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Intangible expenses, export intensity and company performance in the French wine industry

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Abstract
Purpose: because of the international competition in the wine sector, intangible expenses can play a strategic role in the implementation of differentiation strategies on foreign markets. While the effects of exporting on company performance (profit and risk) as well as the impact of intangible expenses on exports and on financial performance have already been analyzed separately in the literature, this communication aims at analysing the relationship between intangible expenses, exporting and performance in the wine industry.

Design/methodology/approach: the impact of intangible expenses on exporting and on financial performance supported by resource-based view and specific-asset theory is tested on a sample of French wine companies, both corporations and cooperatives. The empirical study firstly tests the impact of intangibles on export intensity, before focusing on the relationship between intangibles and company profit and risk according to the level of export intensity.

Findings: empirical analyses carried out on corporations and cooperatives show that the effect of exporting on financial performance varies according to the category of company. Besides, regardless of export levels, intangibles expenses help reduce company risk in both samples. The effects are different with profit margin. Intangible expenses have a positive role only for a high level of investments and for high export intensity corporations whereas they have a positive impact on risk reduction in cooperatives.

Key words: Intangible expenses, export intensity, profit, risk, wine.

1. INTRODUCTION

In France, wine business helps enhancing or even maintaining a "sustainable [local] economic development" (Barbier, 1987). Actually, it can provide for most of the economic wealth, which brings about numerous direct as well as indirect employments that cannot be "relocatable" and that are rather stable. Indeed, as Reardon and Barrett (2000) noticed, agro-industrialization is necessary but not sufficient: in order not to increase inequalities or damage the natural environment, it has to follow "sustainable development objectives". It also provides for a traditional land settlement, visually attractive and enabling a rurality sought even now and more and more environment friendly cultivation techniques. This is why in wine regions wine business constitutes a real wealth, an economic asset that local authorities and trade associations want to preserve.

However, this activity has to face a crisis mainly due to a decrease in domestic consumption, which constitutes two thirds of French wine market outlets. While French population rose, French wine consumption fell from 35.1 million hectoliters to 28.9 million hectoliters from the 1994-1995 campaign to the 2009-2010 campaign, i.e. 18 per cent decrease. This decrease also echoes to a decrease in per capita consumption which fell from 75.6 to 56.5 liters in the same time[1]. In order to remedy this situation and to face the decrease in performance induced by this crisis, wine companies can find new outlets on export markets. Actually, recommendations were that French viticulture must move from a product orientation to a market orientation[2] by investing massively in marketing and developing their general expertise.

The achievement of an export competitive advantage leading to export performance requires the implementation of numerous resources (Dhanaraj and Beamish, 2003), among them are actually intangible ones. In the French wine industry more specifically, intangibles can help developing the image and reputation traditionally associated to French wines but currently weakened both by their complexity and the rising reputation of New World ones. To be sold, wine is, contrary to other products, a product which needs to reflect and to be associated to a certain image and thus requires investment in intangibles. In the French wine industry, the image development and intangible investments are supported both at the producing region scale by inter-professional organizations undertaking collective actions aimed at supporting companies and developing a collective image and at the firm level, by the efforts made by each firms in terms of marketing or R&D for instance.

On the other hand, much research has focused on the benefit of intangible capital on the competitive position of companies on foreign and domestic markets. Intangible expenses or assets[3], such as skilled workforce, patents and know-how, software, strong customer relationships, brands, and unique organizational designs and processes, are absorbing a

[1] Data extracted from *FranceAgriMer Stats 2010*, available on http://www.onivins.fr/pdfs/216.pdf

[2] See Deshpande and Webster, 1989; Narver and Slater, 1990; Kohli and Jaworski, 1990 for an academic presentation of this concept.

[3] Four broad categories often are given in the literature: human capital, intellectual capital, organizational capital, and customer or relational capital. The MERITUM project funded by the European Union proposes three categories: human, structural, and relational capital.

growing part of the companies' investment[1]. Previous research has already analyzed the impact of intangible assets on the performance of companies (Henning *et al.*, 2000; Hand and Lev, 2004) and some have found that this impact depends on the industry considered (Lev and Zarowin, 1998; Villalonga, 2004; Bobillo *et al.,* 2006). For example, in agriculture, Alene (2010) showed that R&D expenditures had a positive effect on firm productivity growth, which is an indicator of performance. Our aim in this paper is to add a new variable and focus on the relationship between intangibles assets, exporting and performance (in terms of company profit and risk) in French wine companies, with a major difficulty brought about by the relatively small size and unlisted status of these companies: the difficult access to financial data and in particular intangible assets.

Therefore, intangible seems to be necessary to develop export activities but also to improve company performance. This is why this paper aims at analyzing the intangibles – firm performance relationship through the introduction of export activity. In other words, this paper aims at determining whether the impact of intangibles on company financial performance differs according to the export development of the firm (measured through export intensity). This could bring light on the relevance of the intangible effort on exporting in a performance improvement objective.

The remainder of this paper is organized as follows: section 2 provides theoretical foundations for the existence of a positive impact of intangibility on exporting and financial performance as well as past empirical findings. The methodology for investigating the link between intangibility, export intensity and company performance, including the description of data and the construction of intangibility and performance measurements, is described in section 3. Our results and conclusions are presented in sections 4 and 5, respectively.

2. LITERATURE REVIEW

This literature review aims at firstly relating intangibility to the process of creating sustainable advantage and corporate value through the use of economic and strategic management literature (2.1.). Then, the same theoretical background will be implemented to explain the relationship between intangible assets and exporting (2.2.). Finally, the favorable impact of intangible assets on company risk and profit, i.e. performance, through exporting will be justified (2.3.).

2.1 Intangible expenses and competitive position of companies

According to the resource-based view (RBV) of the firm, a firm's endowment of resources makes its competitive advantage sustainable over time (Wernerfelt, 1984; Rumelt, 1984; Dierickx and Cool, 1989; Amit and Schoemaker, 1993; Peteraf, 1993; Barney, 1996). RBV stresses the importance of intangible resources as the key to sustainability, those resources being typically tacit, hard to codify (Kogut and Zander, 1992; Conner and Prahalad, 1996), and also likely to trade in imperfect factor markets (Barney, 1996).

Two main methodologies can be figured out (Casta *et al.*, 2008) to explore the relationship between intangibility and company performance: studies analyzing the relationships between

[1] Following Lev (2004), intangible investments absorb a trillion dollars of US corporate investment funds every year.

capital market performance measures and investment in intangible assets and research works dealing with relationships between intangible assets and various non–market-based performance measurement approaches. In this last category, to assess performance, objective financial performance indicators, subjective measures of financial or nonfinancial indicators are used. The first ones give a global impact of intangibles on performance without making a distinction between risk and return and can only be used for listed companies. The second exclusively concentrates on the impact of intangibles on output expectation using a Cobb-Douglas function (Bobillo *et al.*, 2006) or on profit expectation (Sougiannis, 1994; Lev and Sougiannis 1996; Lev and Zarowin, 1998), and investigates only a linear relationship between inputs and profit. All these studies tend to present ambiguous results on the impact of intangible investments on company performance (Casta *et al.*, 2008). Evidence indicates that the strength of statistical relations between intangible asset measurement and performance declines as the sophistication of the analysis increases (Ittner, 2008). Many individual companies find it difficult to link improvement in their intangible asset measures to financial gains (Ittner and Larcker, 2003; 2005).

In general, studies involving resource-based or knowledge-based views present a positive impact of intangible assets on performance. Using a large sample, Villalonga (2004) investigates the relationship between intangibility and competitive advantage sustainability and intangibility is estimated as the difference between a company's market value and the replacement cost of its tangible assets, estimated by Tobin's q. These results reconfirm the RBV prediction. However, for the agriculture and food industries, "*R&D and advertising investments are unlikely sources of competitive advantage in agricultural businesses*" (p. 224). In these industries, "*intangible investment seems a particularly risky strategy (…) since it is associated with lower sustainability of competitive advantage but with a no lower (or a higher) sustainability of competitive disadvantage*" (p. 224). This last result is coherent with the finding that profitability in the Greek food industry is not merely a consequence of intangible capital (Mavrommati and Papadopoulos, 2005). More generally, the impact of intangibility on performance is negative for industries that are labor-intensive (Bobillo *et al.*, 2006).

All these results converge towards a generally positive relationship between intangible assets and company profit, confirming the RBV approach but the relationship must be considered with care in labor-intensive industries. This confirms the need to consider cooperatives and corporations separately in the wine industry. **Our first Hypothesis (H1) is: *Intangible investments have a positive impact on profit.***

2.2 Intangibles and exporting

An important field of research has been developed about the determinants of exports and its performance (for recent literature reviews on this topic see: Wheeler *et al.,* 2008; Sousa *et al.,* 2008 or Ruppenthal and Bausch, 2009). In a seminal paper on the topic, Tookey (1964) already pointed out the favorable effect of some intangible resources on exporting such as marketing methods. Then, theoretical developments on the relationship between intangibles and exporting have called upon the resource-based view (Braunerhjelm, 1996; Kotha *et al.,* 2001; Dhanaraj and Beamish, 2003; Lopez Rodriguez and Garcia Rodriguez, 2005; Rialp and Rialp, 2006). According to Dhanaraj and Beamish (2003), the export competitive advantage of a firm is linked to its set of resources and capabilities, composed partly of intangible ones. To our knowledge, Braunerhjelm (1996) is the first author to have analyzed specifically the relationship between intangible assets and exports. Later, Kotha *et al*. (2001) explains that intangible resources "*are also more likely to be deployed in international growth strategies*

because they are more flexible and do not depreciate with use". In the same line, Lopez Rodriguez and Garcia Rodriguez (2005) focus on a specific intangible resource, i.e. technology and its impact on firm sustainable competitive advantage and more particularly cost advantage and differentiation advantage, those advantages having been recognized as factors of export success (Styles and Ambler, 1994). According to firm specific assets theory (Braunerhjelm, 1996; Kotha *et al.,* 2001; Lu and Beamish, 2004), intangible assets enable the company to exploit market imperfections and reach higher return in international markets (Lu and Beamish, 2004).

A positive impact of intangible assets on exporting has been empirically tested using various methodologies (non linear regression model; logit regression model; ordinary least squared regression model or even multivariate regression model) and generally accepted (Braunerhjelm, 1996; Kotha *et al*., 2001; Lopez Rodriguez and Garcia Rodriguez, 2005; Rialp and Rialp, 2006). Intangible assets are also seen as a moderator of the relationship between internationalization and firm performance (Lu and Beamish, 2004). Some studies have also dealt with a particular intangible resource such as innovation or reputation. Indeed, innovation appears as a favorable determinant of export performance and thus export intensity in SMEs (Lefebvre *et al*., 1998; Dhanaraj and Beamish, 2003), what corresponds to the case of French wine companies. Innovative activities such as design, engineering or production development expenditures are positively related to export intensity (Sterlacchini, 1999). In the wine industry, innovation has been recognized as contributing to a sustainable competitive advantage (Woods and Kaplan, 2005; Remaud, 2006) for exporting firms. Besides, reputation through brand equity can favor the introduction of new products on international markets (Aaker, 1996) but the effect on the performance of an export venture market may not be direct (Morgan *et al.,* 2006).

Considering that intangible assets are among the determinants and resources influencing export intensity and the export competitive advantage and considering that the impact of some intangible assets on exports have already been verified in the wine industry, **Hypothesis 2 (H2) is:** ***Intangible investments have a positive impact on exporting.***

2.3 Intangibles, exports and company risk

2.3.1 Intangibles and company risk

The theory and empirical findings previously presented provide emphasis essentially to the positive impact of intangibles on global financial performance (and more particularly profit) and on exports. However, intangible expenses can be imagined to improve financial performance not only by increasing profit, but also by reducing company risk. Indeed, value creation and financial performance measurement depend on the relationship between expected return and risk.

Like some other classical expenses in agricultural companies (for instance, pesticide or irrigation expenses[1]), intangible expenses could be profit increasing and/or risk reducing. Previous studies on the impact of intangible expenses on performance in the agricultural sector failed to investigate the specific impact of intangible expenditures on profit risk. Managers of wine companies should be very interested in the risk-reducing possibilities of intangible expenses because other risk-reducing strategies (insurance and hedging) are not

[1] See Groom *et al.* (2008) for a recent study on the risk reduction impact of these two inputs and the references therein. In a recent work, Di Falco and Chavas (2006) add crop genetic diversity as a potential risk-reducing tool.

available to address market risk[1] (the risk of output price and quantity fluctuations due to changing market conditions).

Intangible expenses can reduce risk directly or indirectly – by promoting exports, increasing the loyalty of existing customers, reducing price elasticity (Sethuraman and Tellis 1991; Kaul and Wittink 1995; Mela *et al.*, 1997), lowering marketing costs, and enhancing firm reputation – and thus partly insulate the company from economic and business fluctuations (Anderson *et al.*, 1994; Ittner and Larcker 1998; McAlister *et al.*, 2007). Higher advertising stabilizes company's sales and profit (Aaker, 1996; Keller, 1998). Companies with strong brands, a major intangible asset, seem to have lower risk than their relevant benchmark (Madden *et al.*, 2005). Consistent with these theoretical developments, recent studies (Singh *et al.*, 2005; Madden *et al.*, 2005; McAlister *et al.*, 2007) report a significant negative relationship between a company's advertising and/or R&D and its systematic risk, meaning that intangible expenses reduce the sensibility of the company market returns (systematic risk measured by β) to capital market movements.

2.3.2 The role of exporting in the intangibles-risk relationship

The literature on international diversification stresses the importance of export in stabilizing sales and profit. In a seminal paper, Hirsch and Lev (1971) already used portfolio theory to measure the diversification effect of foreign activities on sales. They empirically show that these activities actually reduce the risk of sales of multinational companies because of the incomplete correlation of business cycles across home and foreign markets. Rugman (1976) obtains the same conclusion for the stabilization of profits. Since these first works, an important literature supports the risk management view of international diversification at the company level (Caves, 1982; Cavusgil and Naor, 1987; Kim *et al*., 1989, 1993; Miller and Pras, 1980; Ogbuehi and Longfellow, 1994; Porter, 1990; Salomon and Shaver, 2005; Shrader *et al*., 2000). However, due to changes in currency value, foreign market taxes on dividend, risks in foreign countries that are not present in the domestic market some authors find that companies' diversification gain is low or even negative (Calvet 1981; Globerman, 1986). However, part of additional risks of export can be reduced by exchange risk management tool, specific financing instruments and government supports (Edmunds and Khoury, 1986).

Therefore, **the third hypothesis (H3) is:** ***Intangible investments have a negative impact on profit risk; this impact depends of the level of exports.***

This literature review helps relating intangible expenses, exporting and company risk. They constitute a complement to the arguments supporting a positive relationship between intangibles and profit (2.1.).

3. DATA AND CONSTRUCTION OF INTANGIBLE EXPENSES

In this third section, after a short review on intangible expenses and performance measurement (3.1.), we will introduce the sample and variables used to test our hypothesis on French wine companies (3.2.).

[1] To our knowledge, there is no future market in the wine industry. See Pichet (2002) for an analysis of the failure of the Euronext attempt to create a futures market on Bordeaux wines. However, for Bordeaux wines, there is "en primeur" market, in which wine can be bought while still not mature. This market can meet part of the roles of the future market (see Hadj and Nauges, 2007).

3.1 Measures of intangible expenses and company performance

3.1.1 Intangible expenses measures

Currently, there is no standardized and consistent way of measuring a company's intangibles. Because there is no convergence with regard to defining intangibility, there exist many measurement methods[1], all with different purposes and, often, a lack of comparability. Broadly speaking, two approaches are used and often combined (Hunter *et al.*, 2005): cost-based measurements and valuation concepts. In an attempt to reflect management's intent in deciding to allocate expenditures to intangible investment, we choose the first approach. The aim was to measure the intangible effort of the company and its consequences on performance. For reasons of comparability, reproducibility, and interpretability, we concentrate on monetary cost measurements based on the breakdown of accounting expenses[2]. We cannot, as in studies on large companies, use directly accounting expenses or assets for two main reasons. First, intangible expenses and assets recorded in financial statements are not considered perfectly reliable by researchers in accounting (see Wyatt, 2008 for a review). This is because intangible are resources largely composed of items which do not appear in financial statements (Carmeli, 2001). Second, data such as "R&D expenses", "goodwill" or "intangible assets other than goodwill" (patents, trademarks, copyrights, licenses, etc,), available in financial statements, are not significant for SMEs in the wine sector.

Even with this narrow definition approach (accounting expenses), there is no generally accepted method available for measuring intangibles, and no standardized financial or accounting method for calculating them. Hence, the proposed decomposition between intangible and tangible expenses is affected by data availability and depends on the specificity of the wine sector[3]. In the context of the French wine industry where R&D expenses are low, intangible expenses are mainly composed of promotion and marketing expenses.

3.1.2 Performance measures

Because our sample is essentially composed of non-listed SMEs, we use only book values to measure performance. We choose to use earnings before interest taxes depreciation and amortization (EBITDA) as a measure of profit because we want to compare companies with different legal structures and objectives (corporations and cooperatives) and to remove the impact of the various financial policies. We investigate the impact of 2005 tangible and intangible expenditures on 2006 performances because one can imagine that intangible investments, like all investments, have an impact only on company's future performance. Profit risk is measured by the standard deviation of the time series of profit margin for each company around 2005 (period 2004-2007).

3.2 Sample and data construction

Data were extracted from the database derived from the "*Enquête Entreprises Aval filière Vin – Agro.M – Viniflhor*, *CCVF*, *EGVF*" (Survey about companies in the wine industry – 2006) carried out by the School of Agronomy of Montpellier (SupAgro) in 2006 and covering the

[1] In a systematic review (Marr *et al.*, 2003), 700 papers were found with issues related to measurement of intangible capital. For other overviews, see Rodov and Leliaert (2002) and Hunter *et al.* (2005).

[2] We agree with Hunter *et al.* (2005) when they argue that the use, made by a lot of studies in the field, of a vast array of indicator measures lacks these three properties.

[3] Detailed calculations are provided in **appendix 1.**

2003-05 period. This database collected the data from questionnaires answered by 101 cooperatives and 95 corporations whose activities included one or more stages involved in wine production and marketing. The questionnaire was divided into eight sections: description of the company and its human resources, relationship with suppliers, products, market and distribution channels, governance, strategy, financial decisions, and innovation[1]. As can be seen from these rubrics, there is no direct information on intangible effort and expenses in the questionnaire so we had to select and extract information from available data. Those declarative data were completed by financial statements extracted from the Diane database[2] available for only 189 over the 196 companies, 94 cooperatives and 95 corporations.

In our sample (Table 1), representative of the French wine industry, companies were relatively small, regardless of size measurement criterion (number of employees, sales and total assets), but with a high dispersion: the sample consisted mainly of SMEs below 50 employees (79% for corporations and 92% for cooperatives). Corporations were bigger than cooperatives if size was measured by volume, number of employees, sales or total assets, but not when it was measured by tangible economic assets: tangible assets (tangible fixed assets, inventories, accounts receivable) less non-financial debts (suppliers' debt and fiscal and social debt). Non-financial debts were higher for corporations than for cooperatives, explaining the deviation between total assets and tangible economic assets.

Table 1. Sample descriptive statistics

Item	Corporations		Cooperatives		Total sample	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Volume 2005 (in hl) *	107 396	225 674	64 559	119 510	85 977	181 837
Number of employees 2005 ***	41.8	61.0	14.0	18.0	29.9	49.5
Sales 2005 (k€) ***	23 903	50 903	10 140	11 574	17 865	39 494
Export sales / total sales – 2005 (%) ***	37.46	27.32	7.78	14.85	24.48	27.07
EBITDA 2005 (k€)	1 171	2 008	866	1 241	1 037	1 721
Total assets 2005 (k€) **	20 763	29 092	13 955	17 468	17 776	24 906
Financial leverage 2005 (financial debt / equity)	1.22	2.45	1.57	2.74	1.38	2.59
Sales / volume – 2005 **	0.61	1.05	0.33	0.27	0.48	0.81
Volume / total assets – 2005 **	11.01	23.31	5.68	6.13	8.67	18.12
Total assets / employees – 2005 **	533	400	2 324	6 661	1 175	4 094
Sales / employees – 2005 **	634	633	1 364	2 723	896	1 743
Tangible expenses 2005 (k€) *	14 703	39 713	8 277	11 006	11 884	30 798
Tangible expenses / Sales – 2005 (%) ***	63.57	35.59	79.14	33.70	70.40	35.62
Intangible expenses 2005 (k€) **	3 101	11 664	806	2 094	2 097	8 930
Intangible expenses / Sales – 2005 *	10.55	18.82	6.55	11.03	8.80	16.01
Export intensity (2004-2007 mean) (%) ***	36.89	25.31	7.41	12.03	22.65	24.86
EBITDA / sales 2006 (%)	7.52	8.73	6.80	6.99	7.19	8.00

Volume (in hl) appears in the survey "entreprise aval filière vin". Operational expense decomposition into tangible and intangible is described in appendix 1. The other data were extracted from Diane database.
*Mean significant differences between corporations and cooperatives: *** significant at 1%; ** significant at 5%; * significant at 10%*

Ratios calculated in Table 1 show that the apparent price of wine (turnover / volume) was higher for corporations than for cooperatives. As expected, corporations had less leverage (financial debt / equity). Corporations were also more labour-intensive and less capital-intensive than cooperatives (see volume / total assets, total assets / employees, and

[1] A full copy of the questionnaire is available from the authors.
[2] This database is constructed by Bureau van Dijk (www.bvdep.com). It contains financial data on French listed and non-listed companies; the European and World counterparts are Amadeus and Orbis.

turnover / employees). The production functions (capital and labour combination) of corporations and cooperatives appeared to be quite different. Standard deviations were systematically above the means of the various variables and ratios, expressing a great heterogeneity of the two subsamples.

Whatever the company's legal status is, intangible expenses were smaller than tangible ones, illustrating the fact that French wine companies have not yet entered the "intangible economy" (Table 1). Corporations in the sample had relatively more intangible expenses and less tangible ones than cooperatives. Corporations also had a higher margin ratio (EBITDA / sales) than cooperatives. As for the descriptive statistics in Table 1, standard deviations are very important.

4. METHODOLOGIES AND RESULTS

Empirical evidence (Bernard and Jensen, 1999; Egger and Kesina, 2010 and references inside this paper) shows that exporters are bigger, more productive and they use capital more intensively in production than firms that only serve the domestic market. Therefore, these three factors serve as controls in our estimations. The variable Employees approximates firm size. Productivity is expressed in terms of the sales-to-employment ratio and Capital Intensity is measured by the capital-to-employment ratio[1].

This section is divided into three paragraphs, each devoted to one hypothesis. Indeed, we will first (4.1.) check whether intangibles have a positive impact on exporting (**H2**), before testing the impact of intangible expenses on company profit margin (**H1**) and risk (**H3**), depending on the level of export intensity. Relationships pointed out by our analyses are gathered in Figures 1 (for corporations) and 2 (for cooperatives) while statistical details of the analyses are available in appendix.

4.1 Intangibles and export intensity

Two different methodologies that are suitable given the nature of the dependent variable are implemented. In the first approach, the depend variables is export intensity, in consequence the tobit model is classically used in the literature to take into account the fact that the dependent variable has a left-censored distribution (with either zero or a positive value). In the second approach companies are separated in three groups; non exporters (export intensity below 5 %), low exporters (export intensity below 25 %) and high exporters (export intensity above 25 %). The ordered logistic regression is used in this case with robust standard error to cope with the heteroscedasticity[2].

Three different models are presented and tested with these two approaches:

- model 1: only tangible and intangible expenses are introduced as independent variables and Employees to control for size,
- model 2: independent variables of model 1 + variables that proxy for the level of intangible expenses,
- model 3: independent variables of model 2 + variables that control for size, capital intensity and productivity.

[1] Detailed calculations are given in appendix 2.
[2] Results of the second approach, quite similar to the first one, are given in appendix 3.

Results are given in appendix 3 (Tables A3.a and A3.b). The two methodologies provide for very similar results. For corporations, intangible expenses have a positive and significant effect on export intensity but the effect decrease with the level of intangible (coefficient of intangible square negative). **This both confirms and moderates Hypothesis 2**. This positive relationship confirms results underlined by previous empirical studies (Braunerhjelm, 1996; Kotha *et al*., 2001; Lopez Rodriguez and Garcia Rodriguez, 2005; Rialp and Rialp, 2006) and thus the resource-based view approach. On the other hand, the analysis shows no significant impact of tangible expenses on exporting while we observed in table 1 a higher volatility of these expenses than in cooperatives. Regarding other variables, one can note a strongly significant regional effect to be investigated because of the fact that some producing region are competing more successfully on international market than others, notably thanks to reputation and a strong marketing effort in exporting. Selling in bottle is significantly and positively related to export intensity, what also underlines the need for more intangible expenses when compared to bulk sales generally directed to wine merchants that carry out exporting. Finally and regarding control variables, the model points out a significant negative effect of size on export intensity, what echoes the still existing debate on the relationship between size and export intensity and complete previous results on the wine industry (Castaldi *et al.,* 2003) showing only a slightly positive and significant relationship in American wine firms.

For cooperatives they are very few significant impacts: a positive impact of size and productivity. As the number of cooperatives among high exporters is low, we conduct a complementary analysis with dependent variable separating domestic and exporting cooperatives. Results of classical logit model are given in Appendix 3 (table A3.c). We observe a negative but not significant effect of intangible expenses. The effect becomes positive for a high level of these expenses (coefficient of Intangible Square positive). Bottles still have a positive effect on exports.

4.2 Intangibles, export and profit expectation

In this paragraph, we investigate if impacts of intangibles on profit margin are different for domestic, low or high exporting companies in order to test hypothesis 1. Financial performance is measured by the EBITDA/Sales ratio in 2006.

For corporations, and like Weasthead *et al.* (2001), export intensity has a positive impact on profit margin (Appendix 4, Table A4.a) whereas this causal relationship has been proved to be difficult to verify (Bernard and Jensen, 1999). While according to Lu and Beamish (2004), intangibles play as a moderator of the internationalization-performance relationship, we observe here that depending on export intensity, intangible expenses have very different impacts. For domestic companies, low level of intangible expenses has an indeterminate effect on performance, this effect becomes negative (non significant) as intangible intensity increases. We also observe a positive and significant regional and capital intensity effect. For exporting companies, the effects of tangible and intangible expenses on performance are similar whatever the level of exports, but coefficients are not significant for low exporters and significant for high exporters. The impact of intangible expenses is negative at a low level but positive at a high level. To generate performance, intangible intensity must be high. Impacts of tangible expenses are the contrary of tangible ones. Capital intensity has a significant positive impact on performance. Note that for high exporters the age of the company and the percent of bottles have a significant positive impact on performance.

Conclusion: intangible expenses have a positive role only for a high level of investments and for high export intensity companies. **Hypothesis 1 is thus only partially validated in**

corporations because the relationship between intangible expenses and company profit margin varies actually according to the level of export but the relationship is not often a positive one.

For cooperatives (Appendix 4, table A4.b), exporting has a significant negative impact on profit margin, **what rejects Hypothesis 1 in cooperatives.** There are not big differences in the performance models between domestic and exporting companies. We observe a surprising negative significant quality effect (negative coefficient of Quality Output). The significant regional effect disappears for exporting companies.

4.3 Intangibles, exports and profit risk

To finish, these last analyses aim at testing the hypothesis regarding intangible expenses, exports and company risk (Hypothesis 3). Results show us that variables explaining risk levels are slightly different than those explaining profit margin levels.

Corporation and cooperatives obey very similar logic except for exports (Appendix 5, Table A5.a). For corporations and contrary to previous studies (Hirsch and Lev, 1971; Shaver, 2006) the effect of exports on risk is positive and non significant, diversification effect of exports is more than compensated by intrinsic risk of exporting activities. Indeed, exporting has for a long time been considered as a riskier activity due to the increased uncertainty characterizing its environment (Katz *et al.,* 1985).

In cooperatives, exports reduce risk (diversification effect) what confirms the first part of the hypothesis H3. Note that coefficients of others independent variables are (quasi) not affected by suppression of export (model 1) for corporations as well as cooperatives.

For other variables, impacts are similar in the two groups: as supported by hypothesis 3, even if the effect is decreasing (see positive intangible square coefficient) intangible expenses have a negative impact of profit risk. **In accordance with hypothesis 3**, intangibles are a risk management tool. On the contrary, Tangible expenses have a positive decreasing effect on risk. Regarding the other variables, we can notice that size classically reduces risk and the impact is greater for cooperatives. The percentage of bottles in company volume increases profit margin and risk, what can be explained by a more important production process. Finally, productivity seems to be here a proxy for commercial/production companies as a higher productivity is expected in corporations compared to cooperatives. A higher productivity impacts negatively company risk while it has no effect in cooperatives one.

To finish, here is a synthetic figure on the impact of intangible expenses on profit margin expectation and risk as well the role of exports in corporations (Figure 1) and in cooperatives (Figure 2). “l” means coefficient of linear term; “q” means coefficient of quadratic term and “s” means that the relationship is significant.

Figure 1. Impact of intangible expenses on corporation performance

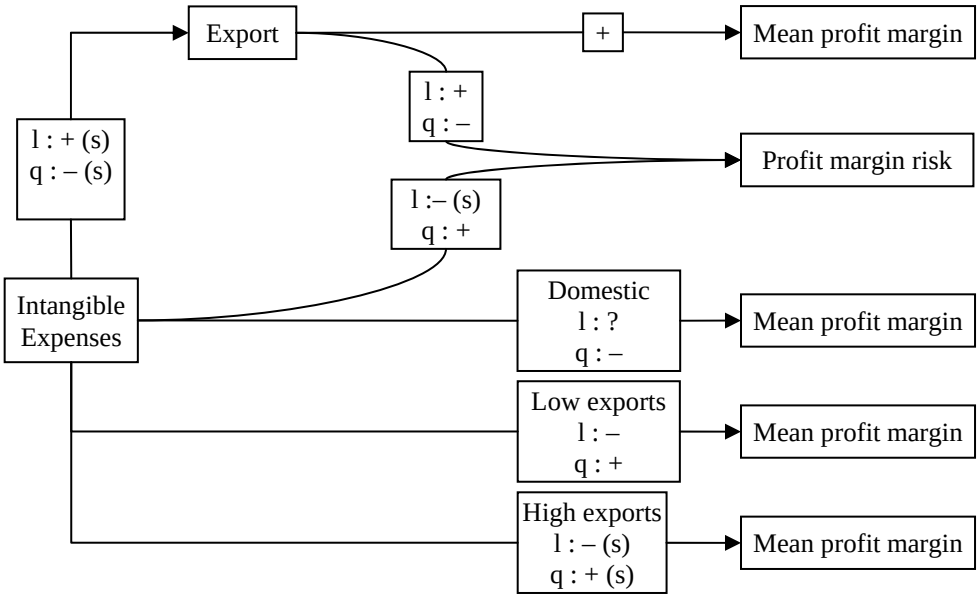
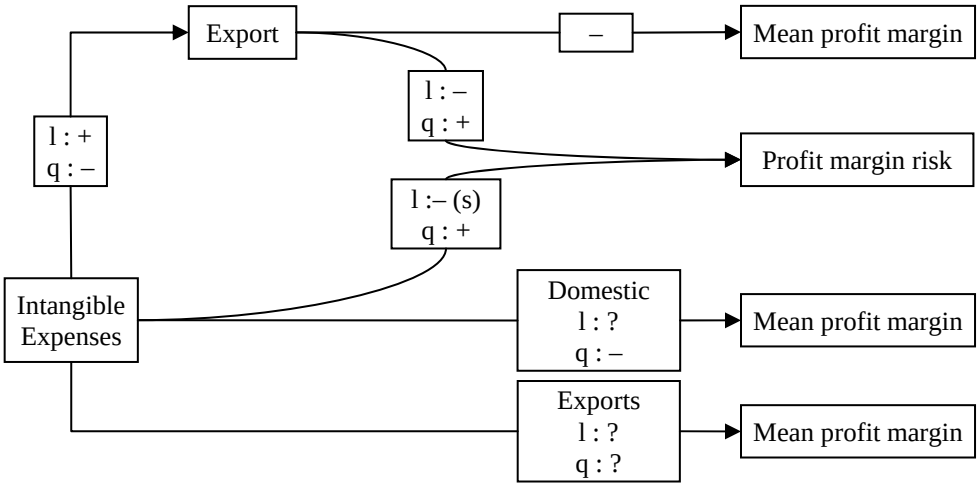


Figure 2. Impact of intangible expenses on cooperatives performance



5. CONCLUSION

The French wine industry must continuously find solutions to compete successfully with its foreign competitors on the domestic as well as on export markets. To do so, wine companies have to invest in intangibles such as a skilled workforce, patents and know-how, software, strong customer relationships, brands and unique organizational designs and processes. The need for such investments is linked to the fact that the forces of their competitors are the implementation of various marketing methods and objectives and strategies resting on differentiation and adaptation to customer tastes and expectations. However, the impact of these efforts will be effective only if their implementation can result in a higher financial performance, i.e. a higher profit as well as a lower risk.

Another issue has to be considered in the current situation of French wine companies. Because of this increasing competition, exporting has become a necessity for numerous

French wine companies for two reasons: first, exporting is a way to reach new sources of revenues lacking on a saturated domestic market. Second, being present on international market appears necessary considering the weakening of the French leadership on the international scene due to new competitors (Anderson, 2004). Moreover, it has been proved that intangible expenses were among key resources for the success of this export activity.

For all these reasons, we found relevant to gather in a same study intangible expenses, exporting and company performance and to test their relationship on corporations and cooperatives from the French wine industry. We first concentrate on the relationship between intangible expenses and exporting before introducing company profit margin and risk. Statistical analyses confirm that wine companies having more intangible expenses are bigger exporters but that this relationship has its limits. This confirms that these expenses actually contribute to a larger exporting activity. When introducing company profit margin and company risk in the previous relationship, the objective is to know whether intangibles have a positive impact on profit margin and a negative one on risk, i.e. a positive impact of company financial performance depending on the level of export development.

Regarding the role of exports in financial performance, relationships are opposed according to the type of company: in corporations, exporting is positively related to both profit margin and risk while in cooperatives, where there are less exporting companies, exporting is negatively related to profit and risk. Regarding intangibles and company performance according to export intensity, results are more diverse. In corporations, exporting and company profit margin are positively related and intangible expenses have a positive role only for a high level of investments and for high export intensity companies. On the contrary, intangible expenses have a negative impact on profit margin in cooperatives whatever the level of exports. The favorable direct effect of intangibles on risk reduction is observed in both samples, despite the positive relationship between exporting and risk in corporations.

According to our results, it seems that two distinct behaviors emerge from the two subsamples and these behaviors are reflected in the relationship between intangible expenses, exporting and performance. We can imagine, in the light of these results, that corporations have an “offensive” vision of exporting. Indeed, they use exporting to increase profit but also accept to support a higher risk. This is partly due to the fact that exporting is a riskier activity when compared to domestic activity. Intangibles have a double function: it permits a strategy of profitable geographical diversification and it is also risk management tool aimed at limiting risk, even if this function is moderated here by the high risk of exporting. On the contrary, cooperative may have a more “defensive” vision of exporting. Even if it enables risk diversification, we can suppose that it is either carried out without making sufficient efforts on intangibles whereas they are necessary to make exports profitable. Or efforts on export-oriented intangibles are actually made but these investments are not mature enough to lead to performance.

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Appendix 1. Expense decomposition between tangible and intangible

Intangible and tangible expenditures are calculated through book expenses decomposition. This decomposition is detailed in Table A1.1.

Table A1.1. Expenses decomposition

Expense	Intangible	Tangible	Non affected
Raw material		100 %	
Transport		100 %	
Dry goods and packaging	Special calculation explained below		
Promotion and publicity	100 %		
Other expenses			100 %
Wages	Special calculation explained below		
Amortisation depreciation		100 %	

Dry goods

We suppose that, beyond a minimum cost, packaging expenses can be considered as a way to promote the product and so are intangible. For every company, we know the decomposition of the wine sold in bulk, bottle, and other conditionings (bag in box, etc.…) for the year 2005. We first verify that conditioning expenses (*CE*) can be explained by the volume of wine in bottles (*B*). We run two OLS and obtain the following results:

$$CE_i = \underset{(0.0027^c)}{0.0671} B_i \quad R^2 = 0.8126 \tag{A1}$$

$$CE_i = \underset{(0.0037^c)}{0.0675} B_i - \underset{(0.0105^{ns})}{0.0018} OP_i \quad R^2 = 0.8041 \tag{A2}$$

OP_i : bag in box and other packaging expenses.

Considering the two coefficients of determination and the negative non significant coefficient for bag in box, we conclude quite a good determination of conditioning expenses by volume of wine in bottle only (highly significant coefficient for bottles).

We then calculate the volume in bottles for 2004 and 2003, supposing a constant proportion with sales. For every company, we calculate the ratio conditioning expenses / volume in bottles. Following the data given in Bonnet, *et al.* (2007: 97), it appears that the minimum cost of dry goods and packaging is 0.4307 €/l for a series of 10,000 bottles. If we take the first quartile of the ratio of conditioning expenses / volume as the basic conditioning expense we obtain: 0.3425 €/l in 2005, 0.3406 €/l in 2004 and 0.3391 €/l in 2003. These values are slightly inferior to those given by Bonnet, *et al.* (2007) but seem coherent because we suppose that series are in general more important than the one given in Bonnet *et al*. Conditioning expenses above this value are considered intangible.

Wages

Wages are decomposed into tangible and intangible expenses using the ventilation of employees (given in the questionnaire) in seven different functions.

First, we try to estimate the wage mean by function using the following OLS model:

$$W_j = \sum_{i=1}^{7} w_i e_{ij} + \varepsilon_j$$

W_j : total wages of company *j*,

e_{ij} : number of persons of the company j employed in function *i*,

w_i : estimated wage for function *i*,

ε_j : residual for company *j*.

In a first step, we implement an OLS regression using all data in the sample. By comparing results obtained with those given by nationals statistics (INSEE, 2007), we observe that our estimated wages are not coherent with the national data, especially for the marketing function. We try various different models, and find that the best model is the model presented below where three outliers are removed. Even if coefficient for marketing function is not significant, we obtain results in line with national data. Results of this second OLS are given in Table A1.2.

Table A1.2. Estimated wages for the different functions (€/year)

1 Production and conditioning	32 646 (2.8918[c])
2 Commercial France	31 364 (2.3004[c])
3 Commercial Export	69 120 (15.9444[c])
4 Sales administration	48 888 (10.3114[c])
5 General administration and finance	82 891 (9.8868[c])
6 Marketing	71 636 (48.3763)
7 Quality and R&D	32 492 (2.3977[c])
Adjusted R^2	0.9693

Note: Standard errors are in parentheses
[a]Significance at the 10 per cent significance level.
[b]Significance at the 5 per cent significance level.
[c]Significance at the 1 per cent significance level.

Only wages of functions 6 and 7 are considered intangible.

Appendix 2. Description of variables

Table A2.1. Description of variables

Variables	Description	Calculation method or data source
Age	Age of the company	2005 – creation date of the company
Capital intensity	Capital to employment ratio in 2005	Book value, Diane
Employees	Number of employees in 2005	Diane
Manager formation	Main domain of formation of the manager	d1 Formation in marketing, d2 technical (production) formation, d3 generalist formation
Productivity	Sales to employment ratio in 2005	Book value, Diane
% Volume in bottle	Percent of total volume made in bottles	Questionnaire
Output quality	Percent of wine sales composed of AOC, VDP	Specific calculation from questionnaire data
Region	Region of production or type of wines	d1 Bordeaux, d2 Bourgogne, d3 Sud Ouest (south west wines), d4 Côte du Rhône, d5 Loire, d20 Effervescent wines, d21 Champagne (questionnaire)

Appendix 3. Complementary analysis on the impact of intangible on exports

Table A3.a. Results of regression of the impact of tangible and intangible expenses on export intensity

Censored Model: Tobit regression
Dependent variable:export intensity (export sales/total sales), expi

	Corporations			Cooperatives		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intangible	1.18**	1.10**	0.99*	0.76	0.22	0.53
(t-stat)	(1.96)	(2.06)	(1.78)	(1.47)	(0.27)	(0.54)
Intangible squared	-1.45*	-1.28*	-1.12	-1.04	-0.04	-1.06
	(-1.85)	(-1.81)	(-1.55)	(-1.11)	(-0.02)	(-0.44)
tangible	-0.22	-0.52	-0.52	0.19	0.21	0.33
	(-0.39)	(-1.03)	(-0.92)	(0.52)	(0.56)	(0.70)
tangible squared	0.04	0.42	0.47	-0.20	-0.23	-0.39
	(0.08)	(0.92)	(0.90)	(-0.75)	(-0.81)	(-1.05)
Employees	-0.0004	-0.001**	-0.001**	0.002***	0.002	0.002*
	(-0.96)	(-2.28)	(-2.15)	(2.60)	(1.95)	(1.73)
Region		-0.02***	-0.02***		-0.003	-0.0016
		(-4.39)	(-3.55)		(-0.83)	(-0.36)
Age		-0.0003	-0.0003		0.0003	-0.0001
		(-1.14)	(-1.14)		(0.29)	(-0.1)
Manager formation		-0.001	-0.007		-0.02	-0.02
		(-0.04)	(-0.23)		(-0.8)	(-0.80)
% volume in bottle		0.28***	0.27***		0.11	0.13
		(3.02)	(2.86)		(1.09)	(1.11)
Output quality		0.0005	0.0007		-0.0004	0.0001
		(1.04)	(1.31)		(-0.81)	(0.25)
Capital intensity			0.0001			$3\ 10^{-6}$
			(1.28)			(0.23)
productivity			0.0004			0.00002
			(0.91)			(1.50)
Constant	0.44***	0.85	0.74	-0.03***	-0.50	0.22
	(4.43)	(1.41)	(1.25)	(-0.23)	(-0.22	(0.08)
Pseudo R2	0.95	3.93	4.47	0.79	1.66	6.66

* p < 0.10, ** p < 0.05, *** p < 0.01

Table A3.b. Results of regression of the impact of tangible and intangible expenses on export intensity

Ordered Model: Logistic regression (Robust standard error)
Dependent variable: export intensity, expid3, (expid3= 0 if expi<0.05, 1 if expi<0.25, 2 if expi>=0.25)

	Corporations			Cooperatives		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intangible	12.58**	15.24**	15.62**	6.30	-3.49	11.66
(z)	(2.32)	(2.52)	(2.47)	(1.19)	(-0.37)	(0.88)
Intangible squared	-14.20**	-17.52**	-17.48**	-6.56	18.44	-16.96
	(-1.97)	(-2.11)	(-2.04)	(-0.83)	(0.78)	(-0.55)
tangible	-1.45	-6.03	-8.40	2.29	4.65	2.29
	(-0.34)	(-0.90)	(-1.08)	(0.73)	(1.00)	(0.38)
tangible squared	0.65	5.37	7.89	-2.57	-4.15	-3.45
	(0.18)	(0.94)	(1.16)	(-1.08)	(-1.21)	(-0.76)
Employees	-0.007*	-0.009***	-0.009***	0.02*	0.0044	0.009
	(-1.89)	(-2.69)	(-2.71)	(1.70)	(0.28)	(0.40)
Region		-0.11***	-0.09***		-0.88	-0.08
		(-3.22)	(-2.63)		(-1.54)	(-1.22)
Age		0.003	0.004		0.01	-0.006
		(0.91)	(1.06)		(0.71)	(-0.28)
Manager formation		0.42	0.35		-0.26	-0.20
		(0.96)	(0.73)		(-0.67)	(-0.47)
% volume in bottle		1.89*	1.52		1.61	2.20
		(1.91)	(1.55)		(1.20)	(1.15)
Output quality		0.004	0.005		-0.003	0.0009
		(0.83)	(1.05)		(-0.55)	(0.10)
Capital intensity			0.0005			-0.4 10-6
			(0.64)			(-0.02)
Productivity			-0.0004			0.0004**
			(-0.77)			(1.94)
Cut1	-2.18	6.28	6.92	1.01	20.51	-10.35
Cut2	-0.63	8.22	8.85	2.39	21.93	-8.83
Pseudo R2	0.07	0.19	0.18	0.08	0.12	0.18

* p < 0.10, ** p < 0.05, *** p < 0.01

Table A3.c. Results of regression of the impact of tangible and intangible expenses on export intensity

Binary Model: Logistic regression (Robust standard error)
Dependent variable: export intensity, expid2, (expid2= 0 if expi<0.05 1 if expi>=0.05)

	Cooperatives		
	Model 1	Model 2	Model 3
Intangible	-6.16	-30.64	-16.53
(z)	(-0.44)	(-1.28)	(-0.43)
Intangible squared	80.09	194.02	194.30
	(1.00)	(1.39)	(0.87)
tangible	1.77	4.90	3.36
	(0.41)	(0.85)	(0.37)
tangible squared	-2.42	-4.52	-4.93
	(-0.78)	(-1.06)	(-0.72)
Employees	0.026	0.014	0.03
	(2.22)	(0.84)	(1.23)
Region		-0.10	-0.08
		(-1.34)	(-0.82)
Age		0.0031	-0.016
		(0.21)	(-0.76)
Manager formation		-0.18	0.066
		(-0.44)	(0.13)
% volume in bottle		2.56**	3.46*
		(1.92)	(1.82)
Output quality		-0.005	-0.006
		(-0.60)	(-0.49)
Capital intensity			0.00007
			(0.30)
Productivity			0.0004**
			(1.91)
Constant	-0.67	-5.86	30.43
	(-0.44)	-0.20	(0.73)
Pseudo R2	0.18	0.22	0.35

* p < 0.10, ** p < 0.05, *** p < 0.01

Appendix 4. Impacts of intangible expenses on profit margin

Table A4.a. Results of regression of the impact of tangible and intangible expenses on profit margin in corporations

Regression Model: OLS (Robust standard error)
Dependent variable: ebitda/sales in 2006
Sample: corporations

	Expid3 = 0 domestic		Expid3 = 1 low export		Expid3 = 2 high export	
Mean of ebitda/sales 06 F = 1.54 (p = 0.22)	4.39 %		5.86 %		8.70 %	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intangible	-0.09	0.09	-0.47	-0.69	-0.49**	-0.58***
(t)	(-0.14)	(0.08)	(-0.90)	(-1.06)	(-2.15)	(-2.80)
Intangible squared	-4.92	-4.44	0.78	1.15	0.65**	0.73***
	(-0.88)	(-0.46)	(1.18)	(1.41)	(2.28)	(2.78)
tangible	0.12	0.18	0.55	0.92	0.26	0.47*
	(0.61)	(1.09)	(0.72)	(1.07)	(0.85)	(1.95)
tangible squared	-0.05	-0.14	-0.46	-0.79	-0.25	-0.48**
	(-0.25)	(-0.91)	(-0.63)	(-0.96)	(-0.88)	(-2.27)
Employees	0.0004	0.0002	0.0004	0.0004	0.0002	0.0002
	(1.13)	(0.48)	(1.31)	(0.93)	(1.40)	(1.49)
Region		0.004**		0.005		0.002
		(1.87)		(1.11)		(0.60)
Age		-0.00007		-0.00007		0.0001*
		(-0.15)		(-0.26)		(1.79)
Manager formation		-0.016		-0.04		0.01
		(-1.17)		(-1.13)		(1.09)
% volume in bottle		0.04		-0.09		0.05*
		(1.31)		(-0.87)		(1.70)
Output quality		-0.00006		0.00003		0.00009
		(-0.22)		(0.05)		(0.664)
Capital intensity	0.00002***	0.00002***	0.00006*	0.00004	0.0001***	0.00007***
	(2.89)	(3.51)	(1.79)	(0.60)	(0.001)	(3.14)
Productivity	-0.00001**	-9 10^{-6}	-0.0001	-0.0002*	-6 10^{-6}	-1.36 10^{-6}
	(-2.38)	(-1.53)	(-1.35)	(-2.03)	(-1.26)	(-0.29)
Constant	-0.003	0.14	-0.04	0.17	0.03	-0.32*
	(-0.10)	(0.16)	(-0.52)	(0.29)	(0.62)	(-1.80)
R2	0.38	0.63	0.32	0.41	0.43	0.59

expid3, (expid3= 0 if expi<0.05, 1 if expi<0.25, 2 if expi>=0.25)
* p < 0.10, ** p < 0.05, *** p < 0.01

Table A4.b. Results of regression of the impact of tangible and intangible expenses on profit margin in cooperatives

Regression Model: OLS (Robust standard error)
Dependent variable: ebitda/sales in 2006
Sample: cooperatives

	Expid2 = 0 domestic		Expid2 = 1 export	
Mean of ebitda/sales 06 F = 3.23* (p = 0.08)	6.21%		3.65%	
	Model 1	Model 2	Model 1	Model 2
Intangible	-0.79	2.47	-0.14	2.02
(t)	(-0.63)	(1.32)	(-0.33)	(1.18)
Intangible squared	-0.16	-20.65	0.38	-5.73
	(-0.02)	(-1.61)	(0.68)	(-1.33)
tangible	0.23	-0.18	0.29	0.09
	(0.84)	(-0.79)	(0.69)	(0.17)
tangible squared	-0.12	0.14	-0.12	0.10
	(-0.53)	(0.79)	(-0.37)	(0.27)
Employees	0.0006	-0.0002	0.0005	-0.00006
	(0.81)	(-0.17)	(0.5)	(-0.05)
Region		0.008**		-0.01
		(2.96)		(-1.50)
Age		-0.0014		0.0003
		(-1.71)		(0.32)
Manager formation		-0.007		0.03
		(-0.54)		(0.98)
% volume in bottle		0.04		0.035
		(0.90)		(0.28)
Output quality		-0.0006***		-0.0009*
		(-2.16)		(-2.24)
Capital intensity	0.00002***	0.00001**	0.00009**	0.0002**
	(3.09)	(2.28)	(2.22)	(2.99)
Productivity	-0.00001**	$2.59\ 10^{-6}$	$-8.67\ 10^{-6}$	-1.78 10-6
	(-2.87)	(0.29)	(-0.16)	(-0.09)
Constant	-0.03	2.97*	-0.18	-0.70
	(-0.45)	(1.76)	(-1.09)	(-0.36)
R2	0.43	0.79	0.61	0.93

* p < 0.10, ** p < 0.05, *** p < 0.01

Appendix 5. Impacts of intangible expenses on profit risk

Table A5.a. Results of regression of the impact of tangible and intangible expenses on profit risk

Regression Model: OLS (Robust standard error)
Dependent variable: standard deviation of ebitda/sales
Sample: All

	Model 1		Model 2	
	corporations	cooperatives	corporations	cooperatives
Intangible	-0.19*	-0.40**	-0.21**	-0.36**
(t)	(-1.82)	(-2.18)	(-2.01)	(-1.98)
Intangible squared	0.20*	0.68**	0.23*	0.62**
	(1.72)	(2.26)	(1.91)	(2.08)
tangible	0.24**	0.05	0.25**	0.06
	(2.06)	(0.46)	(2.12)	(0.54)
tangible squared	-0.23**	-0.02	-0.24**	-0.03
	(-2.01)	(-0.19)	(-2.08)	(-0.35)
export intensity			0.03	-0.12
			(0.97)	(-1.16)
export intensity squares			-0.002	0.19
			(-0.08)	(0.35)
Employees	-0.00008**	-0.0006**	-0.00006*	-0.0006**
	(-2.49)	(-2.04)	(-1.72)	(-2.14)
Ebit/sales	-0.13	-1.03***	-0.13	-1.02***
	(-1.24)	(-2.74)	(-1.16)	(-2.71)
% volume in bottle	0.02***	0.07*	0.01*	0.07**
	(3.12)	(1.94)	(1.67)	(2.05)
Productivity	-0.00001**	2.29 10-7	-0.00001**	9 10-7
	(-2.57)	(0.08)	(-2.39)	(0.33)
Constant	0.006	0.02	0.004	0.02
	(0.52)	(0.81)	(0.3)	(1.01)
R2	0.33	0.65	0.35	0.66