

## **Cooperative Strategy and Liquidation in the Bordeaux Wine Industry**

### **Abstract:**

Cross and Buccola (2004) established that if the lenders of cooperatives are not in position to assess the “right” price to be paid for the raw-material delivered by cooperative members, these latter may push for a cash transfer which may deteriorate the financial position of the cooperative. This form of liquidation can be an exit way for cooperatives which, at the turning point of maturity, do not seek strategic alliances to increase their market power, or do not shift to a new model, according to the lifecycle approach of Cook (1995). In this research, we test this hypothesis for cooperatives of the Bordeaux wine industry. We run two regression which aim at characterizing the relationship between leverage and cash transfer to cooperative members according to the downstream strategy of cooperatives. Our results confirm our main hypothesis. The cooperatives which stay in the traditional form are prone to liquidation: the cash transfer to producers implies a higher leverage which implies a financial distress. The financial behavior of cooperatives forming union and of those which have opted for vertical integration is radically different.

**Key-Words:** cooperative finance, liquidation, lifecycle approach, wine industry, cooperative union, vertical integration

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## 1. Introduction

A major drawback of the cooperative ownership structure is that cooperative members may have a lower stake in the future well-being of the firm, as cooperative owner, than in its present well-being, as cooperative supplier. Cross and Buccola (2004) established that if the lenders of cooperatives are not in position to assess the “right” price to be paid for the raw-material delivered by cooperative members, these latter may push for a cash transfer which may deteriorate the financial position of the cooperative. The desire to liquidate cooperative capital is in line with the yardstick competitive hypothesis (Cross et al, 2009), stating that cooperatives are a temporary mechanism for agricultural producers to fight against the monopsony power of larger downstream firms (Nourse, 1942). As soon as market efficiency is “restored”, cooperatives may let the place to IOFs, which, a priori, benefit from a less costly ownership structure (Hansmann, 1988; Cook, 1995).

However, it appears that a lot of cooperatives do not disappear even when they reach the turning point of maturity and operate in a competitive market. Cook (1995) extended the Nourse’s story in considering that cooperatives which have reached this stage face three options: (1) exit (which is the option given by the yardstick competitive hypothesis); (2) continue in forming strategic alliances utilized as equity-capital-seeking strategy; (3) transition by shifting to a new model that tempers the disincentives stemming from the cooperative ownership structure. If we relate these two lifecycle approaches of cooperatives, we may conjecture that the liquidation process established by Cross and Buccola (2004) can be a way for cooperatives to exit while the cooperatives forming strategic alliances or reinventing themselves have interest to preserve their ability to invest.

In this research, we test this hypothesis in a particular context, the Bordeaux wine industry. Indeed, the Bordeaux cooperatives seem have reached the turning point of maturity. In 2010, the Bordeaux wine industry policymakers agreed on a strategic plan to encourage cooperatives to form union. However, some have succeeded in implementing their own vertical integration strategy and may have not interest to form union with less efficient cooperatives. Others appear reluctant to change from the traditional downstream strategy, which is the sale of bulk wine to *negociants* (the IOF firms which traditionally blend and brand the Bordeaux wine destined for the mass-market). It comes that three types of cooperatives co-exist in the Bordeaux wine industry. They may be categorized according to their downstream strategy: the “traditional” one, which is the sale of bulk wine to *negociants*; the strategic alliance through union; the vertical integration. If we follow the approach of Cook (1995), the “traditional” cooperative may be prone to liquidation while the cooperatives in union and those which have chosen downstream integration have interest to preserve their ability to invest.

## 2. Detecting the cooperative liquidation

To detect the cooperative liquidation is an empirical challenge. Indeed, if it were easily observable, the cooperative lenders could anticipate the financial distress but it appears that many cooperative bankruptcies have taken their stakeholders by surprise (Cross and Buccola, 2004). According to our own knowledge, this idea is relevant for the French wine industry as well<sup>1</sup>.

Cross et al. (2009) proposed a method based on a comparison between the price paid to the cooperative members and the price offered by the investor-owned agribusiness to characterize the liquidation process. However, we cannot use this method in the Bordeaux wine industry because investor-owned wineries are still rare in Bordeaux. There is no “investor-owned-firm contract price” which may serve as a reference to see if the price paid to cooperative members is excessive or not.

Thus, we propose a different empirical strategy. We observe the relationship between the debt ( $LEV$ ) and the price paid to producers ( $P$ ) through two different econometric specifications. In the first one we consider the impact of the price paid to producers on the cooperative debt. The cooperative debt is the dependant variable and we use a lagged proxy of the price paid to producers ( $P_{N-1}$ ) in order to prevent endogeneity. Our control variables ( $CV$ ) are the ratio of net to gross assets as a proxy for investment and the value of the wine processed by the cooperative (the output price). Moreover, we focus on three debt variables: (i) the ratio of the medium and long term debt on equity (the medium and long term leverage), (ii) the ratio of short term debt on sales, (iii) the ratio of financial debt on equity (the total leverage). In the second specification, the price paid to producers is the dependant variable and the lagged proxy of debt is the explanatory variable. The control variable is the output price.

According to our main hypothesis, the relationship between the debt and the price paid to producers should differ according to the downstream strategies ( $DS$ ) of the cooperatives. We use cross-variables to highlight the phenomenon (see the equations of specification below). In the general model (1), as the “traditional” cooperatives are prone to the liquidation process, we should observe a positive relationship between the price paid to producers and the leverage ( $\beta_1 > 0$ ): all else equal, the cooperative members prioritize their current payments against their mid-term financial prospects. For the other cooperatives, the relationship between the price paid to producers and the debt can be negative if they face financial constraints or null if they don’t.

We expect more ambiguity in the second general model (2). Indeed, even if cooperative members intend to use the leverage as a source of cash, the repayment due to the past leverage may act as a constraint on the cash transfer and so imply a lower price paid to producers. In so forth, a negative impact of past leverage on the price to producers may indicate a financial distress. That may be a consequence of a liquidation process. A positive impact may indicate that the access to debt

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<sup>1</sup> See for example the cases of the cooperative of Cayranne and the cooperative of Mont Tauch. The latter one had been cited as an example of proactive cooperative by policymakers just before its tremendous bankruptcy (see Abhervé, 2014).

financing can be used to increase the cash transfer to producers. That can be related to financial constraints or enlighten an extreme form of liquidation.

$$(1) LEV = \beta_0 + \beta_1 DS \times P_{N-1} + \beta_3 CV$$

$$(2) P = \beta_4 + \beta_5 DS \times LEV_{N-1} + \beta_6 CV$$

### 3. Data

In 2010, the Bordeaux wine region encompasses 7 400 farms cultivating vineyards, with 5 700 farms specialized in wine growing. The vineyard covers 124 000 ha (about 50% of the Gironde agricultural area) and generates 90% of the county agricultural value. 2 460 wine-growers are cooperative members. They operate 24 279 ha, i.e. 20% of the Gironde vineyard. The 39 Bordeaux cooperatives process about 36% of the 5.8 million hectoliters of the wine produced in Gironde. The average size of farms exclusively making wine with the cooperative is about 10 ha (DRAAF, 2011).

Thank to a partnership between the professional organizations of the Bordeaux wine industry and the faculty of Bordeaux Sciences Agro, we were able to gather data on all Bordeaux cooperatives, i.e. the 39 cooperatives existing at the time of the collection of data. The uniqueness of our database is due to the mix of production data and financial data which were collected through a survey addressed to the accountants of cooperatives. We asked them to collect data over a six-year period. This enables us to proxy the price paid to producers by dividing the cost of raw materials by the volume of the production processed. It also provides a proxy of the average price of the wine sold by the cooperative (the output price) and information on the distribution channel used by the cooperative through the volume sold in bulk to negociants, the volume transferred to a union and the volume sold in bottles.

We consider that the downstream strategy is: (i) traditional, when cooperatives have not implemented an union nor a vertical integration strategy; (ii) union when more than 30% of turnover is done by sales to a union; (iii) vertical integration when bottled wine represents more than 30% of the turnover.

Table 1 displays general statistics and table 2 focuses on the variables used for the regression models.

**Table 1. Size, sales and downstream strategy**

		Number of members	Area (ha)	Sales (euros)
Traditional	<i>Obs</i>	57	76	76
	Mean	69	524	3,147,210
	Min	30	125	416,569
	Max	185	1,935	14,600,000
Union	<i>Obs</i>	29	35	35
	Mean	77	785	4,351,052

Vertical Integration	Min	33	100	466,085
	Max	208	2,560	15,200,000
	<i>Obs</i>	73	102	102
	Mean	134	647	7,170,552
	Min	12	30	462,991
Total	Max	549	3,671	25,400,000
	<i>Obs</i>	159	213	213
	Mean	100	626	5,271,695
	Min	12	30	416,569
	Max	549	3,671	25,400,000

Note: observations are cooperative-year, e.g. 39 cooperatives over a six year period (2005-2011)

In the table 2, we can observe that the leverage ratios do not seem different according to the downstream strategies of cooperatives, except for the short-term debt which is likely lower for ‘traditional’ cooperatives. However, one striking point is that the minimal sale price is lower than the minimal price paid to producers in the category of “traditional” cooperatives. That illustrates an extreme case of cash transfer from the cooperative to cooperative members which should result on a negative retained earnings. We also observe that the average output price of cooperatives in union is not different from the output price obtained by traditional cooperatives. The same is observed for the price paid to producers.

**Table 2. Price to producers, leverage, sale price and asset renewing**

		Price paid to producers (euros/hl)	Medium and Long-term leverage (%)	Total leverage (%)	Short-term debt on sales (%)	Sale Price (euros/hl)	Ratio of net assets on gross assets (%)
Traditional	<i>Obs</i>	71	71	71	74	71	69
	Mean	73	45	79	10	105	36
	Min	45	2	2	0	30	6
	Max	132	141	441	108	189	100
Union	<i>Obs</i>	35	35	35	35	29	35
	Mean	74	37	69	20	105	29
	Min	43	0	12	0	62	6
	Max	123	135	184	123	170	96
Vertical Integration	<i>Obs</i>	50	102	102	102	29	35
	Mean	105	48	116	28	131	33
	Min	46	0	4	0	91	10
	Max	223	211	858	162	255	53
Total	<i>Obs</i>	156	208	208	211	129	139
	Mean	83	45	96	21	111	34
	Min	43	0	2	0	30	6
	Max	223	211	858	162	255	100

Note: observations are cooperative-year, e.g. 39 cooperatives over a six-year period (2005-2011)

## 4. Results

We present the results of our multivariate analysis (we apply a feasible generalized least square approach adjusting for heteroskedasticity and autocorrelation) in six tables. The first three tables present the results for the first econometric specification according to the three different proxies of debt: medium and long term leverage; short-term debt; total leverage. In the same manner, the following three tables present the second econometric specification according to the three proxies of debt.

In the table 3, the cross variable shows that the medium and long term leverage increases with the price paid to producers for traditional cooperatives while the link is negative for cooperatives in Union and not significant for cooperatives which have chosen vertical integration. This difference in the behavior of cooperatives provides is in line with our hypothesis: the cooperative members prioritize their current payment against the financial mid-term prospects. Reversely, the cooperatives in union seem to anticipate the future financial requirements in reducing the price to producers (implying more retained earnings) before increasing their leverage.

**Table 3. Effect of the price paid to producers on the medium and long term debt leverage, by downstream strategies of cooperatives**

	(1) MLT leverage	(2) MLT leverage	(3) MLT leverage
Traditional	-1.58 (-0.74)		
$P_{N-1}$ *Traditional	0.05** (2.57)		
Union		4.30** (2.17)	
$P_{N-1}$ *Union		-0.04** (-2.02)	
Vert. Integration			-3.22 (-1.16)
$P_{N-1}$ *Vert. Integration			-0.03 (-0.86)
$P_{N-1}$	0.13** (2.26)	0.16*** (2.76)	0.14** (2.04)
Asset renewing	0.94*** (8.76)	0.95*** (9.05)	0.88*** (8.52)
Output price	0.04 (1.29)	0.07** (2.27)	0.03 (0.90)
Constant	-3.62 (-0.56)	-7.66 (-1.12)	0.80 (0.12)
N	100	100	100
Wald statistics	106.78***	104.08***	108.33***

z statistics in parentheses

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

In the table 4, we observe that the link between the price paid to producers and the level of short term debt is exactly the opposite than what we observe in the table 1. We can explain that by the very different nature of nature between the short-term and the long term debt. Indeed, short-term debt is a consequence of the economic and financial situation of the cooperatives while the long-term debt is a decision of cooperatives. As a result, an interpretation of the result is that the less the ‘traditional’ cooperatives pay the producers, the more they appeal to short-term debt. It may denote a situation of financial distress. Again, we observe an opposite link for the cooperatives in union. In this case, the more the cooperative pay the producers, the more they need short-term debt. This is a direct consequence of the cash transfer from the cooperative to the producers, a behavior which needs to be kept in control by the bank in order to avoid financial distress.

**Table 4. Effect of the price paid to producers on the ratio of short-term debt on sales, by downstream strategies of cooperatives**

	(1) ST debt on sales	(2) ST debt on sales	(3) ST debt on sales
Traditional	-2.77 (-0.79)		
P <sub>N-1</sub> *Traditional	-0.11** (-2.56)		
Union		3.10 (0.79)	
P <sub>N-1</sub> *Union		0.12** (2.55)	
Vert. Integration			6.52 (1.35)
P <sub>N-1</sub> *Vert. Integration			-0.04 (-0.64)
P <sub>N-1</sub>	0.17** (2.27)	0.15** (2.19)	0.18** (2.05)
Asset renewing	0.45*** (4.27)	0.52*** (4.53)	0.52*** (4.89)
Output price	-0.09** (-2.11)	-0.05 (-1.31)	-0.09** (-2.24)
Constant	-0.56 (-0.08)	-13.45** (-2.04)	-8.85 (-1.07)
N	102	102	102
Wald statistics	44.45***	39.78***	33.87***

z statistics in parentheses

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

The table 5 includes short-term and long-term debt in the same proxy of debt. We have seen that the link between these two types of debt and the price paid to producers are very different. In this table, we can only conclude that the link between short-term debt and the price to producers dominate in the regression.

**Table 5. Effect of the price paid to producers on the ratio of total leverage, by downstream strategies of cooperatives**

	(1) Total leverage	(2) Total leverage	(3) Total leverage
Traditional	-5.49 (-1.33)		
P <sub>N-1</sub> *Traditional	-0.11*** (-2.59)		
Union		6.07 (1.51)	
P <sub>N-1</sub> *Union		0.11*** (2.78)	
Vert. Integration			0.02 (0.38)
P <sub>N-1</sub> *Vert. Integration			0.00 (0.14)
P <sub>N-1</sub>	0.16 (1.06)	0.15 (0.96)	0.08 (0.46)
Asset renewing	2.74*** (16.31)	2.67*** (13.58)	2.62*** (12.37)
Output price	-0.02 (-0.38)	-0.01 (-0.19)	-0.03 (-0.44)
Constant	-16.89 (-1.29)	-29.80** (-1.97)	-16.98 (-1.11)
N	100	100	100
Wald statistics	305.12***	236.57***	158.23***

z statistics in parentheses

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

In the table 6, we see that the level of long-term debt has a negative impact on the price paid to producers for traditional cooperatives. Considering the table 1 and the table 2, this may reveal a situation of financial distress due to a liquidation process: the higher the cooperatives transfer cash to the producers, the higher they increase the leverage of the cooperatives. And the higher the



cooperatives are leverage, the lower the cooperatives can offer an attractive price to producers. In other words, we would observe the consequence of the liquidation process: the level of medium and long term leverage has a direct consequence on the ability of the cooperatives to pay the producers. We observe no significant effect of leverage on the price paid to producers for the other types of cooperatives.

**Table 6. Effect of the past medium and long term leverage on the price paid to producers, by downstream strategies of cooperatives**

	(1) Price paid to producers	(2) Price paid to producers	(3) Price paid to producers
Traditional	3.04 (0.93)		
MLT Lev. <sub>N-1</sub> *Trad.	-0.12* (-1.93)		
Union		-4.24 (-1.23)	
MLT Lev. <sub>N-1</sub> *Union		0.04 (0.54)	
Vert. Integration			2.37 (0.55)
MLT Lev. <sub>N-1</sub> *Vert. Integration			0.05 (0.66)
MLT Lev. <sub>N-1</sub>	0.14** (2.55)	0.03 (0.62)	0.04 (0.82)
Output price	0.17*** (4.23)	0.16*** (3.85)	0.13*** (3.58)
Constant	52.11*** (9.02)	57.83*** (10.86)	58.01*** (12.09)
N	98	98	98
Wald statistics	33.60***	17.08**	25.67***

z statistics in parentheses

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

In the table 7, we see that the short-term debt has a negative impact on the price paid to producers for ‘traditional’ cooperatives. This is consistent with the idea that the financial distress leads cooperatives to lower the cash transfer to producers. One interesting point is that the access to short-term debt leads vertically integrated cooperatives to offer higher price to their producers, which may be interpreted either an opportunistic behavior of cooperative members against the bank, or a credit rationing which constrain the cooperatives to deliver the optimal price to their producers.

**Table 7. Effect of the past short term debt on the price paid to producers, by downstream**

### strategies of cooperatives

	(1) Price paid to producers	(2) Price paid to producers	(3) Price paid to producers
Traditional	-2.70 (-1.20)		
ST debt. $N_{-1}$ *Trad.	-0.23* (-1.87)		
Union		-4.18 (-1.19)	
ST debt. $N_{-1}$ *Union		0.05 (0.29)	
Vert. Integration			2.97 (1.19)
ST debt. $N_{-1}$ *Vert. Integration			0.26* (1.84)
ST debt. $N_{-1}$	-0.03 (-0.28)	-0.13 (-1.41)	-0.20** (-2.26)
Output price	0.18*** (5.22)	0.18*** (4.81)	0.16*** (4.45)
Constant	58.80*** (12.40)	57.67*** (13.16)	58.25*** (14.30)
N	101	101	101
Wald statistics	49.76***	27.05***	44.47***

z statistics in parentheses

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

In the table 8, we observe that the debt has a negative impact on the price paid to producers for “traditional” cooperatives. This shows that the financial situation of these cooperatives is precarious: debt has a direct and significant effect on the cash transfer to producers. Reversely, for vertically integrated cooperatives, the access to debt impact positively the cash transfer to producers. That confirms the result obtained in the table 5. The interpretation is the same.

**Table 8. Effect of the past total leverage on the price paid to producers, by downstream strategies of cooperatives**

	(1) Price paid to producers	(2) Price paid to producers	(3) Price paid to producers
Traditional	3.53 (1.18)		
Tot. Lev. $N_{-1}$ *Trad.	-0.11*** (-3.20)		
Union		-6.18* (-1.67)	

Tot. Lev. $N-1$		0.03	
*Union		(0.57)	
Vert. Integration			-2.64 (-0.64)
Tot. Lev $N-1$ *Vert. Integration			0.12** (2.43)
ST debt. $N-1$	0.06* (1.72)	-0.04* (-1.89)	-0.06*** (-3.60)
Output price	0.16*** (4.79)	0.18*** (4.54)	0.12*** (3.92)
Constant	55.97*** (10.20)	59.84*** (12.68)	64.29*** (16.30)
N	98	98	98
Wald statistics	51.56***	27.57***	51.92***

z statistics in parentheses

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

## 5. Conclusion

Our empirical strategy shows that cooperative liquidation, in the sense of Cross and Buccola (2004), may be the concretization of the choice of exit, in the sense of Cook (1995), by the cooperatives which do not consider their futures through alliances or new models.

Our methodology requires an *a priori* categorization of cooperatives according to the risk of liquidation. This is a drawback if we want a tool to detect the risk of liquidation. However, this may provide interesting results regarding the evaluation of the structures or the strategic choices of cooperatives. In our research, we show that “traditional” Bordeaux wine cooperatives are effectively prone to a liquidation process, as higher payment lead to higher debt, which may lead to financial distress and, in fine, low payment to producers. By contrast, vertically integrated cooperatives, or cooperatives in union are in more standard relationship with the bank, where the dominant effect is that reduced financial constraints through access to short-term debt lead to higher payment to producers.

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