An analysis of factors affecting the profits of new firms in Spain: Evidence from the food industry

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Abstract: Using the logistic model, this article investigates the influence of financial factors on gaining profits for new firms in the Spanish food industry. Specifically, the firms founded separately during the crisis period and during the postcrisis period are observed for their first three years. The findings suggest that indebtedness (for both periods), previous profitability (for the postcrisis period) and accounts payable (for the crisis period) were most frequently statistically significant in the logistic model. Hence, for new firms, controlling debt burden, accumulating internally generated funds and using payables to establish business relationships can help to gain profits. Firm size and asset rotation were significant in the first year (especially during the postcrisis period), with a positive relationship to profits. Given that the food industry is highly competitive, enlarging firm size to reach efficiencies of scale and using a low-price strategy with high asset rotation to obtain market share are effective marketing strategies for new firms. This article contributes to the empirical studies about the financial effects on new firms' profits in the food industry; it can also help potential entrepreneurs make better decisions about starting new businesses and help to manage new firms better in different macroeconomic environments.

Keywords: financial effects; macroeconomic environments; starting up

The first 20 years of the 21st century witnessed three serious crises (the 2008 global financial crisis, the European sovereign debt crisis and the present COVID-19 crisis) which have had negative repercussions for the European economy. During the upturn period, the increase in the demand for goods and services drove firms' sales and profitability, whereas during the crisis period the decrease in demand depressed firms' profitability (Gaio and Henriques 2018; Pervan et al. 2019). However, the food industry is special, as it was quite stable compared with other industries during the crisis period because of its low variability of demand (Grau and Reig 2018).

Spain was heavily influenced by these crises. According to the data published on the website of the World Bank (2021a, c), since the 2008 crisis the value added of the manufacturing industry in Spain had remained at negative growth until 2013, whereas the percentage of value added of food, beverages and tobacco in the manufacturing industry in Spain increased from approximately 16% to approximately 20%. The report of FoodDrink Europe (2020) shows that the food and drink sector is the largest manufacturing industry in the European Union. Therefore, considering the importance of the food industry in the economy and its special performance during the crisis period, it is worth researching the effects of the crisis on the Spanish food industry by comparing the differences between the crisis and economic upturn periods.

Empirically, the effects of the crisis on firms' profitability have been explored by many researchers – for instance, Kontogeorgos et al. (2017) and Panagiotako-

poulou et al. (2020). There are also some studies, such as those of Bruni et al. (2014) and Alcalde-Fradejas and Ramírez-Alesón (2015), focusing on the differences of the profit-related indicators between the upturn period and the crisis period. Following their example, we compared the financial factors affecting the profit or loss of new firms in the Spanish food industry during the crisis and postcrisis periods. Here, we explore only the effects of the 2008 global financial crisis and the European sovereign debt crisis because the influence of the present COVID-19 crisis has not yet been fully observed.

Many scholars have paved the way for researching the profit-related performance of European food industry firms during the crisis. Notta and Vlachvei (2014) not only compare the performance of Greek food manufacturing firms before and during the economic crisis periods but also explore the differences in profitability between these two periods for Greek dairy firms. The research of Kontogeorgos et al. (2017) showed that the economic crisis negatively affected the profitability of the Greek cheese industry, especially the smaller businesses.

In terms of Spain, Grau and Reig (2015) found that vertical integration strategies played an important role in the maintenance of Spanish agri-food firms' profitability during the crisis period. After studying some regions in Spain, Zouaghi et al. (2017) pointed out that firm-specific effects are most important to firms' profitability in the Spanish agri-food industry. Similarly, the effects of the firm-specific, geographical and macroeconomic factors on profitability were explored by González-Moralejo et al. (2021) in the food industry in the Valencia region; their findings highlight a positive effect of sales margin and asset rotation, as well as a negative effect of economic crisis.

As shown, although there are many empirical studies exploring the effects of a variety of factors on firms' profitability in the food industry during different economic periods, little research has been done on new firms' profitability. Given that part of the value of new firms is in disseminating new technologies by virtue of using the most recent technologies, it is necessary to research the factors that affect profits to help the development of new firms. Hence, this article enriches the empirical studies on profits from the perspective of new firms.

MATERIAL AND METHODS

According to GDP data concerning the growth rate published on the website of the World Bank (2021b), the 2008 global financial crisis and the European sovereign debt crisis deeply affected the economy of Spain. In particular, the GDP growth rate continually decreased from 2008 to 2012, albeit with a rebound in 2010, and this decreasing trend finished in 2013 (Table 1).

Therefore, we chose the Spanish firms incorporated in 2008 and 2013 in the food manufacturing sector from the Iberian Balance Sheet Analysis System (SABI) database developed by Bureau van Dijk to create the sample to reflect the complete influence during the crisis period and to compare it with the postcrisis period; this food manufacturing sector includes sectors 10 and 11 in the Nomenclature of Economic Activities revised classification 2 (European Communities 2008). Because we used the new firms separately for the crisis period (2008) and the recovery period (2013), the differences of the effects of the two periods should be clearer.

Each sampled firm was tracked for three years after its incorporation year, and all the chosen firms had to have reported operating revenues and related financial data for the first three years after the incorporation year. This means that we observed the data in 2009, 2010 and 2011 for the firms founded in 2008 to assess the features during the crisis period and the data in 2014, 2015 and 2016 for the firms founded in 2013 to explore the features during the postcrisis (recovery) period; in doing so, we considered the difference in the incorporation date and then the difference in the time span from the founding year. The reason for choosing a three-year period after the founding year is based on information from previous studies for identifying new firms. For instance, Konings et al. (1996) found an increasing trend of exit rate in the first three years of new firms and a stable trend thereafter. In terms of variables, we designed the dependent variable as a dichotomous variable to describe the profit situation of a firm – that is, whether a firm gained profits or sustained losses. Because the importance of firm-specific variables on influencing firms' profitability in the food industry is stressed by, for instance, Pervan

Table 1. Gross domestic product (GDP) growth – Spain (annual %)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
GDP growth	0.887	−3.763	0.163	−0.814	−2.959	−1.435	1.384	3.835	3.031

Source: World Bank (2021b)

Table 2. Definitions of variables

Variable	Definition
Dependent variable	
Gaining profits or not	if economic profitability (profits before tax/total assets) is positive, it equals 1; if economic profitability is 0 or negative, it equals 0.
Independent variable	
Leverage	indebtedness: (total share-holders funds and liabilities – shareholders equity)/ total share-holders funds and liabilities
General liquidity	current ratio: current assets/current liabilities
Efficiency	asset rotation: sales/total assets
Firm size	natural logarithm of total assets in thousands of euros
Growth	(operating revenues in current year – operating revenues one year before)/ operating revenues one year before
Previous profitability	economic profitability [return on assets (ROA)] one year before
Bank credit (bank loans)	dummy variables: if a firm reports bank loans, it equals 1; if not, it equals 0
Trade credit (payables)	ratio of accounts payable to total assets
Crisis	if a firm's incorporation year is 2008, it equals 1; if a firm's incorporation year is 2013, it equals 0

Source: Authors' own definitions

et al. (2017) and Zouaghi et al. (2017), we used financial variables to represent firm-specific effects with consideration of the effects of the crisis. Specifically, the explanatory variables (Table 2) include leverage, liquidity, efficiency, size, growth, previous profitability, bank credit and trade credit. In addition, crisis as a dummy variable was also considered.

Here, because the dependent variable was dichotomous, we used a logistic model. Logistic regression is a parametric model that can reveal the factors that influence the occurrence of the predefined event as the dependent variable on the basis of the regression coefficients and their odds (Fejér-Király 2015; Glas and Eßig 2018). The main advantages of logistic regression include no optimality conditions for independent variables and being suitable for qualitative variables (Du Jardin 2016).

With reference to the studies of Du Jardin and Séverin (2012), Nikolic et al. (2013), Rodríguez-Fernández et al. (2019) and Gregova et al. (2020), we estimated the logistic model as follows:

$$\pi = 1/[1 + \exp(-\alpha - \beta_1 X_1 - \beta_2 X_2 - \qquad (1)$$
$$- \beta_3 X_3 - \ldots - \beta_k X_k)]$$

where: π – conditional probability that a firm shows a positive economic profitability (gaining profits); X – independent variables; β_k – coefficient of k independent variables; α – constant.

Maximum likelihood estimation was used in the model for calculating the coefficient β_K.

The following research was designed in three stages. In stage one, the firms founded during both the crisis and postcrisis periods were pooled together to run the logistic regressions with the dummy variable of crisis. In stage two, the dummy variable of crisis was multiplied by each of the independent variables to observe the cross effects in the logistic model. In stage three, the firms founded during the crisis period and during the postcrisis period were examined separately by using the logistic model. In the logistic model, we weighed the number of the two categories in the dependent variable for balancing the number of cases.

RESULTS AND DISCUSSION

Statistical description. Table 3 gives a general description of the independent variables for the sampled firms separately founded during the crisis period and during the postcrisis period. We can clearly see that the firms founded during the crisis period had a lower return on assets (ROA), higher indebtedness, lower proportion of firms with bank loans, higher proportion of payables and lower asset rotation on average. Therefore, these variables should be noticeable in the regressions.

Analysis of the logistic regression results for the total sample. The logistic regressions for the total sample (with the 2008 and 2013 cohorts together) were

Table 3. Statistics of the sample

Independent variables	New firms founded in 2008 (197 cases)				New firms founded in 2013 (258 cases)			
	mean	SD	min.	max.	mean	SD	min.	max.
ROA year 1	−0.044	0.283	−2.080	0.748	−0.018	0.226	−0.991	0.645
ROA year 2	−0.034	0.244	−1.490	0.591	−0.009	0.272	−2.668	0.512
ROA year 3	−0.011	0.196	−1.130	0.501	−0.004	0.190	−1.802	0.446
Growth year 1–2	1.084	2.596	−0.895	14.653	3.314	31.051	−0.939	454.581
Growth year 2–3	1.550	17.627	−0.933	247.198	0.561	2.954	−0.981	41.021
Assets year 1 (thousand EUR)	2 532.761	12 269.260	2.288	135 487.200	2 227.177	13 017.900	3.451	170 198.400
Assets year 2 (thousand EUR)	2 907.922	13 703.390	1.014	158 113.000	4 936.105	38 219.370	3.492	564 990.300
Assets year 3 (thousand EUR)	3 064.715	13 520.870	8.375	151 518.200	3 059.963	16 610.760	5.244	230 730.100
Indebtedness year 1	0.816	0.347	0.006	1.979	0.811	0.332	0.005	2.363
Indebtedness year 2	0.834	0.375	0.015	2.346	0.817	0.393	0.028	3.494
Indebtedness year 3	0.842	0.432	0.056	2.975	0.806	0.382	0.016	2.954
Liquidity year 1	2.319	10.864	0.018	145.423	1.637	2.483	0.095	33.835
Liquidity year 2	1.517	1.907	0.043	20.898	1.712	3.760	0.084	57.933
Liquidity year 3	1.632	1.999	0.042	20.140	1.648	1.896	0.037	16.436
Assets rotation year 1	2.083	2.876	0.004	18.701	2.192	2.275	0.001	19.995
Assets rotation year 2	1.855	2.334	0.024	19.182	2.236	2.225	0.001	13.580
Assets rotation year 3	1.865	2.689	0.031	27.592	2.126	2.057	0.019	12.616
Bank loans year 1	0.325	0.470	0.000	1.000	0.353	0.479	0.000	1.000
Bank loans year 2	0.365	0.483	0.000	1.000	0.461	0.499	0.000	1.000
Bank loans year 3	0.391	0.489	0.000	1.000	0.516	0.501	0.000	1.000
Payables year 1	0.354	0.272	0.002	0.968	0.248	0.237	0.001	0.982
Payables year 2	0.326	0.259	0.002	0.996	0.236	0.232	0.001	0.966
Payables year 3	0.333	0.252	0.002	0.979	0.216	0.213	0.001	0.938

ROA – return on assets; year 1, year 2, and year 3 respectively represent the first, second, and third year after firm's founding year

Source: Authors' own calculations based on the sampled data from the SABI (Iberian Balance Sheet Analysis System) database (2020)

separated into two parts: the first part regressed the original financial variables and the crisis dummy variable, and the second part regressed the original financial variables and their cross variables with the crisis dummy. Thus, as shown in Table 4, the left side presents the results of the logistic model for the original financial variables and the crisis dummy variable, and the right side gives the results of the logistic model for the original financial variables and their cross variables multiplied by the crisis dummy. Given that the new firms were observed for three years after their founding, the results are for each of the first three years.

Comparing the results of the original variables with the results of the cross variables (Table 4), we found that, generally speaking, the results were quite similar. The previous ROA and payables were significantly positive factors, and indebtedness was a significantly negative factor, with wide influence in most regressions. The significant effects of growth, logarithm of total assets and asset rotation were not observed as widely as these first three factors; in particular, the crisis dummy was a significantly negative indicator in the regressions without cross variables.

Regarding the cross effects of the crisis dummy with the independent variables, there were many statistically significant cross variables in the regression of year 2, including growth with crisis, liquidity with crisis, asset rotation with crisis and payables with crisis. However, the

Table 4. The results of the logistic regressions for the total sample combining the 2008 and 2013 cohorts

	Regressors									
	Original variables					Original and cross variables				
	B	SE	Wald	Sig.	Exp(B)	B	SE	Wald	Sig.	Exp(B)
Logistic regressions in year 1 (455 cases)										
Crisis	−0.595***	0.211	7.956	0.005	0.552	–	–	–	–	–
Ln total assets	0.156**	0.068	5.277	0.022	1.168	0.203**	0.079	6.514	0.011	1.224
Ln total assets × crisis	–	–	–	–	–	−0.110	0.083	1.742	0.187	0.896
Indebtedness	−2.418***	0.362	44.541	0.000	0.089	−2.698***	0.471	32.836	0.000	0.067
Indebtedness × crisis	–	–	–	–	–	0.517	0.599	0.746	0.388	1.677
Liquidity	−0.051	0.049	1.069	0.301	0.951	−0.033	0.061	0.291	0.589	0.968
Liquidity × crisis	–	–	–	–	–	−0.006	0.076	0.006	0.938	0.994
Assets rotation	0.299***	0.065	21.198	0.000	1.348	0.411***	0.091	20.382	0.000	1.509
Assets rotation × crisis	–	–	–	–	–	−0.222*	0.118	3.540	0.060	0.801
Bank loans	0.357	0.227	2.470	0.116	1.429	0.366	0.303	1.461	0.227	1.442
Bank loans × crisis	–	–	–	–	–	0.094	0.466	0.041	0.840	1.099
Payables	2.040***	0.454	20.158	0.000	7.687	2.181***	0.658	10.971	0.001	8.851
Payables × crisis	–	–	–	–	–	−0.162	0.916	0.031	0.860	0.851
Constant	0.181	0.562	0.104	0.747	1.198	−0.112	0.559	0.040	0.842	0.894
Classification accuracy (%)		71.1					70.2			
Omnibus tests of model coefficients										
Chi-square		137.500					142.181			
Sig.		0.000					0.000			
Model summary										
−2 log likelihood		593.881					589.199			
Cox & Snell *R*-square		0.229					0.236			
Nagelkerke *R*-square		0.306					0.315			
Logistic regressions in year 2 (455 cases)										
Crisis	−0.417**	0.197	4.473	0.034	0.659	–	–	–	–	–
Previous ROA	5.636***	0.743	57.499	0.000	280.454	5.728***	0.903	40.201	0.000	307.508
Previous ROA × crisis	–	–	–	–	–	−0.591	1.563	0.143	0.705	0.554
Growth	0.005	0.008	0.440	0.507	1.005	0.008	0.012	0.478	0.489	1.008
Growth × crisis	–	–	–	–	–	−0.157**	0.069	5.097	0.024	0.855
Ln total assets	−0.017	0.059	0.080	0.777	0.983	0.078	0.069	1.283	0.257	1.081
Ln total assets × crisis	–	–	–	–	–	−0.124	0.083	2.213	0.137	0.883
Indebtedness	−1.618***	0.328	24.385	0.000	0.198	−1.138***	0.386	8.674	0.003	0.320
Indebtedness × crisis	–	–	–	–	–	−0.756	0.578	1.713	0.191	0.469
Liquidity	−0.004	0.023	0.028	0.868	0.996	−0.027	0.029	0.823	0.364	0.974
Liquidity × crisis	–	–	–	–	–	0.409***	0.140	8.565	0.003	1.506
Assets rotation	0.036	0.051	0.509	0.476	1.037	0.079	0.061	1.676	0.195	1.082
Assets rotation × crisis	–	–	–	–	–	−0.167*	0.098	2.898	0.089	0.846
Bank loans	0.158	0.207	0.587	0.444	1.172	0.173	0.270	0.410	0.522	1.188
Bank loans × crisis	–	–	–	–	–	−0.034	0.442	0.006	0.938	0.966
Payables	1.295***	0.446	8.417	0.004	3.652	0.324	0.570	0.324	0.569	1.383
Payables × crisis	–	–	–	–	–	3.047***	0.982	9.622	0.002	21.054
Constant	1.403***	0.499	7.922	0.005	4.069	0.617	0.514	1.442	0.230	1.854

Table 4. To be continued

	Regressors									
	Original variables					Original and cross variables				
	B	SE	Wald	Sig.	Exp(B)	B	SE	Wald	Sig.	Exp(B)
Logistic regressions in year 2 (455 cases)										
Classification accuracy (%)			76.5					78.1		
Omnibus tests of model coefficients										
Chi-square			204.987					231.719		
Sig.			0.000					0.000		
Model summary										
−2 log likelihood			657.344					630.612		
Cox & Snell *R*-square			0.281					0.311		
Nagelkerke *R*-square			0.374					0.415		
Logistic regressions in year 3 (455 cases)										
Crisis	−0.465**	0.187	6.162	0.013	0.628	–	–	–	–	–
Previous ROA	3.390***	0.659	26.488	0.000	29.653	6.238***	1.058	34.736	0.000	512.011
Previous ROA × crisis	–	–	–	–	–	−5.320***	1.303	16.668	0.000	0.005
Growth	0.290***	0.105	7.630	0.006	1.336	0.658***	0.243	7.347	0.007	1.930
Growth × crisis	–	–	–	–	–	−0.571**	0.273	4.376	0.036	0.565
Ln total assets	0.018	0.056	0.107	0.743	1.018	0.065	0.068	0.925	0.336	1.068
Ln total assets × crisis	–	–	–	–	–	−0.093	0.076	1.499	0.221	0.911
Indebtedness	−1.262***	0.304	17.206	0.000	0.283	−1.562***	0.440	12.605	0.000	0.210
Indebtedness × crisis	–	–	–	–	–	0.338	0.529	0.408	0.523	1.402
Liquidity	−0.022	0.052	0.172	0.678	0.978	−0.084	0.078	1.155	0.282	0.920
Liquidity × crisis	–	–	–	–	–	0.064	0.094	0.469	0.493	1.066
Assets rotation	0.017	0.041	0.167	0.683	1.017	0.034	0.071	0.232	0.630	1.035
Assets rotation × crisis	–	–	–	–	–	−0.010	0.085	0.013	0.910	0.99
Bank loans	−0.041	0.190	0.046	0.830	0.960	0.281	0.278	1.024	0.312	1.325
Bank loans × crisis	–	–	–	–	–	−0.638	0.391	2.664	0.103	0.528
Payables	1.417***	0.423	11.222	0.001	4.123	1.129*	0.655	2.972	0.085	3.093
Payables × crisis	–	–	–	–	–	0.440	0.869	0.256	0.613	1.552
Constant	0.808	0.492	2.696	0.101	2.243	0.658	0.514	1.640	0.200	1.931
Classification accuracy (%)			71.6					72.8		
Omnibus tests of model coefficients										
Chi-square			129.817					159.064		
Sig.			0.000					0.000		
Model summary										
−2 log likelihood			737.171					707.924		
Cox & Snell *R*-square			0.187					0.225		
Nagelkerke *R*-square			0.250					0.299		

***, **, *Significance at the 1, 5, and 10% level, respectively; B – coefficient; SE – standard error; Wald – Wald chi-square test; Sig. – *P*-value; Exp(B) – exponentiation of the B coefficient (odds ratio); ROA – return on assets; dependent variable: gaining profits or suffering losses

Source: Authors' own calculations based on the sampled data from the SABI (Iberian Balance Sheet Analysis System) database (2020)

four original variables (growth, liquidity, asset rotation and payables) were not statistically significant. In contrast, the only statistically significant cross variable was asset rotation with crisis in the regression of year 1 with a negative sign, so the positive effect of asset rotation on profits would be reduced by the crisis because of the opposite sign of its cross variable. In the regression of year 3, statistically significant cross variables included the previous ROA with crisis and growth with crisis, both with a negative sign; thus, the positive effects of the previous ROA and growth on profits would be reduced by the crisis because of the opposite signs of their cross variables.

Analysis of the logistic regression results for the crisis period and the postcrisis period. Table 5 shows the results of the logistic regressions separately for the crisis period (the 2008 cohort on the left side) and the postcrisis period (the 2013 cohort on the right side). Again, we observed the results for the first three years after founding. It is obvious that indebtedness was the most widely influential and significant factor in both the crisis and postcrisis periods, with a negative effect, followed by payables, previous ROA and asset rotation, with a positive sign, as well as growth with different signs separately in the crisis and postcrisis periods. In particular, liquidity was statistically significant only during the crisis period, whereas the logarithm of total assets was significant only during the postcrisis period.

Discussion. The negative effects of crisis on the macroeconomic environment and firms' profitability have been recorded in many empirical studies, and here we again provide evidence of the negative influence of crisis (as a dummy variable in the regressions) on new firms' profits. We also found three significant factors that widely influenced new firms: indebtedness, previous profitability and payables. Other factors were not as outstanding as these.

Indebtedness was the clearest factor affecting profit in a negative way during both the crisis and postcrisis periods. The negative effect of indebtedness can be explained by heavy financial burden caused by repaying more interest. In addition, considering that agri-food companies are usually highly leveraged, they would be expected to have more cash constraints and then have difficulty investing in profitable projects (Pattitoni et al. 2014; Grau and Reig 2015).

The previous profitability (previous ROA) was statistically significant and positively related to gaining profits in most regressions. This positive relationship was also supported by Pervan et al. (2019) and can be explained

by the fact that having good past-year profitability can allow a company to bring in more resources (Yazdanfar 2013). Aside from that, the effect of previous profitability during the crisis period was not as strong as during the postcrisis period, which was shown as a lower coefficient in the year 2 regression that became statistically nonsignificant in the year 3 regression, as well as the negative sign of the cross variable of the previous ROA with the crisis dummy. This finding may be because the average ROA was lower during the crisis period, thus exerting a relatively limited effect on the accumulation of funds for future development.

Payables was a statistically significant variable in most logistic regressions, with a positive relationship to gaining profits. Payables were more important during the crisis period than during the postcrisis period as shown by the decrease in the level of statistical significance. This phenomenon may be explained by Grau and Reig (2018): during the crisis period, bank credit becomes difficult to obtain, so firms use trade credit to resist the negative effects of the crisis.

Here, the importance of payables was noticeable in the first year during both the crisis and postcrisis periods. The results here not only highlight the importance of trade credit as a short-term financing source for the start of new firms but also stress the establishment of the relationship between new firms and their suppliers through transferring goods and creating payables. In contrast, bank loans were not statistically significant in any regression. The importance of payables and the lack of significance of bank loans reveal the difference of the effects of different financing sources, and this finding again verifies the crucial role of trade credit in establishing business relationships (not just as a source of financing).

Firm size (the logarithm of total assets) was a positive factor that was especially important for the first year of firms during the postcrisis period. Kestens et al. (2012) pointed out that the 2008 financial crisis strongly influenced debt markets, which resulted in difficulties in obtaining debt finance; after the crisis, external financing became easier, so the average firm size during the postcrisis period would be expected to be larger than it was during the crisis period, thus showing the more obvious effects of efficiencies of scale. According to Grau and Reig (2015, 2021), the agri-food sector is strongly competitive, so it is important to exert the effect of efficiencies of scale as early as possible to reduce production costs and then gain advantages in price competition, thus stressing the importance of larger firm size in the first year.

Table 5. The results of the logistic regressions for the crisis period and the post-crisis period

	2008 cohort for the crisis period (197 cases)					2013 cohort for the post-crisis period (258 cases)				
	B	SE	Wald	Sig.	Exp(B)	B	SE	Wald	Sig.	Exp(B)
Logistic regressions in year 1										
Ln total assets	0.054	0.108	0.250	0.617	1.055	0.230*	0.090	6.603	0.010	1.259
Indebtedness	−2.333***	0.553	17.793	0.000	0.097	−2.535***	0.479	27.998	0.000	0.079
Liquidity	−0.048	0.058	0.680	0.410	0.953	−0.024	0.057	0.178	0.673	0.976
Assets rotation	0.189**	0.093	4.113	0.043	1.208	0.417***	0.090	21.489	0.000	1.517
Bank loans	0.489	0.379	1.666	0.197	1.631	0.366	0.290	1.588	0.208	1.442
Payables	1.932***	0.677	8.154	0.004	6.904	2.174***	0.626	12.048	0.001	8.792
Constant	0.479	0.860	0.310	0.578	1.614	−0.594	0.734	0.656	0.418	0.552
Classification accuracy (%)			71.8					71.7		
Omnibus tests of model coefficients										
Chi-square			46.454					93.723		
Sig.			0.000					0.000		
Model summary										
−2 log likelihood			242.117					349.531		
Cox & Snell *R*-square			0.200					0.254		
Nagelkerke *R*-square			0.267					0.339		
Logistic regressions in year 2										
Previous ROA	5.120***	1.328	14.858	0.000	167.291	5.887***	0.892	43.538	0.000	360.248
Growth	−0.149**	0.070	4.509	0.034	0.862	0.008	0.011	0.535	0.464	1.008
Ln total assets	−0.037	0.108	0.115	0.735	0.964	0.065	0.075	0.760	0.383	1.068
Indebtedness	−1.820***	0.571	10.146	0.001	0.162	−1.179***	0.400	8.709	0.003	0.307
Liquidity	0.383**	0.151	6.424	0.011	1.466	−0.027	0.029	0.895	0.344	0.973
Assets rotation	−0.083	0.087	0.904	0.342	0.921	0.070	0.060	1.378	0.240	1.073
Bank loans	0.131	0.368	0.127	0.722	1.140	0.188	0.261	0.517	0.472	1.206
Payables	3.344***	0.840	15.85	0.000	28.324	0.310	0.547	0.321	0.571	1.364
Constant	0.671	0.889	0.571	0.450	1.957	0.611	0.623	0.960	0.327	1.842
Classification accuracy (%)			81.0					77.7		
Omnibus tests of model coefficients										
Chi-square			111.438					115.577		
Sig.			0.000					0.000		
Model summary										
−2 log likelihood			240.265					394.940		
Cox & Snell *R*-square			0.355					0.269		
Nagelkerke *R*-square			0.474					0.359		
Logistic regressions in year 3										
Previous ROA	0.856	0.762	1.264	0.261	2.355	6.235***	1.021	37.252	0.000	510.060
Growth	0.088	0.132	0.452	0.502	1.092	0.665***	0.231	8.266	0.004	1.945
Ln total assets	−0.064	0.087	0.546	0.460	0.938	0.103	0.080	1.652	0.199	1.108
Indebtedness	−1.306***	0.404	10.477	0.001	0.271	−1.333***	0.490	7.390	0.007	0.264
Liquidity	−0.034	0.067	0.247	0.619	0.967	−0.067	0.080	0.699	0.403	0.935

Table 5. To be continued

	2008 cohort for the crisis period (197 cases)					2013 cohort for the post-crisis period (258 cases)				
	B	SE	Wald	Sig.	Exp(B)	B	SE	Wald	Sig.	Exp(B)
Logistic regressions in year 3										
Assets rotation	0.021	0.057	0.129	0.719	1.021	0.050	0.072	0.471	0.492	1.051
Bank loans	−0.337	0.286	1.382	0.240	0.714	0.276	0.267	1.068	0.301	1.317
Payables	1.460**	0.605	5.814	0.016	4.306	1.057*	0.626	2.852	0.091	2.877
Constant	1.180*	0.708	2.779	0.095	3.254	0.064	0.770	0.007	0.933	1.066
Classification accuracy (%)		67.0					74.8			
Omnibus tests of model coefficients										
Chi-square		30.473					130.129			
Sig.		0.000					0.000			
Model summary										
−2 log likelihood		324.889					382.370			
Cox & Snell *R*-square		0.112					0.297			
Nagelkerke *R*-square		0.149					0.396			

***, **, *Significance at the 1, 5, and 10% level, respectively; B – coefficient; SE – standard error; Wald – Wald chi-square test; Sig. – *P*-value; Exp(B) – exponentiation of the B coefficient (odds ratio); ROA – return on assets; dependent variable: gaining profits or suffering losses

Source: Authors' own calculations based on the sampled data from the SABI (Iberian Balance Sheet Analysis System) database (2020)

Asset rotation as the proxy for efficiency also showed the importance of using assets efficiently in the first year. The positive effect of asset turnover on profitability was not surprising because, according to the DuPont analysis, ROA can be calculated as profit margin multiplied by asset turnover (Ladvenicová et al. 2019). Considering that the market competition in the agri-food sector is strong (Grau and Reig 2021), new firms may reduce the profit margin of their products to promote sales. Thus, the importance of asset turnover in the first year may mirror the pricing strategy (low profit margin) of new firms (Denčić-Mihajlov 2014).

During the crisis period, growth exerted a statistically significant and negative effect on firms' profits, whereas during the postcrisis period its effect was positive. This situation may be caused by the difference in the macroeconomic environment. During the crisis period, the shock of demand results in the shrinkage of firms, among which young and small firms react most efficiently in shrinkage for maintaining profits (Burger et al. 2017). In contrast, during the postcrisis period, growth in sales can help new firms occupy market share and realize efficiencies of scale, thus benefiting profits. Liquidity (current ratio) was mostly statistically nonsignificant, which was explained by Pervan et al. (2019): liquidity measures a company's capacity to cover its short-term debts, so it is risk related rather than relating directly to profits.

CONCLUSION

This article explores the influence of financial factors on the profits of new firms in the Spanish food industry. We found that crisis negatively affected firms' profits, which corresponds to people's common understanding of crisis. The findings also suggested that indebtedness, previous profitability and accounts payable were statistically significant most frequently. Specifically, indebtedness was negatively related to gaining profits, whereas previous profitability (for the postcrisis period) and payables (for the crisis period) were positively related to gaining profits. Therefore, we highly recommend that during either a crisis period or a postcrisis period new firms should control debt burden to reduce the cost of debts that may be unaffordable for new firms with limited profit-generating ability at their startup stage. Seeing the differences between the crisis and postcrisis periods, we also recommend that new firms develop relationships with suppliers by using payables because pay-

ables are a significant external financing source that can greatly benefit new firms' profits during a crisis period. For policymakers, we can recommend policies that provide subsidies, as well as tax incentives and exemptions, to help entrepreneurs reduce financial burdens; however, these recommendations should not include proffering government-guaranteed bank loans, as these would increase the burden of debt and interest.

In terms of the other influential factors, firm size and asset rotation were statistically significant in the first year, especially during the postcrisis period, and both were positively related to profits. Here, the effects of the two factors in the first year can be explained by the characteristics of the food industry. Because the competition in the agri-food sector is quite strong (Grau and Reig 2021), enlarging firm size to reach efficiencies of scale and using a low-price marketing strategy (low profit margin) with high asset rotation to obtain market share are effective strategies for new firms to gain profits. The influence of growth on profits to some extent depends on the macroeconomic environment; the effect of liquidity was quite limited, and bank loans were not statistically significant at all. Therefore, we highly advise new firms in the food industry to enlarge their initial firm size and to occupy a market share as large as possible with an eye toward the feature of high competition in the food industry market. Potential entrepreneurs in the food industry need to consider the features of the industry before starting up. If potential entrepreneurs believe that their startup firms may have some constraints, such as financial constraints, and that it may be difficult to reach efficiencies of scale and have sufficient productivity, they would do better not to start up a new business at that time.

In a nutshell, the main contribution of this article is that it enriches the empirical literature on the study of profit, especially the financial effects on the profits of new firms in the food industry, considering that the profits of new firms have been studied less and that the food industry as a special sector performed better than other manufacturing sectors during the crisis period. Furthermore, the commonalities and differences regarding the influential factors between the crisis and postcrisis periods can help managers and potential entrepreneurs make better decisions in different macroeconomic environments. As previously stated, the effects of the present COVID-19 crisis have not yet been fully observed, so future research could extend the time horizon to compare the effects of the COVID-19 crisis with those of the previous crises.

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