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RESEARCH ARTICLE

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Working capital management and firm sales growth: Evidence from fish processing industry

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Abstract

Working capital management (WCM) is a critical matter for the growth of firms, especially small and medium-sized manufacturing companies faced with liquidity shortages whose current assets account for a significant part of their investments. These characteristics describe most companies in the fish processing industry. Using a sample of more than 1050 European fish processing companies during the period 2013–2020 and applying dynamic panel data methods, this paper analyses the extent to which working capital investment and financing policies affect firm's sales growth. The empirical evidence reveals that the trade credit channel (i.e., accounts receivable and accounts payable) enhances sales growth, while the opposite effect is found for investment in inventories. Additionally, the findings insist on the importance of financing current assets with positive working capital to boost sales growth. [EconLit Citations: C23, G31, L25, L79, Q22].

KEYWORDS

dynamic panel data, firm growth, fish processing industry, trade credit policies, working capital management

Abbreviations: AR, autoregressive; EBITDA, earnings before interest taxes depreciation and amortization; FE, fixed effects; GMM, generalized method of moments; NACE, Statistical Classification of Economic Activities; NWC, net working capital; SME, small- and medium-sized enterprise; WCM, working capital management.

1 | INTRODUCTION

The literature on corporate finance has paid little attention to short-term financial decisions (Aminu & Zainudin, 2015; Baños-Caballero et al., 2014; Nazir & Afza, 2009), but rather has focused on financial decisions that are long-term in nature. However, short-term financial decisions become essential for firm performance, especially for small- and medium-sized enterprises (SMEs). Compared with large companies, SMEs have a higher share of liquid assets, lower liquidity, and more volatile cash flows (Peel et al., 2000). Accordingly, they experience more difficulties in obtaining long-term banking loans, which leads them to rely more on spontaneous financing sources (i.e., accruals and trade credit) and short-term bank debt (Enow & Brijlal, 2014; Juan García-Teruel & Martínez-Solano, 2007). These circumstances require SMEs to manage their working capital effectively to ensure good outcomes (Howorth & Westhead, 2003; Juan García-Teruel & Martínez-Solano, 2007; Padachi, 2006; Peel & Wilson, 1996).

Not surprisingly, the number of studies specifically devoted to working capital management (WCM) has flourished since 2008 (for reviews, see Pratap Singh & Kumar, 2014; Kayani et al., 2019; and Prasad et al., 2019), when the Great Recession led to a shortage of liquidity in most western economies (Sumedrea, 2013). Most of these studies have analyzed the effect of WCM on firm profitability, overlooking its effect on firm growth. However, firm growth is the most widely used measure of firm performance (Beier & Wagner, 2017), and academics and practitioners have traditionally argued that net working capital (NWC, or the sum of accounts receivable and inventories minus accounts payable) has a positive effect on firm growth (Aktas et al., 2015; Buchmann et al., 2008). Additionally, the few studies addressing this issue have mostly ignored the role played by working capital financing policies in enhancing firm growth.

We expect that, as a consequence of the economic instability caused by the COVID-19 pandemic, the war in Ukraine, the supply crisis, increasing inflation, and the raise of official interest rates (European Central Bank, 2022), SMEs will experience a shortage of liquidity similar to, or even worse than, that experienced in the aftermath of the Great Recession. In this context, efficient WCM becomes a fundamental driver of firm performance, especially for manufacturing SMEs that, therefore, have to finance growth while facing credit constraints. This could be the case for firms in the fish processing industry, which provides an interesting case study, as it is an understudied sector within the food industry, while at the same time, it has great potential for growth (Depellegrin et al., 2022).

The main objective of this paper is to analyze whether WCM policies affect the sales growth of fish processing companies. To this end, we construct a sample of more than 1050 European fish processing companies over the period 2013–2020 and apply dynamic panel data methods. Additionally, we distinguish between working capital investment and financing policies, which allows us to gain several novel insights into the joint influence of both spontaneous financing and other short-term liabilities on firm growth. Also, the sample period (2013–2020) provides an interesting context for the analysis, as it includes a period when some European countries were still in recession, a period of economic growth and a final year marked by the COVID-19 crisis.

This paper contributes to the literature in several ways. First, it extends the limited literature on the effect of WCM on firm growth (Kayani et al., 2019; Prasad et al., 2019; Pratap Singh & Kumar, 2014). This is necessary not only because of the importance of firm growth as a driver of the economic progress (Ghoshal et al., 1999), but also because whereas in business management the NWC is considered to serve as a source of financing such firm growth, this role has not been empirically tested in the literature on WCM (Aktas et al., 2015). Second, the use of alternative proxies for WCM allows us to distinguish the effects of working capital investment and financing policies on sales growth. To date, the scarce literature on WCM and firm growth has considered the amounts invested in accounts receivable and inventories (working capital investment policies) and the financing provided by suppliers (spontaneous financing), neglecting other short-term liabilities that define the firm's working capital financing policies. Third, the geographical scope, analyzing data from six different European countries (France, Italy, Norway, Poland, Spain, and Sweden), supposes a novel approach to empirical WCM studies (Kayani et al., 2019).

The structure of the paper is as follows. Section 2 outlines the literature related to WCM and firm growth. Section 3 reports on the data and the variables, as well as the econometric methodology. Section 4 presents the empirical findings. Finally, Section 5 draws the main conclusions, outlining the limitations and suggesting future research lines.

2 | LITERATURE REVIEW

The literature on WCM has increased exponentially since the economic crisis of 2008, which has made efficient short-term financial management essential for the survival, growth, and profitability of companies (Kayani et al., 2019; Prasad et al., 2019; Pratap Singh & Kumar, 2014). Following Pratap Singh and Kumar (2014), this literature can be divided into three categories: (1) studies that focus on working capital practices; (2) studies that seek to explain the impact of WCM on performance; and (3) studies that analyze other topics related to WCM, like payment methods or the impact of the crisis on working capital efficiency. The vast majority of this literature adopts an empirical approach[1] (Kayani et al., 2019; Prasad et al., 2019) and analyses several industries in only one country, often located in emerging markets with tight financial sectors, such as Turkey, India, or Pakistan (Kayani et al., 2019). The present study also adopts an empirical approach by analyzing one single sector in six European countries, and also falls into the second group proposed by Pratap Singh and Kumar (2014), whose emphasis is on the relationship between WCM and firm performance.

While most of the empirical studies are focused on the relationship between WCM and firm profitability (Kayani et al., 2019), in the last years a new wave of works has focused on the relationship between WCM and firm growth (see Table 1). Exploring this topic is necessary for two main reasons: First, firm growth is one of the most widely used measures of firm performance in economics (Beier & Wagner, 2017), reflecting market acceptance and firm success (Feeser & Willard, 1990). Second, several studies have related firm growth to WCM in a theoretical way. Thus, according to Aktas et al. (2015), efficient WCM can increase sales and earnings, leading a company to higher growth rates. While these arguments come from an investment perspective, a few practitioner-oriented articles have also emphasized the role of NWC as a driver of firm growth (Aktas et al., 2015) by focusing on its potential as a source of funding (i.e., from a financing perspective). In this respect, Buchmann et al. (2008) stress that the power of NWC as a potential source of cash to fund growth is often overlooked by firms.

Thus, from a working capital investment approach, granting trade credit allows for implicit price discrimination across customers when it is not possible to do it directly based on prices (Abuhommous, 2017; Aktas et al., 2015; Ferrando & Mulier, 2013). In such cases, firms with high-profit margins can reach less creditworthy customers, increasing their sales and market share (Petersen & Rajan, 1997). Selling on credit also serves to reduce the uncertainty about the quality of a firm's product among potential customers (the asymmetric information problem) by allowing them to verify the quality before paying (Smith, 1987). Cheng and Pike (2003) and Pike et al. (2005) find empirical evidence supporting the product quality argument for firms with a less established reputation, namely young and small firms. Finally, trade receivables are proven to be a useful tool to finance customers in temporary stress who otherwise cannot afford to buy the products (Abuhommous, 2017; Aktas et al., 2015; Ferrando & Mulier, 2013). Delaying payments reduces customers' financial troubles and increases futures sales by fostering a long-lasting relationship with them (Cuñat, 2007; Martínez-Sola et al., 2014).

From an asset management approach, inventories are another keyway in which WCM can be used to boost growth (Hill et al., 2010), contributing to reduced order costs (Blinder & Maccini, 1991) and allowing companies to reach economies of scale by decreasing production costs (Fazzari & Petersen, 1993). At the same time, inventories prevent stock-out problems (Aktas et al., 2015; Corsten & Gruen, 2004; Deloof, 2003) and possible production

[1]Kayani et al. (2019) notes that almost 90% of a sample of studies between 1980 and 2017 adopted an empirical approach instead of conceptual and survey-based approaches.

TABLE 1 Summary of empirical research.

References	Sample (Years)	Measures of growth (relationship with WCM)	Measures of WCM	Estimation methods	Independent and control variables
Ferrando and Mulier (2013)	600,000 nonfinancial firms, eight euro area countries[a] (1993–2009)	Added value growth rate (+) Added value = Profit/Loss – interest – taxation – employee – depreciation – interest paid	Trade credit = (receivables + payables)/total sales	First difference GMM estimation	Bank loans, sales growth, size, age,
Abuhommous (2017)	111 nonfinancial listed firms, Jordan (1999–2015)	Sales growth rate (+)	NWC = (inventories + receivables – payables)/sales revenue	Regression model	Size, age, internal cash flow, external debt, Tobin's Q
Megaravalli and Sampagnaro (2019)	22,233 manufacturing family SMEs, only high-growth firms, Italy (2010–2014)	Sales growth rate (–)	Log (inventory)	Probit regression	Liquidity, solvency, age, cash flow, industry, province
Huang et al. (2019)	20,089 A-share listed firms, China (2003–2017)	Sustainable growth rate (SGR) (+) SGR = P × A × T × R/(1 − P × A × T × R) P = Profit margin (profit/total sales) A = Asset turnover ratio (total sales/total assets T = Leverage factor (total assets/end-of-period equity) R = Retention ratio (retained earnings/profit)	Trade credit = (accounts payable + notes payable + advance receivable)/total assets	Regression model	Size, age, short-term debt, long-term debt, financial slack, internal fund, current assets/current liabilities, profits, cash flow, internal control quality index, management indicators (ownership, number of board directors), regional and financial indicators (development of the credit market, competitions in the finance industry, social trust, number of chamber of commerce)

TABLE 1 (Continued)

References	Sample (Years)	Measures of growth (relationship with WCM)	Measures of WCM	Estimation methods	Independent and control variables
Hanif (2019)	257 nonfinancial firms, Pakistan (2001–2015)	Added value growth rate (+) Added value = Profit/ Loss – interest – taxation – employee – depreciation – interest paid	Account receivable/total sales Account payable/total purchases	Fixed effects estimation GMM estimation	Size, age, macroeconomic variables (GDP, inflation rate)
Hussain et al. (2021)	248 nonfinancial companies from four sectors (textile, food and sugar, motor vehicles and trailers and auto parts, fuel and energy), Pakistan (2011–2020)	Sales growth rate (mixed results by sector)	Trade credit = account receivables/ total assets Trade debt = sales/total assets	Seemingly unrelated regression model	Lagged sales growth, size, age, capital structure, profitability, financial leverage
Lefebvre (2021)	Small retail companies, France (2010–2017)	Sales growth rate (+)	NWC = (inventories + receivables – payables)/sales revenue	Random effects estimation	Age, size, cash flow, leverage, financial slack (cash and equivalents/total assets), fixed assets growth, tangible assets/ total assets, profitability

Abbreviations: GMM, generalized method of moment; NWC, net working capital; SME, small- and medium-sized enterprises; WCM, working capital management.

[a]Belgium, Germany, Spain, Finland, France, Italy, Netherlands, and Portugal.

disruption (Juan García-Teruel & Martínez-Solano, 2007), protecting the company from potentially very costly situations and minimizing risks within the production chain. The efficient management of inventories also reduces the impacts from input price volatility (Blinder & Maccini, 1991), acting as a defensive strategy against large variations in market prices. As Aktas et al. (2015) recognize, these elements are even more important for firms with low initial levels of working capital.

From a working capital financing perspective, accounts payable can be understood as the amount of funds obtained from suppliers to finance current assets. According to Ferrando and Mulier (2013), growth is positively related to higher production costs, which means that a firm confronted with a liquidity shortage will rely more on trade credit. While Bougheas et al. (2009) find support for this relationship in a theoretical model without bank loans, other studies conclude that accounts payable are an alternative source of financing production in contexts (e.g., countries, sectors, or high-growth firms) where other sources of finance (i.e., bank loans) are not readily available (Cuñat, 2007; Ferrando & Mulier, 2013; Fisman & Love, 2003). In other words, in environments with poorly developed financial markets or a shortage of liquidity, taking trade credit can act as a substitute for short-term bank loans.

Despite the above-mentioned arguments in favor of a positive relationship between the items of NWC and firm sales growth, the studies have yielded mixed results. Abuhommous (2017) and Lefebvre (2021) analyze this relationship explicitly and find a positive impact of NWC on firm sales growth. According to Abuhommous (2017), investment in working capital is more likely to lead to higher growth rates in the case of smaller and younger firms. Lefebvre (2021) also concludes that this positive relationship is stronger for small (retail) companies pertaining to a business group, especially when they are in rural areas and in crisis periods. We should underline that both authors use the "conventional" measure of NWC; that is, accounts payable are subtracted from the sum of accounts receivable and inventories. Therefore, they implicitly propose a negative relationship between spontaneous financing and firm growth.

In a recent study not directly focused on WCM, Megaravalli and Sampagnaro (2019) find the opposite result after analyzing the determinants of being a high-growth firm, using a sample of 22,233 Italian manufacturing SMEs. The authors conclude that the level of working capital, measured as the log of inventories, is negatively related to the probability of having experienced sales growth rates greater than 20% for two consecutive periods.

While the three previous studies unconsciously adopt a working capital investment approach, Ferrando and Mulier (2013) draw on a working capital financing approach. More specifically, their study aims to analyze the effect of trade credit on firm growth, instead of considering all elements of NWC jointly. In so doing, the authors emphasize the role of accounts payable as an alternative source to finance production. Moreover, they go further and attribute that same role to accounts receivable, since firms can obtain short-term bank loans (e.g., through bill discounting, factoring, or credit insurance) once their receivables are pledged as collateral. To test their hypothesis, the authors consider the trade credit channel, measured as the sum of accounts payable and accounts receivable, as the key independent variable. By adding the accounts receivable, they are introducing the importance of considering short-term liabilities other than spontaneous financing. Indeed, using a sample of 600,000 nonfinancial firms, Ferrando and Mulier (2013) find that the trade credit channel has a more significant impact on firm growth in countries where the supply of bank loans or debt securities is smaller (Spain, Italy, and Portugal), and for young and small firms, because such firms are more sensitive to financial market imperfections.

Hanif (2019) replicates the analysis of Ferrando and Mulier (2013) by testing separately the effect of accounts payable and accounts receivable on the growth of value-added. The results also support a positive relationship between trade credit channel and firm growth for both working capital items. Huang et al. (2019) find the same positive relationship between the (aggregate) trade credit channel and sustainable growth.

It worth to note that results may be different depending on the industry, since economic activity sectors have different characteristics. This is the approach of Hussain et al. (2021), whose work analyses companies from four different sectors in Pakistan, finding mixed results between them. This sectorial approach points out that internal characteristics of companies from concrete activities lead WCM to different outcomes related to firm growth.

As we have just seen, there are few studies on the impact of NWC on firm sales growth and, in addition, their results are not conclusive. Moreover, based on our review of the literature, we can conclude that the extant studies have only considered the amounts invested in current assets and/or the financing provided by suppliers (spontaneous financing). Indeed, the former minus the latter determines the NWC, or the funds needed to finance the firm's daily operational activities. However, the question of how this financial requirement for NWC is funded has mostly been ignored by the literature. In other words, the studies provide an incomplete view of working capital financing policies, as they do not consider short-term liabilities other than spontaneous financing.

In this respect, corporate finance textbooks typically advocates that long-term resources should at least finance fixed assets, and if there is a surplus (long-term resources minus fixed assets), this should also finance a part of the NWC (Kleiman & Shulman, 1988). These additional long-term financial resources for financing day-to-day activities are known as "working capital." The other part of the NWC is financed with nonspontaneous short-term liabilities, mainly bank debt in the case of SMEs. Even when short-term bank debt is not a direct factor in calculating the NWC, it implicitly becomes a reason to reduce NWC since several studies have found that small companies (Carpenter & Petersen, 2002) and companies based in countries with a tight financial sector (Ferrando & Mulier, 2013) have big problems in accessing bank debt.

Moreover, the balance between long-term and short-term sources of funding to cover the financial requirements of NWC is relevant to firm growth, since short-term and long-term debt are not perfectly substitutable products. Thus, short-term bank debt is riskier than long-term debt because it must be regularly renegotiated over short periods of time, and at the time of renegotiation the conditions of the company, or the context, may have changed and the company may not be able to raise the necessary funds for its day-to-day activities and its growth.

In this paper, we analyze whether the investment in NWC, as well as the way in which it is financed, influences the firm sales growth of fish processing industry. Although the arguments relating to NWC and firm growth might be extended to almost any manufacturing sector, the fish processing industry is particularly well suited to the study of this topic: it has expanded its production considerably in the last decade (Figure 1), and is expected to continue to do so in the near future (Depellegrin et al., 2022). The fish processing industry already has an important impact on the analyzed economies, representing almost 2% of the total production value in manufacturers of the six selected countries (Eurostat, 2022).

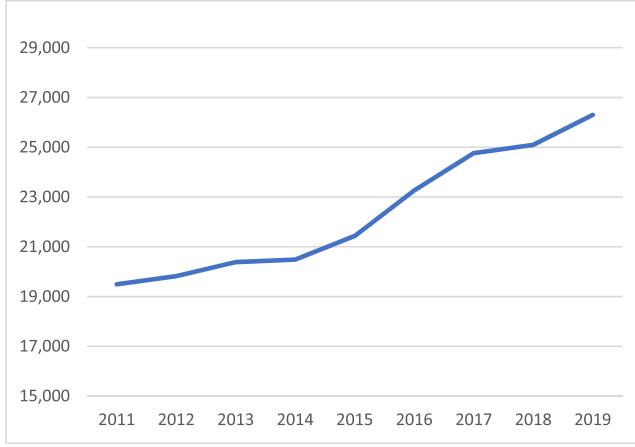

FIGURE 1 Fish processing industry production value (million €). *Source*: Own elaboration based on Annual detailed enterprise statistics for industry. Eurostat (2022).

Additionally, the selected countries provide an invaluable context for the analysis. As mentioned, the limited financial resources of SMEs and their strong dependence on bank lending (Kontogeorgos et al., 2017) make WCM especially relevant for this kind of firms in a period of a credit crunch (Fernández-López et al., 2020). In this respect, the share of SMEs in the fish processing industry in the selected countries is nearly 96%.

3 | METHODOLOGY

3.1 | Sample and data

The study focused on firms in the processing and preserving of fish, crustaceans and molluscs industry, whose Statistical Classification of Economic Activities (NACE) four-digit code is 1020. The data were obtained from the Bureau van Dijk ORBIS database, which contains financial information on companies in European countries.

To build a representative sample of the sector, the first step was to search in Eurostat (2022)[2] for those European countries with the largest number of firms in the NACE code 1020 in 2013, the 1st year of the study period. Specifically, to select the countries to include in the sample, a country had to meet the condition of having at least 200 companies in the fish processing industry. This threshold was set considering that the number of firms in an industry with available data in ORBIS is usually smaller than the total number of firms actually existing in that industry, and that a lower number of firms per country might make difficult the use of dynamic panel data techniques. Thus, the following countries were selected: Spain (640 firms), Norway (466), Italy (395), France (351), United Kingdom (323), Poland (280), Sweden (223), and Germany (204).

For these countries, we performed a search in ORBIS database in March 2022 using the NACE code 1020, retrieving data for the period 2012–2021.[3] Given that only 27 companies had provided data for 2021, in contrast to more than 1300 in the other years, this year was not included in the study. At this point, the initial sample included 3573 unique firms.

We screened the data following the basic rules of the Generally Accepted Accounting Principles. More specifically, observations were excluded if any of the following were found: (1) accounts receivable or inventories were greater than liquid assets or negative, (2) accounts payable were greater than liquid liabilities or negative, (3) sales were negative, (4) long-term debt or short-term debt were negative, and (5) total assets were below 3000 euros (i.e., firms with not enough assets to operate). Since the analysis focuses on a dynamic variable such as sales growth rates, companies created after 2018 were also disregarded.

After the application of these filters, annual sales growth rates were calculated and it was found that both the UK and Germany had 50 or fewer observations in each year, which would impede to apply panel data techniques when analyzing each country individually, so these two countries were discarded. Finally, we eliminated the observations with 5% extreme values in the dependent variable.

In summary, after the cleaning process, the final sample included 2663 unique firms and a total of 9656 observations for the dependent variable. Figure 2 details the number of observations of the initial sample and the final sample per year and country. It should be noted that this is a strongly unbalanced panel data, as a high number of firms enter or exit the sample throughout the period of study. In addition, many companies/observations will not be included in the econometric models because they lack data either on the dependent variable for at least 3 or more consecutive years, or on any of the other independent and control variables, which greatly reduces the number of companies in the multivariate analyses.

[2]https://ec.europa.eu/eurostat/databrowser/view/SBS_NA_IND_R2__custom_3253641/default/table?lang=en.
[3]ORBIS only has data available for the last 10 years, which is why we retrieved data from 2012 onwards.

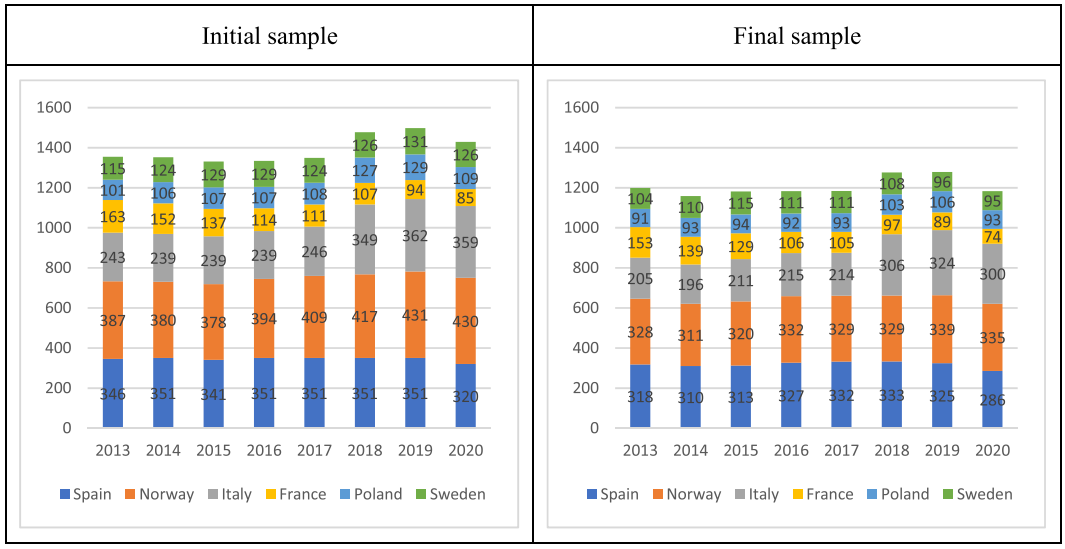

FIGURE 2 Number of companies with observations for the dependent variable (sales growth) per year and country (2013–2020).

3.2 | Estimation strategy and model specification

We used the dynamic panel data methods to test the influence of working capital investment and financing policies on firm growth. Methodological and theoretical issues motivated this choice. First, unlike the OLS regression, panel data allow us to control for individual heterogeneity, that is, the firm's unobservable effects that could affect the growth and are individually associated with each of the companies (α_i). Thus, the error term in the models is split into three components: the unobserved firm-specific effect mentioned above (α_i), a time component to capture the effect of macroeconomic factors on firm growth (λ_t), and finally the random disturbance (ε_{it}).[4] In this way, the risk of obtaining biased results was reduced (Baltagi, 2008).

Second, the economic literature has claimed the need for an autoregressive (AR) framework in the empirical study of firm growth since it was theoretically proposed by Gibrat's (1931) Law of Proportionate Effect. According to this law, the probability of a firm to grow (or shrink) during a given period is the same for all firms in a sector regardless of the size of each firm at the beginning of the period; in other words, firm growth and firm size are not related (Mansfield, 1962). Techniques of dynamic panel estimation are more suitable methods to capture the dynamic nature of firm growth as they allow the inclusion of a lagged dependent variable in the right-side equation without bias (unlike fixed effects estimator). Moreover, the generalized method of moments (GMM) procedure allows to exploit also the lagged values of the explanatory variables as instruments, gaining efficiency in estimation over the fixed effects (FE) methods (Erdinç, 2013). More specifically, following Ferrando and Mulier (2013), we used an augmented version of the Law of Proportionate Effect.

Third, endogeneity attributable to the reverse causality problem may arise since the dependent variable (firm growth) may also explain some of the independent variables of the model like the firm's debt. In particular, since the GMM estimators are instrumental variable estimators they allow us to account for the endogeneity of all the time-varying explanatory variables (Pindado et al., 2014). Thus, the basic specification of the model is as follows:

[4] ε_{it} is normally distributed with mean 0 and variance σ_ε^2.

$$Growth_{it} = \beta_0 + \beta_1 growth_{it-1} + \beta_2 X_{it} + \beta_3 \ln\_nemp_{it} + \beta_4 \ln\_age_{it} + \beta_5 ebitda\_ta_{it} + \beta_6 ltdebt\_fa_{it} + \alpha_i + \lambda_t + \varepsilon_{it}, \quad (1)$$

where firm growth is calculated as the difference between the deflated sales and the lagged deflated sales, divided by the lagged deflated sales[5] ($growth_{it}$), X_{it} denotes the set of independent variables related to working capital investment and financing policies, that is, the variables of interest in this study, and several explanatory variables are used as control variables. Thus, in the same way as Ferrando and Mulier (2013), we included the log of total number of employees ($\ln\_nemp_{it}$) and the log of age ($\ln\_age_{it}$), measured by the number of years since the firm was established, to ensure that any effect of NWC on sales growth is not driven by firm size and age. Regarding the firm's financial performance, we used the ratio of earnings before interest taxes depreciation and amortization (EBITDA) to total assets to represent the firm profitability ($ebitda\_ta_{it}$) (Abuhommous, 2017). In line with previous studies, we also considered the firm's access to long-term debt, measured as long-term debt divided by fixed assets ($ltdebt\_fa_{it}$).

As mentioned, the key explanatory variables (X_{it}) are those referring to the firm's NWC. Regarding working capital investment policies and spontaneous financing, we used the "conventional" definition of NWC (i.e., the sum of accounts receivable and inventories minus accounts payable) divided by total assets ($nwc1\_ta$). Additionally, we separately considered each of the three items of NWC, to know the individual effect of each on sales growth. Specifically, we used accounts receivable ($receiv\_ta_{it}$), inventories ($invent\_ta_{it}$), and accounts payable (pay_ta_{it}) scaled by total assets. In this way, our results can be compared with those of Abuhommous (2017), Ferrando and Mulier (2013), Hanif (2019), Huang et al. (2019), Lefebvre (2021), and Megaravalli and Sampagnaro (2019). It should be noted that the "conventional" measure of NWC implicitly establishes a negative relationship between accounts payable and sales growth. For this reason, an alternative measure of NWC was constructed, following the approach of Ferrando and Mulier (2013). In this case, the accounts payable were added to accounts receivable and inventories ($nwc2\_ta_{it}$). To capture how the financial requirements of NWC are funded (the working capital financing policy), we calculated the percentage of the conventional NWC financed by short-term bank debt ($stdebt\_nwc_{it}$); the higher this percentage, the more aggressive the NWC financing policy.

All the specifications of Equation 1 were estimated with the first difference GMM estimator (Arellano & Bond, 1991) through the user-written command *xtabond2* for Stata. More in detail, we based the inferences on two-step estimation results.[6] We have chosen the first difference GMM approach following two criteria. First, the Hansen test checks the validity of the instruments used in the models and the AR test confirms the absence of serial correlation in the errors. This is not the case for the GMM system estimates included in the robustness analyses. Second, following Arellano and Bond (1991), we compared the obtained coefficients for the lagged dependent variable (β_1) in the first difference GMM estimates and FE estimates. The β_1 estimates for the first difference GMM approach are neither close nor below the β_1 estimates for FE approach, which suggests that the first difference GMM approach is not biased because of weak instrumentation. In contrast, the β_1 estimates for the GMM system estimator are close to that from the OLS regression, suggesting some bias in the results. Finally, we checked for the potential misspecification of the models. More specifically, we used the *m2* statistic (Arellano & Bond, 1991) to test for the lack of second-order serial correlation in the first-difference residual. Additionally, the Hansen *J* statistic for overidentifying restrictions was employed to test for the absence of correlation between the instruments and the error term.

[5]We calculated the firm's sales in real terms by dividing the sales in nominal terms by the GPD deflator in 2015.

[6]The two-steps estimation tends to be more efficient than the one-step estimation as the former uses the residuals of the latter (Arellano & Bond, 1991). Alternatively, we also applied one-step estimation procedures obtaining coefficients similar to those obtained with two-step estimation procedures. However, in the one-step estimations, neither the Sargan's test allowed us to rule out the over-identification restrictions, nor the AR test the absence of serial correlation in all the estimated models. Therefore, we opted for two-step estimations.

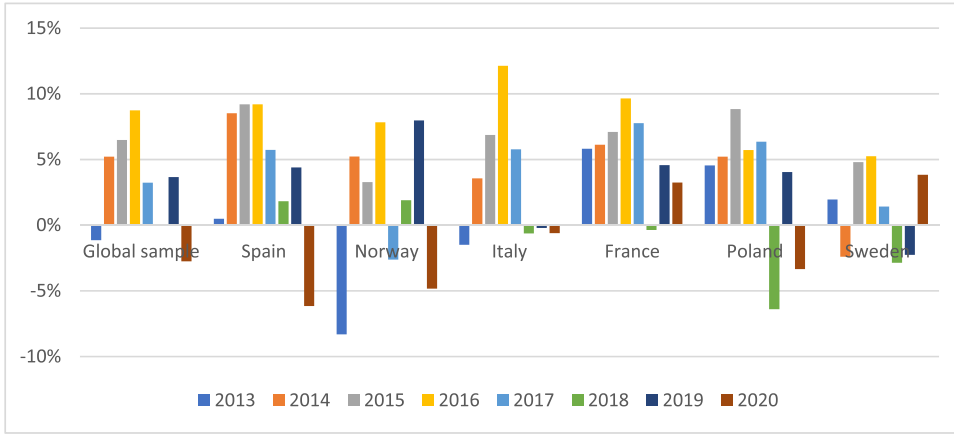

FIGURE 3 Annual rates of sales growth (average) per country (2013–2020).

4 | EMPIRICAL RESULTS

4.1 | Descriptive analysis

Figure 3 illustrates the evolution of average sales growth rates of fish processing companies over the period of analysis. Considering the global sample, the average sales growth rate was 2.9% for the entire period. This growth was not constant: in 2013 and 2020 the sales decreased, and in 2018 they barely grew (0.03%). However, for the rest of the period, companies reported relatively high sales growth rates if considering that they are in a mature industry; in 3 years, growth rates exceeded 5%.

The trend observed for the global sample is similar to that observed for each individual country, albeit with some nuances. Thus, France, Spain, and Poland have higher average growth rates than the global sample (5.7%, 4.3%, and 3%, respectively, for the entire period); meanwhile, Italy (2.7%), Norway (1.3%), and Sweden (1.3%) have lower rates. Additionally, all countries recorded a drop in sales in at least 1 year of the series, although this was not equally frequent; while Spain and France recorded a drop in sales in only 1 year, Italy did so in 4 years.

Table 2 displays the summary statistics for the 2663 companies in the final sample and for the approximately 1070 companies considered in the multivariate analyses due to the lack of data on the variables included in the estimated models. The descriptive analysis focuses on the dependent variable (sales growth), the working capital investment and financing policies, and the characteristics of companies used as control variables. Since there are no large differences, the following comments refer mainly to the final sample.

Regarding the working capital investment policies, the accounts receivable and inventories represent, on average, 21.2% and 15.4% of total assets, respectively. In other words, these two accounting items constitute 36.6% of total assets, which is indicative of the importance of current assets in the sample companies. Focusing on financing policies, the spontaneous financing obtained from suppliers represents, on average, 16.8% of total assets. As a result, the average NWC of the sample firms (under the conventional definition) accounts for 19.9% of their total assets, reaching 53.1% when the NWC is calculated by adding the accounts payable to the accounts receivable and inventories (*nwc2_ta*). These figures underline the relevance of NWC in the financial structure of fish processing companies. In particular, the statistics in Table 2 show that, on average, 24% of NWC is financed with short-term resources. This figure makes sense, as the long-term debt of the companies represents, on average, 180.1% of their fixed assets (*ltdebt_fa*), indicating that a share of the long-term financial resources funds the NWC requirements. In other words, it seems that companies in the fish processing industry to some extent follow a conservative financing policy of the NWC.

TABLE 2 Descriptive statistics.

Variable	Global sample					Firms included in the multivariate analyses				
	Observations	Mean	S.D.	Min.	Max.	Observations	Mean	S.D.	Min.	Max.
$growth_{it-1}$ (%)	9656	0.029	0.230	−0.567	0.973	4212	0.025	0.198	−0.567	0.973
receiv_ta (%)	13,850	0.212	0.206	0	1	4212	0.241	0.175	0	0.969
invent_ta (%)	13,785	0.154	0.171	0	0.993	4210	0.202	0.166	0	0.866
pay_ta (%)	13,672	0.168	0.189	0.	1	4202	0.177	0.164	0	0.921
nwc1_ta (%)	13,891	0.199	0.253	−1.000	1.381	4212	0.267	0.230	−0.635	0.962
nwc2_ta (%)	13,891	0.531	0.394	0	2.000	4212	0.621	0.331	0	1.715
stdebt_nwc (%)	12,900	0.240	2.520	−39.413	47.914	4212	0.349	2.283	−38.30	47.914
n_empl[a] (number of persons)	10,665	48.671	276.10	0	13,061	4212	65.700	239.13	1	4912
ltdebt_fa (%)	12,989	1.801	21.789	0	828.260	4212	1.413	19.191	0	767.63
Age[a] (number of years)	15,559	32.190	35.264	1	121	4212	27.542	23.340	4	120
ebitda_ta (%)	13,891	0.044	0.653	−56.000	15.119	4212	0.074	0.121	−2.266	0.930

[a]Variables are not in logs.

TABLE 3 Descriptive statistics per country (means).

	Spain	Norway	Italy	France	Poland	Sweden
$growth_{it-1}$ (%)	0.043	0.013	0.027	0.057	0.030	0.013
receiv_ta (%)	0.249	0.139	0.244	0.254	0.283	0.171
invent_ta (%)	0.192	0.128	0.148	0.166	0.151	0.135
pay_ta (%)	0.148	0.121	0.204	0.252	0.246	0.138
nwc1_ta (%)	0.296	0.145	0.188	0.168	0.199	0.161
nwc2_ta (%)	0.583	0.388	0.596	0.673	0.649	0.434
stdebt_nwc (%)	0.295	0.191	0.311	0.100	0.401	0.021
n_empl[a] (number of persons)	62.666	55.980	23.674	92.635	64.674	10.964
ltdebt_fa (%)	1.658	2.097	2.876	0.825	0.943	0.683
Age[a] (number of years)	22.215	14.523	24.315	20.579	111.377	23.738
ebitda_ta (%)	0.039	0.045	0.044	0.066	0.028	0.047

[a]Variables are not in logs.

Regarding the remaining control variables, the average number of employees is around 49 people. In this respect, it should be noted that approximately only 4% of the sample companies are large companies, while the remaining 96% are SMEs, according to the EC definition (fewer than 250 employees). The sample companies have an average age of 32 years. Finally, the average economic profitability reaches 4.4%.

Zooming on the companies included in the multivariate analyses, they have a higher percentage of inventories than the global sample and, accordingly, their average NWC is also higher. In addition, they finance a larger part of their NWC with short-term debt, showing a more aggressive financing policy than the global sample. Moreover, their size and profitability are above the average of the global sample, while their age is below.

Table 3 displays the average values of the variables considered in the analyses for each country. Regarding the working capital investment and financing policies, several things deserve to be highlighted: First, while inventories to total assets is similar in all the countries, the accounts receivable to total assets is not. Thus, in Spain, Italy, France, and Poland these two items represent, on average, more than 39% of total assets, while in Norway and Sweden, they jointly represent less than 31%. Second, accounts payable is more important, on average, in firms from Italy, France, and Poland (representing more than 20% of total assets) than in Spain, Norway, and Sweden (representing less than 15% of total assets). Third, as a result of the previous two points, the relevance of the NWC in the firms' balance sheet differs from country to country, depending also on the formula used to calculate it. Thus, the conventional definition of NWC shows average values of NWC to total assets that range from 14.5% in Norway to 29.6% in Spain, whereas that adding accounts payable (instead of subtracting them) leads to average values ranging from 38.8% in Norway to 67.3% in France. Finally, the use of short-term resources to finance the NWC is also of different relevance in each country: the ratio of short-term debt to NWC ranges from 10% in France to 40.1% in Poland. This heterogeneity is very useful for analyzing the impact of different NWC investment and financing policies on firm growth.

Finally, Table 4 shows the correlation matrix of the variables.

4.2 | Multivariate analysis

Table 5 provides the result of the first difference GMM estimation of the models proposed in Equation 1. The table also reports several of the statistics used to check for the potential misspecification of the models. In all

TABLE 4 Correlation matrix.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$growth_{it-1}$ (%)	(1)	1										
receiv_ta (%)	(2)	0.078*	1									
invent_ta (%)	(3)	−0.003	0.0380	1								
pay_ta (%)	(4)	0.057*	0.4650	0.156*	1							
nwc1_ta (%)	(5)	0.018	0.494*	0.593*	−0.267*	1						
nwc2_ta (%)	(6)	0.067*	0.756*	0.531*	0.788*	0.387*	1					
stdebt_nwc (%)	(7)	−0.005	0.017*	0.014	0.024*	0.006	0.027*	1				
ln_*empl*	(8)	0.029*	0.086*	0.190*	0.063*	0.158*	0.169*	0.0105	1			
ltdebt_fa (%)	(9)	0.016	0.056*	−0.016	−0.013	0.044*	0.015	0.001	−0.033*	1		
ln_*age*	(10)	−0.113*	0.102*	0.109*	0.006	0.155*	0.098*	0.015	0.215*	−0.018*	1	
ebitda_ta (%)	(11)	0.153*	0.046*	0.012	−0.052*	0.082*	0.007	0.000	0.059*	−0.020*	0.045*	1

*$p < 0.10$.

TABLE 5 First difference GMM estimates on sales growth.

	receiv_ta (Model 1)	*invent_ta* (Model 2)	*pay_ta* (Model 3)	*nwc1_ta* (Model 4)	*nwc2_ta* (Model 5)
$growth_{t-1}$	−0.041*	−0.039	−0.042*	−0.04	−0.040*
	(−0.025)	(−0.025)	(−0.024)	(−0.025)	(−0.024)
NWC variable	0.280****	−0.232***	0.244****	−0.041	0.134****
	(−0.049)	(−0.079)	(−0.053)	(−0.042)	(−0.03)
stdebt_nwc	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)
ln_*nempl*	0.076****	0.080****	0.078****	0.079****	0.076****
	(−0.017)	(−0.018)	(−0.017)	(−0.017)	(−0.017)
ln_*age*	−0.122*	−0.149**	−0.131**	−0.140**	−0.122*
	(−0.066)	(−0.067)	(−0.066)	(−0.067)	(−0.066)
ebitda_ta	0.403****	0.420****	0.428****	0.424****	0.414****
	(−0.114)	(−0.116)	(−0.118)	(−0.119)	(−0.115)
ltdebt_fa	0.001****	0.001****	0.001****	0.001****	0.001****
	(0)	(0)	(0)	(0)	(0)
Years	Yes	Yes	Yes	Yes	Yes
Countries	Yes	Yes	Yes	Yes	Yes
Firm-year observations	4212	4212	4202	4217	4217
Unique firms	1072	1071	1071	1072	1072
Instruments	38	38	38	38	38
AR(1) Test (*p* value)	−12.63 (0.000)	−12.48 (0.000)	−12.83 (0.000)	−12.67 (0.000)	−12.87 (0.000)
AR(2) Test (*p* value)	−1.37 (0.170)	−1.34 (0.181)	−1.16 (0.245)	−1.04 (0.298)	−1.10 (0.270)
Sargan test (*p* value)	25.31 (0.064)	24.06 (0.088)	23.38 (0.104)	22.85 (0.118)	23.84 (0.093)
J Hansen test (*p* value)	19.51 (0.243)	18.57 (0.291)	18.20 (0.312)	18.01 (0.323)	18.79 (0.280)

Note: This table presents the first difference GMM estimates based on two-step estimation procedures of the models proposed in Equation 1. Robust standard errors are in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

****$p < 0.001$.

the estimated models, the *m2* statistic (Arellano & Bond, 1991) indicates the lack of second-order serial correlation in the residuals. Similarly, the Hansen *J* statistics for overidentifying restrictions cannot reject the null hypothesis.[7] Based on these values, we conclude that the instruments we use are valid in all the estimated models.

[7]According to Roodman (2009), the Hansen test is adequate when the estimation is performed considering an heteroscedastic matrix, as it is the case of the two-step estimation procedures.

Different models are estimated. Models 1–3 take into consideration the individual effect of each accounting item of NWC on sales growth, and Models 4 and 5 test the joint effect of the three accounting items of NWC. While Model 4 uses the conventional definition of NWC, Model 5 employs the definition based on Ferrando and Mulier's (2013) approach (*nwc2_ta*). All the models include the working capital financing policy by adding the nonspontaneous short-term liabilities in the estimations (*stdebt_nwc*).

As it can be seen in Table 5, the working capital investment and financing policies are related to sales growth. Granting trade credit (*receiv_ta*) increases the firm's sales growth rate, supporting the arguments in favor of a positive relationship between these two variables. In accordance with the WCM literature, selling on credit enables sales growth by allowing customers to check the quality of goods before paying for them (Cheng & Pike, 2003; Pike et al., 2005). This reason is especially relevant for firms with a less well-established reputation (i.e., small and young firms). In this respect, around 60% of the firms in the sample are small and micro companies. Trade receivables can also work as a tool for price discrimination (Abuhommous, 2017; Aktas et al., 2015; Ferrando & Mulier, 2013), allowing a firm with high-profit margins to reach less creditworthy customers (Petersen & Rajan, 1997) and to increase its market share. Concerning this argument, it should be noted that four in every five observations shows a profit margin (measured as EBIT divided by total sales) higher than 5%, a nonnegligible figure considering that the fish processing companies operate in a mature industry. Additionally, the result obtained is consistent with that of Hanif (2019), Huang et al. (2019), and Ferrando and Mulier (2013), although the last authors attribute this positive relationship to the possibility of using accounts receivable to obtain short-term bank loans through bill discounting, factoring or credit insurance.

Contrary to what we expected, inventories (*invent_ta*) have a negative impact on sales growth. This result is similar to that reported by Megaravalli and Sampagnaro (2019) for high-growth firms. It seems that the negative relationship between investment in inventories and sales growth also holds for a mature sector such as the fish processing industry, where it is very difficult to find exponential growth rates. Therefore, the arguments in favor of maintaining high levels of inventories to reduce risks of stock-out (Aktas et al., 2015; Corsten & Gruen, 2004; Deloof, 2003) and production disruption (Juan García-Teruel & Martínez-Solano, 2007) are not supported by our estimations.

As occurs with accounts receivable, accounts payable (*pay_ta*) shows a positive relationship with sales growth. This result is consistent with that obtained by Hanif (2019), Huang et al. (2019), and Ferrando and Mulier (2013), who find a positive effect of trade credit on firms' growth. This finding suggests that trade credit works as an alternative source of funding for a firm's daily operational activities, especially in contexts where firms are financially constrained (Ferrando & Mulier, 2013; Fisman & Love, 2003).

When the NWC is traditionally defined (*nwc1_ta*), it has a nonsignificant negative impact on sales growth. In contrast, when we assume a positive effect of accounts payable (*nwc2_ta*), we find the opposite result. These findings reinforce the previous result: the higher the amount of NWC financed by suppliers, the higher the firm's growth, emphasizing the role of the working capital financing policies, particularly spontaneous financing, in enabling firm sales. Again, these results are in line with those of Ferrando and Mulier (2013) and are contrary to those of Abuhommous (2017) and Lefebvre (2021), who using the conventional definition of NWC found a positive impact on firm sales growth.

In contrast, the variable measuring the percentage of NWC financed with short-term debt (*stdebt_nwc*) is nonsignificantly related to firm growth. In this respect, the results do not attribute a relevant role to current liabilities negotiated. However, the ratio of long-term debt to fixed assets (*ltdebt_fa*) does have a positive influence on sales growth, indicating that the higher the percentage of long-term debt used to finance the fixed assets, the higher the sales growth. More in detail, descriptive statistics have shown that the average ratio of long-term debt to fixed assets is greater than 1 in all the years analyzed, which would indicate that, on average, companies operate with positive working capital (even before considering equity) and that there is a

TABLE 6 Robustness analyses.

		receiv_ta (Model 1)	*invent_ta* (Model 2)	*pay_ta* (Model 3)	*nwc1_ta* (Model 4)	*nwc2_ta* (Model 5)
GMM system estimation	*NWC variable (Std Err)*	0.179** (0.086)	0.183** (0.075)	0.112 (0.093)	0.123** (0.050)	0.124*** (0.045)
	stdebt_nwc (Std Err)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
	Observations/firms	5264/1248	5643/1248	5637/1248	5648/1248	5648/1248
	Instruments	172	172	172	172	172
	p Value AR(1)/AR(2)	0.000/0.402	0.000/0.585	0.000/0.549	0.000/0.601	0.000/0.637
	p Value Sargan/J Hansen	0.000/0.000	0.000/0.000	0.000/0.000	0.000/0.000	0.000/0.000
First difference GMM estimation: SME (<250 employees)	*NWC variable (Std Err)*	0.280**** (0.050)	−0.234**** (0.082)	0.251**** (0.054)	−0.046 (0.043)	0.137**** (0.030)
	stdebt_nwc (Std Err)	−0.000 (0.000)	−0.000 (0.000)	0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)
	Observations/firms	4031/1033	4032/1033	4021/1032	4036/1033	4036/1033
	Instruments	38	38	38	38	38
	p Value AR(1)/AR(2)	0.000/0.135	0.000/0.141	0.000/0.190	0.000/0.240	0.000/0.217
	p Value Sargan/J Hansen	0.050/0.219	0.068/0.262	0.080/0.291	0.091/0.292	0.071/0.255
First difference GMM estimation: Spain	*NWC variable (Std Err)*	0.564**** (0.108)	−0.219** (0.100)	0.530**** (0.113)	−0.058 (0.070)	0.335**** (0.062)
	stdebt_nwc (Std Err)	−0.004 (0.003)	−0.004 (0.003)	−0.004 (0.003)	−0.003 (0.003)	−0.003 (0.003)
	Observations/firms	1487/327	1486/327	1472/326	1487/327	1487/327
	Instruments	33	33	33	33	33
	p Value AR(1)/AR(2)	0.000/0.603	0.000/0.912	0.000/0.624	0.000/0.910	0.000/0.551
	p Value Sargan/J Hansen	0.002/0.096	0.005/0.081	0.021/0.226	0.008/0.092	0.012/0.184
First difference GMM estimation: Norway	*NWC variable (Std Err)*	0.338** (0.167)	−0.550*** (0.187)	0.308*** (0.102)	−0.186** (0.091)	0.079 (0.085)
	stdebt_nwc (Std Err)	−0.000 (0.000)	−0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	−0.000 (0.000)

(Continues)

TABLE 6 (Continued)

		receiv_ta (Model 1)	*invent_ta* (Model 2)	*pay_ta* (Model 3)	*nwc1_ta* (Model 4)	*nwc2_ta* (Model 5)
	Observations/firms	933/277	933/277	933/277	933/277	933/277
	Instruments	33	33	33	33	33
	p Value AR(1)/AR(2)	0.000/0.446	0.000/0.199	0.000/0.527	0.000/0.418	0.000/0.575
	p Value Sargan/J Hansen	0.147/0.070	0.245/0.161	0.149/0.082	0.227/0.155	0.188/0.102
First difference GMM estimation: Italy	*NWC variable (Std Err)*	0.115** (0.054)	−0.036 (0.181)	0.124 (0.077)	0.011 (0.069)	0.072** (0.034)
	stdebt_nwc (Std Err)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)
	Observations/firms	981/220	981/220	981/220	981/220	981/220
	Instruments	33	33	33	33	33
	p Value AR(1)/AR(2)	0.000/0.095	0.000/0.099	0.000/0.102	0.000/0.103	0.000/0.104
	p Value Sargan/J Hansen	0.000/0.064	0.000/0.064	0.000/0.063	0.000/0.066	0.000/0.068
First difference GMM estimation: France	*NWC variable (Std Err)*	0.279 (0.185)	−0.394 (0.312)	0.761*** (0.249)	−0.266 (0.199)	0.277** (0.132)
	stdebt_nwc (Std Err)	0.001** (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.001)	0.001 (0.000)
	Observations/firms	218/77	218/77	218/77	218/77	218/77
	Instruments	33	33	33	33	33
	p Value AR(1)/AR(2)	0.001/0.142	0.001/0.052	0.003/0.073	0.001/0.038	0.002/0.205
	p Value Sargan/J Hansen	0.033/0.185	0.032/0.155	0.014/0.137	0.022/0.107	0.022/0.166
First difference GMM estimation: Poland	*NWC variable (Std Err)*	0.148 (0.350)	0.494 (0.460)	0.375 (0.232)	0.086 (0.243)	0.278 (0.170)
	stdebt_nwc (Std Err)	−0.002 (0.004)	0.000 (0.005)	−0.002 (0.004)	−0.002 (0.004)	−0.001 (0.004)
	Observations/firms	176/75	175/74	176/75	176/75	176/75
	Instruments	30	30	30	30	30
	p Value AR(1)/AR(2)	0.181/0.124	0.096/0.083	0.099/0.105	0.173/0.120	0.061/0.109
	p Value Sargan/J Hansen	0.000/0.042	0.000/0.006	0.000/0.032	0.000/0.028	0.000/0.019

TABLE 6 (Continued)

		receiv_ta (Model 1)	*invent_ta* (Model 2)	*pay_ta* (Model 3)	*nwc1_ta* (Model 4)	*nwc2_ta* (Model 5)
First difference GMM estimation: Sweden	*NWC variable (Std Err)*	0.460**** (0.130)	−0.384* (0.199)	0.030 (0.104)	0.089 (0.080)	0.078 (0.066)
	stdebt_nwc (Std Err)	0.002**** (0.001)	0.002**** (0.001)	0.002**** (0.001)	0.002**** (0.001)	0.002**** (0.001)
	Observations/firms	417/96	419/96	422/96	422/96	422/96
	Instruments	33	33	33	33	33
	p Value AR(1)/AR(2)	0.001/0.665	0.000/0.350	0.000/0.779	0.000/0.806	0.000/0.867
	p Value Sargan/J Hansen	0.388/0.835	0.289/0.752	0.263/0.664	0.270/0.684	0.312/0.736

Note: The table shows the two-step estimation results. The estimated models include all the control variables, excepting the country variables in those estimates referred to an individual country. Robust standard errors are in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

****$p < 0.001$.

cushion of long-term resources to finance short-term assets. This would explain why traded current liabilities are less utilized, and therefore do not have a significant effect on the sales growth of fish processing firms.

Finally, some of the control variables also influence sales growth. While the firm size or economic profitability have a positive impact, the firm age reduces sales growth. It can also be seen that in 3 of the 5 models estimated there is a negative effect of the lagged dependent variable, suggesting negative growth persistence in the fish processing industry. More in detail, the estimated coefficients imply that high levels of sales growth lead to lower growth rates the next period. This inverse speed of adjustment of growth to steady state suggest that mean reversion occurs in the growth dynamics of the sector, rejecting Gibrat's law.

4.3 | Robustness analyses

To evaluate the robustness of the findings, additional analyses were performed. First, we re-ran the estimates detailed in Table 5 by using the GMM system estimator (two-step procedure) to check if the results are robust to changes in model specification and estimation methods. Second, we repeated the estimations in Table 5 by only considering SMEs (i.e., those with fewer than 250 employees), as well as different firm size cutoffs to check for the short-term financial management for SMEs only. Third, we conducted separate country panels to explore if the WCM effects on sales growth hold across sample countries.

Table 6 shows the estimated coefficients of the variables referring to the firms' NWC. The GMM system estimates yield similar results to those obtained with the first difference GMM estimator, although inventories show a positive relationship with sales growth and the effect of payable accounts is no longer significant. However, since the Hansen *J* statistic prevents us from accepting the null hypothesis of the absence of correlation between the instruments and the error term, we consider the results provided in Table 5 to be more robust.

When the estimates are restricted to SMEs (i.e., firms with less than 250 employees) the results hold. Furthermore, the estimates have been repeated with different firm size cutoffs (i.e., less than 50 and 10 employees), and the results turn out to be robust to changes in firm size cutoffs.[8]

In the estimates by country, only those referring to Poland present problems of possible misspecification. The sign and significance of the coefficients obtained for the Spanish and Norwegian companies coincide with those of the main models. In the rest of the countries, although the signs of the effects estimated in Table 5 are maintained, some of the variables are no longer significant. More in detail, only accounts receivable and *nwc2_ta* positively influence the sales growth of Italian firms. This positive influence is also found for accounts payable and, as expected, *nwc2_ta* in the case of French firms. Finally, in Swedish companies, while accounts receivable maintains their positive effect, inventories maintain their negative influence. In summary, accounts receivable positively impacts sales growth in four of the countries studied, and accounts payable in three, while inventories have a negative effect in three other countries. It seems clear that WCM policies have an impact on the sales growth of companies in the sector.

5 | CONCLUSIONS

Short-term financial management is critical for company performance, especially for SMEs, which face greater difficulties than large companies in obtaining bank loans (Peel et al., 2000). These difficulties are even more pronounced in credit-constrained contexts, such as those experienced in the aftermath of the financial crisis of 2008 or the COVID-19 pandemic, or the one that can be anticipated with the war in Ukraine, the supply crisis,

[8]For firms with less than 10 employees, the coefficient of inventories maintains the negative sign but is no longer significant. Results are available upon request.

increasing inflation or the rise in interest rates by central banks in 2022. WCM is crucial for overcoming the financial constraints the companies face and for sustaining their growth. Despite this evidence, the literature on the topic emphasizes the influence of WCM on firm profitability, overlooking its potential role in firm growth.

In this paper, we explore the effect of WCM on firm sales growth, focusing on the fish processing industry of six European countries in the period 2013–2020. After applying panel data methods, the results show clearly that working capital investment and financing policies impact on firm sales growth. More in detail, accounts receivable and accounts payable positively influence sales growth, while the investment in inventories has a negative effect. These results suggest that the trade credit channel functions as a driver of sales growth. Particularly, the higher the amount of NWC financed by suppliers, the higher the firm's growth. In terms of working capital financing policies, the results show that short-term bank debt does not have a significant impact on sales growth, but long-term bank debt does, suggesting the importance of financing the NWC with positive working capital to boost growth. Moreover, these findings have proven to be robust to different estimations and across different subsamples (e.g., by country and firm size).

From a scientific approach, an important conclusion can be drawn. By adding payables to receivables and inventories, this paper proposes a definition of NWC that is an alternative to the conventional one. In doing this, payables are assumed to be related to firm performance in the same direction as receivables. Moreover, by considering the share of NWC that is financed by nonspontaneous short-term liabilities, we are also considering the working capital financing policies in our analysis. This perspective for analyzing NWC contributes to a holistic picture of the working capital financing policy that does not just consider spontaneous finance but also integrates other short-term loans, which are traditionally ignored by scholars.

Moreover, there are relevant conclusions from a practical perspective for both the European fish processing industry and other manufacturing sectors in which SMEs are predominant. From a working capital financing perspective, spontaneous financing and working capital (i.e., long-term financial resources remaining after the financing of fixed assets) positively impacts on firm sales growth, discouraging the abuse of short-term bank debt. Taking the previous results together, we can conclude that losing opportunities for early payment discounts is compensated by lower short-term financial costs. Moreover, this trade-off may be more important in tight financial markets, in which short-term debt can be even more expensive or just not accessible because of information problems.

From a working capital investment approach, the results speak in favor of reducing inventories and increasing accounts receivable. Thus, receivables can be a good mechanism to increase sales, favoring a long-term relationship with consumers and allowing financially stressed potential new customers to participate in the market, clearly affecting growth in a positive way. In contrast, although the literature usually considers inventories management from a value chain perspective, focusing on breakdowns in production and reductions in sale capacity, higher storage costs need resources that could potentially be invested in growth strategies, thus delaying them.

The most important limitation of this study lies in the lack of data for some variables of interest, which reduced the number of companies included in the multivariate analyses to less than half. In addition, companies often set target ratios and a time frame for achieving them; this could be the case for sales growth. This aspect has not been considered in the study and could open future lines of research. Also, the proposed theoretical approach and the results are promising and should be validated by extending the analysis to other sectors and/or macroeconomic situations. Thus, the fish processing industry shows some characteristics in its production chain that would be different for other sectors facing different NWC needs. Also, analyzing WCM under different macroeconomic circumstances (e.g., tight financial markets in developing countries, or periods of financial crisis) can be helpful for understanding the growth possibilities of firms through NWC. For instance, it would be interesting to analyze what happened to the sales growth and WCM of fish processing companies in the years immediately following the 2008 financial crisis. A particularly challenging research line would be to test whether the negative effect of inventories persists in a context dominated by the threat of supply chain disruption as experienced over the last year.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data were obtained from the Bureau van Dijk ORBIS database, which contains financial information on companies in European countries.

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