Export performance and financial constraint in French wine SMEs

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Abstract:

This study aims at testing whether French wine exporting firms are financially constrained and whether there exists a link between financial constraint and their export performance. These ideas are supported a weakening of their financial health due to the structural crisis affecting the French wine industry, the size of the firm and the nature of the activity to finance.
Exporting wine firms appear as financially constrained as domestic ones. Moreover, even if financial constraint and financial fragility are positively linked, export performance is not linked to the financial fragility of exporting firms whereas exporting firms having a higher export margin and a lower export intensity and financial performance are less financially constrained

Keywords : Export Performance, financial constraint, SMEs, wine industry.

Introduction

The French wine industry is composed of a majority of small and medium-sized enterprises (SMEs). According to Viniflhor[1] (2008 (1)), French wine exports amounted to 7.044 billion euros (14.3 million hl) for the 2007-2008 period. This represents an increase in value but a decrease in volume when compared to the previous years. The wine industry is the first exporting sector of the French agro-food industry, itself 3rd worldwide exporting industry. However, despite this position, French wine firms are facing a growing competition from both traditional (Italy, Spain…) and new producing countries (NPC: USA, Australia, South Africa, Chile…). The international market shares of NPC jumped from 10% in 1995 to 27.4 % in 2005 while Italy has been threatening France's leadership (Viniflhor, 2008 (2)). Moreover, they operate in a much more complex domestic context than in NPC such as Australia (Jordan *et al.,* 2007).

This situation of French wine exporters raises the question of their export performance, i.e. "*the composite outcome of a firm's international sales"* (Shoham, 1996), and its determinants. Identifying export performance determinants could help firms analyze how to maintain and even improve their position on international markets. Among these determinants, we are concentrating on financial constraint. Several reasons could justify the existence of financial constraints in small and medium-sized French wine exporters: First, the exporting activity itself, but also the size of the firms and the financial difficulties generated by the structural crisis of the industry.

So, this paper aims at determining whether these exporters are financially constrained and whether there exists a relationship between financial constraints and export performance. The first section introduces the theoretical framework supporting this relationship. Section 2 and 3 are devoted to the methodology and the results of the empirical study.

1. Theoretical background of the relationship between export performance and financial constraint

1.1. Definitions and assessment of the constructs

Export performance is a multidimensional construct defined by Shoham (1996) as "*the composite outcome of a firm's international sales"*, including three subdimensions: export sales, export growth and export profitability. It can be influenced by several internal (firm characteristics, management, export strategy) and external (macro and microenvironment) determinants, as highlighted by several literature reviews (Aaby and Slater, 1989; Zou and Stan, 1998; Sousa *et al*., 2008). There exist numerous empirical studies dealing with SMEs but only a few concentrate on export performance determinants in the wine industry (Castaldi *et al.,* 2003; Aylward, 2004; Wood and Kaplan, 2005; Remaud, 2006). Besides its determinants, research also concentrate on export performance assessment. Most of the time, export performance is assessed through more than one single indicator, so does our empirical study. According to Sousa (2004), the most frequently used indicators of export performance are "*export intensity (export-to-total sales ratio), export sales growth, export profitability, export market shares, satisfaction with overall export performance, and perceived export success."*

The second key construct of this paper is financial constraint. It is the situation in which a firm has difficulty to get external financial resources (Greenaway *et al.,* 2007) or the fact that a firm cannot raise enough funds on time and at a cost reflecting the risk of the financed project (De Maeseneire

[1]Viniflhor is a French public organism devoted to the management of several agricultural sectors such as wine or fruits and vegetables. http://www.viniflhor.fr

and Claeys, 2007). Financial constraint is most of the time assessed through the use of the sensitivity of investment to cash flow (Fazzari *et al.,* 1988, 2000). Authors in favour of this indicator argue that the higher this sensitivity is the higher financial constraint is. However, this indicator is subject to some criticism (Kaplan and Zingales, 1997, 2000). Opponents support that less financially constrained firms experience a higher sensitivity of investments to cash flow. A high sensitivity of investment to cash flow can also indicate over-investment. To overcome this debate, some authors use financial ratios such as net borrowing to equity ratio (Gottfries, 2002) on the basis of agency theory models. These models indicate that the capacity of the firm to borrow and thus the implicit cost of equity depend on the amount of its debts relative to equity. Equity can be used as collateral by the bank: a higher level of equity corresponds to a lower financial constraint (Crepon and Rosenwald, 2001). In our empirical study, we will assess financial constraint both with the sensibility of investment to cash flow and some ratios reflecting the financial fragility of firms.

1.2. Why can smaller French wine exporters be financially constrained?

The export activity: additional financial needs and a higher risk

Several elements make us support the fact that the exporting companies we study may be more financially constrained than non-exporters, that we call "domestic firms". The export activity corresponds to an increased uncertainty (St Pierre, 2003). Lenders will be more reluctant to fund a riskier activity, or they will do it at a higher price. Moreover, this risky activity generates additional financial needs for which exporting firms need to find funds. We think that export performance can be influenced by a possible financial constraint of wine SMEs because the export development is conditioned by the satisfaction of financial needs. Small exporters need long and short term financial resources to invest and to manage the working capital needs. Export-related investments can be industrial investments to increase production or commercial investment linked to innovation and branding. These investments are considered as riskier (Tannous and Sarkar, 1993). Meanwhile, the exporters need financial resources to manage financial risks such as non-payment and exchange risks (St Pierre, 2003; Cooper and Nyborg, 1998; Tannous, 1997; Leonidou, 2004). Working capital needs will also be increased by additional export-specific costs (Dean *et al.,* 2000; St Pierre, 2003). These agricultural firms, even if not exporting, already have high investments, high leverage and very high working capital needs (Barry and Robison, 2001). Exporting firms must, besides these financial characteristics, fund a risky activity generating specific expenditures. SMEs want to keep a certain financial autonomy and do not have any access to financial markets (Couderc, 2008), and because the exporting activity is more difficult to finance with external funds, one can formulate the hypothesis:

H1: exporting firms are more financially constrained than domestic firms.

French wine exporters: small businesses in crisis

If we concentrate now on exporting companies only, we can highlight two facts which can influence the level of financial constraint and export performance. The French wine industry is mainly composed of SMEs, and among them, a minority of medium-sized firms (Couderc, 2008). The relationship between SMEs and their lenders is characterized by asymmetric information (St Pierre, 2004, p.13; Dietsch, 2008). This situation gives rise to credit rationing (Stiglitz and Weiss, 1981) explaining financial constraints (Psillaki, 1995). Crepon and Rosenwald (2001) find that financial constraints exist in companies with less than 100 employees despite an actual financial streamlining of French companies. According to Psillaki (1995), bankruptcy risk is higher in SMEs and constitutes one explanation of credit rationing by banks. According to Blancard *et al*. (2006), financially unconstrained farmers are the largest ones. However, this relationship is moderated by other authors. Dietsch (2008) advances that credit rationing *"does not seem to be a serious problem"* in French SMEs. He underlines that SMEs often complain about financial constraint. He quotes a report indicating that financing constraints do not regard all SMEs but *mainly new firms, very small firms, more traditional SMEs, and firms whose activities were considered risky"*. This corresponds to the

situation of exporting firms in the wine industry. A recent study by the French bank Credit Agricole (2006) shows that conditions of the access to financing resources by SMEs is quite favourable but unequal according to the different existing resources. Since the beginning of the 2000s, the bank has been observing a strengthening of equity in French SMEs. The second element that can generate financial constraint and prevent from high export performance is the structural crisis that the wine industry in France has been experiencing since the beginning of the 2000s. This crisis has been weakening the financial health of some exporters. It can be more difficult for exporters having financial difficulty to have access to financing for their export activity and thus to experience a better export performance. We support that this is due to the fact that export performance can be achieved through the satisfaction of the financial needs quoted before and that having financial difficulty will mare harder to get additional financial resources. Our second hypothesis is:
H2: exporters experiencing financial difficulty and being the most financially constrained have a lower export performance.

2. Methodology

2.1. Data and Samples

To test the hypothesis, we use financial data extracted from SCRL-Diane[2] database from 1998 to 2006. Diane gathers data from financial statements of French companies. The present empirical study regards a sample of 418 companies, gathering exporting and non exporting firms. We keep domestic firms in order to compare financial constraints according to the activity of these firms (H1). Domestic firms are considered in this study as companies with an export sale to total sales ratio (i.e. export intensity) comprised between 0 and 5%. We used this 5-percent threshold because it, the export activity is not substantial enough and it enables to get a large enough sub-sample. On the other side, exporting firms are companies with export intensity equal or over 10 %. If we refer to the famous export stage theory (Cavusgil, 1980, 1984; Gankema *et al.,* 2000), these SMEs are said to belong to the active (export intensity between 10 and 39 %) and committed (between 40 and 100%) stages. The following tables provide the characteristics of the sample and subsamples. The database does not provide for indications about the nature of the exports, direct or indirect, but Couderc (2008) notices that numerous firms from this industry export through an importer, so indirectly.

Table 1 – Descriptive statistics

	Domestic firms	Exporting firms	Sig. (a)
	107 – 25,6%	311 – 74.4%	-
Firm size 0 to 20 employees	60%	53.9%	-
21 to 50 employees	28.2%	25.3%	
51 to 200 employees	9.4%	17.8%	
Over 200 employees	2.4%	2.9%	
mean *xrate* (2002-2006)	1.00%	47.01%	0.000
Mean total turnover (2002-2006)	21,206.50 keur(b)	23,416.16 keur	0.738
Mean export turnover (2002-2006)	397.09 keur	11,018.59 keur	0.004

(a) Sig.: significance of the mean difference. (b)keur: kilo euros

This table shows us that these companies are mainly small businesses and that there is no significant difference of size (total turnover) between the two groups, whereas mean differences of export intensity and export sales are highly significant.

[2] https://dianeneo.bvdep.com/version-20091029/Home.serv?product=diane2006

2.2. Variables

Export performance indicators

Numerous authors think that export performance would better be measured through more than one indicator because it is a multidimensional construct. So we decided to use two indicators:

- Export intensity (*xrate*): mean export sales (years 2002 to 2006) to mean total sales (years 2002 to 2006) ratio. Export intensity is the most frequently used export performance indicator and gives information about the export dependence of the firm.
- Export financial performance: export margin ratio, margin volatility (margin risk), margin to risk ratio and correlation between domestic and export margins.

Export financial performance: before explaining how we calculate export financial performance, we need to develop the motivations behind our will to create an actual financial performance indicator of the export activity of firms. Because we study export performance from a "financial point of view", export profitability had to be included to this empirical study. However, when analyzing the literature about this indicator, we saw that this indicator is actually most of the time a qualitative variable (Bilkey, 1982; Cavusgil and Zou, 1994; Moini, 1995; Rose and Shoham, 2002). This is due to the difficulty to collect the financial data necessary to calculate export profitability, either because export specific figures are seldom provided for in financial statements (Bilkey, 1982; Yang *et al.,* 1992; Haahti *et al.,* 2005; Favre-Bonte and Gianellonni, 2007) or because of the reluctance of smaller companies to give financial data (Brouthers and Nakos, 2005). To overcome this, Viviani (2009) elaborate an implicit financial export performance measure based on modern portfolio theory (Markowitz, 1952, 1959). Thanks to this approach[3], one can deduce the margin ratio (*xmargin*), the risk (*xrisk*), export financial performance (*xmrr* or export margin to risk ratio) and the correlation with domestic activities of export activities knowing export intensity, domestic and global financial performance of exporting companies.

Table 2- Correlation coefficients between export performance measures in exporting firms

	xrate	*xmargin*	*xmrr*
xrate	1	**-0.410****	**0.543****
xmargin	**-0.410****(a)	1	**-0.431****
xmrr	**0.543****	**-0.431****	1

(**) Significant at 0.05 level.

Exporters with a higher financial performance (*xmrr*) are the ones which export the most but they are not the most profitable. A higher export intensity does not enable the exporting firms to reach better export margin.

Financial constraint indicators

We measure financial constraint with two kinds of indicators. On the one hand, the sensitivity of investment to cash flow (*fc* for financial constraint) is obtained by regressing on the nine years available (from 1998 to 2006) the investment to fixed assets ratio on the cash flow to fixed assets ratio. We also used two indicators of the financial fragility of firms. These ratios are the main tools for decisions regarding financing conditions granted by banks (Cadot and Couderc, 2008). Financial debt (short, middle and long term) to equity ratio (*fdeq*) is said to give information about financial constraints because the lower it is, the more important is internal source compared to external financing source. This equity is considered as a guarantee for the financial institution which is going to lend money to the firm. So a bank will be more likely to lend to a safer firm. Generally, when the

[3] Details about the mathematical demonstration leading to these indicators are included into appendix 1.

ratio is over 1, financial analysis considers the firm as overextended. The second ratio is the middle and long term financial debt to cash flow ratio (*fdcf*). It indicated the number of years, necessary to the firm to pay off financial debt if it devoted all its internal resources (cash flow). The higher is the ratio, the more fragile is the company because it means that the internal financial resources are not sufficient. The generally accepted threshold for this ratio in financial analysis is three to four years. Both ratios are the mean value of the years 2002 to 2006. Here are the correlations between these three indicators. They will show us whether a high financial constraint corresponds to a higher (Fazzari *et al*., 1988, 2000) or a lower (Kaplan and Zingales, 1997, 2000) sensitivity of investment to cash flow.

Table 3 - Correlation coefficients between financial constraint measures in exporting firms

	Domestic firms			Exporting firms		
	fc	*fdeq*	*fdcf*	*fc*	*fdeq*	*fdcf*
fc	1	-0.043	0.022	1	0.041	0.045
fdeq	-0.043	1	**-0.217***	0.041	1	0.036
fdcf	0.022	**-0.217***	1	0.045	0.036	1

Correlation coefficients indicate that the sensibility of investment to cash flow (fc) is not correlated to financial fragility ratios (*fdeq* and *fdcf*). Moreover no significant correlation exists between both ratios in exporting firms while *fdeq* and *fdcf* are negatively and significantly correlated in domestic companies.

Table 4 - Financial constraint characteristics according to the sample

	Domestic firms	Exporting firms	Sig.(a)
Mean *fc*	0.439787	0.443961	0.959
Mean *fdeq*	2.3256	1.6115	0.230
Mean *fdcf*	0.2869	5.0041	0.222

(a) Sig.: Significance of mean difference between domestic firms and exporting firms

There exist no significant mean differences of financial constraint and fragility between exporting and domestic firms, even if exporting firms appear to have lower level of debts than domestic firms. So, we cannot validate *H1*. However, we can notice that mean gearing ratios are too high. This corresponds to the situation described in the press about their financial situation.

Then, we classified exporting firms in three groups according to the level of each financial ratio and we checked whether there were significant mean differences between them:
-*fdeq*<0.5; 0.5<*fdeq*<1; *fdeq*>1. The higher is this ratio, the more debts are important compared to equity and the higher is financial fragility.
-0 year<*fdcf*<4 years; 4 years<fdcf<10 years; fdcf>10 years or negative. The higher is this ratio, the more the firm has difficulty to pay off debts with internal funds.

Table 5 – Financial constraint and financial fragility in exporting firms

fdcf	0 to 4 years	4 to 10 years	More than 10 years or negative	Sig.
Mean *fc*	0.24943397	0.39147582	0.54942193	0.002
Fdeq	*fdeq*<0.5	0.5<*fdeq*<1	*fdeq*>1	Sig.
Mean *fc*	0.27018888	0.43756122	0.51005331	0.030

We can clearly see that according to this classification the mean sensitivity of investment to cash flow increases with the financial fragility of exporting firms. This measure appears to be a quite good measure of financial constraint in the case of our sample.

3. Export performance and financial constraint in exporting firms

3.1. Is it a linear relationship?

We are now only considering exporting firms and observing the link between their export performance (*xrate, xmargin, xmrr*) and financial constraint and fragility variables (*fc, fdeq, fdcf*). We perform a correlation matrix and a factor analysis (with varimax rotation) with these variables.

Table 6 - Pearson correlation coefficients between export performance measures and financial constraint measures

	xrate	*xmargin*	*xmrr*	*fc*	*fdeq*	*fdcf*
xrate	1	**-0.410****	**0.543****	0.092	-0.065	0.071
xmargin	**-0.410****	1	**-0.431****	**-0.211****	**0.173****	-0.074
xmrr	**0.543****	**-0.431****	1	0.097	-0.060	0.062

A higher export margin corresponds to a lower financial constraint (*fc*) and a higher gearing. Export intensity (*xrate*) and export financial performance (*xmrr*) are not correlated with any of these financial indicators.

Table 7 - Rotated component matrix[a]

	Component	
	1	2
xrate	**0.811**	0.003
xmargin	**-0.756**	-0.254
xmrr	**0.829**	0.006
fc	0.198	**0.570**
fdeq	-0.202	**0.723**
fdcf	0.108	**0.447**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

The first component (explaining 34,3% of the variance ([4])) focuses on export performance indicators, confirming the results of correlations. The second component (17.7%) focuses on financial ratios: their coefficients all have the same sign, indicating that a high sensitivity corresponds to a higher financial fragility.

3.2. Export performance of the most and the least financially constrained exporters

[4] See appendix 2.

Because previous results brought to light only a weak linear relationship between one export performance indicator (*xmargin*) and financial constraint, we separated exporting firms into two groups according to the level of *xrate, xmargin and xmrr*, in order to oppose firms with a higher export performance to those with a lower export performance:
-According to the export development stages for *xrate*: active exporters (10%<*xrate*<39%) vs. committed exporters (40%<*xrate*<100%).
-According to the median *xmargin : xmargin*<0.1650022 vs. *xmargin*>0.1650022.
-According to the median *xmrr: xmrr*<1.7238617 vs. *xmrr*>1.7238617.
Here are the results of the analysis of variance and mean differences tests:

Table 8 – High vs. low export performance and financial constraint and fragility

Criteria : *xrate*			Mean difference	
Dependent variables	F	Sig.	10%<*xrate*<39%	40%<*xrate*<100%
fc	**4.146**	**0.043**	**Negative**	**Positive**
fdeq	0.042	0.837	Negative	Positive
fdcf	0.238	0.267	Negative	Positive
Criteria : *xmargin*			Mean difference	
Dependent variables	F	Sig.	*xmargin*<0.1650022	*xmargin*>0.1650022
fc	**11.967**	**0.001**	**Positive**	**Negative**
fdeq	2.895	0.090	Positive	Negative
fdcf	1.253	0.264	Positive	Negative
Criteria : *xmrr*			Mean difference	
Dependent variables	F	Sig.	*xmrr*<1.7238617	*xmrr*>1.7238617
fc	**8.625**	**0.004**	**Negative**	**Positive**
fdeq	0.008	0.927	Negative	Positive
fdcf	0.406	0.237	Negative	Positive

These analyses confirm the absence of relationship between financial fragility ratios and the level of export performance. However, they show us that exporters experiencing a higher export performance (*xrate* and *xmrr*) display a higher sensitivity of investment to cash flow, i.e. a higher financial constraint, which refuses *H2.*

Conclusion

The aim of this paper was to test whether there was a relationship between financial constraint and export performance. Financial constraint is very often associated with smaller firms and with riskier firms which corresponds to the situation of French wine exporters: the wine industry is mainly composed of SMEs and exporting is considered as a risky activity necessitating financial resources. Our empirical study In French wine companies has refused our two hypotheses. Indeed, exporting wine firms appear as financially constrained as domestic ones (H1 refused). Moreover, even if financial constraint and financial fragility are positively linked, we can say that export performance is not linked to the financial fragility of exporting firms whereas exporting firms having a higher export margin and a lower export intensity and financial performance are less financially constrained (H3 refused). Even if this refutes our hypothesis, because *xmrr* is the margin to risk ratio, we now know that less financially constrained firms are those having a more profitable export activity but also a less risky activity. This converges with our idea that exporting is risky and can restrain the access to funds for a risky activity.

References

Aaby, N. et S.F. Slater (1989). Management influences on export performance: A review of the empirical literature 1978–1988, *International Marketing Review,* Vol. 6, No.4, pp. 7–23.

Aylward, D.K. (2004), Clusters equal export success, *The Australian and New Zealand Grapegrower and Winemaker*, Vol. 487.

Barry, P.J. and L.J. Robison (2001), Agricultural finance: Credit, credit constraints, and consequences, *Handbook of Agricultural Economics,* chapter 10, pages 513-571.

Bilkey, W. J. (1978). An attempted integration of the literature on the export behavior of firms, *Journal of Internal Business Studies*, Vol. 9, pp. 33-46.

Blancard, S., J.-P. Boussemart, W. Briec and K. Kerstens (2006), Short- and Long-Run Credit Constraints in French Agriculture: A Directional Distance Function Framework Using Expenditure-Constrained Profit Functions. *American Journal of Agricultural Economics*, Vol. 88, No. 2, pp. 351-364.

Brouthers, L.E. et G. Nakos (2005). The role of systematic international market selection on small firms' export performance, *Journal of Small Business Management,* Vol. 43, No. 4, pp. 363-381.

Cadot, J. and J.-P. Couderc (2008), L'installation en viticulture et son accompagnement par la banque, in Couderc, J.-P, Hannin H., D'Hauteville, F., Montaigne, E. et Aubert, M., *Bacchus 2008, enjeux, stratégies et pratiques dans la filière vitivinicole,* Dunod, 352 p.

Castaldi, R.M., S. Sengupta and M. Silverman (2003). Improving export performance: the case of the U.S. wine Industry, *Journal of Global Marketing*, Vol. 17, No. 1, pp. 45-65.

Cavusgil, S.T. (1980). On the internationalisation process of firms, *European Research*, Vol. 8, pp. 273-281.

Cavusgil, S.T. (1984). Differences among exporting firms based on their degree of internationalization, *Journal of Business Research*, Vol. 12, pp. 195-208.

Cavusgil, S.T. et S. Zou (1994). Marketing strategy-performance relationship: an investigation of the empirical link in export market ventures, *Journal of Marketing*, Vol. 58 No. 1, p. 1.

Cooper S. et I. Nyborg (1998). The financing and information needs of smaller exporters, *Bank of England Quarterly Bulletin*, Vol. 38, No. 2, pp. 66-72.

Couderc, J.-P. (2008), Manifeste pour un aggiornamento commercial dans la filière vin en France, in Couderc, J.-P, Hannin H., D'Hauteville, F., Montaigne, E. et Aubert, M., *Bacchus 2008, enjeux, stratégies et pratiques dans la filière vitivinicole,* Dunod, 352 p.

Crepon, B. et F. Rosenwald (2001). Des contraintes financières plus lourdes pour les petites entreprises, *Economie et Statistique*, No. 341-342.

Dean, D.L., B. Mengüc et C.P. Myers (2000). Revisiting firm characteristics, strategy, and export performance relationship: A survey of the literature and an investigation of New Zealand small manufacturing firms, *Industrial Marketing Management*, Vol. 29, No. 5, pp. 461-477.

De Maeseneire, W. et T. Claeys. (2007). SMEs, FDI and financial constraints, *Vlerick Leuven Gent Management School Working Paper Series*.

Dietsch, M. (2008) Financing small businesses in France, *Cahiers BEI*, Vol. 8, No. 2, pp. 92-119.

Favre-Bonte, V. et J.L. Giannelloni, (2007). L'influence des caractéristiques de personnalité du dirigeant de PME sur la performance à l'export, *AIMS*, 7-9 Juin, Montreal, Québec.

Fazzarri, S.M., B.C. Petersen et R.G. Hubbard. (1988). Financing constraints and corporate investment, *NBER working paper*.

Fazzarri, S.M., R.G. Hubbard et B.C. Petersen. (2000). Investment-cash flow sensitivity are useful: a comment on Kaplan and Zingales, *The Quarterly Journal of Economics*, Vol. 115, No. 2, pp. 695-705.

Gankema, H., H. Snuif et P. Zwart (2000). The internationalization process of of small and medium-sized enterprises: an evaluation of stage theory, T*he Journal of Small Business Management*, Vol. 38, No. 1, pp. 15-27.

Gottfries, N. (2002). Market Shares, Financial Constraints, and Pricing Behavior in the Export Market, *Economica*, Vol. 69, pp. 583-607.

Greenaway D., A. Guariglia et R. Kneller (2007). Financial factors and exporting decisions. *Journal of International Economics,* Vol.73, pp. 377-395.

Haahti, A., V. Madupu, U. Yavas et E. Babakus (2005). Cooperative strategy, knowledge intensity and export performance of small and medium sized enterprises, *Journal of World Business*, Vol. 40, No. 2, pp. 124-138.

Jordan, R., P. Zidda and L. Lockshin (2007). Behind the Australian wine industry's success: does environment matter?, *International Journal of Wine Business Research*, Vol. 19, n. 1, pp. 14-32.

Kaplan, S.N. et L. Zingales. (1997). Do investment-cash flow sensitivity provide useful measures of financial constraints?, *Quarterly Journal of Economics*, Vol. 112, p.169-215.

Kaplan, S.N. et L. Zingales (2000). Investment-cash flow sensitivity are not valid measures of financial constraints, *Quarterly Journal of Economics*, Vol. 115, pp. 702-712.

Leonidou, L.C. (2004). An analysis of the barriers hindering small business export development, *Journal of Small Business Management*, Vol. 42, No. 3, pp. 279-302.

Moini, A.H. (1995). An inquiry into successful exporting: an empirical investigation using a three-stage model, *Journal of Small Business Management*, Vol. 33, pp. 9–25.

Remaud, H. (2006), L'influence de l'orientation marché sur la compétitivité export des petites entreprises, *8ème CIFEPME*, 25-27 Octobre 2006, Fribourg, Switzerland.

Rose, G.M. et A. Shoham (2002). Export performance and market orientation: establishing an empirical link, *Journal of Business Research*, Vol. 55, No. 3, pp. 217-225.

Shoham, A. (1996). Marketing-Mix Standardization: Determinants of export performance, *Journal of Global Marketing,* Vol. 10, No. 2, pp. 53-76.

Sousa C.M.P. (2004). Export performance measurement: an evaluation of the empirical research in the literature, *Academy of Marketing Science Review*, Vol. 9.

Sousa, C.M.P., F. Martínez-López et F. Coelho (2008). The Determinants of export performance: A review of the research in the literature between 1998 and 2005, *International Journal of Management Review*, Vol.10, No. 4, pp. 343-374.

Stiglitz, J.E. et A. Weiss, (1981). Credit Rationing in markets with imperfect information, *American Economic Review,* Vol. 71, No. 3, pp. 393-410.

St Pierre, J. (2003). Relations entre l'exportation, le développement organisationnel et la situation financière des PME canadiennes, *Revue Internationale PME*, Vol. 16, No. 2, pp. 61-82.

St-Pierre, J. (2004). *La gestion du risque : comment améliorer le financement des PME et faciliter leur développement*, Presses de l'Université du Québec, 257 p.

Tannous, G.F. (1997). Financing export activities of small Canadian businesses: Exploring the constraints and possible solutions, *International Business Review*, Vol. 6, No. 4, pp. 411-431.

Tannous, G.F. et A.K. Sarkar (1993). Banks and small business export finance: new targets for services and marketing strategies, *International Journal of Bank Marketing*, Vol. 11, No. 2, pp. 10-17.

Viniflhor-infos n°158, Commerce extérieur des vins français, bilan 2007-2008, novembre 2008 : http://www.onivins.fr/pdfs/1227.pdf (1)

Viniflhor, Facteurs de compétitivité sur le marché mondial du vin, http://www.onivins.fr/pdfs/1176.pdf (2)

Wood, E. and Kaplan, D. (2005), Innovation and performance improvement in the South African wine industry, *International Journal of Technology and Globalization*, Vol. 1, No. 3-4, pp. 381-399.

Yang Y.S., R.P. Leone et D.L. Alden (1992). A market expansion ability approach to identify potential exporters, *Journal of Marketing*, Vol. 56, No. 1, pp. 84-96.

Zou, S. et S. Stan (1998). The determinants of export performance: a review of the empirical literature between 1987 and 1997, *International Marketing Review*, Vol. 15, No. 5, pp. 333-356.

Appendix 1 Implicit export financial performance measurement

A1. Theoretical framework

Companies seek the combination of domestic and export activities so as to maximize expected utility of profit:

$$E\left[u(\pi)\right] = E\left[u\left(\tilde{m}_D S_D + \tilde{m}_X S_X\right)\right] \qquad [1]$$

With π : profit, $\tilde{m}_D$: random margin of domestic activities (in % of sales), $\tilde{m}_X$: random margin of export activities (in % of sales), S_D : domestic sales, S_X : export sales, U(.) : utility function, E(.) : denotes expectation.

We suppose that domestic and foreign activities represent a given universe and we concentrate on the optimal combination of these given activities. Accordingly, the sales constraint is the following: $S_D + S_X = S$ (S means total sales) and dividing equation by S constraint becomes: $s_D + s_X = 1$.

To solve the previous program, [1], it is common in empirical studies to use an approximation formula which incorporates agent risk aversion ([5]):

$$E\left[u\left(\tilde{m}_G\right)\right] = E\left[\left(\tilde{m}_D s_D + \tilde{m}_X\left(1 - s_D\right)\right)\right] - \frac{\lambda}{2} V\left[\left(\tilde{m}_D s_D + \tilde{m}_X\left(1 - s_D\right)\right)\right] \qquad [2]$$

$\tilde{m}_G$: global margin ratio of the company, λ : coefficient of risk aversion, λ > 0, V(.) : variance.

First order condition of expected utility maximization gives the optimal proportion of domestic activities:

$$s_D^{\ *} = \frac{\overline{m}_D - \overline{m}_X + \lambda\left[V\left(\tilde{m}_X\right) - Cov\left(\tilde{m}_D, \tilde{m}_X\right)\right]}{\lambda\left[V\left(\tilde{m}_D\right) + V\left(\tilde{m}_X\right) - 2Cov\left(\tilde{m}_D, \tilde{m}_X\right)\right]} \qquad [3]$$

$\overline{m}_D = E\left(\tilde{m}_D\right)$
$\overline{m}_X = E\left(\tilde{m}_X\right)$

Cov(.,.) : covariance.

From the previous theoretical model we can get three equations:

- The optimal combination of activities, (equation [3]),
- Expected margin decomposition: $\overline{m}_D s_D^* + \overline{m}_X\left(1 - s_D^*\right) = \overline{m}_G$ [4]
- Risk decomposition: $V\left(\tilde{m}_D\right) s_D^{*\,2} + V\left(\tilde{m}_X\right)\left(1 - s_D^*\right)^2 + 2s_D^*\left(1 - s_D^*\right) Cov\left(\tilde{m}_D, \tilde{m}_X\right) = V\left(\tilde{m}_G\right)$ [5]
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The solution of the system formed by the two equations [3] and [5] is (see Viviani, 2009):

[5] This objective function is a direct adaptation to our specific framework of a currently used utility function simplification in finance. The passage from [1] to [2] goes back to Pratt (1964).

$$V(\tilde{m}_X) = \frac{V(\tilde{m}_G)(1-2s_D^*) + s_D^{*2}V(\tilde{m}_D) - 2As_D^*(1-s_D^*)}{(1-s_D^*)^2}$$
$$Cov(\tilde{m}_D, \tilde{m}_X) = \frac{V(\tilde{m}_G) - s_D^*V(\tilde{m}_D) + A(1-s_D^*)}{(1-s_D^*)} \quad [6]$$

$$A = \frac{\overline{m}_D - \overline{m}_X}{\lambda}$$

We get a system of only 3 equations for 9 unknowns. So we must deduce the value of 6 unknowns from financial data. From empirical data, we can obtain quite easily the expected global margin $(\overline{m}_G)$ and the variance of global margin $(V(\tilde{m}_G))$ of exporting companies. The choice by a company of a specific risk reward relationship will enable us to induce it's coefficient of risk aversion, λ. We suppose that the actual combination of activities is equal to the optimal one, so (1- s_D^*) is set equal to the observed export intensity. To obtain the expected margin and margin standard deviation of domestic activities, we suppose that the opportunity set for domestic activities of exporting companies is similar to the one of purely domestic one. Hence $\overline{m}_D$ and $V(\tilde{m}_D)$ are deduced from the mean and variance of margin ratio of purely domestic companies. The solution of the system of equations [3] to [5] gives us the value of the three remaining variables: expected export margin, export margin standard deviation, and correlation between export margin and domestic margin. The procedure is detailed below.

A2. Procedure for estimating financial export performance

We develop an estimation procedure of the 3 dimensions of export financial performance (expectation and variance of margin ratios and correlation between domestic and export margin ratios) including the following steps: first step estimation of the coefficient of risk aversion, second step estimation of the expected domestic margin and risk of domestic activities for exporting companies, third step determination of the dimensions of exports financial performance (expected margin, risk and correlation with domestic activities)

Estimation of the coefficient of risk aversion

In order to compute financial performance of export it is necessary to obtain the value of the coefficient of risk aversion. We suppose that the observed global return to risk relationship of each company reveals their relative risk aversion coefficient. Knowing the opportunity set, a company is more risk adverse if it chooses a lower global standard deviation. Using the sample of exporting companies, an Ordinary Least Square, (OLS), of margin ratios on standard deviation of these ratios is implemented to obtain the global opportunity set of exporting companies:

$$m_{Gi}^e = \alpha_G + \beta_G\sigma_{Gi} \quad [7]$$

m_{Gi}^e expected global margin ratio of company, i, having a global given risk σ_{Gi}.

The following program has to be solved for company, i: $E(u(\tilde{m}_i)) = E(\tilde{m}_i) - \frac{\lambda_i}{2}V(\tilde{m}_i)$ [8]

Using equation [7], the first order condition for the expected utility maximization [8] is:

$$\frac{dE\left(u\left(\tilde{m}_i\right)\right)}{d\sigma_{Gi}} = \beta_G - \lambda_i \sigma_{Gi} = 0 \Leftrightarrow \lambda_i = \frac{\beta_G}{\sigma_{Gi}} \qquad [9]$$

In the context of a linear relationship between risk and return, the coefficient of risk aversion has a very simple interpretation. A company has a low risk aversion if it chooses an high global risk level $\left(\sigma_{Gi}\right)$ even when risk is not well rewarded (β_G is low).

Estimation of the expected domestic margin and risk of domestic activities for exporting companies

Using now the sample of domestic companies the same procedure is applied to obtain the implicit domestic expected margin and margin risk. First, by OLS the opportunity set (relationship between their expected margin and margin standard deviation) of purely domestic companies is obtained:

$$m_{Di}^e = \alpha_D + \beta_D \sigma_{Di} \qquad [10]$$

m_{Di}^e, σ_{Di} : expected domestic margin and standard deviation of domestic margin of purely domestic companies.

Our objective is to calculate the position on the domestic line that an exporting company would have chosen if it was purely domestic. As we have already calculated the coefficient of relative risk aversion for exporting companies (equation [9]), the optimal level of risk chosen on the domestic line is given by the first order condition:

$$\frac{dE\left(u\left(\tilde{m}_{Di}\right)\right)}{d\sigma_{Di}} = \beta_D - \frac{\beta_G}{\sigma_{Gi}}\sigma_{Di} = 0 \Leftrightarrow \sigma_{Di} = \frac{\beta_D}{\beta_G}\sigma_{Gi} \qquad [11]$$

By observing equation [11] one can see that if exporting companies face situation where domestic risk is less rewarded than their global activities ($\beta_D < \beta_G$) they would had chosen a less risky point in the margin to risk domestic activities opportunity line.

The expression of the expected domestic margin of exporting companies $\left(m_{Di}^e\right)$ can be deduced using the classical properties of expectation:

$$m_{Di}^e = \alpha_D + \frac{\beta_D^2}{\beta_G}\sigma_{Gi} = m_{Di}^e = \alpha_D + \beta_D\left(\frac{\beta_D}{\beta_G}\right)\sigma_{Gi} \qquad [12]$$

It is clear from equations [12] that the implicit domestic expected margin of exporting companies is given by the domestic market line where the risk of purely domestic companies is replaced by the risk level that exporting companies would have chosen if they were purely domestic.

A3. Empirical results

Using the sample of domestic companies, the OLS coefficients are computed:

$$m_D^e = \underset{(0.000)}{0.047} + \underset{(0.039)}{0.674}\sigma_D \quad AdjR^2 = 0.073 \qquad [13]$$

Using the sample of exporting companies, we obtain the following relationship between global margin and global risk:

$$m_G^e = \underset{(0.001)}{0.04915} + \underset{(0.002)}{1.2086}\,\sigma_G \qquad AdjR^2 = 0.091 \qquad [14]$$

From the comparison of these two straight lines we can deduce that export permit to obtain a better relation between risk and return because the global line [14] is above the domestic line [13].

Appendix 2 Principal Component Analysis

Table 7 - Total variance explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.058	34.308	34.308	2.058	34.308	34.308	2.009	33.491	33.491
2	0.924	17.726	52.034	1.064	17.726	52.034	1.113	18.543	52.034
3	0.964	16.070	68.104						
4	0.924	15.405	83.509						
5	0.534	8.894	92.403						
6	0.456	7.597	100.000						

Extraction Method: Principal Component Analysis.