Article

Financial Sustainability in Agri-Food Companies: The Case of Members of the PDO Parma Ham Consortium

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Abstract: Agri-food companies play an economic, social, and environmental role. In Italy, the typical products protected by the European Union with the PDO and PGI marks are spread throughout the national territory, even in disadvantaged ones, and generate turnover, employment, and positive effects in related industries. These companies are often of medium or small size (SMEs) and are financially constrained. The research applies the assessment of financial sustainability to the balance sheet statement (BSS), financial ratios (FRs), interest coverage ratios (ICRs), duration of the cash conversion cycle (CCC), and net working capital (NWC) data. It shows that companies in the sector have high capital intensity in both the fixed asset (FA) and NWC cycles. Profitability is largely eroded by the cost of debt (COD). Financial sustainability is calculated through the following: (1) the duration of the cash conversion cycle (CCC), broken down into the cycle lengths of inventory, receivables, and payables; (2) the calculation of the income and financial margins generated by the management and their correlation; (3) the calculation of financial ratios (FRs) and the verification of financial leverage (ROA > ROD); (4) the calculation of income and financial interest coverage ratios (ICRs) and tests on the significant differences between them. The application of ICRs with the financial methodology applied in the research makes it possible to (1) improve the assessment of financial sustainability and reduce the related risk and (2) reduce the information asymmetry between the company and the bank, facilitating access to credit. The duration of the CCC is negatively correlated to profitability (ROE), while size and economic performance are positively correlated. The ICRs (interest coverage ratio) calculated with the financial approach are statistically different from the ones calculated with the economic one. The application of the result is relevant to industry operators and for future research. The research is replicable; the results can be tested on other sectors of the agri-food sector and disseminated to operators.

Keywords: parma PDO ham; typical food product; agricultural finance; financial sustainability; net working capital; interest coverage ratios; free cash flow; bankruptcy

1. Introduction

1.1. Research Premise

Agricultural and agri-food companies play an important role in the economic system, both in terms of the formation of the gross domestic product and in terms of employment. These companies also play an important role from a social and environmental point of view; they produce food for human consumption, contribute to human health and food safety, and oversee the territory, even in disadvantaged areas, by carrying out environmental services [1,2] and favoring the transition to a circular economy model [3]. In the agri-food sector in Italy, productions protected with the collective marks PDO (protected designation of origin), PGI ("typical geographical identification" in Italian), and TSG (traditional specialty guaranteed) play an important role in the national economic system. The total value of production in 2021 will be 19.1 billion euros, of which 10.7 billion will be exported,

equaling 21% of total Italian agri-food exports. There are 845 PDO, PGI, and TSG productions in Italy (3069 in Europe), of which 526 are wines, and these involve 198,842 operators organized in 291 consortia for the protection of typical products [3].

Italy is therefore the first European country for the number of PDO, PGI, and TSG products, followed by France (698 productions) and Spain (349 productions). These products play an important role in guaranteeing quality for consumers, safeguarding local territories, and maintaining production traditions [4,5]. There are 43 meat-based PDO, PGI, and TSG-marked products in Italy with a production value of 1.953 billion euros in 2021. The pig chain of marked products has 3674 recognized operators, 2005 operating farms, a total of 8254.314 pigs slaughtered in 2021, and 6,560,218 until October 2022 [6]. Among these products, Parma PDO Ham (Prosciutto di Parma DOP, in Italian) is the largest production, with a production value of 650 million euros at the production stage for 80,230 tons of certified production. The estimated total consumer turnover of Parma Ham PDO, at the consumer stage, is 2.171 billion euros for 2021, of which 294 are intended for export [3]. In 2021, Parma PDO Ham will be the third Italian production with PDO, PGI, and TSG marks after Parmigiano Reggiano PDO (1.607 billion euros of production value) and Grana Padano PDO (1.460 billion euros of production value). In 2021, there were 8,774,091 pork legs sent for PDO Parma Ham production, of which 7,865,744 were approved for PDO production. During 2022, up to the month of October, there were 7,054,846 pork legs for the production of PDO Parma Ham, of which 6,389,927 were approved for PDO production.

The designation of origin "Prosciutto di Parma" is protected in Italy through the law of 4 July 1970 n. 506; Parma Ham was then recognized as a PDO with EC Regulation n. 1107, dated 12 June 1996 Parma Ham production is regulated by the production specification (Disciplinare di Produzione, in Italian), which was modified in 2019 by the Parma Ham Consortium (Consorzio del Prosciutto di Parma, in Italian). The production specification defines that, in C.1 paragraph, rules as follows: "*The typical production area of Parma Ham, as identified by Law No. 26 dated 13 February 1990 and before that, by law No. 506 dated 4 July 1970, includes the territory of the province of Parma (Emilia-Romagna region, Italy) extending South of the Emilia Way not less than 5 km from it and up to a maximum altitude of 900 m, bordered, to the East, by the Enza river and, to the West, by the Stirone stream. The processing plants (Ham factories) and the slicing and packaging plants must be located within the territory defined in paragraph C.1 and where all raw material processing phases, as envisaged by the specifications, must take place. The raw material comes from a larger geographical area than the processing one, and which includes the administrative districts of the following Italian Regions: Emilia-Romagna, Veneto, Lombardy, Piedmont, Molise, Umbria, Tuscany, Marche, Abruzzo and Lazio (Italy)*". The Parma PDO ham sector plays an important role in the economy of the territory of the province of Parma in Italy. In fact, 140 companies operate in the sector [7], employing around 3000 people, and process fresh pork legs that come from around 3600 pig farms and 78 slaughterhouses. It is therefore an important sector for the territory of the province of Parma, which concentrates a large number of enterprises in a small territorial area with significant capital derived from the pig production area.

Parma PDO ham "PDO (short for Protected Designation of Origin) is a European Community certification system designed to protect the names and traditions of high-quality European foods made according to traditional methods in a defined geographic region. The name Parma Ham, for instance, is exclusively reserved to hams produced in Parma according to the strict rules defined by the Consorzio's specifications, which are based on the ancient tradition of its place of origin. In 1996, Parma Ham became one of the first meat products to be awarded the Designation of Protected Origin status." The activity of enhancing the production of Parma PDO Ham is carried out by the Parma Ham Consortium, which "was born in 1963 to protect and promote Parma Ham all over the world and offer consumers guarantees and certainties on the quality of the product." [8]. The certification activity of the Parma PDO Ham is carried out by CSQA Certificazioni Srl (in Italian, or briefly CSQA Ltd.), an external certification body that carries out the compliance checks of the product with the production specification according to the control plan of

the Parma PDO Ham. In fact, according to Regulation (EU) No. 1151/2012, PDO and PGI agri-food products are produced in compliance with the relative production specification; compliance with the rules of the specification by operators is subject to the control of independent control structures, such as CSQA Certifications, which must be authorized by individual states. CSQA is the control body for the PDO Parma Ham, pursuant to art. 53 of Law 128/98, authorized by the Italian Ministry of Agricultural, Food, and Forestry Policies with Ministerial Decree n. 17,977 of 17 December 2019.

The financial sustainability of companies operating In the Parma PDO ham sector, must consider that these companies were characterized by 12 bankruptcies in the period 2013/2022, out of 140 actual companies in the sector; all the bankrupt companies are SMEs. Therefore, in the evaluation of financial sustainability, the research achieves the goal of showing the following:

(1) The companies must age Parma PDO ham according to the rules of production specification; it is an investment in working capital that requires financial backing. This requires that companies have access to the capital market and that the cost of debt (COD), contracted to finance the inventory cycle, is considered in financial planning and covered with sufficient margins.

(2) To store the cured hams, the companies need adequate physical structures, such as production plants and equipment. Investments in fixed assets (FAs) generate income and, subsequently, financial flows in the future, generally in the medium and long term [9]. Therefore, if the repayment of these debts could be requested by the lenders in the short term, the investments would not yet have had time to generate the economic and financial flows necessary for the repayment of the debts contracted by the firms [10,11].

(3) The size analysis shows that SMEs in the Parma PDO Ham sector account for about 87% of all the companies in this sector. According to the Commission Recommendation 2003/361/CE, SMEs are defined as "enterprises that employ fewer than 250 persons, whose annual turnover is less than 50 million euros, or whose annual balance sheet total is not higher than 43 million euros." SMEs often have more difficult and expensive access to the capital market than large companies, and even this aspect is investigated in the research [12–14].

The production specification defines a minimum aging period of Parma PDO ham of 14 months. This rule of the specification has two consequences: (1) the aging determines an absorption of working capital necessary for the purchase of the fresh pork leg and the subsequent processing; and (2) the aging also leads to an increase in fixed capital investments because companies in the sector require physical aging structures, which therefore require fixed capital investments in buildings, plants, and machinery. For the evaluation of the research, it is necessary to consider that the companies in the Parma PDO meat sector are not obliged to produce only this product but can produce other types of hams and meat products or carry out processing activities on behalf of third parties. Public company data does not allow for the composition of the production value, which is confidential company data. The production of non-PDO hams and other charcuterie products of smaller size and shorter aging periods is also carried out in order to increase inventory rotation and consequently reduce the capital commitment. This strategy is particularly useful for small and medium-sized enterprises (SMEs), which have generally more difficult and expensive access to the capital market than large companies [15–19]. Recent research on agri-food companies has highlighted a negative relationship between size and profitability in the case of U.S. agricultural cooperatives [20]. In the food and beverage (F&B) sector listed on the Indonesia Stock Exchange, a recent study [21] shows that the current ratio and current liability-to-inventory ratios have a negative effect on profit growth, while the total asset turnover, net profit margin, and sales growth ratios have a positive effect. In the European Union, other research has shown that in organic agricultural firms, size affects the return on assets, cost ratios, liquidity, and debt [22]. Recent research has also involved the application of FRs to farms [23–26] and related

renewable energies [27], thus analyzing the effect on reducing their carbon footprint [28]. Other recent studies are interested in the creation of value and have shown that firm value is not influenced by the COD, while the cost of equity (COE) has a negative effect, along with the cost of capital (CO), thus expressing that the COD and COE have a negative effect on firm value, while the COC and CS have a positive effect [29].

The research uses the data of all the companies registered in the Consortium of Parma PDO Ham (Consorzio del Prosciutto di Parma DOP, in Italian); in the research, all the available financial statements of the companies were used, on a historical series of 10 years (2012–2011). The Parma PDO ham sector is interesting because: (1) it is one of the major PDO food productions in Italy and in Europe, and, therefore, the conclusions deriving from the analysis of the sector have a direct impact on a significant number of companies and on related industries; (2) the long aging is similar to other cured meats, cheeses, and wines; for this reason, the research can be extended to other agri-food sectors; and (3) the PDO Parma ham specification presents mandatory production specification rules that could affect company performance; the research is then interesting for other food products regulated by mandatory production regulations.

The research therefore has the following objectives: (1) analyze the data from the AAS of companies active in the Parma PDO ham sector to highlight the economic and financial characteristics of the companies; (2) analyze the companies' generation of profit margins and financial margins, verifying whether these margins are correlated with each other or whether they are statistically different; (3) calculate the profitability of capital and COD ratios to verify whether financial debt is sustainable; (4) verify the sustainability of financial debt through interest coverage rates; and (5) develop a correlation analysis of profitability and for the analysis of cash flow generation, forecasting a comparison and drawing the conclusions of the analysis.

1.2. Theoretical Background

The companies in the sector are often characterized by investments in fixed capital (property, plants, and machinery) and in working capital, including the company warehouse of the pork leg in the course of aging. Companies registered in the Consortium are not obliged to work only PDO Parma ham, but can also work other products, and can operate with plants not necessarily located in the typical production area; the data extraction takes place considering the company as a whole as the object of the data extraction and not the single production plant; some companies are large groups and have significant interests in other sectors of the agri-food sector, even in other provinces or regions.

In recent years, research on the agri-food sector has involved various developments related to the circular economy [30], the application of new technologies to gastronomic tourism [31], the role of intellectual capital as a determinant of performance in agri-food companies [32,33], contractual relationships along the supply chain [34]. All these topics are of interest and constitute research lines that can be developed in the PDO Parma ham sector. Further developments may concern the analysis of firms divided into family capital firms and non-family capital firms [35–38]. The public data used does not allow this insight, which could be the subject of further research.

In order to assess financial sustainability, it is first necessary to consider that in an economic approach, revenues and costs are compared using accrual-based methods, as expressed in accounting data [39,40]. The financial approach quantifies the cash flow available to distribute dividends or to finance discretionary investments [41,42]. Since the change in inventory and sales not yet collected are positive values of the company's income, it is important to consider a temporal mismatch between profit and cash flow. Economic and financial approach frequently show different result due a lag between economic and financial cycles as shown by several researcher [43]; therefore, firms may even have financial un-sustainability even in the case of positive income margins, both in the fixed asset (FA) cycle [44] and net working capital (NWC) cycle [45–49]. Even companies with positive earnings are not always able to bear the payments of the financial cycle. It is

therefore necessary to assess the sustainability of the financial cycle and the significance of the differences between profit and cash flow, considering a sample of companies; this is often the case for agri-food processing firms [50,51]. Companies in the Parma PDO Ham sector, in fact, make large investments that require financial backing. If this is done with risk (equity) capital, it is necessary to evaluate the relative yield considering the level of risk associated with the investment [52,53]. If the financial coverage is made with debt capital, it is necessary to evaluate the company's ability to cover the COD and repay the capital [54,55].

In order to finance investments, the companies can use the equity capital contributed by the shareholders or apply to the debt capital market. Firms prefer medium/long-term bank loans to finance investments in property, plants, and machinery, or loans to finance capital goods [56]. These loans usually take the technical form of a loan secured by a mortgage on the property or, rarely, as an unsecured loan; collateral forms of guarantee are often envisaged [57,58]. In medium/long-term loans, companies have a contractual obligation to repay debts based on debt amortization, which includes interest on the principal [59]. For the financing of working capital, companies prefer short-term lines of credit, such as credit on trade receivables, credit on contracts, and credit on fresh processed meat consignments [60–62]. It is therefore necessary to evaluate whether the cash flows generated by management are sufficient to pay the debt service (principal and interest). This assessment is important considering the significant time lag that exists between the economic cycle and the financial cycle [63]. The definitions of fixed capital and working capital take into account the speed of conversion of investments into free cash flows available for the payment of the company's debts, the repayment of the outstanding loans, and the return on equity [64–66]. Accounting data provides the classification of company activity values according to the principle of destination of the investments without considering the speed of conversion of the firm's values into available cash flow [67,68]. In this way, one can estimate the ability of companies to meet financial commitments by quantifying the generation of cash flows. The cost of financial debt is independent of the company's economic results, and this distinguishes this form of financing from risk capital (equity), which has a residual nature in the form of profits distributed in the form of dividends [69].

Agri-food companies have some characteristics, also with regard to investment and financing choices: (1) Parma PDO Ham has production and maturing cycles that can only partially be modified; (2) agricultural businesses are subject to additional biological and meteorological risks compared to businesses operating in other sectors; (3) the useful life and logistic chain of food products have limitations given by the nature of products, which can only partially be modified; and (4) food products have a significant impact on consumer health and the environment. Agri-food companies must make their own investment choices and therefore financing decisions, taking these specificities into consideration. Even financial intermediaries that finance agri-food companies must know the characteristics and risks of production cycles so as to adequately assess the credit risk caused by the sector.

For the financing of investments, the following credit lines are offered to companies in the sector by financial intermediaries [70]: (1) Long-term loan with mortgage guarantee; these loans have a long term, generally between 5 and 20 years; these are loans intended to finance investments in company structures, in particular company buildings. In general, the loan is assisted by a real mortgage guarantee on the property that is the object of the investment. (2) A medium- or long-term loan without collateral (unsecured loan); these loans generally have a duration of between 2 and 10 years; these are loans intended to finance investments in plants and machinery or the long aging of products. It is interesting to note that unsecured loans, intended to cover fixed assets, are frequently used by companies in the PDO Parma ham sector to finance the warehouse aging cycle, which has currency conversion beyond 12 months; these values therefore, even if formally allocated among working capital, have characteristics of conversion into currency that make them similar to investments in FA, with the consequent need for financial coverage at least in the

medium term [71,72]. (3) Leasing financial operations may concern real estate, such as plant and buildings in general, or movable property, such as equipment and machinery. Leases relating to movable assets have a shorter duration, which is generally in line with the life cycle of the leased assets [73,74]. (4) Particularly used in inventory financing transactions are short- and medium-term credit transactions secured by a pledge on inventory [75]. The pledge constitutes a form of collateral for lenders [76]. Collateral guarantees in Italy are the mortgage and the pledge, which are real guarantees, and the surety, which is a signature guarantee; these guarantees are governed by the Civil Code and by special regulations on credit, such as the consolidated banking law (Testo unico delle leggi in materia bancaria e creditizia, in Italian, D.Lgs. n. 385/1993). In the event of non-payment by the company, the lenders may have separate assets derived from the pledged asset; this asset can be sold to recover from the financial exposure. Loans to finance inventory stock are also guaranteed by a non-possessory pledge, governed by art. 1 of Legislative Decree 59/2016, then amended and converted into Law No. 199/2016. The non-possessive pledge differs from the pledge envisaged by articles 2784 and following of the civil code because the financed company must not divest itself of the asset subject to the pledge and thus has the possibility of continuing to dispose of the asset, which can remain with the company and be used in the production cycle. The most relevant precedent for the non-possessory pledge is the provision relating to the pledge on PDO hams, pursuant to Law No. 401/1985. The decree-law of 17 March 2020, n. 18, coordinated with the conversion law of 24 April 2020, n. 27 ("DL Cura Italia," in Italian), extended the possibility of constituting the revolving pledge, originally limited to Parma PDO Ham, according to Law 401/1985, and to aged cheeses (decree of the Ministry of Agricultural, Food, and Forestry Policies (MiPAAF) of 26 July 2016, n. 188), to PDO and PGI products in general. It identifies PDO and PGI agricultural and food products, including wine products and alcoholic beverages, as new assets to be pledged by means of annotation in special registers. The revolving pledge strengthens the access to credit of numerous strategic companies in the agricultural sector (primarily producers), allowing them to valorize the considerable fixed capital destined to remain deposited in warehouses for a long time before being placed on the market [77].

2. Methods

2.1. Annual Account Statement (AAS) Analysis

The annual account statement (AAS) is mandatory for companies operating as corporations or cooperatives; the AAS is the main document to inform third parties on the trend of a firm's business [78]. Therefore, the AAS are also freely available to researchers. The adoption of the AAS by the companies allows for a homogeneous information base on a European and national basis. The AAS is the main document, together with the Central Risk Bank of the Bank of Italy, used by banks to assess the creditworthiness of companies. The AAS is drawn up by a company's board of directors and submitted for approval by its shareholders; the AAS is drafted and approved every year. AAS have been adapted to Italian legislation by the content of the Fourth Directive of the Council of 1978. The regulation of the AAS is governed in Italy by Legislative Decree 18 August 2015, n. 139, which implements European Directive 2013/34/EU. The AAS consists of a balance sheet (BSS), an income statement (IS), and a cash flow statement (CFS).

As regards the balance sheet statement (BSS), the legislation imposes a scheme of opposing sections divided into an asset balance sheet statement (ABSS), expressing the investments, and a liability balance sheet statement (LBSS), expressing shareholders' equity and debt as sources of capital; LBSS expresses the sources of financing. The total amount of capital invested, classified in ABSS, expresses the total asset (TA) of the firm in a given period; ABSS assumes a classification of values on the destination of the investments in the management of the company; liabilities in LBSS are classified according to the origins of the sources of financing, i.e., of the subjects who have made funds available for the financing, divided by shareholders' equity and debt, expressed as the total source of capital (TS) [79]. Accounting principles and AAS rules contained in the Italian civil code establish

as mandatory a partial reclassification of receivables and payables and the underlying maturity, distinguishing between values with maturities before and after 12 months. We can write the BSS equation as follows [80]:

$$
\begin{aligned}
&A + Bfa^{int} + Bfa^{tan} + Bfa^{fin} + Cwc^{i} + Cwc^{ar<12m} + Cwc^{ar>12m} + Cwc^{o<12m} + \\
&Cwc^{o>12m} + Cwc^{ql} + CL + D^{+} = AE^{sc} + AE^{r} + AE^{\Pi} + \Pi + B + C + \\
&Df^{<12m} + Df^{>12m} + Dwc^{ap<12m} + Dwc^{ap>12m} + Dwc^{o<12m} + Dwc^{o>12m} + D^{-}
\end{aligned}
\tag{1}
$$

in Equation (1), the left side of ABSS expresses the BSS value of total assets (TA); the right side expresses the value of total liabilities and total sources of capital (LBSS); the sum of all the values on the left side of the equation is the total source of capital (TS). On the left side of Equation (1), A is the value of receivables from shareholders for capital subscription, Bfa^{int} is the value of intangible fixed assets, Bfa^{tan} is the value of tangible fixed assets, and Bfa^{fin} is the value of the financial fixed assets. Cwc^{i} is the working capital inventory, defining the stock value of materials and product stock at the end of financial year. $Cwc^{ar<12m}$ is the value of the working capital accounts receivable (commercial credit) in the short period (within 12 months), $Cwc^{ar>12m}$ is the value of the working capital accounts receivable (commercial credit) after 12 months, $Cwc^{o<12m}$ is the value of the working capital other credits (non-commercial credits) within 12 months, and $Cwc^{o>12m}$ is the working capital other credits (non-commercial credits) after 12 months. Cwc^{ql} is the working capital investment in a quasi-cash asset; CL is the working capital liquidity; and D^{+} is the active accruals and deferrals. In Equation (1), on the right side, AE^{sc} is the value of share capital, AE^{r} is the value of the reserves, AE^{Π} is the value of retained profit, Π is the value of net profit for the year. B is the provision for risks and charges, and C is the severance pay to be paid to workers (trattamento di fine rapporto, in Italian). The maturity of this debt is considered short-term because workers are free to resign and are entitled to severance payments on sight. $Df^{<12m}$ is the value of financial debts due within 12 months, $Df^{>12m}$ is the value of financial debts due after 12 months, $Dwc^{ap<12m}$ is the value of accounts payable (commercial debt) of working capital due within 12 months, $Dwc^{ap>12m}$ is the value of accounts payable (commercial debt) of working capital after 12 months, $Dw^{co<12m}$ is the value of other working capital debts (non-commercial debt) due due within 12 months, $Dw^{co<12m}$ is the value of other working capital debts (non-commercial debt) due after 12 months), and D^{-} is the negative accruals and deferrals. In Equation (1), $B + C + Df^{<12m} + Df^{<12m} + Dwc^{ap<12m} + Dwc^{ap>12m} + Dwc^{o<12m} + Dwc^{0>12m} + D^{-} = D^{T}$, where D^{T} is the value of total debt. The Italian standard on AAS provides that for smaller firms, combinations of values can be applied so that the AAS does not contain the details of all the values; for this reason, in the research, Equation (1) was reformulated as follows:

$$
A + BFA + Cwc^{i} + CWCA + D^{+} + CL = E + B + C + DFT + DWCS + D^{-}
\tag{2}
$$

in Equation (2), left-side of equation, $Bfa^{int} + Bfa^{tan} + Bfa^{fin} = BFA$; BFA is the value of the total amount of capital invested in fixed assets; $Cwc^{ar<12m} + Cwc^{ar>12m} + Cwc^{o<12m} + Cwc^{o>12m} + Cwc^{ql} = CWCA$; CWCA is the total amount of capital invested in firms' asset credits, jointly considering commercial credits ($Cwc^{ar<12m} + Cwc^{ar>12m}$), non-commercial credits ($Cwc^{o<12m} + Cwc^{o>12m}$) and quasi-cash assets (Cwc^{ql}); BFA + Cwc^{i} + CWCA + CL + D = T, where TA is total asset invested in the firm. On the right side of the equation, we can rewrite $AE^{sc} + AE^{r} + AE^{\Pi} + \Pi = E$, where E is the total value of shareholder capital, defined jointly as equity. $Dwc^{ap<12m} + Dwc^{ap>12m} + Dwc^{o<12m} + Dwc^{0>12m} = DWCS$; DWCS is the total amount of the source of capital from commercial accounts payable ($Dwc^{ap<12m} + Dwc^{ap>12m}$) and non-commercial accounts payable ($Cwc^{o<12m} + Cwc^{o>12m}$). The total amount of financial debt could be rewritten as $Df^{<12m} + Df^{<12m} = DFT$; DFT is the total amount of financial debt, therefore $B + C + DFT + DWCS + D^{-} = D^{T}$, where D^{T} is the total amount of debt, i.e., capital borrowed from third parties. Equation (2) could be briefly summarized with TA = E + D^{T} where TA is total investment in assets (or total

assets), and $E + D^T = TS$, where TS is total sources of capital; therefore, by definition, we have that ABSS = LBSS. Equations (1) and (2) could be properly applied to quantify net working capital (NWC), calculated as the difference between the current assets, expressed in terms of working capital investment (WCI^T), and liabilities, expressed in terms of working capital source of capital (WCS^T), as follows: $WCI^T = A + Cwc^i + CWCA + CL + D^+$, and $WCS^T = B + C + DWCS + D^-$; therefore, $NWC = WCI^T - WCS^T$. The net amount of cash due to banks and other financial intermediaries could be expressed in terms of net financial position (NFP) and is expressed as follows: $NFP = Df^{<12m} + Df^{>12m} - CL$; NFP's value is the net total amount of financial debt to be repaid to financial institutions. Therefore, Equation (2) could be expressed as follows:

$$BFA + NWC = E + NFP \tag{3}$$

In Equation (3), assume that NWC > 0 and NFP > 0; these values express, respectively, an absorption of capital per NWC cycle (as frequently occurs in the Parma PDO ham sector) and that the NFP expresses a source of capital, therefore the presence of loans from financial intermediaries. The cases where NWC < 0, and NFP > 0, are also possible; if NWC < 0, working capital cycle finances the firm's business and this case is defined as an aggressive working capital policy [81]. If NFP > 0, there is the case in which the company has more active financial resources than passive ones, and, therefore, NFP is an investment and not a source of financing; all these cases are analyzed in the research for the sample firms.

In BBS, the assessment of financial sustainability considers (1) the financial structure, with the ratio between debt (NFP) and equity capital (E) (the DER index is calculated accordingly), and (2) the capital absorption given by the net working capital (NWC). The DER index has an effect on (a) the increased risk of lenders and risk capital holders, which consequently increases the interest rate required to finance the enterprise, and (b) any excess risk and financial constraint on the acquisition of additional capital. The NWC cycle is important to assess financial sustainability because ΔCwci is to be considered as a positive or negative source of income: $\Delta(+)Cwc^i = \Delta(+)\Pi$, $\Delta(-)Cwc^i = \Delta(-)\Pi$. An increase in the NWC determines an increase in profit but not an increase in available cash, and this expresses a misalignment between economic flow (profit) and financial flow (cash flow). All other conditions being equal, an increase in the NWC determines an increase in the CCC and therefore reduces financial sustainability given the increase in the duration of the monetary conversion cycle.

In the AAS, the document that analyzes management performance is the income statement (IS); this document has the purpose of: (1) quantifying the profit created by the firm; (2) expose various intermediate profit margins; (3) isolate the contribution to the management of the firm from different areas of management (operational management, financial management, taxes). IS values are calculated applying the accrual principle; IS therefore does not consider the moment of collection and payment (the financial approach) but the moment of value creation [82,83]. IS could be expressed applying Equation (4), as follows [70]:

$$
\begin{aligned}
&(S \pm \Delta Cwc^i + OR) - (M + S + R + L + O) = VP - MC = EBITDA \\
&EBITDA - (D + A) = EBIT \\
&EBIT + (Ir - Ic) \pm W = EBIT + SF + \pm W = \Pi^{bT} \\
&\Pi^{bT} - T = \Pi
\end{aligned}
\tag{4}
$$

In Equation (4), S is the total amount of sales (net of discount), ΔCwc^i is the annual variation in inventory value. OR is other revenues (positive sources of income, including revenues from equity investments). The change in the value of inventories over time could be related to the aging of products in the PDO Parma ham sector; this value expresses the increases or decreases in value of inventories of products subject to aging. In the event of an increase in the aging period or an increase in the production volume, there will be an increase in the value of the products being aged; vice versa, there will be a decrease in value.

The sum of S, ΔCwc^i, Cp, and Os is the value of production (VP); VP is the total amount of value generated by current operations. VP is not a financial value because it does not consider the moment of collection and payment, but it is an economic value because it considers the increase or decrease in the value generated by the company, even if this value has not yet been translated into receipts or payments. M is the total amount spent for raw material acquisition; S is the cost of services; R is the total amount of renting and leasing; and O is the total amount of other costs. The sum of M, S, R, L, and O is the total amount of the monetary cost of production (MC).

The difference between VP and MC is earnings before interest, tax, depreciation, and amortization (EBITDA); EBITDA is the disposable income margin obtained from current operations. D is depreciations A is amortizations. The difference between EBITDA and D + A is earnings before interest and tax (EBIT). EBIT is the main IS margin that expresses the operating profitability of the firm's management; EBIT is available for the payment of the cost of debt and taxes and, for the residual share, to remunerate the holders of equity capital with profit. SF expresses financial revenues and costs, Ir is interest revenue and Ic is interest charge (Ir − Ic = SF); SF is the result of financial revenues and costs. W is the sum of revaluation and devaluation, where W is the result of the impairments of financial assets. $\prod^{bT}$ is profit before taxes; T is income taxes; $\prod$ is net profit. $A\prod$ in the BSS is equal to the $\prod$ of the IS.

In IS, the assessment of financial sustainability is estimated as follows: (1) economic margins (EBITDA and EBIT) are applied to assess the company's ability to cover the COD and the repayment of financial exposure (the hypothesis, which needs to be verified with the analysis of cash flows, is that these margins are proxies for cash flows), and (2) profit can be distributed to pay dividends to shareholders (also in this case, the assumption is that there is sufficient free cash flow to equity to distribute dividends). Therefore, for the assessment of financial sustainability, it is necessary to proceed with the calculation of CFS, which directly expresses cash flows generated by management, and as such, no approximations are needed.

The application of AAS and IS to evaluate firms' financial sustainability approach has some limitations: (1) AAS and IS data are influenced by accounting rules, including the rule of prudence for the protection of third parties. The application of AS and IS does not take into account the moment of manifestation of the financial flows, and for this reason it is applied to the cash flow statement (CFS) to assess financial sustainability. CFS is the main document that allows the calculation of financial margins. In agri-food firms, the AAS are an essential source for assessing creditworthiness and can be usefully integrated with sector and market performance data [84]. An early definition considers cash flow to be the sum of an accounting result (profit or EBIT) plus depreciation and amortization [85]. Other researchers express the absorption or generation of cash in the NWC cycle [86,87]. In our research, we apply the indirect CFS method [88–90] quantifies CF generated by operations with a starting point that is an income margin ($\prod$ in our case):

$$\Pi + (D + A) + SF = CF$$
$$CF \pm \Delta NWC = OCF$$
$$OCF \pm \Delta FA = UFCF \tag{5}$$
$$UFCF - SF = FCFE$$

In Equation (5), CF is cash flow, OCF is operating cash flow, UFCF is unlevered free cash flow, and FCFE is free cash flow to equity. In the analysis of CFS, it must be considered that the change in the value of the inventory has the opposite effect compared to what is observed in IS. In IS, an increase in inventory value causes an increase in economic margins, and vice versa. In CFS, an increase in inventory value causes a reduction in OCF, and vice versa. In our research, OCF assumes a key role because it is a financial margin net of changes in the value of the inventory; OCF then considers the absorption or generation of liquidity that derives from the production aging cycle. UFCF is therefore the cash flow available, for the remuneration of financial debt and equity capital. UFCF could

be considered a cash flow measure available for the payment of interest and the reduction, discretionary and otherwise, of the financial debt. Consequently, FCFE is the cash available for the distribution of $\prod$ in terms of dividends. Only if FCFE > 0 occurs is it possible to pay a dividend to shareholders. If UFCF is < 0, the firm would not be able to pay the cost of debt (SF). Only UFC > SF guarantees the ability of firms to repay the cost of any debt.

CFS is applied to directly evaluate financial sustainability without approximations caused by the time lag between the economic cycle and the financial cycle. Financial margins express the generation of available cash flows, each at a different stage of management: (1) OCF expresses the sustainability of operational management; (2) UFCF expresses the sustainability of debt cost payment; and (3) FCFE expresses the sustainability of dividend distribution to shareholders. To calculate the financial sustainability, it is therefore necessary to apply the financial margins defined above (CF, OCF, UFCF, FCFE) with respect to the economic margins (EBITDA and EBIT) in terms of: (1) payment of the cost of debt; (2) repayment of the financial debt (NFP). Due to the provisions of the Civil Code, the calculations on the AAS of the sample do not allow for the breakdown of financial and non-financial debts. Again, in the CFS analysis, the difference between CF and OCF is calculated only considering the change in the value of the inventory stock; in fact, not all AAS indicate the change in the complete range of credits and debts of working capital. In the research, it was chosen to express FCFE = UFCF − SF and not FCFE = UFCF − SF − DR, where DR is a non-discretionary payment of NFP, because DR is not a mandatory data in AAS; therefore, it is not available data in the public database.

2.2. Interest Coverage Ratios (ICRs)

Several studies in the literature on the prediction of bankruptcy apply interest coverage ratios (ICRs) to explain the state of financial distress at firms [91–93]. In ICRs calculations with an economic approach, EBITDA and EBIT are widely applied to approximate cash flow in assessing the financial sustainability of the operating cycle and to quantify the cost of debt service capacity. In our research, as shown in other research, the applied ICRs are calculated with a financial approach, thus considering financial margins derived from CFS (CF, OCF, and UFCF). In fact, financial margins directly express the CF generations, without any approximation as is necessary in the case of ICRs calculated with an economic approach. Some authors have calculated ICRs with the numerator EBIT regarding the topic of tax shield and deductibility of interest expense [94]; other authors have analyzed the application of ICRs to calculate the solvency of the listed companies, always calculating with EBIT in the numerator [95], while other research has used the same methodology for SMEs [96]. Other authors have preferred a calculation of ICRs using the EBITDA margin in determining the credit rating [97] and in determining covenants in financing operations [98,99], along with the extension to firms operating in the food sector [100].

In the research, we would propose a panel of 5 ICRs to be applied to the firm's sample data. The ratios are divided as follows: (1) Ratios ICR_1 and ICR_2 are marked with "ea" letters expressing an economic (earnings) approach and assume the denominations ICR1ea and ICR2ea; (2) ratios from ICR3 to ICR5 are marked with "cfa" letters expressing a cash flow approach and assume the denominations ICR3cfa to ICR5cfa. Traditional (economic) ratios are expressed with an asterisk (ICR1ea* and ICR2ea*); in fact, ICRs with an economic approach (EBITDA and EBIT based ICR) could be considered more traditional if compared with "cfa" ICRs. ICRs, calculated with a financial approach, are marked with two asterisks (ICR3cfa**, ICR4cfa**, and ICR5cfa***), respectively CF, OCF, and UFCF based ICRs. ICRs with a "cfa" approach could be usefully applied in the PDO Parma Ham sector because; (1) CF is expressive of the cash flow available to pay the cost of debt and it does not consider financial absorption due to the NWC cycle; (2) OCF is expressive of the cash flow available to pay the cost of debt even considering financial absorption in the NWC cycle, including

stock values in the cycle of inventories for the aging of food products. The ICRs calculated with an economic approach are expressed as follows:

$$\begin{aligned} \text{ICR1ea}^* &= \text{EBITDA : SF} \\ \text{ICR2ea}^* &= \text{EBIT : SF} \end{aligned} \tag{6}$$

ICR1ea* and ICR2ea* express the firm's capacity to pay the cost of debt, having EBITDA and EBIT as available margins to pay the cost of debt. Financial sustainability valuation on the basis of these ICRs may give incorrect results due to an overestimation or underestimation of the debt service coverage capacity. However, this approach is the one most frequently applied in corporate practices and also in rating systems to assess access to bank credit, as suggested by Basel III Agreements [101–103]. In our research, ICRs are calculated using the "cfa" approach, as suggested in other research for firms in the food sector characterized by high capital absorption in the cycle of fixed assets or working capital [104]. This is the case for Parma Ham PDO firms. The "cfa" ICRs are calculated as follows:

$$\begin{aligned} \text{ICR3cfa}^{**} &= \text{CF : SF} \\ \text{ICR4cfa}^{**} &= \text{OCF : SF} \\ \text{ICR5cfa}^{**} &= \text{UFCF : SF} \end{aligned} \tag{7}$$

ICR3cfa**, ICR4cfa**, and ICR5cfa** express the company's ability to cover the result of the financial management area with financial margins (CF, OCF, and UFCF, respectively); these ratios, classified as "cfa" ICRs, are proposed in the article in a comparison with "ea" ICRs; we write ICRsEA and ICRsCFA, respectively, to jointly indicate the ICRs calculated with an economic approach and with a financial approach

2.3. Financial Ratio Analysis (FRs)

The analysis of the financial ratios (FRs) is based on the accrual principle, starting from the AAS data and taking into account the creation of value over time derived from management facts. FRs can provide information on the economic trend as well as on the equity and financial aspects of firms' management [105–108]. FRs methodology makes it a comparison between companies of different sizes and from different sectors. This financial reporting application had its first application in the financial offices of the DuPont Company, which used an integrated reporting system to evaluate the performance of managers and the return on equity capital [109–113]. FRs, based on accounting data, are ratios between AAS book values; therefore, they are influenced by accounting principles mandatory for AAS approval [114].

A widely applied profitability FR is return on equity (ROE); ROE aims to quantify the return on equity available for shareholders of the company. ROE can be expressed as the ratio between net income ($\prod$) and equity capital (E), as follows: ROE = $\prod$:E. ROE is applied to calculate the value for shareholders in investing in equity capital; for this reason, it is necessary: (1) ROE > 0, because if ROE < 0 there are losses and it follows that the equity value decreases; (2) ROE > Ke, where Ke is the cost of using equity capital. ROE must guarantee a return not only greater than zero but also greater than the minimum return expected by the shareholders (Ke), given the cost of using capital in alternative investments and considering the risk profile. The return on assets (ROA) compares the operating income with the total capital invested in the firm; ROA is the ratio between the earnings before interest and tax (EBIT), and the total asset (TA): ROA = EBIT:TA; ROA expresses the annual percentage yield of each unit of capital invested in a firm, regardless of the cost of debt and the taxes. ROA needs to be able to: (1) pay the cost of debt; (2) pay the cost of taxes; and (3) maintain a margin to remunerate equity holders.

The FR that expresses the cost of debt is the return on debts (ROD); the ROD aims to quantify, in percentage terms, the average cost of the debt. ROD is the ratio between the economic result of financial management (SF) and net financial position (NFP), as follows:

ROD = SF:NFP. The joint use of AAS and IS makes it possible to calculate the ROA and ROD ratios and verify the financial leverage effect (ROA > ROD).

Among RFs, when analyzing the structure of capital sources, the debt equity ratio (DER) is calculated as the ratio between E and NFP, as follows: DER = NFP:E. DER expresses the level of financial debt; DER is frequently applied to analyze the financial strength of a firm's capital structure [115].

The expression of ROE, ROA, and DER allows ROE [116] to be decomposed with the additive formulation. If we assume that the firm pays taxes on the basis of a single tax rate (Tm) and the tax base is equal to $\prod^{bT}$, we can express as follows:

$$\text{Roe} = \left[\text{Roa} + \left(\text{Roa} - \frac{\text{SF}}{\text{D}^\text{T}}\right)\frac{\text{NFP}}{\text{E}}\right](1 - T_\text{m}) = \left[\text{Roa} + (\text{Roa} - \text{Rod})\frac{\text{NFP}}{\text{E}}\right](1 - T_\text{m}) \quad (8)$$

Based on Equation (8), an increase in the difference between return ROA and return ROD results in a change in the same sign of net profitability (ROE). If ROA > ROD, the firm applies positive financial leverage; this is the case in which the capital invested in the firm is able to generate a return (ROA) higher than the cost (ROD) to be paid for its financing.

In order to quantify the duration of the NWC financial cycle, three main financial ratios for the NWC duration are frequently applied [86,117,118]: (1) AR_DAYS, as follows: AR_DAYS = CWCS × 365:S; this expresses the length of the payment deferral given for accounts payable, in days; (2) AP_DAYS, as follows: AP_DAYS = DWCS × 365:S; this expresses the length of the payment given by suppliers, in days; (3) INV_DAYS, as follows: INV_DAYS = WCi$^\text{i}$ × 365:S; expresses the length of inventory rotation in days. To measure the duration of working capital in days, many researchers apply measures based on the duration of NWC in days (NWC_DAYS), thus expressing the so-called Cash Conversion Cycle (CCC) [119–123].

For the purposes of assessing financial sustainability, profit margins (EBITDA, EBIT, and $\prod$) do not take into account the effect of sales not collected from customers, purchases not paid to suppliers, and changes in the value of inventories. $\prod$, calculated with the economic approach, may differ from the cash flow available for distribution to shareholders. This is caused by the misalignment between the business cycle (value creation) and the financial cycle (cash flows). Any deviations between the economic and financial cycles must be highlighted so as to identify the risks of (1) the financial non-sustainability of payment of operating debts, (2) the financial non-sustainability of payment of the COD, and (3) the impossible distribution of dividends to shareholders.

3. Results

3.1. Research Plan

The research has as its object the analysis of data from companies operating in the PDO Parma Ham sector; for the composition of the sample, the procedure was as follows:

1.   The companies operating in the Parma PDO Ham sector, 140 in number, are registered in the Consortium of Parma PDO Ham, and the names of the companies, the address of the headquarters, and the VAT number of each company are public data that were used to locate the list of companies. The companies which, even if they were registered in the Consortium in the past, have therefore been excluded from the database; therefore, in addition to the companies voluntarily canceled by the Consortium, also the companies that went bankrupt or started bankruptcy proceedings in the Court were excluded from the sample.

2.   As known, it is mandatory in Italy only for corporations (società a responsabilità limitata, società per azioni e società in accomandita per azioni, in Italian) to file their AAS every year in the Business Register (Registro delle Imprese, in Italian); partnerships and sole proprietorships (società in nome collettivo o società in accomandita semplice, in Italian) do not file the AAS. The research showed that 31 firms are sole

proprietorships or partnerships; the AASs of these companies are not available in public databases, so they were not included in the research database.

3. Data from the Business Register showed that: a further 1 company, still registered in the Consortium, went bankrupt; 3 companies are in liquidation and no longer carry out operating activities; and for 2 joint-stock companies, the AAS is not available at the Companies Register. The sample was therefore reduced to 103 companies out of 140.

4. Of the 103 companies whose AAS are available, data were extracted free of charge using the AIDA database made available by the University of Parma for research purposes. The AAS are freely available to all interested parties, for a fee, at the Business Register office held at the Chambers of Commerce; data extraction can take place online in electronic format or on a spreadsheet database. All data used for research are therefore public, and the research is replicable. Data extraction covered a 10-year series, which is the longest series available in the database. However, some firms do not have a 10-year series available, so the database observations are not 1030, which is equal to 103 firms over 10 years, but 959 only.

5. Analyzing the database, it emerged that the useful observations are not 959 in fact; in fact, of the 959 observations, 119 cannot be used for research because they are from companies that do not provide the minimum information necessary to carry out the analyses of the AAS. In this phase of the elaboration, two companies have been eliminated from the database.

6. A total of 840-year-old firms have been considered in the research, and each observation corresponds to a financial year. The final database uses data from 101 companies for a total of 840 observations. It appears that the complete 10-year series is not available for all companies in the sample, with 170 missing financial year data. The extracted firms have all the data available for a time series covering the financial years 2012 to 2021. Data analysis was performed with IBM™ SPSS Statistics release 29.

In order to evaluate the results of the research, it is therefore necessary to consider that: (a) the sample of companies includes companies registered in the Parma PDO Ham Consortium today, but companies no longer registered are not considered, including companies subject to insolvency procedures; to carry out an analysis on the risk of bankruptcy, these companies excluded from the database must also be considered; (b) sole proprietorships and partnerships were excluded from the sample, and, among the 103 enterprises whose data were extracted, 109 AAS observations were excluded from the survey, mostly SMEs; however, the data of the excluded companies are not available because only joint-stock companies are required to draft and file AAS; (c) the data of the AAS analyzed have not been revalued for inflation; (d) the data analysis must take into account that in 2020 and 2021, the companies in the sample were affected, as in the case of the entire national economy, by the COVID-19 pandemic; the effect of the pandemic on AAS is not the subject of the research, and the AAS for the years 2020 and 2021 have been treated without adjustments.

The sample of companies includes all members of the PDO Parma Ham Consortium; the only companies for which the data are not available in public registers have been excluded; it was therefore not necessary to choose a random sample because the entire sector of companies under study is represented. Parma PDO ham was chosen as a food product because: (1) pig breeding characterizes many regions of northern Italy; it is one of the major national productions of meat and related industries are significant; (2) Parma PDO Ham has a consolidated production tradition in the province of Parma, is linked to food traditions and is the basis of local gastronomy and attracts gastronomy tourism; the product is exported and is widely known all over the world; (3) Parma PDO ham also attracts investments from large food groups based not only in the province of Parma, but throughout Italy and therefore contributes to the socio-economic development of the local area.

The data sample considers the years 2020 and 2021; in recent years, the performance of companies has been influenced by the pandemic caused by the COVID-19 virus. As

exposed by some recent research [124], it is necessary to analyze how COVID-19 influences the existing relationship between corporate governance and firm performance. Further research developments could be issued on this topic. The Parma PDO ham sector can benefit from technological innovation; as other studies have highlighted, block chain technology can provide, even for food production, greater transparency and traceability so as to reduce opportunistic behavior, creating stable and sustainable supply relationships over time [125] and thus reducing information asymmetries [126].

3.2. Descriptive Statistics

Recent research on agri-food companies has highlighted a negative relationship between size and profitability in the case of US agricultural cooperatives [20]. In the Food and Beverage (F&B) sector listed on the Indonesia Stock Exchange, recent research [21] shows that the current ratio and current liability to inventory ratios have a negative effect on profit growth, while the total asset turnover, net profit margin, and sales growth ratios have a positive effect. In the European Union, other research has shown that, in an organic agricultural firm, size affects return on assets, cost ratios, liquidity, and debt [22]. Recent research has also involved the application of FRs to farms [23–26] and related renewable energies [27], thus analyzing the effect on reducing the carbon footprint [28]. Other recent researches are interested in the creation of value and have shown that firm value is not influenced by the cost of debt (COD), while cost of equity (COE) has a negative effect and cost of capital (CO) thus expressing that COD and COE have a negative effect on firm value, while COC and CS have a positive effect [29].

The analysis of the sample firms first considers BSS (Table 1). The data analysis allows to highlight some results:

1. In ABSS data show: (a) capital intensity of the companies in the sector; the capital intensity (TA:VP) has a mean of 1.25 and a median of 1.49, with asymmetry (g)1 positive (21.46) and kurtosis (g2) high (536.66); (b) capital absorption is concentrated in inventories (31.34% of TA), €11,484,443 mean and €6,511,026 median values; (c) the first capital absorption item is in fixed assets (37.39% of TA), €13,701,977 mean and €4,121,345 median values, and receivables absorb 25.13% of TA), €9,209,464 mean and €2,679,294 median values; all ABSS values have g1 > 0 and g2 > 0; g1 and g2 median values of TA are 5.76 and 41.57 respectively.

2. In LBSS data show: (a) equity capital (E) is on average 32.95% of TS, €12,076,678 mean and €5,191,512 median values; financial debts (DFT) are the first source of financing, 35.15% of TS, €12,882,786 mean and €5,280,146 median values; (b) Passive sources of working capital (DWCS) are 27.12% of TS, €9,209,464 mean and €2,679,294 median values; all LBSS values have g1 > 0 and g2 > 0; g1 and g2 median values of TA are 5.70 and 38.48 respectively.

In order to evaluate FA and NWC's capital absorption and financial leverage (DER), the BBS data in functional form (Table 2) show that:

1. FA is the first asset, accounting for 59.90% of the investment in FA + NWC; therefore, NWC absorbs 41.10% of the FA + NWC investment. Note that NWC > 0 on average, thus expressing that in the sample NWC expresses an absorption, and not a source, of capital, therefore considering that NWC > 0 in 747 cases out of 840 (NWC < 0 in 93 cases); note that, considering the median values, NWC > FA expresses the median level of capital absorption in the NWC cycle; FA has values g1 = 6.65 and g2 = 54.33; NWC has values g1 = (−)0.91 and g2 = 16.09.

2. E is the first source of capital, being 52.80% of E + NFP; therefore, NFP absorbs 47.20% of the E + NFP. Note that NFP > 0 on average, thus expressing that in the sample NFP expresses a source, of capital, therefore considering that NFP > 0 in 726 cases out of 840 (NPF < 0 in 112 cases); even for median values, E > NFP; E have values g1 = 0.56 and g2 = 20.49; NWC have values g1 = 3.74 and g2 = 17.99.

Table 1. Reclassified BSS, 840 observation data points (101 firms for 10 financial years), descriptive statistics.

Balance Sheet ID	Mean	Mean (%TA)	Median	St. Dev. Sample	Skewness g1	Kurtosis g2
A—Receivables from shareholders capital subscription	24,261	0.07	0	238,740	11.09	127.27
Bfa^{int}—Intangible fixed assets	1,197,095	3.27	20,538	9,601,858	11.95	151.66
Bfa^{tan}—Tangible fixed assets	10,460,634	28.54	3,892,973	22,781,294	6.26	48.15
Bfa^{fin}—Financial fixed assets	2,044,247	5.58	5739	6,791,317	4.37	23.36
BFA—Total fixed assets	13,701,977	37.39	4,121,345	34,462,216	6.65	54.33
Cwc^{i}—Working Capital Inventories	11,484,443	31.34	6,511,026	16,497,646	3.63	17.50
Cwc$^{ar<12m}$—Working Capital acc. rec. (<12 months)	7,796,307	21.27	2,133,202	14,980,066	3.23	11.43
Cwc$^{ar>12m}$—Working capital acc. rec. (>12 months)	74,711	0.20	0	595,098	15.77	282.42
Cwc$^{o<12m}$—Working capital other. cred. (<12 months)	1,045,129	2.85	283,514	2,258,733	3.89	17.12
Cwc$^{o>12m}$—Working capital other. cred. (>12 months)	99,377	0.27	1744	406,154	10.05	135.45
Cwc^{ql}—Working capital inv. quasi-cash asset	193,940	0.53	0	1,228,759	9.58	103.98
CWCA	9,209,464	25.13	2,679,294	17,471,424	3.27	11.79
CL—Liquidity (cash and bank)	2,086,584	5.69	237,486	8,406,560	10.06	120.87
D^{+}—Active accruals and deferrals	139,797	0.38	23,725	301,546	3.43	12.97
WCI^{T}—Working capital investment	22,920,288	62.54	11,252,588	38,254,822	4.13	21.66
TA—Total asset	36,646,526	100.00	16,403,633	70,893,779	5.26	34.99
E—Equity	12,076,678	32.95	5,191,512	25,790,040	0.56	20.49
B—Provisions for risks and charges	763,820	2.08	55,095	3,635,839	11.93	157.43
C—Severance pay	626,331	1.71	241,823	1,534,879	6.30	45.58
DWCS—Commercial & non-commercial acc. payable	9,936,804	27.12	2,684,027	27,642,090	5.98	41.29
DFT—Financial debt	12,882,786	35.15	5,280,146	24,720,861	4.83	30.38
D^{-}—Passive accruals and deferrals	360,106	0.98	72,448	962,690	7.46	69.20
D^{T}—Total amount of debt	24,569,847	67.05	8,924,439	54,489,383	5.42	35.68
TS—Total source	36,646,526	100.00	16,403,633	70,893,779	5.26	34.99

Table 2. Reclassified BSS (functional form), 840 observation data points (101 firms for 10 financial years), descriptive statistics.

Balance Sheet ID	Mean	Mean (%BFA + NWC)	Median	St. Dev. Sample	Skewness g1	Kurtosis g2
BFA—Total fixed assets	13,701,977	59.90	4,121,345	34,462,216	6.65	54.33
NWC—Net working capital	9,170,904	40.10	6,060,956	17,360,222	−0.91	16.09
BFA + NWC	22,872,880	100.00	11,594,425	36,249,698	3.57	17.39
E—Equity	12,076,678	52.80	5,191,512	25,790,040	0.56	20.49
NFP—Net financial position	10,796,202	47.20	4,977,461	19,110,593	3.74	17.99
E + NFP	22,872,880	100.00	11,594,425	36,249,698	3.57	17.39

The analysis of the sample firms then considers IS (Table 3). The data analysis allows us to highlight some results:

1. S value are: mean €39,898,889 and median €9,437,864; the highest cost item is M which absorbs 70.51% of S. Services and labor costs absorb, respectively, 16.86% and 8.33% of S.

2. Monetary costs absorb 96.92% of S and, consequently, EBITDA is 5.16% of S; EBITDA is affected by an increase of 0.80% in inventory value and 1.28 of other revenue. EBITDA shows g1 = 6.37 and g2 = 58.21; non-monetary costs absorb 3.18% of S and, consequently, EBIT is 1.98% of S; EBIT shows g1 = (−)11.09 and g2 = 240.72.

3. SF and W absorb respectively 0.64% and 0.24% of S; therefore, Π^{bT} is 1.10% of S; T absorbs 0.64% of S; therefore, Π is 0.47% of S (g1 = −20.96 and g2 = 512.42); SF > 0 in 82, therefore SF is a source of income and SF < 0 in 764 cases, out of 840, therefore representing a cost.

4. Analysis of IS margins shows that: (a) EBITDA > 0 in 770 cases out of 840 (EBITDA < 0 in 76 cases); (b) EBIT > 0 in 713 cases out of 840 (EBIT < 0 in 113 cases); (c) Π^{bT} > 0 in 672 cases out of 840 (Π^{bT} < 0 in 174 cases); (d) Π > 0 in 661 cases out of 840 (Π < 0 in 185 cases).
5. The comparison between EBIDTA/EBIT and SF shows that: (a) EBITDA > SF in 746 cases out of 840 (EBITDA < SF in 94 cases); (b) EBIT > 0 in 672 cases out of 840 (EBIT < SF in 168 cases).
6. The collateral guarantee allows lenders to be able to claim other assets, distinct from the company assets, or to acquire specific privileges on parts of the company assets. The pledge in general and the revolving pledge specifically are important forms of collateral for companies operating in the PDO Parma Ham sector.

Table 3. Reclassified IS, 840 observation data points (101 firms for 10 financial years), descriptive statistics.

Income Statement ID	Mean	Mean (%S)	Median	St. Dev. Sample	Skewness g1	Kurtosis g2
(+) S—Sales	39,898,889	100.00	9,437,864	89,866,497	4.19	21.14
(+/−) ΔCwc—Change in inv. value	318,890	0.80	85,682	2,628,449	−0.49	32.29
(+) OR—Others revenue	512,308	1.28	68,751	1,766,162	6.72	51.63
(+/−) VP—Value of prod.	40,730,087	102.08	9,746,172	91,745,314	4.25	21.85
(−) M—Raw materials	−28,133,755	−70.51	−6,151,728	64,065,997	−3.64	14.46
(−) S—Services	−6,728,723	−16.86	−1,761,209	14,978,569	−4.94	29.69
(−) R—Rent	−210,098	−0.53	−17,438	773,699	−6.15	40.52
(−) L—Labor cost	−3,324,114	−8.33	−715,061	9,539,791	−6.79	53.46
(−) OC—Others cost	−274,325	−0.69	−101,584	639,073	−5.63	36.70
(+/−) MC—Monetary costs	−38,671,014	−96.92	−8,919,384	87,169,291	−4.09	20.00
(+/−) EBITDA	2,059,073	5.16	583,638	5,700,926	6.37	58.21
(−) D—Depreciations	−113,964	−0.29	0	1,557,868	−26.28	730,14
(−) A—Amortizations	−1,154,063	−2.89	−292,783	3,983,864	−10.30	140.27
(+/−) EBIT	791,046	1.98	312,666	4,976,936	−11.09	240,72
(+) IR—Interest revenue	48,456	0.12	364	349,945	20.62	506,32
(−) IC—Interest charge	−302,641	−0.76	−96.941	859,070	−8.11	80.64
(+/−) SF—Net Interest	−254,184	−0.64	−87,028	840,989	−6.57	78.99
(+/−) W—Reval. and Deval.	−96,949	−0.24	0	1,573,700	−26.09	725.07
(+/−) ΠbT—Profit before taxes	439,913	1.10	176,523	6,366,474	−18.71	445.19
(−) T—Income taxes	−253,997	−0.64	−55,824	725,830	−5.46	44.57
(+/−) Π—Profit after taxes	185,915	0.47	104,309	6,148,217	−20.96	512,46

The analysis of the sample firms then considers CFS (Table 4). The data analysis allows to highlight some results:

1. CF values are: mean €1,708,127 and median €534,617; CF is 4.28% of S; OCF values are: mean €1,389,236 and median €311,406; OCF is 3.48% of S; UFCF value are: mean €193,473 and median €534,617; UFCF is 0.48% of S; FCFE value are: mean €−60,712 and median €−20,778; CF is −0.15% of S.
2. Analysis of CFS margins shows that: (a) CF > 0 in 780 cases out of 840 (CF < 0 in 66 cases); (b) OCF > 0 in 614 cases out of 840 (OCF < 0 in 232 cases); (c) UFCF > 0 in 451 cases out of 840 (UFCF < 0 in 395 cases); (d) FCFE > 0 in 408 cases out of 840 (FCFE < 0 in 438 cases).
3. The comparison between CF/OCF/UFCF and SF shows that: (a) CF > SF in 750 cases out of 840 (CF < SF in 90 cases); (b) OCF > 0 in 561 cases out of 840 (OCF < SF in 279 cases); (b) UFCF > SF in 406 cases out of 840 (UFCF < SF in 434 cases).

Table 4. Reclassified CFS, 840 observation data points (101 firms for 10 financial years), descriptive statistics.

Cash Flow Statement ID	Mean	Mean (%S)	Median	St. Dev. Sample	Skewness g1	Kurtosis g2
CF—Cash Flow	1,708,127	4.28	534,617	5,611,794	1.95	81.31
(/+) ΔCwc—Change in inv. Value	−318,890	−0.80	−85,682	2,628,449	0.49	32.29
OCF—Operating Cash Flow	1,389,236	3.48	311,406	5,222,051	4.78	61.11
(+) D+A—Depr. & Amortiz.	−1,195,763	−3.00	−279,791	17,540,604	−9.08	234.75
UFCF—Unlevered Free Cash Flow	193,473	0.48	41,595	16,684,039	−6.01	169.25
(−/+) SF—Net Interest	−254,184	−0.64	−87,028	840,989	−6.57	78.99
FCFE—Free Cash Flow To Equity	−60,712	−0.15	−20,778	16,931,091	−6.49	174.72

3.3. Financial Ratios (FRs) Analysis

The analysis of the sample data (Table 5) presents the following results for the FR:

1. Return on equity capital (ROE) has values g1 = (−)0.91 and g2 = 16.09 value (−1.34%) while the median value is positive (2.79%); ROE > 0 in 661 cases out of 840 (ROE < 0 in 179 cases); ROE has values g1 = (−)14.82 and g2 = 258.79.
2. Return on asset (ROA) has positive mean (2.56%) and the median values (+2.40%); ROA > 0 in 708 cases out of 840 (ROA < 0 in 132 cases); ROA has values g1 = (−)3.48 and g2 = 39.29.
3. Return on debts (ROD) has a positive mean (1.28%) and median value (1.90%); ROD has values g1 = (−)26.26 and g2 = 738.10.
4. Cost effectiveness analysis compares ROA and ROD; if ROA > ROD, the return on invested capital is higher than the cost of financial debt, and therefore the use of financial leverage generates profit; ROA > ROD in 453 cases out of 840 (ROA < ROD in 387 cases).
5. Financial leverage (DER) has a mean value of 156.87% and a median value of 93.39%; DER has values g1 = 6.49 and g2 = 80.14. it is noted that, for the median value, DER < 1 and, therefore, E > NFP; it is confirmed that E is the first source of financing for the firms in the sample.

Table 5. Financial Ratio, 840 observation data points (101 firms for 10 financial years), descriptive statistics.

Financial Ratio ID	Mean	Median	St. Dev. Sample	Skewness g1	Kurtosis g2
ROE—return on equity	−1.34%	2.79%	82.74%	−14.82	258.79
ROA—return on asset	2.56%	2.40%	6.44%	−3.48	39.29
ROD—return on debts	1.28%	1.90%	31.25%	−26.26	738.10
DER—debt equity ratio	156.87%	93.39%	268.47%	6.49	80.14
INV_DAYS	240.70	218.82	324.72	18.25	449.64
AR_DAYS	130.84	95.76	217.67	11.80	197.41
AP_DAYS	142.60	85.29	259.68	7.29	68.11
NWC_DAYS (CCC)	228.94	212.41	405.65	14.02	350.21

The data on the duration of the working capital cycle (Table 5) show that:

1. INV_DAYS has a mean value of 240.70 and a median value of 218.82; INV_DAYS has values g1 = 18.25 and g2 = 449.64; INV_DAYS > 360 (360-day, 12 months, aging period) in 164 cases out of 840 (INV_DAYS < 360 in 676 cases); INV_DAYS > 360 (420-day, 14 months, aging-period) in 96 cases out of 840 (INV_DAYS < 420 in 744 cases).

2. AR_DAYS has a mean value of 130.84 and a median value of 95.76; AR_DAYS has values g1 = 11.80 and g2 = 197.41.
3. AP_DAYS has a mean value of 142.60 and a median value of 52.29; AP_DAYS has values g1 = 7.29 and g2 = 68.11.
4. The duration of NWC in days (NWC_DAYS), expressed by the cash conversion cycle (CCC), has a mean value of 228.94 and a median value of 212.41; NWC_DAYS has values g1 = 14.02 and g2 = 350.21.

Data confirm, as revealed by various researches, that the FRs have an asymmetric distribution and flattening characteristics of the distribution in a platycurtic or leptocurtic way.

3.4. Interest Coverage Ratios (ICRs) Analysis

Data analysis of the ICRs expresses the ability of companies to pay the cost of debt, thus verifying financial sustainability. Two approaches are used in the research, as exposed in the method part: (1) more traditional ICRs (ICR1ea* and ICR2ea*) calculate sustainability using economic margins; (2) the applied and researched ICRs (ICR1cfa**, ICR2cfa**, and ICR3cfa**) calculate sustainability using financial margins. Note that the economic margins approximate the liquidity generated by management but do not express it directly; liquidity is expressed directly by financial margins. The cost of debt represents both a cost and a negative financial flow and, therefore, is a homogeneous value with respect to the financial margins while it is inhomogeneous with respect to the economic margins.

The results of the analysis of the ICRs show a result common to all indices: the mean value is distorted by the presence of anomalous values, as evidenced by mean values that are very different from the median values, resulting in a strong asymmetry and kurtosis. Having made this observation, the analysis will be limited to commenting only on the median values, which are less sensitive to outliers than the average values.

The data on the duration of the working capital cycle (Table 6) show that:

1. ICR1ea* has median value 5.29; ICR1ea* > 1 in 681 cases out of 840 (ICR1ea* < 1 in 164 cases).
2. ICR2ea* has median value 2.54; ICR2ea* > 1 in 623 cases out of 840 (ICR2ea* < 1 in 222 cases).
3. ICR3cfa** has median value 4.56; ICR3cfa** > 1 in 685 cases out of 840 (ICR3cfa** < 1 in 160 cases).
4. ICR4cfa** has median value 2.81; ICR4cfa** > 1 in 496 cases out of 840 (ICR4cfa** < 1 in 349 cases).
5. ICR5cfa** has median value 0.04; ICR5cfa** > 1 in 384 cases out of 840 (ICR5cfa** < 1 in 461 cases).

Table 6. Interest Coverage Ratios, 840 observation data points (101 firms for 10 financial years), descriptive statistics.

Interest Coverage Ratio ID	Mean	Median	St. Dev. Sample	Skewness g1	Kurtosis g2
ICR1ea*—EBITDA:SF	−96.31	5.29	2821	−20.33	528.94
ICR2ea*—EBIT:SF	−26.60	2.54	1025	−18.27	521.86
ICR3cfa**—CF:SF	−85.65	4.56	2295	−19.75	490.10
ICR4cfa**—OCF:SF	−24.39	2.81	2776	−3.46	315.24
ICR5cfa**—UFCF:SF	1049.06	0.04	23,010	27.33	771.06

The analysis of the data from the ICRs shows that, whatever the calculation system, a significant number of companies in the sample show that the payment of the cost of the debt cannot be sustained; this percentage is 19.52% for ICR1ea*, 26.43% for ICR2ea*, 19.05% for ICR3cfa**, 41.55% for ICR3cfa**, and 54.88% for ICR3cfa**. Financial non-sustainability calculated with the ICRs affects about 2 out of 10 companies in the sector if the calculation is carried out with the first 3 ICRs, while the percentage rises to about 5 out of 10 companies

for ICRs 4 and 5. The analysis confirms that companies in the sector present frequent cases of financial non-sustainability of the cost of debt, as already highlighted by the ROA/ROD comparison. A further analysis is carried out in the paragraph dedicated to the difference between the median values of the ICRs.

3.5. Correlation Analysis

The analysis presents the results of the correlation AAS variables, as follows:

1. A first analysis is carried out to verify the correlation between economic margins and profit margins.
2. A second analysis is carried out to verify the correlation between FRs and some AAS variables and margins.

For each calculation, the result is shown, and some premises for the results are illustrated. To quantify relations between values, it is first necessary to verify the normality of the distribution of ratios by applying the KSD (Kolmogorov-Smirnov D statistic) method; KSD shows that all data series do not follow a normal distribution. We then apply a nonparametric approach to the correlation (Spearman's rho).

The correlations between AASs' economic and financial margins (Table 7) show that:

1. EBITDA is correlated with EBIT, Π, CF, UFCF, while it is not correlated with OCF and FCFE.
2. EBIT is correlated with EBITDA, EBIT, CF, and UFCF, while it is not correlated with FCFE.
3. Π is correlated with all margins: EBITDA, EBIT, CF, OCF, UFCF, and FCFE.
4. CF is correlated with EBITDA, EBIT, Π, CF, OCF, UFCF, while it is not correlated with OCF and FCFE.
5. OCF is correlated with EBIT, Π, CF, UFCF, FCFE, while it is not correlated with EBITDA and CF.
6. UFCF is correlated with all margins: EBITDA, EBIT, Π, CF, OCF, UFCF, FCFE.
7. FCFE is correlated with Π, UFCF while it is not correlated with EBITDA, EBIT, CF, OCF.

Table 7. Spearman's Rho, 840 observation data points (101 firms for 10 financial years), nonparametric correlation (economic and financial margins).

Margin ID	Correlation	EBITDA	EBIT	Π	CF	OCF	UFCF	FCFE
EBITDA	Spearman's Rho Sig. (two-tailed)	-						
EBIT	Spearman's Rho Sig. (two-tailed)	0.925 ** 0.000	-					
Π	Spearman's Rho Sig. (two-tailed)	0.800 ** <0.001	0.897 ** <0.001					
CF	Spearman's Rho Sig. (two-tailed)	0.987 ** 0.000	0.895 ** <0.001	0.771 ** <0.001	-			
OCF	Spearman's Rho Sig. (two-tailed)	0.051 0.140	0.102 ** 0.003	0.146 ** <0.001	0.044 0.198	-		
UFCF	Spearman's Rho Sig. (two-tailed)	0.441 ** <0.001	0.378 ** <0.001	0.338 ** <0.001	0.453 ** <0.001	0.492 ** <0.001	-	
FCFE	Spearman's Rho Sig. (two-tailed)	0.012 0.722	0.070 0.042	0.144 ** <0.001	0.000 0.995	0.988 ** 0.000	0.470 ** <0.001	-

** The relation is significant at the 0.01 level (2-tailed).

It is to be noted that the economic and financial margins are generally correlated with each other (16 correlations out of 21 are statistically significant); all correlations are positive (21 out of 21), and this is consistent with economic theory. FCFE correlates with a small number of margins (3 out of 6 correlations are statistically significant).

For correlations between FRs and some AAS variables and margins, first we have to consider two size-variables: (1) SIZE_1 is the ratio between TA of the observation (total invested assets of the company in the year observed) and the median of TA in the sample; SIZE_1 expresses a measure of the relative size of the company with respect to the sample taking into account the investments made (TA); if SIZE_1 > 1, then the observation has investments in TA greater than the median of the sample of 840 observations, and vice versa. (2) SIZE_2 is the ratio between S of the observation (total turnover of the company in the year observed) and the median of S in the sample; SIZE_2 expresses a measure of the relative size of the company with respect to the sample, taking into account the turnover (S); if SIZE_2 > 1, then the observation has a turnover greater than the median of the sample of 840 observations, and vice versa. Correlations (Table 8) show that:

1. ROE is positively correlated with ROA and SIZE_2, negatively with ROD, DER, and CCC, while it is not correlated with SIZE_1.
2. ROA is positively correlated with ROE and SIZE_2, negatively with DER, while it is not correlated with ROD, SIZE_1, and CCC.
3. ROD is positively correlated with DER, negatively with ROE and CCC, while it is not correlated with ROA, SIZE_1 and SIZE_2.
4. DER is positively correlated with ROD, SIZE_2, and CCC, negatively with ROE and ROA, while it is not correlated with SIZE_1.
5. SIZE_1 is positively correlated with SIZE_2, negatively with CCC, while it is not correlated with ROE, ROA, ROD, and DER.
6. SIZE_2 is positively correlated with ROE, ROA, DER, and SIZE_1, negatively correlated with CCC, while it is not correlated with ROD.
7. CCC is positively correlated with DER and negatively correlated with ROE, ROD, SIZE_1, and SIZE_2, while it is not correlated with ROA.

Table 8. Spearman's Rho, 840 observation data points (101 firms for 10 financial years), non-parametric correlation (FRs, size-variables and duration-variable).

Margin ID	Correlation	ROE	ROA	ROD	DER	SIZE_1	SIZE_2	CCC
ROE	Spearman's Rho Sig. (two-tailed)	-						
ROA	Spearman's Rho Sig. (two-tailed)	0.831 ** <0.001	-					
ROD	Spearman's Rho Sig. (two-tailed)	−0.130 ** <0.001	−0.003 <0.928					
DER	Spearman's Rho Sig. (two-tailed)	−0.140 ** <0.001	−0.207 ** <0.001	0.224 ** <0.001	-			
SIZE_1	Spearman's Rho Sig. (two-tailed)	0.006 0.857	−0.022 0.519	−0.031 0.377	0.008 0.823	-		
SIZE_2	Spearman's Rho Sig. (two-tailed)	0.115 ** <0.001	0.099 ** 0.004	0.011 0.761	0.093 ** 0.007	0.917 ** 0.000	-	
CCC	Spearman's Rho Sig. (two-tailed)	−0.153 ** 0.722	−0.063 0.066	−0.119 ** <0.001	0.069 * 0.045	−0.082 * 0.018	−0.199 ** <0.001	-

** The relation is significant at the 0.01 level (2-tailed). * The relation is significant at the 0.05 level (2-tailed)

The analysis shows that 14 correlations out of 21 are statistically significant; 7 correlations are positive (7 out of 14), and 7 correlations are negative (7 out of 14). The data show that: (1) DER is positively correlated with ROD; this indicates that an increase in

financial debt increases the cost of debt; (2) SIZE_2 is positively correlated with ROE and ROA. This indicates that larger firms (by turnover) have higher profitability, and SIZE_1 is not correlated with ROE, ROA, ROD, and DER; (3) DER is negatively correlated with ROE or ROA, so an increase in leverage is negatively correlated with the return on equity and invested capital; (4) the duration of the CCC is negatively correlated with the ROE, and this expresses that an increase in the duration of the monetary conversion cycle is negatively correlated with the return on equity capital.

3.6. Comparison between ICRs Values

The ICRs are applied to assess the ability to pay the cost of debt of the firms in the sample; however, it is necessary to calculate whether there are significant differences between the ICRs. In this way, it is possible to identify the most reliable ICRs to evaluate the financial sustainability of the payment of the debt. As shown, the KSD statistic shows that all ratio distributions do not follow the normal distribution. Therefore, a nonparametric approach for paired data (Wilcoxon's paired sample *t*-test) was applied to test the null hypotheses of the medians' equality. The analysis tests the following 10 null hypotheses:

H$_1$. *The ICR1ea* and ICR2ea* ratios have equal medians in the firm's sample.*

H$_2$. *The ICR1ea* and ICR3cfa** ratios have equal medians in the firm's sample.*

H$_3$. *The ICR1ea* and ICR4cfa** ratios have equal medians in the firm's sample.*

H$_4$. *The ICR1ea* and ICR5cfa** ratios have equal medians in the firm's sample.*

H$_5$. *The ICR2ea* and ICR3cfa** ratios have equal medians in the firm's sample.*

H$_6$. *The ICR2ea* and ICR3cfa** ratios have equal medians in the firm's sample.*

H$_7$. *The ICR2ea* and ICR5cfa** ratios have equal medians in the firm's sample.*

H$_8$. *The ICR3ea* and ICR4cfa** ratios have equal medians in the firm's sample.*

H$_9$. *The ICR3ea* and ICR5cfa** ratios have equal medians in the firm's sample.*

H$_{10}$. *The ICR4ea* and ICR5cfa** ratios have equal medians in the firm's sample.*

The analysis tests (Table 9) show that:

1. It is possible to reject the null hypothesis of equality between medians by applying a two-sided test with a 1% significance in 9 out of 10 cases; only the ICR2 and ICR4 comparison confirm the null hypothesis of equality between EBIT-based and OCF-based ICRs; this means that the two ICRs can be used alternatively without finding a difference between the medians.
2. The analysis of the signs of the ranks shows: (1) ICR2 < ICR1 (ranks) as necessary since EBIT ≤ EBITDA by definition; ICR3 < ICR1, ICR4 < ICR1, ICR5 < ICR1 (ranks) as necessary since EBIT ≤ EBITDA by definition; this highlights that the use of EBITDA-based ICRs, with EBITDA used as a proxy for CF, determines an overestimation of the effective financial sustainability of the cost of debt, which is correctly estimated using CF-based ICRs, since the cost of debt is paid with available CFs;
3. By number of ranks, ICR3cfa** > ICR4cfa** > ICR5cfa**. This gives information on the absorption of cash flows for the firms in the sample in the different phases of CFS, as expressed by the CF-based ICRs. Financial ICRs with "a higher number" (ICR4cfa** and ICR5cfa**) are restrictive but could be considered more reliable, and more correctly restrictive, in calculating the financial sustainability of the payment of the cost of the debt.

Table 9. A comparison of economic and financial data applying a non-parametric approach for paired-samples (Wilcoxon T-statistic).

Comparisons (1)	Positive Rank	Negative Rank	Equal Rank	Wilcoxon T-Statistic	Statistical Significance (2-Tailed)
Comp. 1: ICR1 & ICR2	755 ICR2 < ICR1	80 ICR2 > ICR1	5 ICR1 = ICR2	(−) 17.378 [a]	<0.001 **
Comp. 2: ICR1 & ICR3	652 ICR3 < ICR1	161 ICR3 > ICR1	27 ICR1 = ICR3	(−) 13.564 [a]	<0.001 **
Comp. 3: ICR1 & ICR4	545 ICR4 < ICR1	294 ICR4 > ICR1	1 ICR1 = ICR4	(−) 7.729 [a]	<0.001 **
Comp. 4: ICR1 & ICR5	574 ICR5 < ICR1	266 ICR5 > ICR1	0 ICR1 = ICR5	(−) 8.324 [a]	<0.001 **
Comp. 5: ICR2 & ICR3	163 ICR3 < ICR2	676 ICR3 > ICR2	1 ICR2 = ICR3	(−) 13.828 [b]	<0.001 **
Comp. 6: ICR2 & ICR4	399 ICR4 < ICR2	441 ICR4 > ICR2	0 ICR2 = ICR4	(−) 0.930 [b]	0.352
Comp. 7: ICR2 & ICR5	514 ICR5 < ICR2	326 ICR5 > ICR2	0 ICR2 = ICR5	(−) 4.883 [a]	<0.001 **
Comp. 8: ICR3 & ICR4	498 ICR4 < ICR3	340 ICR4 > ICR3	2 ICR3 = ICR4	(−) 5.831 [a]	<0.001 **
Comp. 9: ICR4 & ICR5	563 ICR5 < ICR3	277 ICR5 > ICR3	0 ICR4 = ICR5	(−) 7.829 [a]	<0.001 **
Comp. 10: ICR4 & ICR5	610 ICR5 < ICR4	230 ICR5 > ICR4	0 ICR4 = ICR5	(−) 8.158 [a]	<0.001 **

** The relation is significant at the 0.01 level (2-tailed). ([a]) expresses positive rank sign; ([b]) expresses negative rank sign. (1) the abbreviation ICR1, ICR2, ICR3, ICR4, ICR5 is used instead of ICR1ea*, ICR2ea*, ICR3cfa**, ICR4cfa**, ICR5cfa**.

4. Discussion

The companies in the PDO Parma Ham sector are confirmed as capital-intensive companies. The capital intensity of the firms in the sample (median value: 1.49) and the median inventory turnover (median value: 218 days) confirm the capital intensity. This is due to the provision of the production disciplinary, which provides that the minimum duration of the aging of PDO Parma ham is 14 months, or approximately 420 days; the minimum maturation was increased from 12 to 14 months in 2019, and the relative effect therefore only occurs on a part of the series of AAS analyzed. Capital intensity also considers investments in FA and not just inventory; this determines an increase in the value of the index: 511 observations have capital intensity greater than 1 and 329 less than 1; (b) 206 observations have credit rotation greater than 420 days and 634 less than 420. Therefore, in the majority of observations (634 out of 840), the companies in the sector implement strategies to reduce inventory rotation with respect to the minimum forecast of Ham curing di Parma PDO required by the specification. Since the company data do not allow us to understand what these strategies are, at the moment it is possible to hypothesize that: (1) the companies modify the production mix by working with, in addition to PDO Parma ham, other less aged products. Considering the 2021 data alone, the companies in the sample have sales revenues of €3835 billion; this value is higher than the estimate of the production value of Parma PDO ham alone made by the Consortium, which is equal to €650 million; therefore, it can be estimated that approximately €2.2 billion of the revenues of the companies in the sample are related to other productions.

The duration of NWC_DAYS is a crucial task in the case of Parma PDO Ham companies; the production specification of Parma PDO ham requires companies to season raw ham with an increase in NWC_DAYS. This result emerges in our analysis from the joint analysis of ABSS data and company cycle duration indices (CCC, INV_DAYS, AR_DAYS, AP_DAYS). The increase in the duration of NWC_DAYS caused by the aging cycle determines an increase in the financing requirement, and this requires (1) the raising of resources in terms of equity or financial debts to finance the increase in the duration of NWC_DAYS and (2) the calculation of the cost of these resources and the comparison of the cost with the remuneration of the invested capital. It should also be noted that companies, especially SMEs, have worse access to the capital market and, as a result, may find it difficult to finance an increase in the duration of NWC_DAYS. An increase in the value of the product stock determines an increase in NWC_DAYS, and this implies the need to find the necessary financial resources.

Research shows that agri-food companies in the sector have a long processing cycle, also due to production regulations; this must be considered because there is a misalignment between economic results and financial flows. If NWC_DAYS is positive, it means that the company needs time, expressed in the duration of NWC_DAYS in days, to transform its

cash outflows to pay for supplies into cash. Conversely, if NWC_DAYS is negative, the company collects its receivables derived from the transformation of the products before paying for its supplies; we can express NWC_DAYS as follows: NWC_DAYS = AR_DAYS + INV_DAYS − AP_DAYS, where NWC_DAYS is the length of the NWC in days. An increase in AR_DAYS and INV_DAYS and a decrease in AP_DAYS (thus expressing an increase in the NWC cycle duration, which is given by an increase in the NWC_DAYS value) determine an increase in the capital investment that is to be forcibly financed with debt (DT) or equity (E) capital.

It emerges that the larger companies reduce the inventory, reduce the terms of collection from customers, and manage to reduce the terms of payments to suppliers; it is conceivable that these companies, by reducing the duration of the cycle of INV_DAYS and AP_DAYS, can pay suppliers faster.

In 2021, out of 88 observations, the first decile (9 observations) generates €2392 billion in revenues, and the second decile (further 9 observations) generates another €684 million in turnover. The top 2 deciles (18 observations) generate 81.4% of total 2021 revenues, equaling €3.112 billion. The turnover in excess of the production of PDO Parma ham is therefore mainly concentrated in larger companies. The first 2 deciles have a mean lifespan of CCC 66.46 and a median of 67.11; the mean duration of INV_DAYS is 80.57 median and 85.52 mean. To evaluate differences in strategy, the 2021 data of the last five deciles are analyzed, made up of companies with the lowest turnover (44 observations); these companies, equal to 50% of the 2021 sample, generate 81.4% of the total revenues in 2021, equal to €182 million; these enterprises have an average duration of CCC of 302.30 and a median is 266.00. The average duration of INV_DAYS is 255.86 and the median of 271.97. It is therefore confirmed that the larger companies that belong to the first 2 deciles by turnover have low CCC and INV_DAYS durations, in any case lower than the minimum duration of the Parma PDO ham aging, and this confirms that they implement strategies for differentiating production towards products with a shorter cycle time of CCC and INV_DAYS. This is found to a lesser extent in smaller firms by turnover (5 deciles), which have longer durations than both INV_DAYS and CCC. The result is confirmed by the negative correlation between SIZE_1 and CCC.

As regards the analysis of the income statements of the companies in the sample, it emerges that the companies make little use of labor compared to other production factors; in fact, L affects S on average by 8.33%. The first cost item of the companies in the sample is the purchase of the raw material (70.5% of S) and thus confirms, as evidenced by various literature, the importance of supply chain relationships in agri-food companies to guarantee continuity, quality, and low volatility of raw material prices over time [127–130]. This figure may explain why the companies in the sector are vertically integrated with the slaughterhouses that sell fresh pork legs.

About the duration of the financial cycle, the research also shows that firms' size per level of investments (SIZE_1) is negatively correlated with the CCC; this means that as investments increase, the duration of the CCC decreases. This assessment can have various causes: (a) the major companies manage to reduce the duration of the CCC by modifying the production mix with less aged products, or they manage to obtain better payment conditions from customers; briefly, we performed a correlation analysis (Spearman's Rho) between SIZE_1, INV_DAYS, AR_DAYS_ and AP_DAYS; the analysis carried out shows a statistically significant negative correlation between SIZE_1 and INV_DAYS (-1.64 **, $p < 0.001$) and between SIZE_1 and AR_DAYS (-2.23 **, $p < 0.001$). This correlation confirms that SIZE_1 is negatively correlated with the two active NWC durations. The meaning is that the increase in size, expressed by SIZE_1, is negatively correlated with the duration of the warehouse (INV_DAYS) and with the payment terms from customers (AR_DAYS). Interestingly, SIZE_1 is also negatively correlated with AP_DAYS; we have that the increase of SIZE_1 is correlated to a reduction of the terms of payment.

The analysis also shows that the median return on capital is low: ROE = 2.79%, ROA = 2.40%; these levels of returns are lower than the expectations of return on risk capital,

which, as illustrated by various research, have been between 5 and 8 percentage points in the last decade [131–133]. The correlation data also allow us to make some observations regarding the relationship between FRs and BSS data, by cost of debt (ROD) duration (CCC) and size (SIZE_1 and SIZE_2); data show that; (a) ROE is positively correlated with ROA and SIZE_2, negatively with ROD, DER and CCC; (b) ROA is positively correlated with ROE and SIZE_2, negatively with DER; (c) ROD is positively correlated with DER, negatively with ROE and CCC; (d) DER is positively correlated with ROD, SIZE_2 and CCC, negatively with ROE and ROA. Therefore, the data allow us to observe that the performance of the companies in the sample (ROE and ROA) is negatively correlated with the increase in the duration of the financial cycle (CCC) and with the increase in debt (DER). In fact, it can be seen that the financial leverage effect (ROA > ROD) has no positive effects, given that the median values are, respectively, ROA = 2.40% and ROD = 1.90%; the difference between ROA and ROD is only + 0.50%, and this difference is not sufficient to guarantee the leverage effect of the financial debt. Regarding the effect of company size, data show that: (e) SIZE_1 is positively correlated with SIZE_2, negatively with CCC; (f) SIZE_2 is positively correlated with ROE, ROA, DER and SIZE_1, negatively with CCC; (g) CCC is positively correlated with DER, negatively with ROE, ROD, SIZE_1 and SIZE_2. The size per turnover (SIZE_2) is positively correlated with profitability (ROE, ROA) and the level of debt (DER), while the correlation is negative with CCC; this result confirms the results of other studies on agri-food [134–137]. Larger companies are therefore correlated with higher profitability, higher debt, and a shorter duration of the monetary conversion cycle (CCC); data highlights that CCC is negatively correlated with size (SIZE_1 and SIZE_2), and this shows that firms, as their size increases, reduce the length of their financial cycle.

There is a high correlation between economic margins (EBITDA and EBIT) and financial margins (CF, OCF, UFCF, FCFE). However, the results of the analysis show that, in particular, FCFE is poorly correlated with the other margins (3 correlations out of 6). The data show that in 497 cases out of 840 (59%) Π > FCFE; this shows that the companies in the sample, even in the case of positive profits, have a financial constraint in the distribution of dividends; this confirms various analyzes conducted on the difficulty in agri-food companies in generating financial flows and in the presence of financial constraints [138,139].

With regard to the financial sustainability of the COD payment, the ICRs also provide relevant information for the management of companies in the sector. The analysis highlights that the use of ICRsEA, with EBITDA and EBIT as proxies for CFs, leads to an overestimation of the effective financial sustainability of the debt cost, which could be strictly and prudently calculated with ICRsCFA, as the COD is paid with cash flows and not with economic values; the application of the ICRsEA thus leads to a distorted result, even if frequently applied in bank covenants' transactions. Therefore, the frequent application of ICRsEA in the quantification of bank covenants for credit operations and the analysis of the ratings leads to a distorted result; this result is significantly different from the result that could be calculated with ICRsCFA.

Given the results of the research, we believe that there may be further developments: (a) investigate the use of financial leverage in companies in the sector, which is used in a scarcely effective way; (b) take into consideration how changes in consumer choices have influenced production policies and company performance, as in the case of the increased consumption of sliced Parma PDO ham in large-scale retail chains; and (c) carry out in-depth studies on the financial sustainability of companies, taking into (i) company size, (ii) belonging to firms' groups, (iii) the classification of companies as family or managerial, (iv) the choice of sales channel, and (v) the choice of production mix and percentage of turnover generated by Parma PDO Ham out of the total. The data indicated above is only available for Point (1) in the company AAS and therefore requires in-depth investigations in the field, which are not possible in this state.

Some elements of a socio-economic nature must be considered in the interpretation of the results: (1) © family structure and the social structure in Italy have undergone significant changes in recent decades; there has been (a) a reduction in the average number of family

members; (b) an aging of the population; (c) an increase in female employment; and (d) an increase in resident foreigners. All these changes in the demographic and social structure have led to changes in consumption, which also have an impact on food consumption. In particular, there was an increase in the consumption of PDO Parma Ham in pre-sliced trays and an increase in sales in the large-scale distribution channel. (2) The Italian economic trend in the last decade has led to a contraction in income and a growing percentage of families below the poverty line; these macroeconomic trends also have effects on household consumption choices and on business performance. (3) There has been a reduction in the number of SMEs and a phenomenon of concentration in larger industrial groups; the PDO Parma Ham sector also had this trend, with a decrease in the number of companies and an increase in the average size. A process of progressive concentration has affected the sector in recent years; in fact, various M&A operations, company acquisitions, and company branches have been observed during insolvency proceedings. These operations have often allowed horizontal integration, particularly with the intervention of large food groups in the meat sector, or vertical integration with groups operating in the pig slaughtering sector.

5. Conclusions

The companies in the PDO Parma Ham sector produce the first PDO of meat processing in Italy by turnover; it is a product known all over the world and appreciated by consumers, which attracts capital, generates a significant offer of related services, and promotes employment in many municipalities in the province of Parma. Most of the companies in the sector were born as artisan companies, but over the years, there has been a reduction in the number of companies registered in the Parma PDO Ham Consortium. The reduction concerned the increase in the average size of the companies due to acquisitions and mergers, but there were many cases of crisis and bankruptcy in the sector.

These reasons have determined the research interest for companies registered in the Parma PDO Ham sector. The data analysis shows that the firms analyzed, out of 840 observations relating to 103 firms over a 10-year series, have modest profitability, especially when compared to the COD. Furthermore, the length of the aging cycle and the length of the cash conversion cycle have a negative correlation with company profitability. Traditional ICR indices, if applied to companies in the sector, overestimate the financial sustainability of the payment of the COD, and the application of ICRs calculated with a financial approach is preferable.

In the Parma PDO ham sector, the suggested valuation is relevant given the time lag between the economic and financial cycles, which can lead to the wrong strategic choices. The results of this article could be applied to do the following: (1) improve the management of firms for the benefit of managers and venture capital holders and of all stakeholders; (2) improve the relationship between firms and banks by providing information on financially sustainable or potentially risky business conduct; (3) reduce the default risk of companies, thus reducing the social risk deriving from management in terms of job losses and damage to creditors, including the state for unpaid taxes by failed companies; (4) reduce the risk of loss of the collateral provided by private entities, including the shareholders of the companies who personally guaranteed the loans received, or by the state, which guaranteed the loans used by the companies in the sample with a public guarantee; and (5) evaluate the impact of an increase in interest rates, which occurred in 2022, on the financial sustainability of companies in the next decade.

For the purpose of evaluating the results of the study, it is necessary to consider the following:

(1)　The companies implement a production mix freely chosen by the management, which can include products other than Parma PDO ham. For this reason, the conclusions of the study cannot be interpreted as a photograph of the trend of the Parma PDO ham sector; more correctly, they must be considered as a study on the trend of companies that are registered in the consortium of Parma PDO Ham, and in addition to this PDO product, they can freely produce other productions.

(2) All sole proprietorships and partnerships were excluded from the sample; these companies are not required to file their AAS with the business register (31 firms out of 140). It is rational to assume that the firms excluded from the sample are smaller than the average. There is no data available for eight other companies; the database used therefore includes 101 companies out of 140, or 72% of the companies registered in the Parma PDO Ham consortium.

(3) The data includes the year 2020, which was affected by the COVID-19 pandemic, and therefore may present anomalous data compared to the previous 8 years of the analyzed series.

The Parma PDO ham sector is protected by the PDO mark of the European Union; for this reason, the results of the research, even if relating to a sector located in Italy, can be generalized to other typical productions in Europe or in non-European countries if characterized by similar production techniques and protection constraints. In fact, it must be noted that the production specification for Parma PDO ham imposes a minimum aging period of 14 months and a specific meat processing technique. The research can therefore be interesting for operators and policymakers in relation to the sector of typical products, in particular those characterized by high capital intensity caused by investments in FAs or working capital, that operate in Italy and beyond.

Even with the limitations listed above, the methodology applied in the study can be extended to other agri-food sectors so as to evaluate whether they can provide useful results for management improvement. The methodology is replicable and could also extend to other sectors of PDO products with a high supply volume, such as Grana Padano PDO, Parmigiano Reggiano PDO cheeses, or other food products, such as wines, subject to a long aging period. The application to other PDO products with a smaller supply volume may also be interesting, especially in sectors characterized by smaller companies and often characterized by worse access to credit and the worst sustainability of the financial cycle.

Author Contributions: G.B. wrote the section titled "research premise", M.I. wrote the sections titled "methods", "results", and "discussion", and G.B. and M.I. jointly wrote the sections titled "theoretical background" and "conclusions", with equal contributions from the authors. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study are available upon request from the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. De Luca, A.I.; Iofrida, N.; Strano, A.; Falcone, G.; Gulisano, G. Social life cycle assessment and participatory approaches: A methodological proposal applied to citrus farming in Southern Italy. *Integr. Environ. Assess. Manag.* **2015**, *11*, 383–396. [CrossRef]
2. De Luca, A.I.; Iofrida, N.; Leskinen, P.; Stillitano, T.; Falcone, G.; Strano, A.; Gulisano, G. Life cycle tools combined with multi-criteria and participatory methods for agricultural sustainability: Insights from a systematic and critical review. *Sci. Total Environ.* **2017**, *595*, 352–370. [CrossRef] [PubMed]
3. Zarbà, C.; Chinnici, G.; La Via, G.; Bracco, S.; Pecorino, B.; D'Amico, M. Regulatory elements on the circular economy: Driving into the agri-food system. *Sustainability* **2021**, *13*, 8350. [CrossRef]
4. Garavaglia, C.; Mariani, P. How Much Do Consumers Value Protected Designation of Origin Certifications? Estimates of willingness to Pay for PDO Dry-Cured Ham in Italy. *Agribus* **2017**, *33*, 403–423. [CrossRef]
5. ISMEA. Available online: https://www.ismea.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/12017#:~:text=22%20novembre%202022-,Rapporto%20Ismea%2DQualivita%202022%3A%20Dop%20Economy%20%22sovrana%22%2C,vitivinicole%20italiane%20DOP%20IGP%20STG (accessed on 10 January 2023).
6. Tudisca, S.; Di Trapani, A.M.; Sgroi, F.; Testa, R. Economic evaluation of PDO introduction in Sicilian orange farms. *Qual. Access Success* **2014**, *15*, 99–103.
7. CSQA. Available online: https://www.csqa.it/CSQA/Download/PROSCIUTTO-DI-PARMA-DOP (accessed on 5 January 2023).

8.	Consorzio del Prosciutto di Parma. Available online: https://www.prosciuttodiparma.com/en/parma-ham-consortium/ (accessed on 11 January 2023).

9.	Kling, G. A theory of operational cash holding, endogenous financial constraints, and credit rationing. *Eur. Jour. Fin.* **2018**, *24*, 59–75. [CrossRef]

10.	Grau, A.; Reig, A. Operating leverage and profitability of SMEs: Agri-food industry in Europe. *Small Bus. Econ.* **2021**, *57*, 221–242. [CrossRef]

11.	Piccoli, P.; Bianchini, N., Jr.; Coser, J.; Moreira, V.R. Short-term financial sustainability of agricultural cooperatives. *Agric. Financ. Rev.* **2020**, *81*, 444–457. [CrossRef]

12.	Kropp, J.D.; Katchova, A.L. The effects of direct payments on liquidity and repayment capacity of beginning farmers. *Agric. Fin. Rev.* **2011**, *71*, 365. [CrossRef]

13.	Svabova, L.; Michalkova, L.; Durica, M.; Nica, E. Business Failure Prediction for Slovak Small and Medium-Sized Companies. *Sustainability* **2020**, *12*, 4572. [CrossRef]

14.	Cepec, J.; Grajzl, P. Management turnover, ownership change, and post-bankruptcy failure of small businesses. *Small Bus. Econ.* **2021**, *57*, 555–581. [CrossRef]

15.	Baños-Caballero, S.; García-Teruel, P.J.; Martínez-Solano, P. Working capital management, corporate performance, and financial constraints. *J. Bus. Res.* **2014**, *673*, 332–338. [CrossRef]

16.	Mabandla, N.Z.; Makoni, P.L. Working capital management and financial performance: Evidence from listed food and beverage companies in South Africa. *Acad. Account. Financ. Stud.* **2019**, *23*, 2.

17.	Purnima, R.; Satish, K.; Meena, C.; Weng, M.L. A systematic literature review on SME financing: Trends and future directions. *J. Small Bus. Manag.* **2021**, *8*, 1–31. [CrossRef]

18.	Afrifa, G.A. Net working capital, cash flow and performance of UK SMEs. *Rev. Account. Financ.* **2016**, *15*, 21–44. [CrossRef]

19.	Banos-Caballero, S.; Garcia-Teruel, P.J.; Martinez-Solano, P. How does working capital management affect the profitability of Spanish SMEs? *Small Bus. Econ.* **2012**, *39*, 517–529. [CrossRef]

20.	Singh, K.; Misra, M.; Kumar, M.; Tiwari, V. A study on the determinants of financial performance of U.S. agricultural cooperatives. *J. Bus. Econ. Manag.* **2019**, *4*, 633–647. [CrossRef]

21.	Endri, E.; Sari, A.K.; Budiasih, Y.; Yuliantini, Y.; Kasmir, K. Determinants of Profit Growth in Food and Beverage Companies in Indonesia. *J. As. Fin. Econ. Bus.* **2020**, *7*, 739–748. [CrossRef]

22.	Hampl, F. A statistical analysis of the financial performance of organic and conventional farms in the Czech Republic with respect to their size. *Agric. Econ.* **2020**, *66*, 1–9. [CrossRef]

23.	Balezentis, T.; Novickyte, L. Are lithuanian family farms profitable and financially sustainable? Evidence using dupont model, sustainable growth paradigm and index decomposition analysis. *Transf. Bus. Econ.* **2018**, *17*, 237–254. Available online: https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046378264&partnerID=40&md5=f3a362371f3bbc4aa35f35b0b4dee3ee (accessed on 2 February 2023).

24.	Beyer, D.; Hinke, J. European benchmarking of determinants of profitability for companies with accrual accounting in the agricultural sector. *Agric. Econ.* **2020**, *66*, 477–488. [CrossRef]

25.	Vanhuyse, F.; Bailey, A.; Tranter, R. Management practices and the financial performance of farms. *Agric. Fin. Rev.* **2020**, *81*, 415–429. [CrossRef]

26.	Tsiouni, M.; Gourdouvelis, D.; Aggelopoulos, S.; Siggia, D. Improve the financial management practices in goat farms with the study of financial ratios. The case of Greece. *Int. J. Man. Fin. Acc.* **2022**, *14*, 184–196. [CrossRef]

27.	Kusz, D.; Bąk, I.; Szczecińska, B.; Wicki, L.; Kusz, B. Determinants of Return-on-Equity (ROE) of Biogas Plants Operating. *Poland. Ener.* **2023**, *16*, 31. [CrossRef]

28.	Mazurek-Czarnecka, A.; Rosiek, K.; Salamaga, M.; Wasowicz, K.; Żaba-Nieroda, R. Study on Support Mechanisms for Renewable Energy Sources. *Poland. Ener.* **2022**, *15*, 4196. [CrossRef]

29.	Kurniasih, A.; Rustam, M.; Endri, E. Cost of capital and firm value: Evidence from Indonesia. *Investig Manag. Fin. Innov.* **2022**, *19*, 14–22. [CrossRef]

30.	Malorgio, G.; Marangon, F. Agricultural business economics: The challenge of sustainability. *Agric. Econ.* **2021**, *9*, 1–4. [CrossRef]

31.	Ferrara, C.; Tomasi, S.; Aleffi, C.; Ferrara, A.; Bertella, G.; Paviotti, G.; Cavicchi, A. Relationships matter. new paths for tourism beyond COVID-19 pandemic. an exploratory research from Italy. In *COVID-19: Paving the Way for a More Sustainable World*; World Sust. Series; Springer: Cham, Switzerland, 2021; pp. 349–370. [CrossRef]

32.	Arimany-Serrat, N.; Farreras-Noguer, M.A.; Rabaseda-Tarrés, J. Economic and financial analysis of Rioja wine sector. *Intan. Cap.* **2016**, *12*, 268–294. [CrossRef]

33.	Paoloni, P.; Modaffari, G.; Paoloni, N.; Ricci, F. The strategic role of intellectual capital components in agri-food firms. *Br. Food J.* **2022**, *124*, 1430–1452. [CrossRef]

34.	Sgroi, F.; Sciancalepore, V.D. Dynamics of structural change in agriculture, transaction cost theory and market efficiency: The case of cultivation contracts between agricultural enterprises and the food industry. *J. Agric. Food Res.* **2022**, *10*, 100396. [CrossRef]

35.	Della Corte, V.; Del Gaudio, G.; Sepe, F. Innovation and tradition-based firms: A multiple case study in the agro-food sector. *Br. Food J.* **2018**, *120*, 1295–1314. [CrossRef]

36.	Dangelico, R.M.; Nastasi, A.; Pisa, S. A comparison of family and nonfamily small firms in their approach to green innovation: A study of Italian companies in the agri-food industry. *Bus. Strat. Environ.* **2019**, *28*, 1434–1448. [CrossRef]

37. Iaia, L.; Vrontis, D.; Maizza, A.; Fait, M.; Scorrano, P.; Cavallo, F. Family businesses, corporate social responsibility, and websites: The strategies of Italian wine firms in talking to stakeholders. *Br. Food J.* **2019**, *121*, 1442–1466. [CrossRef]
38. Onjewu, A.K.E.; Puntaier, E.; Hussain, S. The correlates of energy management practices and sales performance of small family food firms in Turkey. *Br. Food J.* **2022**, *124*, 2343–2360. [CrossRef]
39. Organismo Italiano di Contabilità (OIC). Available online: https://www.fondazionenazionalecommercialisti.it/cat/2/1/64 (accessed on 20 January 2023).
40. Andrei, P.; Fellegara, A.; Balluchi, F.; Marchini, P.L.; Tibiletti, V.; Zalera, P.; Azzali, S. *Contabilità Generale e Bilancio D'impresa*; Giappichelli: Torino, Italy, 2017; Volume 1.
41. Organismo Italiano di Contabilità (OIC). Available online: https://www.fondazioneoic.eu/wp-content/uploads/2011/02/2016 -12-OIC-10-Rendiconto-finanziario.pdf (accessed on 20 January 2023).
42. IFRS Foundation. Available online: https://www.ifrs.org/issued-standards/list-of-standards/ias-1-presentation-of-financial- statements/ (accessed on 20 January 2023).
43. Gollo, V.; Kruger, S.D.; Mazzioni, S.; Da Cunha, P.R. Comparative analysis of the economic and financial results between pig and dairy production. *Custos E Agronegocio* **2015**, *11*, 93–113.
44. Lososová, J.; Zdeněk, R.; Svoboda, J. Tangible fixed assets in Czech small and middle-sized farms. *East. J. Europ. Stud.* **2020**, *11*, 236–251.
45. Boisjoly, R.P.; Conine, T.E.; McDonald, M.B. Working capital management: Financial and valuation impacts. *J. Bus. Res.* **2020**, *108*, 1–8. [CrossRef]
46. Kussainov, G.B.; Saghaian, S.H.; Reed, M.R. Innovation behavior of agri-food small and medium-sized firms: The case of Europe's emerging economies. *Internat. Food Agrib. Manag. Rev.* **2021**, *24*, 355–369. [CrossRef]
47. Banos-Caballero, S.; Garcia-Teruel, P.J.; Martinez-Solano, P. Financing of working capital requirement, financial flexibility and SME performance. *J. Bus. Econ. Manag.* **2016**, *17*, 1189–1204. [CrossRef]
48. Fernández-López, S.; Rodeiro-Pazos, D.; Rey-Ares, L. Effects of working capital management on firms' profitability: Evidence from cheese-producing firms. *Agribus* **2020**, *36*, 770–791. [CrossRef]
49. Golas, Z. Impact of working capital management on business profitability: Evidence from the polish dairy industry. *Agric. Econ.* **2020**, *66*, 278–285. [CrossRef]
50. Grashuis, J.; Dary, S.K. An empirical investigation of patent and trademark ownership propensity and intensity in the U.S. food and drink industry. *Internat. Food Agrib. Manag. Rev.* **2017**, *20*, 747–764. [CrossRef]
51. Sgroi, F. Cooperation and innovation in Italian agribusiness between theoretical analysis and empirical evidence. *J. Agric. Food Res.* **2022**, *10*, 100406. [CrossRef]
52. Fama, E.F.; French, K.R. Common risk factors in the returns on stocks and bonds. *J. Fin. Econ.* **1993**, *33*, 3–56. [CrossRef]
53. Guo, H.; Pai, Y. The risk-return relation puzzle. *Pac. -Basin Fin. J.* **2021**, *69*, 101652. [CrossRef]
54. Cao, V.N. What explains the value premium? The case of adjustment costs, operating leverage and financial leverage. *J. Bank. Financ.* **2016**, *59*, 350–366. [CrossRef]
55. Mansi, S.A.; Maxwell, W.F.; Miller, D.P. Analyst forecast characteristics and the cost of debt. *Rev. Acc. Stud.* **2011**, *16*, 116–142. [CrossRef]
56. Munir, A.; Fin, M. Inflation, Time of Debt Repayment and Firms Performance: The Evidences from Food and Beverage Companies. *J. Manag. Lead.* **2018**, *1*, 17–23.
57. Matias Gama, A.P.; Dias Duarte, F. Collateral and relationship lending in loan pricing: Evidence from UK SMEs. *Trans. Bus. Econ.* **2015**, *12*, 21–35.
58. Ono, A.; Uesugi, I. Role of collateral and personal guarantees in relationship lending: Evidence from Japan's sme loan market. *J. Mon. Cred. Bank.* **2009**, *41*, 935–960. [CrossRef]
59. Vermoesen, V.; Deloof, M.; Laveren, E. Long-term debt maturity and financing constraints of SMEs during the Global Financial Crisis. *Small Bus. Econ.* **2016**, *41*, 433–448. [CrossRef]
60. Zabolotnyy, S.; Sipilainen, T. A comparison of strategies for working capital management of listed food companies from Northern Europe. *Agric. Food Sci.* **2020**, *29*, 239–249. [CrossRef]
61. Wang, Z.; Akbar, M.; Akbar, A. The interplay between working capital management and a firm's financial performance across the corporate life cycle. *Sustainability* **2020**, *12*, 1661. [CrossRef]
62. Aminu, Y.; Zainudin, N. A review of anatomy of working capital management theories and the relevant linkages to working capital components: A theoretical building approach. *Europ. J. Bus. Manag.* **2015**, *7*, 10–18.
63. Dono, G.; Buttinelli, R.; Cortignani, R. Financial performance of connected Agribusiness activities in Italian agriculture. *Bio-Based Appl. Econo.* **2022**, *11*, 147–169. [CrossRef]
64. Boyd, S.; Boland, M.; Dhuyvetter, K.; Barton, D. Determinants of return on equity in US local farm supply and grain marketing cooperatives. *J. Agric. Appl. Econ.* **2007**, *39*, 201–210. [CrossRef]
65. Jin, Y. DuPont Analysis, Earnings Persistence, and Return on Equity: Evidence from Mandatory IFRS Adoption in Canada. *Account. Perspect.* **2017**, *16*, 205–235. [CrossRef]
66. Barbier, P.J.A. Financial return on equity (FROE): A new extended dupont approach. *Acad. Account. Financ. Stud. J.* **2020**, *24*, 2.
67. Wild, J.J.; Shaw, K.W.; Chiappetta, B.; Dahawy, K.; Samaha, K. *Fundamental Accounting Principles*, 23rd ed.; McGraw-Hill: New York, NY, USA, 2007.

68. Argiles, J.M.; Slof, E.J. The use of financial accounting information and firm performance: An empirical quantification for farms. *Account. Bus. Res.* **2003**, *33*, 251–264. [CrossRef]
69. Dechow, P.M.; Dichev, L. The Quality of Accruals and Earnings, the Role of Accruals Estimation Errors. *Account. Rev.* **2002**, *87*, 35–59. [CrossRef]
70. Sabasi, D.; Shumway, C.R.; Kompaniyets, L. Analysis of Credit Access, U.S. Agricultural Productivity, and Residual Returns to Resources. *J. Agr. Appl. Econ.* **2021**, *53*, 389–415. [CrossRef]
71. Iotti, M. Le esigenze finanziaria delle imprese agricole. In *Strumenti Finanziari e Creditizi*; cap. 4; McGraw-Hill: Milano, Italy, 2022.
72. Langemeier, M. Measuring Repayment Capacity and Farm Growth Potential. Farmdoc daily, 2018, 175, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign. Available online: https://farmdocdaily.illinois.edu/2018/09/measuring-repayment-capacity-and-farm-growth-potential.html (accessed on 3 January 2023).
73. Rossi, M.; Lombardi, R.; Nappo, F.; Trequattrini, R. The capital structure choices of agro-food firms: Evidence from Italian SMEs. *Int. J. Man. Prac.* **2015**, *8*, 172–186. [CrossRef]
74. Rossi, M.; Lombardi, R.; Siggia, D.; Oliva, N. The impact of corporate characteristics on the financial decisions of companies: Evidence on funding decisions by Italian SMEs. *J. Innov. Entrepr.* **2015**, *5*, 2. [CrossRef]
75. Catalano, R. L'oggetto del pegno rotativo e il limite di valore entro il quale il bene può essere sostituito. *Banca Borsa Titoli Di Credito: Riv. Di Dottrina E Giurisprud.* **2022**, *75*, 9.
76. Beyhaghi, M. Third-Party Credit Guarantees and the Cost of Debt: Evidence from Corporate Loans. *Rev. Fin.* **2022**, *26*, 287–317. [CrossRef]
77. Balbusso, S. Primi appunti sulla disciplina del pegno rotativo su prodotti agricoli e alimentari d.o.p. e i.g.p. introdotta in sede di conversione del decreto "cura Italia" (d.l. n. 18/2020, art. 78, commi da 2-duodecies a 2-quaterdecies). In *Emergenza COVID-19 e Questioni Di Diritto Civile*; Giappichelli: Torino, Italy, 2022.
78. Weygandt, J.J.; Kieso, D.E.; Kimmel, P.D.; Trenholm, B.; Warren, V.; Novak, L. *Accounting Principles*; John Wiley Sons: Hoboken, NJ, USA, 2019; Volume 2.
79. Arsenijević, A. The conservatism principle in modern financial reporting. *FACTA UNIVERSITATIS-Econ. Organiz.* **2020**, *17*, 375–383. [CrossRef]
80. Bonazzi, G.; Camanzi, P.; Ferri, G.; Manghi, E.; Iotti, M. Economic Sustainability of Pig Slaughtering Firms in the Production Chain of Denomination of Origin Hams in Italy. *Sustainability* **2021**, *13*, 7639. [CrossRef]
81. Weinraub, H.J.; Visscher, S. Industry Practice Relating to Aggressive and Conservative Working Capital Policies. *J. Financ. Strateg. Decis.* **1998**, *9*, 21–37.
82. Welc, J. *Financial Statement Analysis, Evaluating Corporate Financial Performance*; Palgrave Macmillan: London, UK, 2022. [CrossRef]
83. Dono, G.; Buttinelli, R.; Cortignani, R. Financial sustainability in Italian farms: An analysis of the FADN sample. *Agric. Financ. Rev.* **2021**, *23*, 719–745. [CrossRef]
84. Aktas, N.; Croci, E.; Petmezas, D. Is working capital management value-enhancing? Evidence from firm performance and investments. *J. Corp. Financ.* **2015**, *30*, 98–113. [CrossRef]
85. Banos-Caballero, S.; Garcia-Teruel, P.J.; Martinez-Solano, P. Net operating working capital and firm value: A cross-country analysis. *BRQ Bus. Res. Q.* **2020**, *23*, 234–251. [CrossRef]
86. Boisjoly, R.P.; Izzo, S. The Cash Flow Implications of Managing Working Capital and Capital Investment. *J. Bus. Econ. Stud.* **2009**, *15*, 98–109.
87. Deloof, D. Does Working Capital Management Affect Profitability of Belgian Firms? *J. Bus. Financ. Account.* **2003**, *30*, 573–587. [CrossRef]
88. Bradbury, M. Direct or indirect cash flow statements? *Austr. Acc. Rev.* **2011**, *21*, 124–130. [CrossRef]
89. Comporek, M. The use of operational cash flow in the estimation of accrual-based earnings management. *Fin. Sci. Nauki o Finans.* **2019**, *24*, 46–60. [CrossRef]
90. Pornupatham, S.; Tan, H.T.; Vichitsarawong, T.; Yoo, G.S. The Effect of Cash Flow Presentation Method on Investors' Forecast of Future Cash Flows. *Manag. Sci.* **2022**, 1–24. [CrossRef]
91. Dothan, M. Costs of Financial Distress and Interest Coverage Ratios. *J. Financ. Res.* **2006**, *29*, 147–162. [CrossRef]
92. Bhandari, S.B.; Iyer, R. Predicting business failure using cash flow statement based measures. *Mang. Fin.* **2013**, *39*, 667–676. [CrossRef]
93. Saputra, K.A.K.; Putri, P.Y.A.; Kawisana, P.G.W.P. Ecotourism, Agricultural Products, And Biological Assets. *Acc. Russ. J. Agric. Socio-Econ. Scie. (RJOAS)* **2022**, *2*, 63–73. [CrossRef]
94. Antia, M.; Tandon, A. Interest costs, taxes, and value creation. *Rut. Bus. Rew.* **2021**, *6*, 112–121. Available online: https://rbr.business.rutgers.edu/sites/default/files/documents/rbr-060110.pdf (accessed on 6 February 2023).
95. Kaplanoğlu, E.; Yükçü, C. The Investigation of Zombie Firms' Existence in Borsa İstanbul Manufacturing Industry. In *Uncertainty and Challenges in Contemporary Economic Behaviour*; Emerald Publishing Limited: Bingley, UK, 2020; pp. 37–48. [CrossRef]
96. Khermkhan, J.; Chancharat, S. The determinants of financial health in Thailand: A factor analysis approach. *Int. J. Econ. Res.* **2015**, *12*, 1453–1459. Available online: https://serialsjournals.com/abstract/37374_11.pdf (accessed on 6 February 2023).
97. Hung, K.; Cheng, H.W.; Chen, S.-S.; Huang, Y.C. Factors that affect credit rating: An application of ordered probit models. *Romanian J. Econ. Forec.* **2013**, *16*, 94–108. Available online: https://ipe.ro/rjef/rjef4_13/rjef4_2013p94-108.pdf (accessed on 4 February 2023).

98. Malikov, K.; Coakley, J.; Manson, S. The effect of the interest coverage covenants on classification shifting of revenues. *Europ. J. Fin.* **2019**, *25*, 1572–1590. [CrossRef]

99. Greenwald, D. Firm Debt Covenants and the Macroeconomy: The Interest Coverage Channel (Vol. 1). MIT Sloan School of Management, 2019. Available online: https://www.dlgreenwald.com/uploads/4/5/2/8/45280895/debt_covenant_draft.pdf (accessed on 6 February 2023).

100. Dainelli, F.; Daddi, T. Does an organic strategy pay? An explanatory study of the Italian wine industry. *Br. Food J.* **2019**, *121*, 2322–2336. [CrossRef]

101. Kim, K.N.; Katchova, A.L. Impact of the Basel III Bank Regulation on US Agricultural Lending. *Agric. Financ. Rev.* **2020**, *80*, 321–337. [CrossRef]

102. Basel Committee on Banking Supervision. *Basel III Monitoring Report*; 2021; Bank for International Settlements: Basel, Switzerland; ISBN 978-92-9259-508-1.

103. Gama, A.P.M.; Geraldes, H.S.A. Credit risk assessment and the impact of the New Basel Capital Accord on small and medium-sized enterprises: An empirical analysis. *Manag. Res. Rev.* **2012**, *35*, 727–749. [CrossRef]

104. Iotti, M.; Bonazzi, G. Application of ICRs with a net financial position (NFP) repayment approach in the Parma PDO ham sector. *J. Food Agric. Environ.* **2015**, *13*, 109–114. [CrossRef]

105. Lewellen, J.W. Predicting Returns with Financial Ratios. *J. Financ. Econ.* **2004**, *74*, 209–235. [CrossRef]

106. Beaver, W.; Correia, M.; McNichols, M.F. Do differences in financial reporting attributes impair the predictive ability of financial ratios for bankruptcy? *Rev. Account. Stud.* **2012**, *17*, 969–1010. [CrossRef]

107. Liang, D.; Lu, C.C.; Tsai, C.F.; Shih, G.A. Financial ratios and corporate governance indicators in bankruptcy prediction: A comprehensive study. *Europ J. Oper. Res.* **2016**, *252*, 561–572. [CrossRef]

108. Morales-Díaz, J.; Zamora-Ramírez, C. The impact of IFRS 16 on key financial ratios: A new methodological approach. *Account. Eur.* **2018**, *15*, 105–133. [CrossRef]

109. Mishra, A.K.; Harris, J.M.; Erickson, K.W.; Hallahan, C.; Detre, J.D. Drivers of agricultural profitability in the USA: An application of the Du Pont expansion method. *Agric. Financ. Rev.* **2012**, *72*, 325–340. [CrossRef]

110. Bauman, M.P. Forecasting operating profitability with DuPont analysis Further evidence. *Rev. Account. Financ.* **2014**, *13*, 191–205. [CrossRef]

111. Doorasamy, M. Using DuPont analysis to assess the financial performance of the top 3 JSE listed companies in the food industry. *Investig. Manag. Financ. Innov.* **2016**, *13*, 29–44. [CrossRef]

112. Anderson, M.; Hyun, S.; Muslu, V.; Dongning, M. Earnings prediction with DuPont components and calibration by life cycle. *Rev. Account. Stud.* **2023**, 1–35. [CrossRef]

113. Curtis, A.; Lewis-Western, M.F.; Toynbee, S. Historical cost measurement and the use of DuPont analysis by market participants. *Rev. Account. Stud.* **2015**, *20*, 1210–1245. [CrossRef]

114. Faello, J. Understanding the limitations of financial ratios. *Acad. Account. Fin. Stud. J.* **2015**, *19*, 75.

115. Yusni, N.; Sunarsi, D. The Effect of Current Ratio and Debt to Equity Ratio on Deviding Growth. *JASa (J. Akunt. Audit. Dan Sist. Inf. Akunt.)* **2020**, *4*, 304–312. [CrossRef]

116. Linares-Mustarós, S.; Coenders, G.; Vives-Mestres, M. Financial performance and distress profiles. From classification according to financial ratios to compositional classification. *Adv. Acc.* **2018**, *40*, 1–10. [CrossRef]

117. Shulman, J.; Cox, R. An Integrative Approach to Working Capital Management. *J. Cash Manag.* **2009**, *5*, 32–38.

118. Dechow, P.M. Accounting Earnings and Cash Flow as Measures of Firm Performance, the Role of Accounting Accruals. *J. Account. Econ.* **1994**, *18*, 3–42. [CrossRef]

119. Carroll, C.; Griffith, J.M. Free Cash Flow, Leverage, and Investment Opportunities. *Q. J. Bus. Econ.* **2001**, *1*, 27–51.

120. Denis, D.J.; Sibilkov, V. Financial constraints, investment, and the value of cash holdings. *Rev. Fin. Stud.* **2010**, *23*, 247–269. [CrossRef]

121. Ebben, J.J.; Johnson, A.C. Cash Conversion Cycle Management in Small Firms: Relationships with Liquidity, Invested Capital, and Firm Performance. *J. Small Bus. Entrepr.* **2011**, *24*, 381–396. [CrossRef]

122. Wang, B. The cash conversion cycle spread. *J. Fin. Econ.* **2019**, *133*, 472–497. [CrossRef]

123. Lin, Q.; Lin, X. Cash conversion cycle and aggregate stock returns. *J. Fin. Mark.* **2021**, *52*, 100560. [CrossRef]

124. Khatib, S.F.A.; Nour, A.I. The Impact of Corporate Governance on Firm Performance during the COVID-19 Pandemic: Evidence from Malaysia. *J. Asian Fin. Econ. Bus.* **2021**, *8*, 0943–0952. [CrossRef]

125. Najjar, M.; Alsurakji, I.H.; El-Qanni, A.; Nour, A.I. The role of block chain technology in the integration of sustainability practices across multi-tiersupply networks: Implications and potential complexities. *J. Sustain. Fin. Investig.* **2022**, *13*, 744–762. [CrossRef]

126. Sgroi, F.; Piraino, F.; Garifo, G.; Modica, F.; Ingrassia, M. Information asymmetry in the agri-food sector and territorial marks: The case of the olive oil Val di Mazara PDO. *J. Agric. Food Res.* **2022**, *9*, 100337. [CrossRef]

127. Tudisca, S.; Di Trapani, A.M.; Sgroi, F.; Testa, R. Socio-economic assessment of direct sales in Sicilian farms. *It. J. Food Sci.* **2015**, *27*, 101–108. [CrossRef]

128. Taghizadeh-Hesary, F.; Rasoulinezhad, E.; Yoshino, N. Energy and food security: Linkages through price volatility. *Energy Policy* **2019**, *128*, 796–806. [CrossRef]

129. Schrijvers, D.; Hool, A.; Blengini, G.A.; Chen, W.Q.; Dewulf, J.; Eggert, R.; Van Ellen, R. A review of methods and data to determine raw material criticality. *Res. Cons. Rec.* **2020**, *155*, 104617. [CrossRef]

130. Foti, P.; Romeo, F.V.; Russo, N.; Pino, A.; Vaccalluzzo, A.; Caggia, C.; Randazzo, C.L. Olive mill wastewater as renewable raw materials to generate high added-value ingredients for agro-food industries. *Appl. Sci.* **2021**, *11*, 7511. [CrossRef]

131. Raimo, N.; de Nuccio, E.; Giakoumelou, A.; Petruzzella, F.; Vitolla, F. Non-financial information and cost of equity capital: An empirical analysis in the food and beverage industry. *Br. Food J.* **2020**, *123*, 49–65. [CrossRef]

132. Banca d'Italia, Relazione Annuale 2021. Available online: https://www.bancaditalia.it/pubblicazioni/relazione-annuale/2021/rel_2021.pdf (accessed on 20 December 2022).

133. Fernandez, P.; Ortiz, A.; Acín, I.F. Market Risk Premium Used in 71 Countries in 2016: A Survey with 6,932 Answers. *J. Internat. Bus. Res. Mark.* **2017**, *2*, 23–31. [CrossRef]

134. Lehenchuk, S.; Raboshuk, A.; Valinkevych, N.; Polishchuk, I.; Khodakyvskyy, V. Analysis of financial performance determinants: Evidence from Slovak agricultural firms. *Agric. Res. Econ.* **2022**, *8*, 66–85. [CrossRef]

135. Ehrhardt, M.; Wachowicz, J.M. Form Follows Function: The Appropriate Definition of Free Cash Flow. *J. Fin. Econ. Pract.* **2007**, *7*, 18–37. [CrossRef]

136. Murugesu, T. Effect of cash conversion cycle on profitability: Listed plantation companies in Sri Lanka. *Res. J. Fin. Account.* **2013**, *4*, 132–137.

137. Attari, M.A.; Raza, K. The optimal relationship of cash conversion cycle with firm size and profitability. *Int. J. Acad. Res. Bus. Soc. Sci.* **2012**, *2*, 189.

138. Rey-Ares, L.; Fernandez-Lopez, S.; Rodeiro-Pazos, D. Marine Impact of working capital management on profitability for Spanish fish canning companies. *Mar. Policy* **2021**, *130*, 104583. [CrossRef]

139. Khanal, A.R.; Omobitan, O. Rural Finance, Capital Constrained Small Farms, and Financial Performance: Findings from a Primary Survey. *J. Agric. Appl. Econ.* **2020**, *52*, 288–307. [CrossRef]