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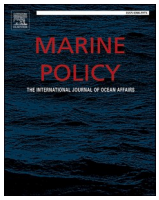

Impact of working capital management on profitability for Spanish fish canning companies

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ABSTRACT

Credit restrictions, such as those happening in the current context shaped by the crisis derived from COVID-19, make working capital management (WCM) a driving force behind SME performance. This paper analyses whether WCM policies affect the economic and financial profitability of Spanish companies in the fish canning industry. Spain leads the EU's production of canned seafood and the seafood industry is a key sector for the Spanish economy. To assess the WCM-profitability relationship, we applied a dynamic panel data methodology in a sample consisting of 377 companies during the period 2010–2018. We can conclude that the economic profitability of fish canning companies is related to the collection period (Days Sales Outstanding or DSO) and the inventory conversion period (Days Inventory Outstanding or DIO). Moreover, empirical evidence reveals the existence of an optimal level of receivables that balances the benefits of increasing sales and the opportunity costs of customer funding. The findings also identify a convex relationship between investment in inventory and economic profitability.

1. Introduction

The literature on corporate finance has traditionally focused on long-term financial decisions [4,38], leaving short-term finances behind (i.e., working capital investment and financing policies). Nevertheless, the latter conditions the day-to-day activities of companies and, in turn, their financial outcomes, especially in small and medium-sized enterprises (SMEs). Along this line of reasoning, Howorth and Westhead [25] highlight that working capital management (WCM) has a greater impact on SME profitability than in larger companies due to the high percentage of current assets, the insufficient amount of liquidity, and the highly volatile cash flows that often characterise SMEs [43]. Additionally, since SMEs face more difficulties in accessing long-term debt, they increase their reliance on short-term liabilities through spontaneous financing and short-term bank loans [13,17]. All of these SME characteristics underline the importance of an efficient WCM to enhance financial outcomes such as firm profitability and survival [17,25,41].

Besides, the financial constraints and high dependence on bank lending often experienced by SMEs [24] have led them to encounter a drastic shortage of liquidity in the aftermath of the Great Recession [7]. Responding to this challenge, European governments have increased efforts towards facilitating access to finance for SMEs [14], implementing strategies to ensure timely payments among other actions. The current context shaped by the crisis derived from the COVID-19 pandemic suggests a liquidity shortage similar to that experienced during and after the financial crisis of 2007.

The aforementioned circumstances stress the importance of WCM as a driving force behind SMEs' performance, especially when they are exposed to credit restrictions. Consequently, the literature on the WCM-profitability relationship has flourished since 2008 (for a review, see [16,53]). However, the extant studies leave several gaps. First, they often use a sample of listed firms, but, as described, WCM is more relevant for SMEs, which are usually non-listed firms [16]. Second, most of them focus on the effect of WCM on economic profitability, overlooking its potential effect on financial profitability. Third, excluding some references, the literature analyses companies from different industries, ignoring that fact that working capital investment and financing policies differ greatly across industries. Indeed, no study has assessed the WCM-profitability relationship in the fish canning industry to date.

This paper seeks to address these research gaps. Thus, it aims to analyse whether WCM policies affect the economic and financial

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profitability of Spanish companies in the fish canning industry. In so doing, a sample of 377 fish canning companies over the period 2010–2018 is considered and a dynamic panel data methodology is applied. As demonstrated, current assets represent on average 61.7% of firms' total assets, while the WCM is more complex in this industry than in other manufacturing sectors, putting the survival of companies at risk. Additionally, the seafood industry is a key sector for the Spanish economy. The share of this sector in the total industrial sector accounted for 1% in terms of the value of production and employment in 2018; that is, a production value of 5989 million euros and 21,984 employees [26]. Indeed, Spain leads the production of canned seafood in the EU [15]. Accordingly, gaining insights into how WCM influences profitability is essential in terms of the design of policies aiming to enhance the performance of fish canning firms.

Empirical evidence reveals that the economic profitability is related to the DSO and the DIO. Namely, an inverted U-shaped relationship between the collection period and the economic profitability is confirmed, therefore leading to the existence of an optimal level of receivables. Similarly, empirical evidence suggests the existence of a convex or U-shaped relationship between the inventory investment and the economic profitability, i.e., an initial increase in inventory levels will reduce the company's economic profitability until a point where the increase in inventory will lead to increases in the economic profitability.

There are three main contributions of this paper. First, we examine the WCM-profitability relationship in a previously unexplored industry, namely the fish canning sector. In so doing, this paper contributes to a better knowledge of WCM in industries made up of SMEs (97% of the total companies in the industry according to INE [26] with a high presence of current assets and liabilities in their balance sheet and highly stressed working capital policies). Second, unlike most previous studies, we test the potential non-linear effects of WCM on firms' economic profitability, also including the financial profitability in the analysis. The third contribution of this paper relies on the characteristics of the selected context; that is, Spain during the period 2010–2018. The country leads the production of canned seafood in the EU [15], so the results obtained can be understood as being broadly representative of the situation of the sector worldwide and, furthermore, the analysed period in the immediate aftermath of the 2007 financial crisis illustrates a time of severe credit crunch for SMEs [7].

After this introductory section, the rest of the paper is organised as follows. Section 2 offers a general overview of the fish canning industry in Spain, as well as of the relevance of WCM within it. Section 3 introduces the relevant literature on WCM and the research hypotheses. Section 4 describes the methodology, whilst Section 5 discusses the empirical results. Finally, Section 6 concludes and sets out the major questions for future research.

2. The Spanish fish canning industry: dimensions and the relevance of WCM

The canned seafood manufacturing sector is crucial for the Spanish economy and leads the production thereof in the EU [15]. This section briefly describes the importance and main characteristics of the sector.

The fish canning industry has a non-negligible role in the Spanish economy. Its share in the total industrial sector accounted for 0.69% in terms of sales turnover and 0.67% employment in 2018 [26]. Moreover, the sales turnover of the canning sector represents 72.75% of the overall turnover of the fish processing industry [26]. In 2018, its production exceeded 350,112 tons [1], generating an income of 4565 million euros [26]. The evolution of the canned seafood industry income has positively evolved since 2016, with 12% accumulated growth. Thus, the number of direct employees in this sector was 14,961 in 2018 [26]. The industry is mainly composed of medium-sized enterprises dominated by the canning sector and to a lesser extent by frozen and fresh processed seafood [50].

The product with the highest production also has the highest demand: tuna. It accounts for 59.5% of the total value of the industry, making it the canned product par excellence, spanning a large part of production [1].

Regarding foreign trade, in 2019 the canned seafood industry continued its positive trend of recent years, increasing by 0.61% over the previous year. It is worth mentioning that in the last 5 years the canned seafood industry exports grew 25% in volume and 40% in value. In numbers, exports in 2019 amounted to 204,642 tons with a value of 991 million euros, representing 0.61% of total food sector exports in Spain [1]. The main destinations for these products are in the EU, with the most important buyers being Italy, France, Portugal, and the Netherlands; outside the EU, countries such as the United States, Morocco, and Libya are paramount [1]. If we focus on the product monopolising the majority of the market, namely tuna, Spain is the third largest exporter in the world, surpassed only by Thailand and Ecuador [36].

As in other manufacturing industries, current assets and liabilities represent the bulk of companies' balance sheets. Thus, in the sample companies, current assets represented on average 61.7% of total assets over the period 2010–2018, while current liabilities reached 36.8%. These figures give us an idea of the importance of WCM for this sector.

Furthermore, the sector's own operation makes the WCM more complex than in other food industries. This complexity is largely due to the following reasons. First, there is a vital decoupling between the processes comprising the daily activity of fish canning firms. That is, while sales and production are relatively stable throughout the year, the supply of raw materials is seasonal and usually takes place over very short periods of time. At such times, financing needs may increase. Second, the raw materials on which the sector depends are mainly natural resources, and it is difficult to act on the volume of their production and their quality (except for aquaculture). This generates uncertainty in production. Furthermore, access to these natural resources is conditioned by international regulations that impose catch quotas and tariffs that are also periodically reviewed (e.g., see the recent Brexit negotiations). In fact, the Spanish sector is highly dependent on imports of raw materials, which are affected by EU tariffs [15]. This adds yet more uncertainty to the companies' core business. Third, its main competitors are located in developing countries where labour costs are lower [15]. To deal with this challenge, the sector is continuously searching for more value-added products using innovation. But this process requires financial capacity, which can be freed up by an efficient WCM. Finally, the product is mostly commercialised through supermarkets (52.6%) and hypermarkets (37.2%) [34], which often implies the existence of low bargaining power for small companies, resulting in very long payment periods.

In short, the decoupling in the operating processes, the high dependence on raw materials subject to high levels of uncertainty, the low bargaining power, and the need for a certain financial leeway to face the immediate challenges imposed by competitors in emerging countries make it necessary to study the relations between the WCM and the profitability of fish canning companies. As previously mentioned, the fact that companies in the industry are mainly SMEs, where the WCM is in itself more relevant than in large companies, and the geographical (Spain) and temporal (2010–2018) context of the analysis add interest to the study.

3. Literature review and proposal of hypotheses

The current assets and liabilities of SMEs not only represent a higher percentage of total assets and liabilities than in larger firms [2,41,42], but their management also takes significant time and effort [40], impacting both firm profitability and firm value [11]. The theoretical view on WCM naturally raises the notion that companies with high levels of working capital investment reduce operational risk (e.g., breakage costs and price fluctuations of raw material) [52], but at the cost of cutting their profits by incurring greater opportunity and

financing costs. The opposite is expected in companies maintaining low levels of working capital assets [19,33,37,38,58].

Since the pioneering work of Deloof [11], and especially after the financial crisis of 2007, a large number of studies have attempted to empirically demonstrate this WCM-profitability relationship (for a review, see [16,53]). This research has predominantly focused on quoted companies, despite the fact that the WCM is considered to be a more crucial element in understanding the performance of SMEs, which are usually non-quoted companies [43]. Scant attention has been paid to the influence of WCM on financial profitability. A further subject of neglect in this strand of research is the little evidence referring to a specific industry (i.e., [16,37,58]); that is, most of the studies analyse companies from different industries, overlooking that the working capital practices differ greatly across and between them [16]. In this respect, there has been little work exploring the WCM-profitability relationship in the food industry [5,16]; notably, no study has investigated this in the fish canning industry whose WCM is particularly challenging for the aforementioned reasons.

In the following sections, we present the theoretical arguments as well as the empirical findings of the studies that have recently analysed the WCM-profitability relationship, in order to propose the research hypotheses.

3.1. Accounts receivable

Selling to customers on credit may have a considerable impact on firm profitability. From an empirical perspective, Jakpar et al. [28] and Khan et al. [32] find a positive relationship between the collection period (Days Sales Outstanding or DSO) and the economic profitability. Thus, granting customers more collection days tends to lead to increases in sales by attracting new customers. These customers not only benefit from obtaining funding at a lower cost than that usually offered by financial institutions, but they also benefit from testing and enjoying the products or services before paying for them [11,17].

There are also authors who have failed to find any significant relationship between DSO and economic profitability [35,37,48,49]. However, the previous literature ascertained that most studies found a negative association between both variables [12,17,29–31,33,41,46,5,51,55,9]. One explanation for this evidence is based on the fact that shorter collection periods tend to frighten away less creditworthy customers, i.e., as these customers do not receive immediate financing when buying, they will avoid it and so the number of failed customers and potential defaults would decrease [30,51].

Drawing on the previous literature, we argue that granting long collection periods may positively affect economic profitability due to the increase in new customers and revenues. However, this effect is not indefinite, as at a certain point the collection policies of the company might attract excessive amounts of customers with liquidity problems, leading to the emergence of defaulters and possible irrecoverable debts, and as a consequence, the decline of firm profitability. Thus, the following hypothesis is proposed:

Hypothesis 1a. *: An inverted U-shaped relationship between the number of Days Sales Outstanding (DSO) and the economic profitability of the firm is expected.*

In terms of financial profitability, offering trade credit implies that the company needs more financing for their daily operational activities and, therefore, its opportunity cost increases. Conversely, if the trade credit offered to customers is reduced, the opportunity cost will follow the same trend [11,45]. Along this same line of reasoning, Rezaei and Pourali [46] identify a negative relationship between the collection period and the financial profitability, based mainly on the opportunity cost of working with longer collection periods. Based on these arguments, the following hypothesis on financial profitability is presented:

Hypothesis 1b. *: A negative relationship between the number of Days Sales Outstanding (DSO) and the financial profitability of the firm is expected.*

3.2. Inventories

Similarly to the case of accounts receivable, some authors find a positive relationship between the inventory conversion period (Days Inventory Outstanding or DIO) and the economic profitability of the firm [28,31,39]. In this regard, a high level of inventory prevents firms from lost sales [30] and reduces their risk of incurring breakage costs in their production or supply chain [4,11]. Baños-Caballero et al. [4] also point out that maintaining high levels of inventory allows for greater commercial discounts when placing larger orders. Besides, Gul et al. [19] indicate that a company can increase its value if it has a safety stock.

However, most authors find evidence of a negative relationship between the DIO and firm profitability [5,11,17,19,30,45,56,51,9,12,35,46,55]. High inventory levels involve considerable costs (comprising maintenance costs, insurance costs, or even obsolescence costs) that might decrease profitability. However, if the inventory level is reduced and the procurement is carried out efficiently, the economic profitability of the firm would increase.

Again, we attempt to reconcile the apparently contradictory arguments by proposing a non-linear relationship between the DIO and firm performance. Thus, the economic profitability hypothesis states that maintaining high inventory levels may have positive effects on firm performance (i.e., price fluctuations are avoided, and breakage costs are minimised), but also negative ones, since an excess of inventory increases maintenance and obsolescence costs. Consequently, the following hypothesis is suggested:

Hypothesis 2a. *: An inverted U-shaped relationship between the number of Days Inventory Outstanding (DIO) and the economic profitability of the firm is expected.*

It is worth noting that there are also authors who detect no relationship between firm profitability and the inventory conversion period [33,18,32,41,48,49].

As regards financial profitability, high inventory levels increase the financial resources needed for the firm's day-to-day activities [11,45]. Indeed, Rezaei and Pourali [46] also discover a negative association between the DIO and financial profitability. Drawing on the theoretical arguments and the empirical evidence, the following hypothesis is proposed:

Hypothesis 2b. *: A negative relationship between the number of Days Inventory Outstanding (DIO) and the financial profitability of the firm is expected.*

3.3. Accounts payable

The previous literature finds evidence of a negative relationship between the payment period (Days Payable Outstanding or DPO) and the economic profitability of firms [5,12,17,29,31,35,41,45,49,55,56]. Raheman and Nasr [45] argue that this negative association lies in the fact that firms, when deferring payments to suppliers, might not be benefiting from early payment discounts and, therefore, pay a higher price for the products they buy. Besides, Deloof [11] points out that this negative relationship could be due to the fact that less profitable companies tend to delay payments to suppliers as much as possible, leading to an inverse cause-effect relationship; while Jayarathne's [30] explanation lies in the worsening of trade relations with suppliers, who increase the price of their products if they anticipate that customers want to defer the payments. Therefore, the following hypothesis is proposed:

Hypothesis 3a. *: A negative relationship between the number of Days Payable Outstanding (DPO) and the economic profitability of the firm is expected.*

On the contrary, Rezaei and Pourali [46] advocates a positive relationship between the DPO and the financial profitability of the company. Spontaneous financing such as trade credits has zero costs when there are no discounts to encourage early payments, so companies could opt for this source of financing while reducing other expenses, such as those negotiated with financial institutions, in order to reduce their financing costs. Based on this argument, the following hypothesis is proposed:

Hypothesis 3b. *: A positive relationship between the number of Days Payable Outstanding (DPO) and the financial profitability of the firm is expected.*

3.4. Cash Conversion Cycle

The Cash Conversion Cycle (CCC) is also a valuable indicator of a company's WCM [45,51]. Few authors find a positive relationship between the CCC and the economic profitability of the firm [18,29,39]. Indeed, Baños-Caballero et al. [4] argue that a longer CCC prevents breakage and supply costs and attracts a greater number of customers, thus increasing economic profitability. However, this effect is not indefinite, because at some point the negative effects of having longer collection periods (e.g., attracting less attractive customers who can lead to defaults) and longer inventory conversion periods (e.g., a non-moving inventory situation that leads to high maintenance costs) might arise and counteract the positive effects of a longer CCC. This could lead to decreases in profitability and in the worst-case scenarios even bankruptcy if it results in difficulties in debt collection and suppliers diverging from the enterprise's crediting. In this regard, a large body of literature defends a negative relationship between the CCC and economic profitability [5,9,17,19,30,32,33,37,45,46,54,55,61]. Following the aforementioned arguments, the following hypothesis is put forward:

Hypothesis 4a. *: An inverted U-shaped relationship between the Cash Conversion Cycle (CCC) and the economic profitability of the firm is expected.*

As regards the effect of CCC on financial profitability, a longer CCC necessarily implies greater needs for financing day-to-day activities, which will generate higher financing or opportunity costs for the resources, therefore leading to decreases in financial profitability. For this reason, the following hypothesis is submitted:

Hypothesis 4b. *: A negative relationship between the Cash Conversion Cycle (CCC) and the financial profitability of the firm is expected.*

4. Methodology

4.1. Data and sample

Data from the *Sistema de Análisis de Balances Ibéricos* (SABI) database are used to empirically test the hypotheses on the WCM-profitability relationship. The SABI database contains comprehensive information about Spanish and Portuguese companies and their financials, financial strength indicators, market research, and stock data for listed companies [6].

This paper focuses on fish canning companies, whose National Classification of Economic Activities (CNAE, for its acronym in Spanish) code is 1022.[1] After an initial search, a dataset comprised of 465 active companies is built. We subsequently refine the data with the aim of excluding inconsistent data as a result of company misreports. Thus, we discard observations that met any of the following criteria: the value of current assets is equal to total assets; DSO or DPO greater than 365 days[2]; a negative value for fixed assets or a value greater than non-current assets; accounts receivables greater than current assets; a current ratio (i.e., current assets/current liabilities) lower than the acid test; or accounts payables greater than current liabilities.

Although the number of companies in the sample is relevant, their mortality and the absence of data on the variables under study, as well as the need to have more than two consecutive observations in order to apply the dynamic panel data methodology, mean that in the empirical analyses there are significantly fewer companies. In particular, Table 1 summarises the number of companies which present observations in the ROA variable per year. In sum, the final sample consisted of an unbalanced panel of 377 firms comprising a total of 2215 observations of the dependent ROA variable over the period 2010–2018. It should be noted that the INE reported a total of 457 seafood canned firms in its official statistics for 2018 [26]. We can thus conclude that the sample reflects the Spanish population of these companies quite well (i.e., sampling error under 2.2%).

4.2. Strategy of estimation and model specification

Panel data methodology is applied to test the hypotheses of the effects of WCM on the economic and financial profitability of Spanish fish canning companies. Three methodological issues motivate this choice. First, panel data methodology has the advantage of mitigating the attrition bias and controlling for unobservable heterogeneity [59], which is appropriate in this case as companies are heterogeneous and have specificities that affect WCM but are difficult to measure. There-

Table 1
Number of companies with observations in the ROA variable per year.

	Total
2010	257
2011	250
2012	237
2013	250
2014	250
2015	244
2016	251
2017	251
2018	225
Total	*2215*

[1] Companies dedicated to the processing of fish, crustaceans, and molluscs (CNAE 1021) are not considered in the study.

[2] To establish this threshold, we based on the Spanish legislation -namely, the Law 15/2010 and the Law 11/2013-, which imposes a maximum supplier payment period of 60 days, and 30 days in the case of fresh and perishable products, such as the raw materials used by the canning sector. In spite of this, we consider DSO and DPO up to 365 days for two main reasons. First, this regulation became mandatory in 2013 and the period of analysis in this research is 2010–2018. Second, reports on the payment behaviour of Spanish companies show that the reality is quite far from the legislation. Thus, in the fourth quarter of 2018, DSO and DPO were around 88 days and more than 50% of companies acknowledged that they were not punctual in meeting these deadlines [27].

fore, the econometric models incorporate, in addition to the independent variables, the companies' unobservable effects (α_i), thus mitigating the risk of obtaining biased results.

Second, dynamic panel data models are applied in order to face the endogeneity problems that the data can present, as the dependent variable (firm profitability) could also constitute a driving force for a number of the independent variables included in the models (e.g., firm leverage or firm size). Moreover, the use of an instrumental variable estimator like the GMM system (Generalised Method of Moments) facilitates the consideration of the endogeneity of all time-varying explanatory variables [44].

Third, the literature on profit persistence has made substantial claims in the application of an autoregressive (AR) framework and a GMM estimator [22]. In this respect, empirical evidence exists supporting the profit persistence hypothesis in both the food industry [8,21] and food retailing [22].

Thus, the basic specification of the model is shown in Eq. (1):

$$prof_{it}=\beta_0 + \beta_1\, prof_{i,t-1} + \beta_2\, X_{it} + \beta_3\, X_{it}^{\,2} + \beta_4\, C_{it} + \alpha_i + \lambda_t + \varepsilon_{it}, \quad (1)$$

where $prof_{it}$ is the dependent variable; X_{it} denotes the independent variables referring to the key elements of WCM; C_{it} refers to the control variables; α_i is the unobservable heterogeneity that allows the particular characteristics of each company to be controlled for; and the parameter λ_t is a time dummy variable that captures the effect of contextual factors (e.g., interest rates, taxes), which are beyond the control of companies, but which are capable of influencing their decisions. Finally, the random disturbance ε_{it} is normally distributed with a mean 0 and variance σ_ε^2.

In line with the established hypotheses, firm profitability ($prof_{it}$) is measured through two different variables: (a) the economic profitability or Return on Assets (ROA_{it}), calculated as the ratio of Earnings Before Interest and Taxes (EBIT) over total assets, and (b) the financial profitability or Return on Equity (ROE_{it}), measured as the net income over shareholders' equity. This last dependent variable only considers those observations in which the shareholders' equity displays positive values; otherwise, those observations whose net earnings were negative would obtain a positive but not realistic ROE. In this respect, Singh and Kumar [53] underline that a growing stream in the literature on WCM relates CCC and firm profitability. Most of the studies in this stream have considered the ROA as a measure of firm profitability (see Fernández-López et al. [16] for a review of recent works where such a measure is used). In contrast, few studies consider the financial profitability, using, in such a case, the ROE as dependent variable [46].

Based on the previous literature, the key independent variables (X_{it}) are those periods associated with the major accounting items of working capital (i.e., the DSO, the DPO, the DIO, and the CCC). The DSO_{it} and the DPO_{it} are directly extracted from the SABI database. The DIO_{it} is calculated as the inventory divided by sales and multiplied by 360 days. The CCC_{it} is the sum of the collection and inventory conversion periods minus the payable period (i.e., CCC = DSO + DIO – DPO). It should be noted that the hypothesis referring to economic profitability (*Hypotheses a*) proposes a quadratic relationship, suggesting one inflection point that could be optimally derived by differentiating ROA with respect to each of the periods of working capital. Letting this partial derivative equal zero, this turning point can be computed as $-\beta_2/2\beta_3$ [10].

As control variables (C_{it}), following Jayarathne [30] and Nazir and Afza [38] we include the firm size. In this paper, firm size is approximated by the log of the total number of employees (ln_nemp_{it}). In line with previous studies [16,41,52], the firm's access to debt is considered through the leverage ratio (lev_{it}); that is, the sum of long- and short-term debt divided by total assets. Moreover, we add a leverage squared term to control for the non-linear effects of firm leverage on the dependent variables according to the trade-off theory of capital structure. Similarly to López-Pérez et al. [62] and Shin and Soenen [52], we consider the firm's liquidity measured by the current ratio ($curr\_rat_{it}$). The firm's efficiency in using its total assets to obtain sales is measured by the total asset turnover ratio (ta_turn_{it}).

All specifications of Eq. (10) are estimated with the GMM estimator system [3], using the Stata command *xtabond2* [47]. In particular, we consider the right-side variables as endogenous variables and use their lags from *t-2* to *t-3* as instruments for the equations in differences, and the lagged first-differenced endogenous regressors as instruments for the level equations. In contrast, time dummies are considered to be exogenous variables.

The validity of the econometric models was tested. First, through the Hansen J statistic (over-identification test), we verified the absence of correlation between the instruments and the error term, as well as the validity of the instruments. Second, through the AR statistic (2) developed by Arellano and Bond [3], we tested for the absence of second-order serial correlation in the residues.

5. Empirical results

5.1. Descriptive analysis

Fig. 1 presents the annual average of firm economic and financial profitability, as well as that of the periods referring to the major items of working capital. The ROA and ROE are both positive. Indeed, the economic profitability is between 2.61% (2013) and 5.36% (2018). Besides this, financial profitability is higher than its economic counterpart. It should be remembered that only those observations which showed positive equity values were considered for the calculation of the former. In particular, the lowest value is reached in 2012 (3.37%) and the highest in 2011 (11.87%). In general, the ROE shows the same trend as the ROA; we can refer to a valley in the period 2012–2014 for both and a recovery from that date, with the exception of 2017. It is also worth mentioning that the ROE exceeds the ROA every year, except for 2015; this is due to the fact that the economic profitability exceeds the financial cost borne by the companies for the liabilities used, and the leverage effect allows the ROE to increase.

The DSO slightly decreases to stand at 77 days in 2018, while the same trend is observed for the DPO, although its fall is more noticeable, from 55 days in 2010 to 37 in 2018. The DIO remains stable during the analysed period. As a result, the CCC has increased from 121 to 130 days over the period 2010–2018. These figures reveal that the sampled fish canning companies work with positive net working capital.

Table 2 illustrates the main descriptive statistics of the variables used in the analysis. According to the definition of SMEs given by the European Commission, the share of large companies in the sample ranges from 4.03% in 2015 (9 companies out of 223) to 2.3% in 2017 (5 companies out of 217). Therefore, we can confirm that at least 96% of the sampled companies are SMEs. On average, debt finances around 58% of the total assets of fish canning companies, although this percentage is higher in the initial years of the analysed period. The current ratio experiences the opposite evolution; until 2016 it fails to reach values higher than 3. The DIO is close to 98.24 days; a figure that is far from the 30 days that Bieniasz and Gołaś [5] indicated for enterprises representing the trades of the processing and preservation of fish, crustaceans, and molluscs, but close to the enterprises processing other food products such as sugar, tea, or coffee. Finally, asset turnover generally does not fall below 1.2 over the entire reviewed period.

Finally, the correlation matrix of the variables is shown in Table 3. Besides, since potential multicollinearity problems could arise, the Variance Inflation Factor (VIF) was calculated. Overall, the average VIF was less than 2, which is an acceptable threshold [20].

5.2. Multivariate analysis

The following subsections present and discusses the results of the econometric analyses on the economic profitability and the financial profitability, respectively.

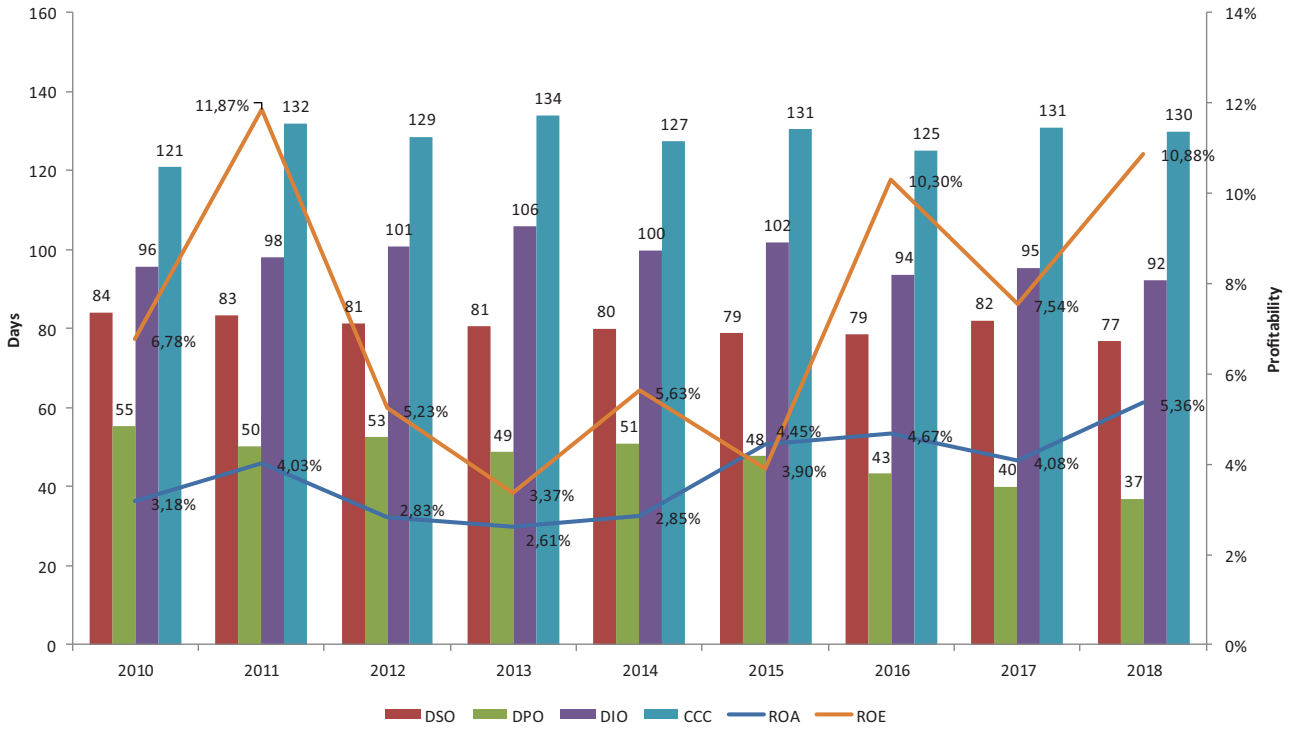

Fig. 1. ROA, ROE, and the periods of working capital (2010–2018).

Table 2
Summary statistics.

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
ROA (%)	2215	0.04	0.10	-0.95	0.96
ROE (%)	1966	0.07	0.35	-7.82	6.52
DSO (days)	2106	80.73	53.36	0.00	363.89
DPO (days)	2106	47.55	46.85	0.00	359.57
DIO (days)	1946	98.24	77.32	0.01	362.17
CTT (days)	1946	128.80	97.61	–289.54	564.55
NEMP[a]	1992	46.76	115.08	1.00	1429.00
LEV (%)	1870	0.58	0.24	0.03	1.00
TA_TURN	2106	1.27	0.92	0.00	8.82
CURR_RAT	2152	3.01	5.53	0.00	91.74

Notes: *Obs*. stands for the number of *Observations*; *Std. Dev*. for *Standard Deviation*; *Min*. for *Minimum*; and *Max*. for *Maximum*.
[a] The NEMP variable is not in logs.

5.2.1. *Economic profitability*

Table 4 displays the estimates of the dynamic panel data models on economic profitability. Models include the lagged dependent variable (ROA_{t-1}) as an independent variable, the set of independent variables on WCM, and the control variables. The quadratic form of the WCM variables, with the exception of *DPO*, is included in order to test *Hypotheses a*. Each of the four models (M1–M4) alternatively includes the four representative periods of WCM. As previously mentioned, we use the Hansen *J* statistic of overidentifying restrictions. Since its values are not significant, the null hypothesis cannot be rejected, so the instruments we use are valid in all of the models. Additionally, the AR(2) statistic [3] shows the lack of second-order serial correlation in the first-difference residuals.

Empirical evidence in Table 4 reveals that the collection period (proxied by the *DSO*) seems to display an inverted U-shaped relationship with the ROA (M1), which allows us to accept *Hypothesis 1a*. Previous financial literature finds evidence of a positive relationship [28,32], but also of a negative association between both variables [17,29,31,33,41,46,5,51,55,9,12]. In this respect, the empirical evidence for companies in the fish canning industry partially agrees with previous literature; the relationship between the ROA and the collection period starts to become positive, i.e., granting trade credit positively affects the attraction of new customers, but this positive effect does not last indefinitely. More

Table 3
Correlation matrix.

	ROA	ROE	DSO	DIO	DPO	CTT	CURR_RAT	NEMP	LEV	TA_TURN
ROA	1									
ROE	0.461***	1								
DSO	–0.069**	–0.067**	1							
DIO	–0.281***	–0.143***	0.055*	1						
DPO	–0.198***	–0.104***	0.166***	0.099***	1					
CTT	–0.175***	–0.107***	0.484***	0.766***	–0.308***	1				
CURR_RAT	0.027	–0.012	0.040	0.128***	–0.241***	0.222***	1			
NEMP	0.044	–0.003	–0.054*	-0.016	–0.104***	0.021	–0.076*	1		
LEV	–0.181***	0.014	–0.019	0.012	0.366***	–0.162***	–0.455***	–0.096	1	
TA_TURN	0.269***	0.200***	–0.293***	-0.441***	–0.089***	–0.461***	–0.150***	0.091***	0.232***	1

Notes: This table shows the Pearson correlation coefficients for the variables considered in the empirical analyses.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 4
Dynamic model estimations on ROA.

	M1	M2	M3	M4
DSO_100	0.091*			
	(0.05)			
DSO_100^2	–0.024†			
	(0.01)			
DIO_100		–0.041*		
		(0.02)		
DIO_100^2		0.011*		
		(0.01)		
DPO_100			–0.018	
			(0.02)	
CCC_100				0.005
				(0.01)
CCC_100^2				–0.002
				(0.00)
ROA_{t-1}	0.358***	0.356***	0.364***	0.379***
	(0.06)	(0.06)	(0.07)	(0.07)
LEV	0.193	0.061	0.003	0.043
	(0.13)	(0.14)	(0.12)	(0.13)
LEV^2	–0.246†	–0.111	–0.046	–0.083
	(0.13)	(0.13)	(0.12)	(0.13)
TA_TURN	0.031***	0.022**	0.01	0.019**
	(0.01)	(0.01)	(0.01)	(0.01)
LN_NEMP	–0.005	–0.002	–0.003	–0.006
	(0.01)	(0.01)	(0.01)	(0.01)
CURR_RAT	0.001	0	0	0
	(0.00)	(0.00)	(0.00)	(0.00)
YEARS	Yes	Yes	Yes	Yes
Constant	–0.059	0.028	0.065	0.028
	(0.04)	(0.05)	(0.03)	(0.03)
Number of observations	1638	1638	1550	1550
Number of companies	297	297	280	280
Number of instruments	222	196	222	222
Degrees of freedom	15	14	15	15
F test	6.73	6.79	7.23	6.56
F p-val.	0.00	0.00	0.00	0.00
AR(1) test	–3.23	–3.26	–2.78	–2.81
AR(1) p-val.	0.001	0.001	0.005	0.005
AR(2) test	0.65	0.84	0.86	0.9
AR(2) p-val.	0.518	0.398	0.388	0.367
Hansen J statistic	214.29	182.34	217.14	218.44
Hansen J p-val.	0.314	0.437	0.267	0.248

Notes: The dependent variable is economic profitability or ROA; DSO_100, DIO_100, DPO_100, and CCC_100 are the WCM management variables divided by 100; and DSO_100^2, DIO_100^2, and CCC_100^2 their square. ***, **, *, and † denote a p-value of 0.001, 0.01, 0.05, and 0.1, respectively.

specifically, the estimated coefficients suggest that the turning point in this relationship is around 190 days. Thus, it seems that by extending collection periods beyond this limit, customers with liquidity problems are attracted, which could lead to the appearance of defaulters and possible failures, and a consequent decline in economic profitability. This period is lengthy; nevertheless, around 90% of the retail of canned seafood goes to supermarkets and hypermarkets [34], which often impose very long deadline payments, damaging the profitability of their suppliers.

The evidence found for the inventory conversion period (M2) contradicts what was established in *Hypothesis 2a*. Thus, data in Table 4 suggest that the relationship between the DIO and the economic profitability of fish canning companies is U-shaped. Previous literature mostly points to a negative influence of the inventory conversion period on firms' economic profitability [5,11,17,19,30,45,56,51,9,12,35,46,55]. Our findings coincide to some extent with this negative relationship. In this regard, the estimates indicate that the DIO initially have a negative effect on firms' economic profitability since increases in inventories lead to higher costs (e.g., maintenance or obsolescence costs) that decrease profitability. This negative effect holds true for a period of time (namely, 187 days) after which the benefits of avoiding potential price fluctuations and breaking costs overcomes the costs of the extra inventory. Indeed, the literature on the WCM-profitability relationship has also found a positive relationship between DIO and economic profitability. This finding, which is to some extent counter-intuitive, might also reflect certain specificities of the fish canning companies. Thus, while the consumption (sales) of canned fish remains relatively stable throughout the year, the companies are subject to the seasonal catches of fish and fishing quotas imposed by the EU fishery regulations in the Spanish case [57]. As a result, fish canning companies are frequently forced to source the raw material they will use annually in a very short period of time; this results in high inventory levels. In such a context, high inventory levels would act as a signal that the productive capacity and the coverage of company demand would be guaranteed and could therefore be translated into stable relationships with their customers and, in turn, into greater economic profitability.

The lack of statistical significance does not allow confirming *Hypothesis 3a*, as in the research of Ng et al. [39]. Similarly, the relationship between the ROA and the CCC, proposed in *Hypothesis 4a*, cannot be confirmed. This may be partly due to the opposing relationship found for the DSO and DIO variables that would be compensated for in the CCC. Neither Deloof [11], Vahid et al. [56], nor Serrasqueiro [51] found a significant effect of the CCC on firms' economic profitability, whereas Bieniasz and Gołaś [5] identified that prolonging this cycle translates into a decrease in the profitability of companies in the food sector.

Some of the control variables seem to positively influence firms' economic profitability. Indeed, the significant and positive coefficients of the lagged dependent variable (ROA) speak in favour of the profit persistence hypothesis in the fish canning industry, similarly to the results obtained by other studies pertaining to the food industry [8,21,22]. Moreover, the positive estimated coefficients of the total asset turnover ratio indicate that the higher the company's efficiency in using its total assets to obtain sales, the higher its economic profitability. Finally, firm size and firm leverage fail to have a significant impact on economic profitability. On the one hand, Hirsch and Schiefer [23] and Gschwandtner and Hirsch [60] determine that firm size has a significantly positive effect on firm profitability, which might be due to a positive cost-scale effect, i.e., larger firms are usually in a better position to deal with pre-market approval procedures and advertising costs, or to cope with competitive pressures. In this regard, both papers proxy firm size by the natural logarithm of total assets, rather than by the number of employees, as this paper does. On the other hand, Bieniasz and Gołaś [5] found a significantly negative effect of leverage on the economic profitability of large-sized enterprises in the food industry.

Firm liquidity, proxied by the current ratio, also fails to be statistically significant; a result in line with Bieniasz and Gołaś [5], who do not observe any statistically significant relationship between the profitability and the current and quick ratio for mid- and large-sized companies in the food industry. However, Bieniasz and Gołaś [5] and Gschwandtner and Hirsch [60] confirmed the existence of a significantly positive relationship for small-sized enterprises and for US and EU food companies.

5.2.2. *Financial profitability*

As previously mentioned, firms' financial profitability is measured by the ROE. The estimates obtained through dynamic panel data models are summarised in Table 5. In line with the proposed hypotheses (*Hypotheses b*), the models are not quadratic. Again, the Hansen *J* statistic and the AR(2) statistic allow us to discard potential problems of model misspecification.

Overall, empirical evidence reflects that WCM does not seem to affect the financial profitability of fish canning companies, i.e., the statistical evidence on the effect of the DSO, the DPO, the DIO, and the CCC on the financial profitability fails to be significant and therefore, *Hypotheses 1b*, *2b*, *3b*, and *4b* are not supported. Similarly, Chowdhury et al. [9] do not find any effect of the DSO and the DPO on financial profitability.

Although the WCM does not have a great impact on financial profitability, some of the control variables included in the study display

Table 5
Dynamic model estimations on ROE.

	M1	M2	M3	M4
DSO_100	0.047			
	(0.06)			
DPO_100		–0.071		
		(0.10)		
DIO_100			–0.04	
			(0.04)	
CCC_100				0.004
				(0.03)
ROE_{t-1}	–0.024	–0.028*	–0.021	–0.021
	(0.01)	(0.01)	(0.01)	(0.01)
LEV	1.542*	1.098	0.927	0.942
	(0.77)	(0.68)	(0.60)	(0.60)
LEV^2	–1.709*	–1.225†	–1.003	–1.032
	(0.81)	(0.73)	(0.65)	(0.63)
TA_TURN	0.146**	0.148**	0.075*	0.100*
	(0.05)	(0.05)	(0.04)	(0.04)
LN_NEMP	–0.087*	–0.076*	–0.078**	–0.089**
	(0.04)	(0.03)	(0.03)	(0.03)
CURR_RAT	0.008†	0.005	0.004	0.003
	(0.01)	(0.00)	(0.00)	(0.00)
YEARS	Yes	Yes	Yes	Yes
Constant	0.000	0.000	0.064	0.026
	(.)	(.)	(0.12)	(0.14)
Number of observations	1632	1632	1544	1544
Number of companies	297	297	280	280
Number of instruments	196	196	196	196
Degrees of freedom	14	14	14	14
F test	5.22	4.58	2.23	2.05
F p-val.	0	0	0.01	0.01
AR(1) test	–1.14	–1.14	–1.41	–1.42
AR(1) p-val.	0.255	0.253	0.159	0.155
AR(2) test	–0.92	–1.08	–1.26	–1.24
AR(2) p-val.	0.255	0.278	0.206	0.217
Hansen J statistic	203.64	198.29	200.66	194.84
Hansen J p-val.	0.109	0.166	0.139	0.213

Notes: The dependent variable is financial profitability or ROE; DSO_100, DIO_100, DPO_100, and CCC_100 are the WC management variables divided by 100. ***, **, *, and † denote a p-value of 0.001, 0.01, 0.05, and 0.1, respectively. Observations with negative values of the shareholders' equity are discarded; otherwise, if these observations also presented negative net earnings, they would result in a false positive ROE.

statistically significant relationships. In this regard, a company's leverage seems to display an inverted U-shaped relationship with respect to the dependent variable. This relationship can be explained through the debt leverage, i.e., the amplification of the return earned on equity when an investment is partially financed with borrowed money. By taking on more debt leverage, a company can make more investments through the economic year without the need to request contributions from its partners or shareholders, which are more costly and so the company props up its profitability. This effect does not last indefinitely, i.e., the effect is positive as long as the cost of the debt -or the interest rate- is lower than the return made on the investment. However, once the cost of the borrowed money exceeds the return made on the investment, the leverage effect becomes negative, thus leading to decreases in financial profitability.

Again, a firm's efficiency in using its assets to generate sales (i.e., the total assets turnover ratio) has a positive effect on financial profitability. Finally, it should be mentioned that a negative relationship between firm size, measured by the number of employees, and financial profitability is obtained. Thus, empirical evidence indicates that fish canning companies with fewer employees are more likely to obtain a higher ROE.

6. Conclusions

This paper aims to explore how working capital policies influence the profitability of Spanish fish canning companies. Within the food manufacturing industries, we pay attention to this sector because of the high share of current assets and liabilities on such companies' balance sheets, as well as to the enormous complexity of the working capital investment and financing policies. Thus, in the sampled firms, accounts receivables and inventories comprised up to 61.7% of total assets in the period 2010–2018. Similarly, spontaneous financing and short-term liabilities represented 15% and 21.8% of total assets, respectively. The fact that 97% of the companies in the sector are SMEs, together with a period of analysis characterised by an insufficient amount of liquidity for firms, adds interest to the study concerning the WCM-profitability relationship.

After applying dynamic panel data methodology in a sample consisted of 377 companies during the period 2010–2018, we find that the economic profitability of fish canning companies is related to the DSO and DIO. Thus, we can conclude that granting trade credit and maintaining inventory affects firms' economic profitability. Moreover, unlike previous studies, one contribution of this paper is to analyse the functional form of the aforementioned relationships. Thus, empirical evidence reveals the existence of an inverted U-shaped relationship between the collection period and economic profitability, which involves the existence of an optimal level of receivables that balances the benefits of increasing sales and the opportunity costs of funding customers. This optimal point is reached at around 190 days; once these 190 days have been exceeded, the high non-payment risk decreases firm profitability.

The findings also reveal a convex or U-shaped relationship between investment in inventory and economic profitability. In other words, an initial increase in the level of inventory decreases the firm's economic profitability; however, once the turning point of 187 days is exceeded, the increases in the inventory levels enhance economic profitability.

In contrast, no significant relationship was found for either the DPO or the CCC with economic profitability, nor did we find empirical evidence that any of the periods referring to major items of working capital are related to financial profitability.

The findings of this analysis have interesting managerial and policy implications. The relationship between the DSO and the economic profitability following an inverted U-shaped pattern implies the existence of an optimal point of management for the collection period. Therefore, we propose two types of policies. On the one hand, those companies that are below this optimum point should offer a flexible credit policy to their customers or a better payment period. In this sense, our recommendation is to carry out a solvency analysis of their customers aimed at offering payment facilities to those customers who have a greater level of solvency. On the other hand, we have those companies that are above the optimum point and therefore should reduce the collection period, thus increasing the rotation of their credits. In this sense there are different policies that would allow to increase the credit rotation and thus to reduce the collection period, as for example: reducing the standard payment period on invoices; requiring, whenever possible, an initial deposit at the beginning of the work or at the signing of the order; establishing real incentives for early payment; establishing special policies for faster collection from new customers; and/or automatising the invoicing process so that invoices are generated and sent as quickly as possible.

In relation to the second evidence obtained, i.e., a convex relationship between the DIO and the economic profitability, once again, the evidence leads to the existence of an optimal point. Therefore, companies should analyse their situation in relation to this inflection point, and consequently, those companies whose DIO is below the inflection point should increase their inventory stock to avoid potential breakages in their supply chain and to benefit from greater commercial discounts when placing larger orders. On the other hand, those companies whose DIO is above the inflection point should maintain or increase the inventory conversion period, but within reasonable limits, as extending too much the inventory conversion period might have detrimental effects. If this is the case, i.e., the inventory conversion period is too lengthy, some possible measures to reduce it might include: making an

accurate estimate of demand in order to produce and stock the right inventory; shortening supply times by choosing suppliers with fast deliveries and negotiating appropriate conditions; maintaining an optimum level of stock and improving purchasing and information management, so that the amount of inventory at each stage can be easily know or calculated.

One of the alternatives that can help companies in these two tasks, i.e., collection and inventory management, is the digitisation of these processes. On the one hand, the digitisation of the collection process generates an efficient workflow in which payment dates are synchronised with key notifications and improves the average payment time. In addition, it allows the online visualization of the status of invoices, the customer portfolio, or the enabling of different online payment methods and the reconciliation of payments. On the other hand, the digitisation of inventory and warehouse management makes it possible to control stock, track inventory and know the available stock, to automate storage and picking tasks, or to manage in real time all the workflows related to the supply chain and the warehouse, as well as to ensure product traceability. In both cases, digitisation provides useful information and makes it easier to obtain metrics and data for analysing the efficiency of the firms when carrying on these tasks.

This paper contributes to the extant literature on the WCM-profitability relationship in three fundamental ways. First, it is focused on a food industry, namely the fish canning sector, where the understanding of how WCM impacts firm profitability becomes essential for firm performance. Second, unlike most previous work, this paper explores non-linear effects of the periods referring to WCM upon firm economic profitability and also considers financial profitability. Third, it adds to the literature by providing insight into a challenging time period for working capital policies.

The main limitation of this paper is the availability of data for the sample companies. Despite having a representative sample of companies in the sector, the need for consistent data led us to exclude some of the observations that presented information that was not consistent with the basic rules of the Generally Accepted Accounting Principles. This has led to multivariate analyses being limited to fewer companies than those in the initial sample. To better understand how companies manage their current assets and liabilities, surveys would be required in future work, where managers could highlight their policies for dealing with issues such as the liquidity shortage that firms will face during the crisis derived from the COVID-19 pandemic.

CRediT authorship contribution statement

Lucía Rey-Ares: Conceptualization, Methodology, Writing - review & editing, Formal analysis. **Sara Fernández-López:** Conceptualization, Writing - original draft, Writing - review & editing, Formal analysis, Supervision. David Rodeiro-Pazos: Data curation, Writing - original draft, Investigation, Visualization.

References

[1] ANFACO-CECOPESCA, Clúster Mar-Alimentario, 2019. http://www.anfaco.es/fotos/biblioteca/docs/sector/Datos%20sector%202019.pdf (Accessed March 2021).
[2] G.A. Afrifa, K. Padachi, Working capital level influence on SME profitability, J. Small Bus. Enterp. Dev. 23 (1) (2016) 44–63.
[3] M. Arellano, S. Bond, Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, Rev. Econ. Stud. 58 (2) (1991) 277–297.
[4] S. Baños-Caballero, P.J. García-Teruel, P. Martínez-Solano, Working capital management, corporate performance, and financial constraints, J. Bus. Res. 67 (3) (2014) 332–338.
[5] A. Bieniasz, Z. Gołaś, The influence of working capital management on the food industry enterprises profitability, Contemp. Econ. 5 (1) (2011) 68–81.
[6] Bureau van Dijk, SABI Database, 2017. https://help.bvdinfo.com/mergedProjects/122_ES/Home.htm.
[7] S. Carbó-Valverde, F. Rodríguez-Fernández, G.F. Udell, Trade credit, the financial crisis, and SME access to finance, J. Money Credit Bank. 48 (1) (2016) 113–143.
[8] F.R. Chaddad, M.P. Mondelli, Sources of firm performance differences in the US food economy, J. Agric. Econ. 64 (2) (2013) 382–404.
[9] A.Y. Chowdhury, M.Z. Alam, S. Sultana, M.K. Hamid, Impact of working capital management on profitability: a case study on pharmaceutical companies of Bangladesh, J. Econ. Bus. Manag. 6 (1) (2018) 27–35.
[10] A. De Miguel, J. Pindado, C. De La Torre, Ownership structure and firm value: new evidence from Spain, Strateg. Manag. J. 25 (12) (2004) 1199–1207.
[11] M. Deloof, Does working capital management affect profitability of Belgian firms? J. Bus. Financ. Account. 30 (3–4) (2003) 573–588.
[12] M.D.C.C. Diaz, D. Rojas, D. Cueva, R. Armas-Herrera, La Gestión del Capital de Trabajo y su efecto en la Rentabilidad de las Empresas Constructoras del Ecuador, X-pedientes Econ. 2 (3) (2018) 28–45.
[13] S.T. Enow, P. Brijlal, The effect of working capital management on profitability: the case of small medium and micro enterprises in South Africa, J. Account. Manag. 4 (2) (2014) 7–15.
[14] European Commission, Annual report on European SMEs 2017/2018: SMEs growing beyond borders. European Commission, Brussels, 2018. https://publications.europa.eu/en/publication-detail/-/publication/a435b6ed-e888-11e8-b690-01aa75ed71a1 (Accessed March 2021).
[15] FAO, GLOBEFISH highlights, 3th issue 2015 – A quarterly update on world seafood markets, Food and Agriculture Organization of the United Nations, Fisheries and Aquaculture Department, Rome 60, 2015.
[16] S. Fernández-López, D. Rodeiro-Pazos, L. Rey-Ares, Effects of working capital management on firms' profitability: evidence from cheese-producing companies, Agribus. Int. J. 36 (4) (2020) 770–791.
[17] P.J. García-Teruel, P. Martínez-Solano, Effects of working capital management on SME profitability, Int. J. Manag. Financ. 3 (2) (2007) 164–177.
[18] A. Gill, N. Biger, N. Mathur, The relationship between working capital management and profitability: evidence from the United States, Bus. Econ. J. 10 (1) (2010) 1–9.
[19] S. Gul, M.B. Khan, S. Raheman, M.T. Khan, M. Khan, W. Khan, Working capital management and performance of SME sector, Eur. J. Bus. Manag. 5 (1) (2013) 60–68.
[20] W.H. Greene, Econometric Analysis., Pearson, New York, 2012.
[21] S. Hirsch, A. Gschwandtner, Profit persistence in the food industry: evidence from five European countries, Eur. Rev. Agric. Econ. 40 (5) (2013) 741–759.
[22] S. Hirsch, D. Lanter, R. Finger, Profitability and profit persistence in EU food retailing: differences between top competitors and fringe firms, Agribus.: Int. J. 37 (2) (2021) 235–263.
[23] S. Hirsch, J. Schiefer, What causes firm profitability variation in the EU food industry? A Redux of classical approaches of variance decomposition, Agribus. Int. J. 32 (1) (2016) 79–92.
[24] M. Hoffmann, M. Egor, B.E. Sørensen, Small Firms and Domestic Bank Dependence in Europe's Great Recession. CAMA Working Paper No. 76/2019, 2019. https://ssrn.com/abstract=3467313.
[25] C. Howorth, P. Westhead, The focus of working capital management in UK small firms, Manag. Account. Res. 14 (2) (2003) 94–111.
[26] INE, Estadística Estructural de Empresas: Sector Industrial, 2021. https://www.ine.es/jaxiT3/Tabla.htm?t=28379&L=0 (Accessed February 2021).
[27] Informa D&B, 6º Análisis del comportamiento de pagos empresarial, 2019. https://cdn.informa.es/sites/5c1a2fd74c7cb3612da076ea/content_entry5c5021510fa1c000c25b51f0/5d5d19d9da508900b2189a96/files/Libro_pagos2019_pdf.pdf?1566382553 (Accessed April 2021).
[28] S. Jakpar, M. Tinggi, T.K. Siang, A. Johari, K.T. Myint, M. Sadique, Working capital management and profitability: evidence from manufacturing sector in Malaysia, J. Bus. Financ. Aff. 6 (2) (2017) 1–9.
[29] S. Javid, P.R. Dalian, Effect of working capital management on SMEs' performance in Pakistan, Eur. J. Bus. Manag. 6 (12) (2014) 206–220.
[30] T.A.N.R. Jayarathne, Impact of working capital management on profitability: evidence from listed companies in Sri Lanka, in: Proceedings of the 3rd International Conference on Management and Economics 26, 2014, p. 27.
[31] J. Kasozi, The effect of working capital management on profitability: a case of listed manufacturing firms in South Africa, Invest. Manag. Financ. Innov. 14 (2) (2017) 336–346.
[32] A. Khan, M. Sohail, Z. ur Rehman, Financial leverage, working capital management and firm profitability: empirical evidence from Pakistan stock exchange, Sarhad J. Manag. Sci. 4 (1) (2018) 97–110.
[33] I. Lazaridis, D. Tryfonidis, Relationship between working capital management and profitability of listed companies in the Athens Stock Exchange, J. Financ. Manag. Anal. 19 (1) (2006) 1–12.
[34] Ministerio de Agricultura, Pesca y Alimentación, Informe del Consumo Alimentario en España. Ministerio de Agricultura, Pesca y Alimentación, Secretaría General Técnica, Centro de Publicaciones, 2019. http://servicios.mpr.es/VisorPublicaciones/visordocumentosicopo.aspx?NIPO=003191619&SUBNIPO=0001&IDPUBLICACION=497100319.
[35] S. Mulyono, D. Djumahir, K. Ratnawati, The effect of capital working management on the profitability, J. Keuang. Dan Perbank. 22 (1) (2018) 94–102.
[36] J.L. Murcia, Las conservas de pescado se convierten en tendencia gastronómica internacional, Distrib. Y. Consumo 4 (2019) 47–50.
[37] N. Musau, Determinants of tax compliance among small and medium enterprises in Kenya: a case of Nairobi county. College of Humanities and Social Sciences (CHSS) [21765], 2015. http://erepository.uonbi.ac.ke/handle/11295/95034 (Accessed February 2021).
[38] M.S. Nazir, T. Afza, Impact of aggressive working capital management policy on firms' profitability, IUP J. Appl. Financ. 15 (8) (2009) 19–30.
[39] S.H. Ng, C. Ye, T. San Ong, B.H. Teh, The impact of working capital management on firm's profitability: evidence from Malaysian listed manufacturing firms, Int. J. Econ. Financ. Issues 7 (3) (2017) 662–670.

[40] H. Nobanee, J. Abraham, Current assets management of small enterprises, J. Econ. Stud. 42 (4) (2015) 549–560.
[41] K. Padachi, Trends in working capital management and its impact on firm's performance: an analysis of Mauritian small manufacturing firms, Int. Rev. Bus. Res. 2 (2) (2006) 45–58.
[42] K. Padachi, Working capital financing preferences: the case of Mauritian manufacturing small and medium-sized enterprises (SMEs), Asian Acad. Manag. J. Account. Financ. 8 (1) (2012) 125–157.
[43] M.J. Peel, N. Wilson, C. Howorth, Late payment and credit management in the small firm sector: some empirical evidence, Int. Small Bus. J. 18 (2) (2000) 17–37.
[44] J. Pindado, I. Requejo, C. de la Torre, Family control, expropriation, and investor protection: a panel data analysis of Western European corporations, J. Empir. Financ. 27 (2014) 58–74.
[45] A. Raheman, M. Nasr, Working capital management and profitability – case of Pakistani firms, Int. Rev. Bus. Res. Pap. 3 (1) (2007) 279–300.
[46] M. Rezaei, M.R. Pourali, The relationship between working capital management components and profitability: evidence from Iran, Eur. Online J. Nat. Soc. Sci. 4 (1) (2015) 342–351.
[47] D. Roodman, How to do xtabond2: an introduction to difference and system GMM in Stata, Stata J. 9 (1) (2009) 86–136.
[48] S. Sarwat, D. Iqbal, B. Durrani, K. Shaikh, F. Liaquat, Impact of working capital management on the profitability of firms: case of Pakistan's cement sector, J. Adv. Manag. Sci. 5 (3) (2017) 238–244.
[49] C.R. Sathyamoorthi, M. Mapharing, P. Selinkie, The impact of working capital management on profitability: evidence from the listed retail stores in Botswana, Appl. Financ. Account. 4 (1) (2018) 82–94.
[50] Scientific, Technical and Economic Committee for Fisheries (STECF), The Economic Performance Report on the EU Fish Processing sector (STECF-13–31). Publications Office of the European Union, Luxembourg, EUR 26444 EN, JRC 87692, 2013.
[51] J.N. Serrasqueiro, Working Capital Management Impact on Profitability: Empirical Study Based on Portuguese Firms (Master Dissertation). Available in https://repositorio.ucp.pt/handle/10400.14/19996, Católica Lisbon School of Business and Economics, 2015.
[52] H.H. Shin, L. Soenen, Efficiency of working capital management and corporate profitability, Financ. Pract. Educ. 8 (1998) 37–45.
[53] H.P. Singh, S. Kumar, Working capital management: a literature review and research agenda, Qual. Res. Financ. Mark. 6 (2) (2014) 173–197.
[54] H.P. Singh, S. Kumar, S. Colombage, Working capital management and firm profitability: a meta-analysis, Qual. Res. Financ. Mark. 9 (1) (2017) 34–47.
[55] M. Usman, S.A. Shaikh, S. Khan, Impact of working capital management on firm profitability: Evidence from Scandinavian countries, J. Bus. Strateg. 11 (1) (2017) 99–112.
[56] T.K. Vahid, G. Elham, A.K. Mohsen, E. Mohammadreza, Working capital management and corporate performance: evidence from Iranian companies, Procedia Soc. Behav. Sci. 62 (2012) 1313–1318.
[57] S. Villasante, The management of the blue whiting fishery as complex social-ecological system: the Galician case, Mar. Policy 36 (6) (2012) 1301–1308.
[58] S. Vishnani, B.K. Shah, Impact of working capital management policies on corporate performance: an empirical study, Glob. Bus. Rev. 8 (2) (2007) 267–281.
[59] J. Wooldridge, Econometric Analysis of Cross Section and Panel Data, The MIT Press, Cambridge, 2002.
[60] A. Gschwandtner, S. Hirsch, What drives firm profitability? A comparison of the US and EU food processing industry, Manchester Sch. 86 (3) (2018) 390–416, https://doi.org/10.1111/manc.12201.
[61] H.L. Le, K.T. Vu, N.K. Du, M.D. Tran, Impact of working capital management on financial performance: The case of Vietnam, Int. J. Appl. Econ. Financ. Account. 3 (1) (2018) 15–20, https://doi.org/10.33094/8.2017.2018.31.15.20.
[62] A. López-Pérez, S. Fernández-López, D. Rodeiro-Pazos, F. Li-Bonilla, Análisis en la Relación entre el Fondo de Maniobra y la Rentabilidad: Caso del Sector Oleícola Español, Revista Nacional de Administración 9 (1) (2018) 7–25, https://doi.org/10.22458/rna.v9i1.2102.