_0 controls for persistence in the export strategy generated by sunk costs associated to this activity; θ_1 is a vector that accounts for firms' expected returns from exporting to be affected by firms' product and process innovation activities; θ_2 takes into account whether firms that are more financially constrained face problems that decrease their likelihood of exporting;[10] θ_3 captures the effect of demand conditions on firms' decisions to invest in export activities; the vector C_{it-1} includes (following Almunia et al., 2021) variables affecting firms' competitiveness from the supply side such as log labor productivity, log average wages and price variation of intermediate inputs. All these factors may encourage exports by affecting production costs. Furthermore, average wages may have undergone a downward adjustment in response to the effects of a recession in the labor market (the so-called "internal devaluation"). These factors are relevant to our export equation since they allow us to distinguish between the export incentives generated by "internal devaluation", production costs and supply side effects from those generated by a firm's strategic reaction to the fall in internal demand. Additionally, the vector Z_{it-1} includes control variables at the firm level (the foreign capital participation

[10] The financial restrictions variable is the same one already included in the employment equations and in the continuation in operation *probit* model previously described in the paper.

dummy, log age and the dummy variable for medium *versus* small firms). Sector (s_j) and year (δ_t) dummies are also included. Finally, ε_{it} is a composite error term that includes permanent individual unobserved heterogeneity and an idiosyncratic error term.

TABLE 6. *Probit* estimates for SMEs export strategy

Variables	(1) $Export_t$	(2) $Export_t$
$Export_{t-1}$	1.918***	1.907***
	(0.072)	(0.065)
$Innov_{t-1}^{Product}$	0.183***	0.167**
	(0.067)	(0.068)
$Innov_{t-1}^{Process}$	0.171***	0.113**
	(0.052)	(0.054)
$Financial\_Restrictions_{t-1}$	-0.042*	-0.030
	(0.024)	(0.027)
$Growth\_Domestic\_Sales_{t-1,t}$	-0.127**	-0.125**
	(0.057)	(0.050)
$log(Average\_wage_{t-1})$	0.001	0.123
	(0.090)	(0.113)
$Intermediates\ price\ change(\%)_{t-1,t}$	-0.003	-0.002
	(0.002)	(0.003)
$\log(LabProd)_{t-1}$	0.309***	0.257***
	(0.042)	(0.059)
$Foreign\ participation_{t-1}$	0.161	0.186†
	(0.132)	(0.117)
$Medium_{t-1}$	0.399***	0.399***
	(0.058)	(0.055)
$\log(Age_{t-1})$	0.048	0.006
	(0.044)	(0.039)
$Export\ Presample\ Mean$	2.211***	2.186***
	(0.149)	(0.133)
$Lambda\ cont.\ operation$		-1.092*
		(0.611)
$Constant$	-5.000***	-5.258***
	(0.927)	(0.865)
Log pseudo-likelihood	-3402.6581	-3373.6372
$N\ observations$	18,824	18,639
$N\ firms$	2,919	2,894

Note. All estimations include industry and time dummies. Clustered robust standard errors are in parentheses. When a previously estimated variable is included among regressors, we provide block-bootstrapped standard errors in parentheses. ***, **, and * mean significant at the 1 percent, 5 percent, and 10 percent level, respectively. † means slightly above 10 percent level (11.2% for the Foreign participation variable).

In the export equation, the variable for demand conditions is simply the growth (in percent) of domestic sales (from period *t-1* to *t*). The reason for this is to verify with our data the hypothesis of "venting-out" in Almunia et al. (2021), who show that once supply factors are controlled, there is a negative relationship between domestic sales growth and export decisions due to a firms' strategic reaction.

Next, we comment on the estimates for expression (3) shown in Table 6. First, as for the continuation in operation correction term (included in our second specification of the export equation, but not in the first), it is statistically significant. Its negative sign suggests that unobservables that increase firms' survival decrease the likelihood of exporting. This interesting result reinforces the idea that SMEs use the export strategy as a means to avoid death. Consequently, when death is less likely to occur some SMEs may be discouraged from entering foreign markets. Furthermore, we find high persistence (state dependence) in the firm's export status, which is in favor of the existence of sunk costs in that activity. A different type of persistence generated by the presence of unobserved individual heterogeneity (captured by export pre-sample means) also exists. We also find that innovation activities affect positively the payoffs from exporting. Moreover, we confirm that the previously more productive firms are the ones that self-select into exports.

Regarding the results for the variables capturing firms' financial restrictions and demand conditions, we obtain the following: first, that financial restrictions are only binding when we do not control in estimation for firms' survival (specification 1) and, second, we confirm the "venting out" hypothesis in Almunia et al. (2021). This means that a slump in domestic sales encourages SMEs' export decisions (see in Table 6 that the coefficient on the variable *Growth_domestic_sales* is negative and significant). However, the "internal devaluation" argument that operates through the average wage variable is not supported by our data, since this variable is not statistically significant. The price variation in intermediates is also statistically non-significant in the export decision. Therefore, from the group of supply side variables, the one that is relevant is labor productivity.

Finally, the firm-level control variables that present statistical significance are foreign capital participation and the medium-size dummy variable, but not the age variable. The positive signs of the coefficients associated to these variables indicate, first, that being foreign participated may facilitate access to foreign markets and, hence, facilitate exports and, second, that in the group of SMEs, small firms are less likely to export.

4. CONCLUDING REMARKS

Spain, among the southern European countries, is a relevant case study to analyze the effect of SMEs export participation on their resilience to job destruction generated by recessive periods associated with domestic demand. During the Great Recession, it was the only country in this group that simultaneously suffered a sharp drop in GDP and domestic demand, a sharp rise in the unemployment rate, and a significant take-off in its exports and in the participation of SMEs in this activity. Furthermore, a high number of temporary workers, typically considered more vulnerable and precarious, characterized the composition of employment in Spain at the beginning of the recession. For all these reasons, in this work we were not only interested in analyzing the link between SMEs export participation and their level of employment in recessive

periods, but also in differentiating its effects for workers with temporary or permanent contracts.

Using a firm-level panel dataset for manufacturing SMEs provided by the Spanish Survey on Business Strategies (ESEE) for the period 2000-2014, we obtain that exporting SMEs show greater resilience in terms of employment in a period of recession than non-exporting SMEs. Furthermore, this compensatory effect of exports on employment works in favor of permanent workers, being statistically insignificant for temporary workers. This implies that the ratio of permanent to temporary workers increases for SMEs during recessive periods. In addition, exporting increases SMEs survival chances. Otherwise, SMEs survival is negatively affected by financial constraints, production costs and a recessive demand. Finally, we provide further evidence supporting that SMEs participation in exports also obeys to a reaction to the fall in domestic demand (the so-called "venting out" hypothesis).

We can extract from this paper several policy recommendations for SMEs. Given that, on the one hand, exporting in recessive periods has helped SMEs to offset the negative effect of the downturn *per se* in their levels of employment and, on the other hand, it has also been a good strategy for SMEs survival, public policies should facilitate this activity among SMEs. For instance, according to our results for the export equation, this can be done by promoting innovation activities among SMEs, alleviating their financial constraints, facilitating their access to external markets, or increasing their competitiveness by promoting productivity enhancing policies. These policies would not only help offset the job losses suffered by SMEs in recessive periods, but also, according to our results, would favor permanent employment over temporary employment, which can help alleviating instability and precariousness in the Spanish labor market.

Our study contributes to the European needs of boosting SMEs performance. Interreg Europe presents in its agenda the necessity of implementing better policies in order to boost and support SMEs, since the competitiveness of these firms is at the forefront of their objectives (Interreg Europe, 2021). In order to achieve this increase in competitiveness, the Horizon 2030 of the European Commission also highlights the necessity of promoting the internationalisation of SMEs (Bichisao, Mora, & Pizzi, 2019). Hence, our paper sheds light on how this internationalisation of SMEs, more precisely through exporting, can help offset the shocks on employment suffered during downturns, gaining this way in competitiveness.

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