

MATCHMAKERS IN WINE MARKETING CHANNELS: THE CASE OF FRENCH WINE BROKERS (REFEREED)

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Abstract

Wine brokers are wholesale intermediaries. They belong to the category of the matchmaker intermediaries. These middlemen are not well known. Their role is to help buyers and sellers of bulk wine to meet and transact. Assuming that wine merchants appeal to brokers because they reduce transaction costs, we analyze how a broker intervention can reduce search costs, negotiation costs, and monitoring and enforcement costs of a transaction on bulk wine. A data base of contracts on bulk *vins de table* and *vins de pays* is used to estimate a logistic model of the probability “broker intervention”.

Introduction

Wholesale intermediaries in marketing channels can be defined as distribution-oriented institutions and agencies that stand between production on the one hand and “retailers and other merchants, and/or industrial, institutional, and commercial users” on the other hand (Stern and El-Ansary, 1992, p. 106). But, this too large definition fails to render the complexity of wholesaling and the great diversity of intermediary types.

Traditionally, the marketing channels literature identifies two categories of wholesale intermediaries (Hackett, 1992; Stern and El-Ansary, 1992): “marketmakers” and “matchmakers” (Yavas, 1992)¹. The distinction between these

¹ The terminology varies according authors. Although we cannot really include this reference in the marketing channels literature, the terminology used by this author appeared to be the most general. Hackett (1992) for instance uses the terms “merchants” and “brokers”. However these terms can be associated to very specific types of intermediaries. Thus Hackett’s terminology appears to be too restrictive.

two categories is based on whether the intermediary takes title to goods and on the way he or she is compensated (Hackett, 1992).

Marketmakers buy products to suppliers in order to resale them to buyers. They are compensated by the spread between the ask price and the bid price at which they sell and buy goods. For instance wholesale merchants, industrial distributors, or importers and exporters belong to this category.

Unlike marketmakers, *matchmakers* don't take title to goods. They simply match buyers and sellers and help them to transact. These intermediaries are compensated by a revenue-sharing commission. This second category includes different types of middlemen that differ in the type of relations they have with the other parties of the transaction. These intermediaries can be representatives of one party of the transaction or they can remain independent. Thus, we make a distinction between *agents* who are commissioned to buy or sell goods on behalf of a principal – e.g. manufacturers' agents or commission merchants – and *brokers* who remain independent and neutral and don't conclude any transactions in their name or in the name of one party or the other.

French wine brokers belong to this last category. These middlemen intermediate bulk wine exchanges between wine growers and merchants, or between merchants and merchants². Wine brokerage is really poorly known. Moreover these intermediaries often lack of legitimacy *vis-à-vis* the other actors of the wine industry. Wine brokerage is yet a regulated activity and brokers still account for about 60% of bulk table and local wine transactions and for about 80% of AOC exchanges in France. Moreover, a recent survey carried out on Australian wine industry shows that brokerage is not an exclusive French activity. Some Australian wine firms mobilize brokers to sell their wines, both bulk and bottle wines. Thus, it appears that a better knowledge of wine brokerage activity would be interesting in order to better understand wine marketing channels.

The purpose of this contribution is to present this profession and to analyse the brokers' role in bulk wine transactions. One question that must be answered is why sellers and buyers of bulk wine continue to use brokers services. What are the wine broker intervention determinants? This question is all the more interesting as, despite their share in exchanges is decreasing, brokers continue to intermediate a great number of transactions even in the framework of buyer-seller long-term relationships.

The question of intermediaries' legitimacy and existence in exchanges has been largely treated by literature (Wilkinson, 2001). However, scholars have neglected matchmakers intermediaries. These middlemen have been mainly studied in literature about export intermediaries. But, a large part of these works considers intermediaries as manufacturers' representatives and analyses the trade-off between integration and outsourcing of the sales force (Anderson and Gatignon, 1986; Anderson and Coughlan, 1987; Dutta *et alii*, 1995). As we underlined it earlier, contrary to other matchmakers, brokers remain neutral and independent from transacting parties. Thus following Peng and colleagues (Peng and Illinitch, 1998; Peng and York, 2001; Peng and Wang, 2002), we consider brokers as a specific governance mechanism of the exchange relationship. We use a transaction costs analysis approach. We argue that buyers and sellers appeal to brokers because they allow a reduction of transaction costs. We distinguish three transaction costs categories: information and search costs, negotiation costs which are *ex ante* costs, and monitoring and enforcement costs which are *ex post* costs. Because they affect each stage of the transaction, we assume that brokers can sufficiently reduce these transaction costs to make them an appeal.

The interest of the article is twofold. First, from an empirical point of view, to the best of our knowledge, it constitutes a first work on matchmaker intermediaries in wine marketing channels. Yet, a survey conducted in Australia shows that this form of intermediation also exists in other wine growing countries. Second, from a theoretical point of view, this work contributes to a better understanding of matchmakers intermediaries functions, which are often neglected by scholars.

The remainder of the paper is organized as follows. Section 2 describes wine brokerage activity and develops the theoretical background and hypothesis. Section 3 presents the data and the sample we used to test hypothesis. Measures used to test hypothesis and empirical predictions are detailed in section 4. Results are presented, analysed and discussed in sections 5 and 6. Finally, section 7 closes the paper with a summary of the results, limitations of the article and suggestions for future research.

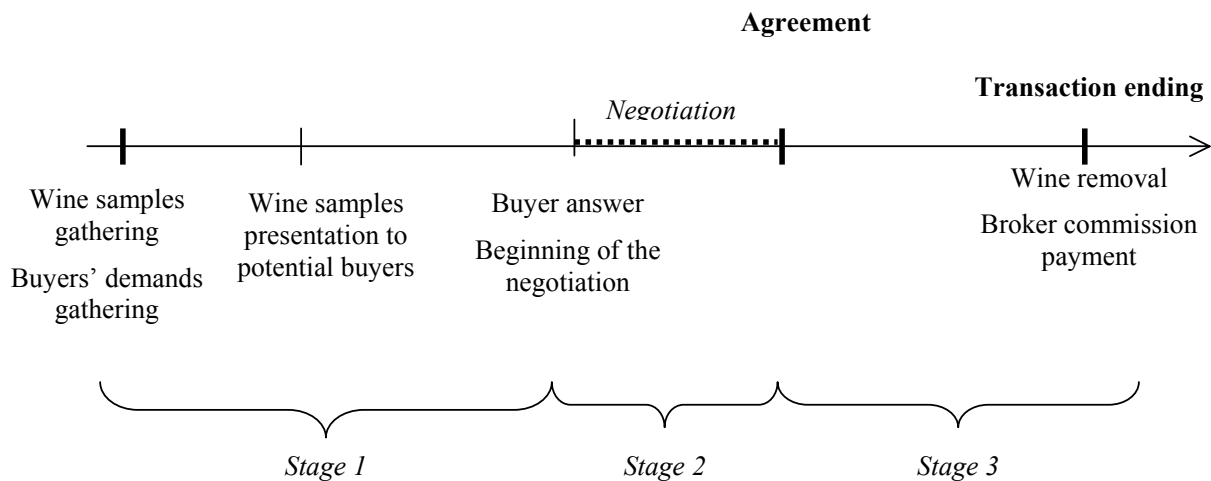
² Wine brokers can also intermediate exchanges of bottled wine however this activity still remains rare.

1. Wine brokers: presentation and hypotheses

1.1 Wine Brokerage

Wine broker take part to all the exchange stages (Figure 1): before the agreement (stage 1), during the negotiation (stage 2), and finally, after the contractual arrangement (stage 3).

Figure 1 - Successive stages of bulk wine exchange with broker



During the first stage, broker collects wine growers' offers and merchants' demands. To collect information on supply characteristics, wine broker regularly visits the different wine growers he is in contact with. These visits allow him to taste wine, to gather samples, and also to collect a more "informal" and strategic information on market (e.g. on stocks). At the same time, he finds out about demand by regular direct contacts with merchants and/or by taking part in information meetings.

This knowledge of available wine production and buyers' needs allows the broker to match supplies and demands. He sends to the merchant wine samples. In the same time he can also inform him about prices proposals and available volumes.

If the sample fits merchant's needs, he sends a purchase order to the broker. Negotiation stage starts at this moment.

Price and volume are not the only negotiated issues. Payment and removal modalities are also negotiated. When an agreement is reached between buyer and seller, a formal contract is written, established by the broker.

Theoretically, broker's activity stops after contract signature. Actually, wine broker also supervises the follow-up of the deal. The broker is "the moral guarantor" of the contract enforcement. First, the broker checks the product quality by regularly collecting samples. Second, he makes sure that contract terms are enforced. In case of disagreement between the parties, the broker tries to mediate the conflict.

The broker activity really ends when he receives his compensation. In theory, the broker is paid at the deal confirmation. But in practice, brokerage is generally charged at the delivery moment.

1.2 Broker as a mechanism of transaction costs reduction: Hypotheses

Several scholars used transaction costs analysis to explain the existence of matchmaker intermediaries in transactions (Rindfleisch and Heide, 1997). Particularly, Anderson and colleagues (Anderson and Schmittlein, 1984; Anderson, 1985; Weiss and Anderson, 1992) study the determinants leading manufacturers to choose integrated sales force or reps to sell their products. However, these works do not consider the middleman as a governance mechanism. They focus on the transaction between the manufacturer and the sales persons. They explain the determinants of the manufacturer's choice of integrating or not this transaction and they consider the intermediary as a representative.

Williamson (1979), following Macneil (1978), take into account the existence of a third party in the governance structure by introducing the concept of trilateral structure within which transacting parties can appeal to a "third-party assistance" (p. 250). But the third-party has only a limited role. She only perform *ex post* functions by monitoring parties and arbitrating potential conflicts whereas brokers take part to *ex ante* exchange stages to.

In order to take into account the *ex ante* research and matching functions of brokers, we try to analyze the effect of broker's intervention on transaction costs. We distinguish three main costs associated with the initiation and execution of an exchange: search costs, negotiation costs, monitoring and enforcement costs. Thus we identify what are the factors of broker efficiency in reducing these costs.

1.2.1 *Broker as a mechanism of information and search costs reduction?*

The wine market is a bilateral search market. It is a market where "two parts, such as buyers and sellers, look themselves for each other" (Yavas, 1994, p. 406). These markets are characterized by potential information asymmetries between parties

about their preferences and about the products quality. As buyers and sellers don't know the whole exchange opportunities, they have to go on search for a trade partner. This search can be expensive and time consuming (McGarry, 1951). Moreover, information asymmetries conduct to search uncertainty. Even if traders manage to meet they need detailed information on products and each other preferences to start a successful negotiation (Balderston, 1958).

Balderston (1958), Baligh and Richartz (1967), and afterward Etgar and Zusman (1982), showed that marketing intermediaries who do not intervene in physical flows can improve distribution channels efficiency by efficiently managing information flows. Brokers can be considered as such intermediaries: they match buyers and sellers, they don't title to the goods, and they are independent. So, they can be considered as a communication mechanism among producers and merchants.

Thus, one of the most important wine brokers' function is information management. They collect and transmit information to producers and merchants in order to match buyers and sellers.

A first dimension of broker's efficiency is independence. It allows brokers to be in touch with several buyers and sellers. As brokers are not attached to a particular client, they can build a prospect's network, which allows them to use wider information³. When the number of buyers and sellers is important in a market, the larger the broker's network, the greater the matching efficiency (Gehrig, 1996).

Another dimension of broker's efficiency is its expertise. Expertise can be defined as a body of specific knowledge that is possessed by a limited number of persons used to perform a particular function (Jones, 2003). Wine brokers expertise is based on their specialization in a specific wine production area and on a very good knowledge of their customers network. Particularly, brokers build long-term relationships with wine growers and merchants.

This information management function allows the brokers to assure a second function: matching supply and demand. Wine is not a standardized product. Consequently, matching has to be made not only in quantitative and monetary terms (Spulber, 1996), but also in qualitative terms. In regard with the qualitative level, matching mainly rests on wine samples. Broker's expertise allows him to propose wine samples directly to the best potential buyer. The broker can transmit the other

³ The survey conducted on Languedoc-Roussillon wine brokers shows that they all maintain more or less strong ties with several buyers (158 on average) and sellers (49 on average), the number depending, of course on the size of the office.

transaction modalities (quantities, prices, removal delays) with the samples or wait for the wine sample acceptance.

To summarize, wine broker seems to be an expert for managing all the necessary information to implement and to realize wine exchanges. To perform this function, the broker has incentives to develop expertise on a specific wine area and on his customers (buyers and as well as sellers). This leads to the first hypothesis:

H1: the greater the information and search costs associated to a transaction, the greater the likelihood of using a wine broker.

1.2.2 Broker as a mechanism of negotiation costs reduction?

Buyers and sellers have divergent interests. The negotiation aims at conciliating these interests. Then, negotiation costs result from all the necessary discussions, meetings and visits to find an agreement satisfying buyer and seller. The bargaining is conducted on prices, volumes as well as on exchange modalities⁴. In addition to direct negotiation costs, opportunity costs have to be considered. These are costs supported by negotiators in case of negotiation failure. They will be as high as the negotiation stage will have been long and expensive.

Reduction of negotiation costs require not only reduction of direct logistical costs of conducting bargaining, but also reduction of hazards related to information asymmetries existing between parties (Peng and Ilinitch, 1998). Thus, by improving the quality of the match and mitigating information asymmetries, brokers can reduce the risk of negotiation breakdown.

Moreover, as underlined by Peng and Wang (2002), uncertainty linked to the negotiation issue can be reduced thanks to an experimented third-party intervention. Thus broker expertise appears to be an important dimension of his efficiency in reducing negotiation costs. Also independent intermediary status of the broker seems to be important. The more the broker independence is recognized by negotiators, the easier is the negotiation. As a mediator⁵ the broker can match buyers and sellers, which would have never exchanged without a middleman.

This leads to the second hypothesis:

⁴ Conditions of wine removal are an important dimension of the exchange. Insofar as the seller store the wine between contract sign and wine removal, the longer the delay, the bigger the risk of wine transformation.

H2: the higher the negotiation cost for a transaction, the greater the likelihood of using a wine broker.

1.2.3 Broker as a mechanism of monitoring and enforcement costs reduction?

Monitoring and enforcement costs are *ex post* costs. These costs are associated with devices designed to enforce contract terms. Monitoring costs are associated with the implementation of devices for controlling contractors' actions. Enforcement costs result from the implementation of adjustment and adaptation mechanisms necessary to cope with disturbances – conflicts for instance – that can occur during the transaction (Williamson, 1985).

Adaptation costs are mainly renegotiation costs and we hypothesized in the previous section that broker by mediating bargaining and reducing information asymmetries can reduce negotiation costs.

The other source of *ex post* costs is opportunism (Williamson, 1991). Thus, a broker will be able to reduce these costs if he is able to mitigate the opportunism of the traders. However, the middleman can also be opportunist and traders have to monitor her performance too. Despite the broker is not commissioned by one party of the transaction, he is compensated to perform a service. So, there is a transaction between the matchmaker and the parties. Thus, buyers and sellers will use broker services to reduce *ex post* costs if and only if monitoring the efforts of the broker is not too much costly.

Management of broker's opportunism

Insofar as buyer and seller delegate some tasks to the broker, an agency relation is established between the formers and the latter (Jensen and Meckling, 1976). As we developed earlier, brokerage is closely connected with information management function. On the one hand, information production is hard to monitor and on the other hand, information is easy to manipulate (Gromb and Martimort, 2003; Lizzeri, 1999). Thus, it can be hard for brokers clients to monitor the intermediary effort. For instance, it is almost impossible for a buyer to check whether the broker provided a sufficient effort to make an exhaustive list of alternative supplies corresponding to his needs. Thus, brokers will be efficient in reducing monitoring and enforcement costs if

⁵ Following Wall and Blum (1991), we define a mediator as “a neutral third party who facilitates a negotiation solution, using reasoning, persuasion, control of information, suggestions for alternative, etc.”

they succeed in reducing information asymmetries among them and the principals (Peng and Wang, 2002).

For a broker one way to reduce these information asymmetries is to signal to the principals that she is able to be more efficient than them in collecting and analyzing information (Spence, 1973). In the French wine sector, one signal consisted in establishing, in 1997, an exam to obtain a wine broker professional permit. This exam aims to make sure that the candidate has the minimum required knowledge to exercise wine brokerage⁶. More individually, brokers must signal to the other industry actors their ability to assume their functions. Brokers can develop expertise on a specific wine area or for a specific wine product. If buyers and sellers recognize this expertise, it can be interpreted as a greater ability for the broker to collect information. The broker can also be a member of the French wine brokers union. By this way, the broker signals to the other agents of the industry that she has access to more complete information (for instance the union is represented in official wine tasting commissions).

Principals can also implement protection devices against potential broker opportunism. First, shown by Gromb and Martimort (2003) or Lizzeri (1999), one way for principal to obtain more complete information is to introduce competition among brokers. Our interviews showed that some merchants use this strategy. It allows them to confront various propositions. Second, the merchant can use a broker follow-up with an evaluation scale. Years after years, the merchant can monitor the broker's work quality evolution.

Finally, our interviews showed that market mechanisms like repeated exchanges, which develop trust between parties, and reputation seem to prevent brokers opportunism (Klein and Leffler, 1981). These mechanisms are efficient partly due to the little number of actors present on the market.

Monitoring and enforcement costs of the transaction between buyer and seller

Monitoring costs for bulk wine exchange are associated on the one hand with the monitoring of wine quality between the agreement and the wine removal and with the control of the respect of the other agreement terms (volume, wine removal and payment modalities), on the other hand.

⁶ At least 3 months training in a broker agency are required and candidates are given tests about commercial law, brokerage contracts, and wine tasting.

The enforcement costs correspond to a potential contract renegotiation costs. Another situation that can produce enforcement costs is the non-respect of the agreement terms by one contractor. In that case, to settle the conflict requires time, new visits and then expenses for both contractors.

The most part of contractual hazards have two origins. The first is quality product degradation between the contract signature and the wine removal. Another contractual hazard comes from non-respect of the payment term by the buyer.

Thus, the broker can help to solve potential conflicts between buyer and seller. However, this role does not appear as main reason for the merchant to use a broker. But, for all the transactions, brokers have to make sure that exchange will be successful, in particular about agreement terms respect. So, with a relevant *ex ante* clients selection, the broker should limit *ex post* conflicts emergence.

To summarize, a broker can reduce *ex post* costs associated with bulk wine transactions only if the costs of monitoring her performance is not too high for the transacting parties. However, we have noted that principals implement devices in order to protect them against broker opportunism. Moreover, we can postulate that reputation and repeated transactions can mitigate intermediaries' opportunism. Thus, if we argue that buyers and sellers who wish transact only appeal to brokers if the risk of opportunism is minimized, we can formulate the third hypothesis:

H3: the higher the monitoring and enforcement costs for a transaction, the greater the likelihood of using a wine broker.

2. Data and sample

Hypotheses were tested thanks to a contracts database provided by the French national office for wines (ONIVINS). This database gathers exchanges between producers and wine merchants on bulk *vins de table* and *vins de pays* concluded from 1987 to 2003. The database is composed of three categories of variables: variables describing transaction parties, variables describing the products and variables describing the terms of the exchange.

We selected a sample corresponding to exchanges on Languedoc-Roussillon⁷ wines (the seller is based in Languedoc-Roussillon). Thus, the sample is composed of about 290,000 observations. In this sample, 61% of contracts were signed thanks to a broker.

These quantitative data were completed with qualitative data collected thanks to interviews of brokers and different other actors of wine industry in Languedoc-Roussillon (wines growers, merchants, ...).

3. Measures description

3.1 Dependent Variable

The probability of using a wine broker is the dependent variable. It is measured by **BROKER** that is a dichotomous variable indicating whether a broker intermediated the exchange or not.

3.2 Independent Variables

Independent variables are proxies of transaction costs we defined and described earlier. Before any presentation of model variables, it seems to be useful to make two remarks. First, for logistic regression, it is recommended to use dichotomous discrete variables (Marpsat and Verger, 1992). Second, when an explicative dimension has several exclusive levels, the coefficients are interpreted in relation to a reference situation that is usually the most frequent⁸. Table 1 presents the variables frequencies.

3.2.1 Search Costs (*Hypothesis 1*)

Search costs are mainly information costs on products. For collecting information on products, buyers need to visit cellars in order to collect samples and to create and maintain relationships with producers. Thus, we identified three proxies of search costs: geographical distance between buyer and seller, geographical dispersion of supply and structural dispersion of supply.

⁷ Region in the South of France that is the first production area for *vins de table* and *vins de pays*.

⁸ Let be X a discrete variable with three levels – 1, 2, and 3. We created three dichotomous variables X_i ($i \in \{1, 2, 3\}$) which equal to 1 if $X = i$ and 0 else. Even if we distinguish these three variables, they are related to a unique explicative dimension. If 1 is the reference situation, X_2 and X_3 coefficients are interpreted in relation to this reference situation.

Geographical Distance is measured by the distance between the buyer situation and Languedoc-Roussillon that is the seller region. We constructed three dichotomous variables indicating whether the buyer is situated in Languedoc-Roussillon (**LR**), or in a border region of Languedoc-Roussillon (**BREG**), or in a non-border region of Languedoc-Roussillon (**NBREG**), or not. The more distant from the production region is the buyer, the higher are the search and information costs. Thus, we can expect that a distance between the seller and the buyer situations will increase the likelihood of broker usage.

Geographical Dispersion of Supply is measured by the type of wine exchanged. In France, *Vins de table* and *vins de pays* differ mainly in the fact that, for the latter, an authorized production area is legally defined. Moreover, local wines are divided in three categories that differ notably in the expanse of the production area. These categories are, ranged by decreasing expanse of production area: *Vins de Pays de Région* (the authorized production area is the region)⁹, *Vins de Pays de Département* (the authorized production area is the department), and *Vins de Pays de Zone* (the authorized production area is a little geographical zone). The more expensive is the production area the higher is the geographical dispersion of supply and then the more costly is the exhaustive information on product collection. We created four dichotomous variables **VT**, **VPR**, **VPD**, and **VPZ** indicating whether the exchanged products belong, respectively, to the categorie of *Vin de Table*, *Vins de Pays de Région*, *Vins de Pays de Département*, *Vins de Pays de Zone*.

Structural Dispersion of Supply is measured by the seller type. Sellers can be independent wine growers, cooperative wineries or cooperative wineries unions. We hypothesize that when the seller is a production structure gathering a great number of producers it can propose a more varied supply than independent producers. Moreover, interviews showed that it's easier and less time consuming to visit a cooperative cellar than an independent cellar. The main reason is that cooperative cellars always have staff free to receive visitors. Thus, we argue that it is cheaper for the buyer to collect information on products of a structure that gathers several wine growers than on independent wine grower products. We created three dichotomous variables **IWG**, **COOP**, and **CU** indicating whether the seller is, respectively, an independent wine grower, a cooperative winery or a cooperative wineries union. We

⁹ In Languedoc-Roussillon, the only regional appellation for the *Vins de pays* is “Vin de pays d’Oc”.

expect that the more the selling structure gather a great number of wine growers, the higher is the likelihood of a broker intervention.

3.2.2 *Negotiation costs (Hypothesis 2)*

Negotiation costs depend on the atmosphere of the relations between negotiators and on the level of information asymmetries that exists between the parties. We identify three proxies of negotiation costs: culture closeness between buyer and seller, tensions between supply and demand on the market, and the degree of exchange complexity.

Culture Closeness is a proxy to measure likelihood of conflicts between parties. Although this situation is mitigating, French wine industry can still be characterized by a clear distinction between production and trade. Traditionally, wine growers grow vine and make wine that is then sold in bulk to merchants who are in charge of preparing the *cuvée* and bottling. Thus schematically, wine industry can be divided into two spheres – production on the one hand, and trade on the other – that don't have the same functions and the same interests. We created the dichotomous variable **MERCHANT** that indicates whether the buyer belongs to the trading sphere or to the productive sphere (the buyer can be a cooperative winery for instance). We hypothesize that if the buyer is a merchant it will increase the likelihood that the exchange will be intermediated by a broker.

Tensions between supply and demand are measured thanks to the variable *OND*. It represents the percentage of annual volume exchanged during October, November and December¹⁰. We postulate that the more buyers anticipate a low supply compared to the demand, the higher *OND* is. And we argue that if *OND* is above or under a given level, it can be interpreted as a sign of potential tensions between supply and demand which can involve an increase in negotiation costs.

OND was changed in three dichotomous variables: **OND1** which equals to 1 if *OND* is under 32%, and 0 else; **OND2** which equals to 1 if *OND* is between 32% and 36%, and 0 else; **OND3** which equals to 1 if *OND* is above 36%, and 0 else. *OND2* that is the more frequent situation (it corresponds to the second and the third quartiles) is the reference. Hence, we expect that *OND1* and *OND3* will have a positive effect of the likelihood of broker intervention.

¹⁰ October, November and December are the first months of the “*campagne*” which is the vintage year. The vintage year N/N+1 begins at N/08/01 and ends at N+1/07/31.

Exchange complexity is measured by the level of exchange heterogeneity. Transaction parties can exchange several batches in a same contract. The more the products in a same exchange are heterogeneous, the more dimensions to negotiate and the potential information asymmetries. Thus, we postulate that exchange heterogeneity is a negotiation costs proxy. We created three dichotomous variables indicating whether only one batch is exchanged (**HET1**), whether the exchange is on several batches of the same product (**HET2**), or whether several batches of different products – difference in colour, and/or type of wine, and/or price – are exchanged (**HET3**). HET1 being the reference, we expect that HET2 and HET3 will have an increasing positive effect on BROKER.

3.2.3 Opportunity costs (Hypothesis 3)

Volume of the contract is used as a proxy of opportunity costs. The higher the volume of the transaction, the more costly can be the breach of the contract. We distinguished four classes (corresponding to the quartiles of the continuous variable), volume smaller than 180 hl, between 180 hl and 350 hl, between 350 and 780 hl and higher than 780 hl. We created four dichotomous variables indicating whether the volume of the contract belongs to one class or not – respectively **VOLT1**, **VOLT2**, **VOLT3**, and **VOLT4**. We expect that an increasing volume will increase the likelihood of broker intervention.

Table 1 summarizes the propositions, the variables and the expected effects.

Table 1 – Summary of Hypotheses and variables

Hypotheses	Variables	Frequencies				Expected effect	
		Contracts	% Contracts	Volume (hl)	% Volume		
H1	BROKER	181 183	61,80%	131 634 273	66,43%		
	NON BROKER	111 977	38,20%	66 521 177	33,57%		
	LR*	211 393	72,11%	137 240 524	69,26%		
	BREG	22 710	7,75%	13 288 783	7,41%	+	
	NBREG	59 057	20,14%	46 243 233	23,34%	++	
	VT	183 898	62,73%	122 432 499	61,79%	++++	
	VPR	47 586	16,23%	25 767 853	13,00%	+++	
	VPD	47 093	16,06%	40 261 863	20,32%	++	
	VPZ	14 581	4,97%	9 691 144	4,89%	+	
	IWG*	138 120	47,11%	49 403 984	24,93%		
	COOP	111 984	38,20%	107 776 381	54,39%	-	
	CU	43 056	14,69%	40 975 085	20,68%	--	
	H2	MERCHANT	244 137	83,28%	164 665 688	83,10%	+
		NON MERCHANT	49 023	16,72%	33 489 762	16,90%	
HET1*		219295	74,80%	134 909 061	68,08%		
HET2		31 058	10,59%	25 695 974	12,97%	+	
HET3		41 807	14,6%	37 550 415	18,95%	++	
OND1		63 070	21,51%	44 268 607	22,34%	+	
OND2*		161 101	54,95%	107 621 462	54,31%		
OND3		68 989	23,53%	46 265 381	23,35%	+	
H3	VOLT1*	72 673	24,79%	6 793 278	3,43%		
	VOLT2	71 325	24,33%	18 484 529	9,33%	+	
	VOLT3	73 080	24,93%	37 764 313	19,06%	++	

VOLT4	74 182	25,30%	134 771 330	68,01%	+++
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* Indicates the reference situation

4. Model Estimation and Results

4.1 Test of Hypothesis: estimation of a logistic model

Usage of broker vs. non-broker was modelled via a logistic regression, wherein the probability of broker presence is the dependent variable¹¹.

We estimated the logit model using maximum likelihood procedure¹². The results of the estimation are presented in table 2. The coefficients can be interpreted as the effect of the realization of the situation indicated by the independent variable, compared to the reference situation, on the likelihood that the transaction will be intermediated by a wine broker. Only signs of coefficients can be interpreted. Positive coefficients imply a tendency to use a broker and negative coefficients imply a tendency to go direct. The odds ratios allow to evaluate the magnitude of the variable effect – relatively to the reference situation – on the probability of broker intervention.

Table 2 – Results of Logistic Regression

Hypotheses	Variables	Coefficients	Wald Statistic	Odds ratio
	LR	<i>Reference</i>		
	BREG	-0.3334 **	474.95	0.716
	NBREG	0.0157 ^{ns}	2.06	1.016
	VT	0.1817 **	24.4	1.199
H1	VPR	0.1068 **	7.12	1.113
	VPD	0.2342 **	309.5	1.168
	VPZ	-0.9615 **	34.13	0.343
	IWG	<i>Reference</i>		
	COOP	-0.6686 **	4401.64	0.512
	UC	-0.9571 **	5346.85	0.384

¹¹ Contrary to linear regression models, qualitative response models like logit models permit to estimate the effect of independent variables on a binary dependent variable. Moreover, within qualitative response models, results of logit models are very close and easier to interpret than probit model results (Malhotra, 1984; Amemiya, 2001).

¹² There exist alternative procedures, however maximum likelihood procedure is considered as the most robust, especially for large samples (Malhotra, 1984).

	MERCHANT	1.3691 **	14773.65	3.932
	HET1	<i>Reference</i>		
	HET2	0.0188 ^{ns}	0.23	1.019
H2	HET3	-1.0233 **	842.98	0.359
	OND1	-0.1209 **	135.44	0.886
	OND2	<i>Reference</i>		
	OND3	0.0161 ^{ns}	2.53	1.016
	VOLT1	<i>Reference</i>		
	VOLT2	0.6535 **	3292.02	1.922
H3	VOLT3	1.0203 **	7131.8593	2.774
	VOLT4	1.3471 **	10800.88	3.846
	CONSTANT	-0.8101 **	3830.43	

χ^2 (16 d.f.) = 38 378.04, p < 0.0001
Percent concordant: 69.5 %
AIC: 351569.38

** p < 0.01

^{ns} not significant

The chi-square statistic (χ^2 (16 d.f.) = 38 378.04, p < 0.0001) allows us to reject the null hypothesis that all of the estimated coefficients are jointly zero. The model correctly classifies 69.5% of the observations. Thus, the model appears to have a good prediction power.

The Wald statistic allows to estimate the significance of the coefficients. Except NBREG, HET2, and OND3, all the model variables appear to be significant (p<0.01).

Results for the test of the first hypothesis are mixed. Strikingly, geographical distance between buyer and production area doesn't appear as a determinant of broker intervention. On the one hand, if the buyer is situated in a border region of Languedoc-Roussillon, the likelihood of broker intervention decreases compared to the case of a Languedoc-Roussillon buyer. On the other hand, NBREG non-significance means that a greater distance of the buyer from the seller area doesn't have any significant effect on the likelihood of broker intervention. The effect of geographical dispersion of supply is mitigated. As we will discuss it in the next section (7) an explanation of this result is the heterogeneity of trade practices among the different production regions.

Consistent with predictions, compared to the other wines, exchanging some *vins de table* increases the likelihood of broker intervention, and exchanging *vins de pays de zone* decreases this likelihood. However, inconsistent with H1, VPR and VPD odds ratios (respectively 1.113 and 1.168) denote that exchanging *vin de pays de département* has a greater positive effect on broker likelihood than exchanging *vin de pays de région*. An explanation to this mitigated result is that we failed to consider the qualitative diversity of products into each category. Particularly, the majority (almost 80%) of *vins de pays de région* are varietal wines. Thus, we can postulate that these products are more homogeneous among the different wine growers. We argue that information costs related to a more extended production area can be compensated by a greater qualitative homogeneity.

Consistent with hypothesis 1, the likelihood of broker intervention decreases when the seller belongs to a production structure gathering several wine growers.

Consistent with hypothesis 2, the buyer belonging to the commercial sphere increases the likelihood of broker intervention.

On the other hand, contrary to our expectations, exchanging several batches of wine influence the likelihood to use a broker only if the batches are heterogeneous. And strikingly, heterogeneity has a negative effect.

Finally, proposition about the effect of tensions between supply and demand is not satisfied. Compared to the most current situation (OND2), On the one hand, when supply seems to be greater than demand, it decreases likelihood of broker intervention. On the other hand, when demand exceeds supply the effect on broker likelihood is non significant.

The third hypothesis is supported by the results. The increasing volume of the exchange raises the likelihood of broker intervention in the transaction.

4.2 Validity of Results

In order to validate results of a logistic regression, it is recommended to check if they replicate under another method. A well-accepted way to validate a logistic regression is discriminant analysis (Amemiya, 1981; Anderson, 1985). This method, though not as robust as logistic regression, consists to classify the observations of a sample in one of two groups identified – in our case, brokered or non-brokered exchanges.

A discriminant function was estimated and was found to discriminate significantly between contracts with and without broker. Moreover the signs and order of coefficients magnitude were comparable to those of the logistic function. Moreover, the discriminant function classifies correctly 67.5% of the observations (56% of non broker and 75% of broker) that is comparable to the logistic function (69.5%).

Thus, the results appear insensitive to the logistic specification and maximum likelihood estimation.

5. Discussion

Not all our hypotheses are supported by the results of the logistic regression.

The result for the geographical distance between buyer and seller is close to Trabold's result (Trabold, 2002). He empirically tests the Peng and Ilinitch's proposition according to whom "The more distant and unfamiliar the markets are, the more likely that the export intermediaries will be selected by manufacturers" (Peng and Ilinitch, 1998, p. 614). He showed that geographical distance doesn't seem to be a determinant of going through export intermediaries. However he showed that his results are more supportive when he uses psychic distance. For French wine industry, an explanation is that depending on the region where they are situated wine merchants don't have the same trade practices (Montaigne *et alii*, 1997)¹³. Thus, we estimated a model where variables indicating geographical distance were replaced by variables indicating the buyer's region. This second model appears to have a better explicative power than the first model (Percent concordant = 70.5%; AIC = 346 561.89). Moreover, the results were consistent with hypotheses we made about usage of wine brokers by region. Thus, we postulate that there exists a cultural dimension in using a broker. However, the transaction costs analysis framework fails to take into consideration this cultural dimension that is more considered in sociological literature on institutions with concept of embeddedness (Granovetter, 1985).

A second intriguing result is the negative effect of contract heterogeneity on the likelihood of broker intervention. An explanation is given by Wall (1984). He argues that when the negotiation environment is complex particularly when there are a great number of issues on bargaining, it can reduce the mediation efficiency. When the environment is complex, introducing a third party in the negotiation can render much

¹³ For instance in Bordeaux and in Burgundy, merchants traditionally use brokers services whereas Languedoc-Roussillon merchants tend to appeal less to these intermediaries.

more complex the negotiation. Thus, in case of wine, the more the contract is heterogeneous, the greater the number of negotiated issues, and then the less the broker is effective in reducing negotiation costs.

Another striking result is the effect of OND on the likelihood of broker intervention. The hypothesis about the broker ability of facilitating negotiation when there are tensions between supply and demand is not supported. Moreover the negative coefficient of the variable indicating an excess of supply compared to demand can be interpreted as the sign that wine brokers only intervene at buyers request, which can question the neutrality of these agents. However an explanation of this phenomenon is that French bulk wine market is guided by demand. Generally buyers initiate exchanges.

6. Concluding remarks

To the best of our knowledge, this work is the first to address the question of broker intervention in wine transactions. It aimed at identifying the determinants of broker intervention in wine exchanges.

The framework based on transaction costs analysis we developed allowed us to show that some parties and transaction characteristics influence the likelihood of broker intervention. The non-belonging of the sellers to a cooperative production structure has a positive effect. For the buyers, belonging to the productive sphere reduces the recourse to broker services. Also, the extent of production area and the potential quality variance among wine growers appear to be determinant in the recourse to brokers. Finally, the volume of the contract is positively related with the likelihood of broker intervention. On the other hand, our results seem to show that geographical distance, heterogeneity of contracts and tensions between supply and demand are not determinants of wine broker intervention.

Also, it is interesting to note that our results permit to partly explain the presence of brokers in certain buyer-seller long-term relationships. Brokers are mainly presented as efficient devices for matching buyer and sellers (Yavas *et al.*, 2001) but within the framework of long-term relationships the matching function becomes useless. First, to a certain extent, brokers can be considered as reducing negotiation cost devices. Due to market instability, long-term contracts for bulk wine remain incomplete. Thus, broker can intervene as mediator in annual negotiations. A second explanation for intervention of brokers in long-term relationships is that they seem to be perceived as efficient devices for guarantying transaction achievement. As

mediators they can help parties to adjust and solve conflicts. Thus, brokers can be considered as mechanisms guarantying relationship continuity.

6.1 Limitations

One limitation of this work appears in the choice of transaction costs analysis framework. As we concluded from our discussion, this framework fails to consider the embeddedness of institutions in an historical, social, and cultural context.

Another limitation stems from the kind of procedure and data we used to test our empirical hypotheses. Procedures of estimation are based on the choice of proxies of theoretical concepts (here transaction costs). Thus, the choice of these proxies can be questioned. And, even if we tried to reduce it by using multiple measures, measurement error is always a possibility. Concerning the data, the database we used has been created in order to follow the evolution of markets (prices, volumes, ...) and not to analyse the organizations. This is the reason why, information about parties to the exchanges are limited. For instance, as far as we cannot identify the parties, we were not able to estimate the frequency of exchanges between two parties.

6.2 Suggestions for further research

Two main avenues for further research seem to be especially interesting. One is the enlargement of the study of wine brokers in other wine producing countries. A survey conducted on the distribution channels used by Australian wineries showed that these firms appeal to brokers to help them to sell their wine on the domestic and on the foreign markets. It would be interesting to study more precisely the functions and the practices of these intermediaries in order to compare them to French wine brokers.

Another avenue for research is a detailed analysis of the role of brokers, and more generally of a neutral third party, in the creation, maintenance and even breach of long-term relationships between wine growers and merchants. More precisely, it emerges from the interviews we conducted with actors of the wine industry that brokers intervene even if there exists a long-term contract.

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