Team versus Individual Reputations:  
a Model of Interaction and  
some Empirical Evidence

Olivier Gergaud and Florine Livat*

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Abstract

How do individuals, goods or services through their own reputation give birth to a group’s reputation and conversely how do they take advantage of this group’s reputation? Do they contribute to (derive benefit from) the group’s reputation in proportion to their individual reputation or in a different way? To address these questions we analyze a simple theoretical situation in which an individual with an intermediate reputation level can choose between a position of follower in a first-rank organization and a position of leader in a second-rank organization. In this model collective reputation both determines and is determined -simultaneously- by individual reputations as suggested by Tirole (1996). Then, the theoretical model is applied to the case of Bordeaux wines from a rich dataset on individual quality opinions.

Key Words: Individual Reputation, Collective Reputation, Bordeaux wines.

JEL Classification: L15 - L66 - Z13
1 Introduction

To what extent do individual reputations such as those of Saint-Emilion, Margaux, Côtes-de-Bourg, Entre-deux-mers, etc. explain and are explained by the collective reputation of Bordeaux wines? More generally, how do individuals or things through their own reputation give birth to a group's reputation and conversely how do they take advantage of this group's reputation? How do the different kinds of reputation interact? Do they contribute to (derive benefit from) the group's reputation in proportion to their individual reputation or in a different way? Is a position of follower in a first-rank organization more or less efficient than a position of leader in a second-rank organization? What is the optimal strategy to maximise both individual and collective reputations?

These question are relevant given the major role played by reputation in daily life as recognized by F. von Hayek (1948, ch.V, p.97) and Marshall (1949, vol.4, xi)\(^1\) but also in professional life. Indeed, a firm’s good reputation attracts clients, and often leads to higher prices\(^2\) and larger profit margins while a good individual’s reputation can lead to better careers (see Levin, 2001; Tadelis, 2002 and 2003 among others). For Andersson (2002), the reputation phenomenon concerns many experience goods or services, the quality of which is difficult to ascertain at reasonable cost before consumption. As suggested by Shapiro (1983), by reputation, we mean expected quality assessments by peers or consumers. For this author, "a firm has a good reputation if consumers believe its products to be of high quality" (p. 659) and the phenomenon arises when information about quality is imperfect.

To address these questions we analyze a simple theoretical situation in which an individual with an intermediate reputation level can choose between a position of follower in a first-rank organization and a position of leader in a second-rank organization. In this model collective reputation both determines and is determined -simultaneously- by individual reputations as suggested by Tirole (1996). However, while Tirole’s model studies the joint dynamics of individual and collective reputations, our approach here is static, given the nature of our data\(^3\). More generally, this model has

\(^1\)Cited by Klein and Leffler (1981).

\(^2\)An important set of applications of the Hedonic Price Method to wines agree on the existence of a strong and positive relationship between the firm’s individual reputation and the bottle price (see among others Landon and Smith, 1998).

\(^3\)This assumption seems reasonable given the strong inertia that characterizes the reputation phenomenon. Indeed, reputation polls or surveys are generally conducted every two or three years only.
strong connections with the umbrella branding literature\(^4\) (see Andersson, 2002 for a recent and more detailed survey). In this literature, a collective brand or name may act as a quality signal through image spillovers which create reputation linkages among various firms or individuals (Choi et al., 1995). In this context, individual incentives are associated with the group’s ones, which provides a strong commitment to maintain a high quality level for each product and could in turn serve as a competitive advantage. Actually, the possibility for consumers of identifying a range of products with the group can provide the firm substantial economies of scope. Andersson (2002) shows that the profits made by a firm carrying a pooled reputation for producing two goods of high quality are ”not smaller” than the sum of the profits of two separate firms producing each a high quality good and carrying its own individual reputation\(^5\). Wernerfelt (1988) demonstrates that brand extension is efficient only when all the products under the umbrella are of good quality and therefore contribute to the umbrella’s reputation\(^6\). Brand extension practices, and more generally bundling a product of established quality to one of unknown quality, can also be seen as a mechanism for informational leverage in which a firm leverages off a good’s reputation in one market to mitigate the problem of informational asymmetry encountered in other markets (Choi, 1998; Choi, 2003).

This paper also proposes an empirical strategy to assess both umbrella impacts (the impact of a collective reputation on a given individual reputation) and contributions to the umbrella (the contrary). Empirically, the notion of collective reputation has received less attention. Erdem (1998) finds for oral-hygiene products that ”consumers expect the quality levels of products that are umbrella branded to be correlated highly”. Sullivan (1990) provides empirical evidence for the existence of positive and negative image spillovers between the demand for products sold under the same brand name in the case of automobiles. Jarrell and Peltzman (1985) assess the effect of a product recall on the demand for this product and on the one for its

\(^4\)In the umbrella branding literature, collective reputation effects are analysed from the multi-product firm point of view. It is also often concerned with a more specific issue: brand extension, i.e. the use of an established brand name to launch a product in a new market in order to reduce the introductory costs (Tauber, 1988).

\(^5\)This result holds if and only if the firm has produced in the past a high quality product (credibility constraint).

\(^6\)For Wernerfelt (1988, p.459), by branding a new product, the firm does two things: it claims that both the old and the new product are of good quality, and it invites consumers to pool their experience with the two products to infer both qualities. The author shows that, in equilibrium, only firms producing good quality actually choose to use the umbrella branding strategy.
substitutes in the case of drugs and cars. The responsible producer bears losses greater than the strict recall costs because of a loss of goodwill, and those losses spill over to competitors. Because of a negative externality, any favorable effect of a recall on the demand for substitutes is swamped by a more general negative effect on the industry. A comparable effect is examined by Borenstein and Zimmerman (1988) in the case of airlines. They find that demand losses resulting from a specific crash affect the involved airline as well as competing airlines.

Here, the model is applied to the case of Bordeaux wines. Evaluating the quality of a wine requires considerable effort (i.e. is very costly), and is mainly subjective; the good we are considering here consists mostly of what economists call experience and credence characteristics\(^7\), that is to say characteristics that are respectively discovered or not discovered after the product has been consumed.

The dataset used concerns 124,000 different wine quality opinions collected during the year 2001\(^8\) from 6,394 consumers in seven European countries: Belgium, Denmark, Germany, France, The Netherlands, Switzerland, United-Kingdom. Information is available about the quality of Bordeaux wines in general (the umbrella) and a large set of nine -theoretically- related appellations such as Saint-Emilion, Margaux, Médoc, etc.

The originality of this application regarding the existing ones is fourfold as follows: (i) it concerns a large set of products, (ii) it concerns different countries, (iii) it allows a distinction between connoisseurs and non-connoisseurs, (iv) it estimates simultaneously umbrella impacts and contributions to the umbrella\(^9\).

The layout of the paper is as follows. Section 2 develops the model, Section 3 presents the data, Section 4 describes the empirical strategy, Section 5 contains the results and Section 6 concludes.

## 2 The Model

The model discussed in this section appears under the form of two static simultaneous equation systems in which individual reputations influence and are influenced by a single collective reputation. In this model, a distinction

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\(^7\)The two concepts of search good and experience good were introduced by Nelson (1970, 1974). The notion of credence good was introduced later by Darby and Karni (1973).

\(^8\)Source : Sociovision / Comité Interprofessionnel des Vins de Bordeaux.

\(^9\)By lack of appropriated data essentially, brand reputation is used in a majority of applications as an exogenous variable (to assess umbrella impacts). Very few applications estimate both contributions to the umbrella and umbrella impacts.
is made between expected quality and reputation. The former is used at an individual level and the latter at an aggregate level. This distinction is particularly helpful when available data are microdata concerning individual opinions on quality. The expected quality notion used here is close to the one of perceived quality defined by Zeithaml (1988, p.3). According to this author, quality can be defined as superiority or excellence. By extension, perceived quality can be defined as the consumer’s judgment about a product’s overall excellence or superiority.

In a population of $I$ individuals $(i = 1, ..., I)$, expected quality for a good, a service or an individual $j$ $(j = 1, ..., J)$ is a set of $I$ idiosyncratic quality opinions/beliefs:

$$q^e_j = (q^e_{1j}, ..., q^e_{ij}, ..., q^e_{Ij})'$$

(1)

Identically, expected quality for a multi-product brand $U$, an umbrella, is a set of $I$ idiosyncratic quality opinions/beliefs:

$$q^e_U = (q^e_{1U}, ..., q^e_{iU}, ..., q^e_{IU})'$$

(2)

At a disaggregated level (for an individual $i$), our opinion about the group’s level of quality $(q^e_U)$ is not necessarily an arithmetic average, but more likely a weighted average of our opinions concerning the quality of the fellows $(q^e_{1i}, ..., q^e_{ij}, ..., q^e_{ij})$. Conversely, at an aggregated level (for the $I$ individuals), reputation levels\(^{10}\) are simple arithmetic averages of the various individual opinions/beliefs $q^e$:

$$R = \frac{1}{I} \sum_{i=1}^{I} q^e_i$$

For easier comprehension, we analyze a simple situation in which an individual $j = 2$, with reputation level $R_2$, can choose between a position of follower (F) in a first-rank organization $U$ (System 1) and a position of leader (L) in a second-rank organization $u$ (System 2). In this frame $R_U > R_u$. We consider two other individuals $j = 1$ and $j = 3$ with reputation levels $R_1 > R_3$. We also assume that: (a) $j = 1$ is a member of $U$, (b) $j = 3$ belongs to $u$, (c) $j = 2$ is a follower in $U$ and a leader in $u$ and (d) $j = 2$ has an intermediate reputation level : $R_1 > R_2 > R_3$. The subscript $i$ is omitted in what follows for convenience.

System 1: “$j = 2$ is a follower in a first-rank organization $U”$:

$$
\begin{align*}
q^e_U &= \alpha_U + \beta_U X_U + \gamma_1 q^e_1 + \gamma_2 F q^e_2 + \varepsilon_U \\
q^e_1 &= \alpha_1 + \beta_1 X_1 + \delta_1 q^e_{1U} + \varepsilon_1 \\
q^e_2 &= \alpha_F + \beta_F X_2 + \delta_F q^e_{1U} + \varepsilon_F
\end{align*}
$$

\(^{10}\)These reputation levels are those contained in surveys and polls results.
System 2: 

\[ q_u^e = \alpha_u + \beta_u X_u + \gamma_L q_L^e + \gamma_3 q_3^e + \varepsilon_u \]

\[ q_L^e = \alpha_2 + \beta_L X_2 + \delta_L q_u^e + \varepsilon_L \]

\[ q_3^e = \alpha_3 + \beta_3 X_3 + \delta_3 q_u^e + \varepsilon_3 \]

\( \alpha, \beta, \gamma, \delta \) are parameters to be estimated, \( \varepsilon \) a set of error terms. \( \alpha \)'s are constant terms. \( \gamma \)'s are weights for the contribution of each member’s to the umbrella’s reputation (contribution to the umbrella or CU in what follows). \( \delta \)'s are also weights relating the influence of the umbrella on each individual reputation (umbrella impact or UI in what follows). \( X \)'s are exogenous variables vectors: a set of perceived personal characteristics. Figure 1 summarizes the main interactions existing between individual and collective reputations in both systems:

Assumptions: \( R_1 > R_2 > R_3 \) and \( R_U > R_u \)

In this context, the key question for \( j = 2 \) is to choose the right institution, the one that will maximize his/her own reputation level, all other things equal, that is to say given the vector \( X_2 \). For this, he/she has to imagine whether UI will be higher with the umbrella \( U \) or \( u \), i.e. whether \( \delta_U q_u^e \) is greater, lesser than or equals to \( \delta_L q_u^e \). When referring to a Julius Caesar’s famous quotation (“As far as I’m concerned I would rather be first in a little Iberian village than second in Rome”), one could expect UI to be greater for \( j = 2 \) with \( u \) rather than with \( U : \delta_U q_u^e < \delta_L q_u^e \). Within each organization
now, this could suggest firstly that $\delta_1 > \delta_F$ and secondly that $\delta_L > \delta_3$. The following hypothesis generalizes this intuition:

**Hypothesis 1:** The higher the individual reputation level ($R$), the greater UI ($\delta$), i.e. the intensity with which an individual or a product derives benefits from the group’s reputation.

Another interesting point will be to determine whether the relationship between $\delta$ and $R$ is linear or not; whether UI increases with reputation level proportionally, less than proportionally or more than proportionally.

Conversely, an institution may wonder how its fellows give birth to its own reputation. *A priori*, it is tempting to believe that within System 1, $\gamma_1 > \gamma_F$ and that within System #2, $\gamma_L > \gamma_3$. Hypothesis 2 is a generalization of this idea:

**Hypothesis 2:** The higher the individual reputation level ($R$) the greater CU ($\gamma$), i.e. the intensity with which an individual or a product contributes to the group’s reputation.

Here again, a point of interest will be to check whether the relationship between $\gamma$ and $R$ is linear or not.

## 3 The data

The data are survey data collected during the year 2001 in several European countries: Belgium (1028 wine consumers), Denmark (613 wine consumers), Germany (1133 wine consumers), France (819 wine consumers), The Netherlands (1258 wine consumers), Switzerland (584 wine consumers), United-Kingdom (959 wine consumers). As a whole, 6394 individuals have been surveyed. Table 1 shows some sample characteristics and Table 2 gives details on the wine-drinking habits (see Appendix 1).

The data mainly concern their opinion on the quality of Bordeaux wines in general (BDX) and on a series of nine more specific categories of Bordeaux wines: Médoc (MDC), Entre-deux-mers (E2M), Graves (GR), Bordeaux Supérieur (BSUP), Saint-Emilion (SEM), Margaux (MGX), Côtes de Bourg (CBG), Premières côtes de Bordeaux (PCB) and Sauternes (SAUT). During the survey, people were firstly invited to give their opinion on French wines in general (Bourgogne, Côtes du Rhône, Alsace, Bordeaux, etc.) and

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12 In this survey wine consumers drink wine at least once a quarter.
only in a second step on the preceding Bordeaux wines appellations. Let’s make clear that BDX is a natural umbrella for these nine appellations (see Figure 2).

Table 3 (see Appendix 1) relates some summary statistics concerning the reputation and goodwill levels for these appellations. For goodwill, people had to tell whether Yes (1) or No (0) they knew appellation \( j \). For reputation, people had to answer whether they considered (1) or not (0) appellation \( j \) as a high quality one. Table 4 (see Appendix 1) indicates how, on average, people see each appellation and whether or not the appellation has been tasted during the last 12 months. The wine may be perceived as ”Trendy”, ”Ordinary”, ”User-friendly”, ”Formal”, ”Simple”, ”May be tasted apart from meal”, ”Easy to drink”, ”Complicated”, ”Will never buy”, ”Inspire confidence”, ”Expensive”, ”Traditional”, ”Pleasure”, ”Festive”. All these items or idiosyncratic characteristics are dummies, which take the value 1 when the consumer considers that the appellation has the so-called characteristic, otherwise 0.

4 The empirical strategy

In the case of Bordeaux wines we have 9 appellations under a single umbrella (Bordeaux) and therefore a simultaneous system made of 10 reputation equations. Here, the 10 dependent variables \( q^e \) are all binary: ”appellation \( j \) is a high quality one” (Yes = 1 ; No = 0). The appropriate estimation procedure in this case is the —inefficient but consistent— two-stage probit procedure (see Maddala, 1983: 245-247, model 6) even if a linear instrumental variable procedure such as 2SLS seems reasonable given that our sample is large (6394 observations). Indeed, for Angrist (1991) linear IV estimators perform
nearly as well as the correctly specified maximum likelihood estimator, especially in large sample. We also tried a MLE bivariate probit procedure to assess umbrella impacts (see Wooldridge, 2002, 477-478 for details on this procedure and Evans and Schwab, 1995 for an application). The results are actually very close to those obtained from 2SP. Our empirical strategy is very similar to the one implemented by Chun and Oh (2002) in a study of the effect of fertility on the labour force participation of married women\textsuperscript{13} and is as follows:

In the first stage, the reduced-form equations are estimated for the binary choice variables using OLS instead of probit ML as suggested by Angrist and Krueger (2001). The parameters from the reduced-form equations are then used to generate a predicted value for each endogenous variable. Then the structural equations are estimated during the second stage via probit ML analysis. This approach produces consistent estimates but inaccurate standard errors. Their correction being actually very difficult in practice, a solution -adopted here- is to use the consistent two-stage probit estimates along with bootstrapped standard errors\textsuperscript{14}.

All the instruments used in the first stage are exogenous variables correlated with the endogenous variables. The instrument list for the 9 appellations includes three items —”Pleasure”, ”Festive” and ”Traditional”—, level of goodwill and the following vectors: socio-economic characteristics, knowledge in wine, wine-drinking habits. Only the items concerning appellation \textit{j} are then used\textsuperscript{15}. Moreover, the three items listed above are not used to predict \(q_{BDX}\) given that, for instance, the pleasure one has with Bordeaux wines may come from Saint-Emilion, Margaux, etc. The correlation coefficients for the reduced form equations range between 0.1349 (Bordeaux) and 0.3944\textsuperscript{16}.

Once estimated, all the \(\gamma\)’s and \(\delta\)’s plus their respective -bootstrapped- standard errors are gathered in a new dataset. This is from this dataset that hypotheses 1 and 2 are tested.

\textsuperscript{13}At the exception that standard errors are not bootstrapped in their application.

\textsuperscript{14}The bootstrap is a nonparametric alternative approach for estimating the standard errors when the theoretical calculation is either complicated or impossible (see Efron, 1979 and Efron and Tibshirani, 1993).

\textsuperscript{15}The number of variables would have been enormous otherwise.

\textsuperscript{16}The distribution is as follows: \(R^2\) between 0.10 and 0.20: 2 instances ; \(R^2\) between 0.20 and 0.30: 4 ; \(R^2\) between 0.30 and 0.40: 4.
5 The results

The simultaneous system is estimated first on the full sample (6394 obs.) and then country by country\(^\text{17}\). The first procedure generates a limited number of 9 $\gamma$ and 9 $\delta$ coefficients\(^\text{18}\) while the second produces a larger set of 43 $\gamma$ and 43 $\delta$ coefficients\(^\text{19}\). In what follows, an appellation $j$ is said to contribute to (take advantage of) the collective reputation of Bordeaux wines when $\gamma$ ($\delta$) is significant at the 10% level.

The full sample results show six beneficiaries of the umbrella (Bordeaux Supérieur, Entre-deux-Mers, Médoc, Saint-Emilion, Margaux, Premières Côtes de Bordeaux) and only one contributor to the umbrella (Bordeaux Supérieur). The country by country results find the same beneficiaries but three contributors -Saint-Emilion, Margaux and Bordeaux Supérieur as shown in Figure 3. At first glance, the result is quite surprising for Bordeaux Supérieur which is not very well-known (level of goodwill inferior to 3%). However, finding a strong statistical link between Bordeaux Supérieur and Bordeaux is not so abnormal if one refers to the words composing its name: ”Bordeaux” on the one hand and ”Supérieur” on the other hand which clearly suggests an idea of high quality and a link with Bordeaux.

\(^{17}\)First stage estimates generated from the full sample are used here.

\(^{18}\)Estimation results for the simultaneous system on pooled data are available from the authors upon request. Only Bordeaux, Saint-Emilion, Bordeaux Supérieur, Margaux, Médoc and Entre-deux-Mers equations are estimated over the 7 European countries, i.e. on the full sample. The other appellations concern a more reduced set of countries: CBG is only available for France, SAUT is documented for France and Switzerland, GR concerns The Netherlands and PCB is for Belgium, United-Kingdom, Germany and Denmark.

\(^{19}\)The results for the 43 reputation equations are also available from the authors upon request.
In this figure an arrow indicates that a given appellation has a reputation linkage with Bordeaux. More precisely, when an arrow comes from Bordeaux, it means an UI and reciprocally when an arrow goes to Bordeaux it symbolizes a CU. When an appellation both contributes to and takes advantage of the umbrella, it is said to be in the "core" of the system. It is considered as a "free-rider" where it only takes advantage of and does not contribute to the umbrella. At last, when no reputation linkage is found, the appellation is said to be "non-related" to the umbrella.

In this application, the related appellations get, on average, a higher level of reputation than the non-related appellations (18.8% and 16.6% respectively). This suggests a positive relationship between "level of reputation" on the one hand, "UI" and "CU" on the other hand. These results are confirmed by Graphs 1 and 2:
Graph 1: Contribution to the Umbrella and Reputation level

Contribution to the Umbrella (z-stat)

Reputation level

-2  -1  0  1  2  3  4

-2  -1  0  1  2  3  4

sem  bsup  mgx  sem  bsup

e2m  e2mdc  mgx  sem  sem

mdc  bsup  sem  mdc  sau

pcb  mdc  sem  mdc  mdc

sau  pcb  mdc  sem  mdc

m2m  m2mdc  m2mdc  m2mdc  m2mdc
We use thereafter $z_\gamma$ ($\gamma$’s $z$-stat) instead of $\gamma$ as a proxy for CU. Identically, we use $z_\delta$ ($\delta$’s $z$-stat) instead of $\delta$ as a proxy for UI\textsuperscript{20}. Two Pearson correlation coefficients calculated between CU and ”Reputation” on the one hand (0.38) and between UI and ”Reputation” on the other hand (0.32)\textsuperscript{21} strengthens the idea of a positive relationship between these variables.

The fact that some $\gamma$’s and $\delta$’s are significantly different from zero while others are not indicates that these relationships are not linear and that only the strongest individual reputations really take advantage of and contribute to the group’s reputation. These prime results are emphasized by two Box-Cox analysis:

Box-Cox regressions both exhibit a positive and significant relationship between CU, UI on the one hand and ”Reputation” on the other hand as suggested above by hypotheses 1 and 2. Interestingly, we get a non-linear relationship for the regression between UI and ”Reputation” as suggested by the acceptance of a value of $\lambda = 0$ and the rejection of $\lambda = 1$. This informs

\textsuperscript{20} The results are quite similar when using the coefficients instead of their $z$-stat.

\textsuperscript{21} Both coefficients are significantly different from 0 at the 5% level.
us that the relationship is concave -of the logarithmic form- and that UI is increasing with the reputation level but at a decreasing rate. This result is in line with the fact that, above a given threshold, an individual has an incentive to leave his/her group for a more famous organization. Conversely, the relationship between CU and "Reputation" is not proved to be other than linear ($\lambda = 1$ is accepted at the 1% level, the other assumptions being clearly rejected by the data). This result reinforces the idea that a group’s collective reputation level is simply a weighted average of its most famous members’ individual reputations. This is in accordance with the fact that only a limited number of $\gamma$ coefficients has revealed to be significantly different from zero.

As suggested by a kmeans cluster partition analysis on reputation level, UIs can be dispatched into two distinct plots (see Appendix 2, Graph. A2). The first (second) one concerns every appellations with a reputation level below (above) 20%. This reputation threshold refers to the appellation (here Médoc) benefiting from the greatest UI ($z_{\delta \text{ max}}$). Below this threshold, we get only 4 significant UIs out of 27 when retaining a 10% significance level, that is to say only 14.8%. The conclusion is that in this area, individuals (appellations here) do not take advantage of the umbrella, or very few of them. The situation is very different above this threshold, with 8 significant UIs out of 16 coefficients, i.e. 50%. In this area the plot exhibits a U-shape (see Graph. 2 above) as confirmed by the degree of significance of the square of reputation in a regression of $\delta$ on reputation and the square of reputation among others (see Table 6, Appendix 1).

These results introduce the idea of an optimal rank in terms of individual reputation for which UI is maximum (the optimal rank is 16th out of 43 in the present case). For lesser ranks the benefit is nearly 0; suggesting that individuals would be better off leaving the organization for another one in which he/she would have a more favourable rank -we mean a better rank- associated with a significant and positive UI. For better ranks, there also exists an incentive to leave the institution. Above this threshold, the UI decreases sharply to become non-significant for reputation levels ranging from 28% to 45%. UI increases above 45% as indicated by the significance of Saint-Emilion (U-shape). Surprisingly, the leader does not get the greatest benefit from its umbrella. The reason is likely that their own characteristics are ever well perceived by consumers who do not need any additional signal to infer the leader’s level of quality. The leader thus has an incentive to reach another group in which it would get a more favourable rank, i.e. a lesser one. A conclusion could be that a position of leader in a given institution is not the best option and that a position of follower in another institution is preferable. The applicant should however keep in mind that the weakest members do not take advantage of the group’s reputation.
The overall results indicate that one has rather be among the leaders than among the followers. Indeed, in the present case there is a 1/2 chance to get a positive and significant UI among the leaders against only a 1/6 chance among the followers. However, to get the maximum impact one has to be a follower among the leaders.

5.1 Non-connoisseurs versus connoisseurs

The goal here is to determine whether the collective reputation phenomenon is essentially due to connoisseurs, to non-connoisseurs or both. Do non-connoisseurs make a greater use of the umbrella than connoisseurs or not? To address this question, we re-estimate the model on two distinct sub-samples and always country-by-country: from data relative to non-connoisseurs opinions firstly (67.02%) and to connoisseurs opinions secondly (32.16%)\(^2\). This generates two distinct sets of 43 \(\gamma\) and 43 \(\delta\) coefficients. Figure 4 summarizes the results:

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\(^2\)The non-connoisseurs category includes the following consumer types: no knowledge, very limited knowledge and novice while the connoisseurs one relates to fairly-knowledgeable wine-lover, knowledgeable wine-lover and expert types.
de Bordeaux: two appellations explicitly related to Bordeaux and reflecting clearly the idea of a high quality through their name ("Supérieur" and "Premières"). Conversely, connoisseurs do not use intensively the umbrella. For them, Bordeaux is just synonymous with Médoc, the region where the famous first-growths châteaux such as Lafite-Rothschild or Latour are located and with Margaux, a subset of Médoc.

6 Conclusion

In the case of Bordeaux wines, reputation linkages have been detected between the natural umbrella Bordeaux and several of its sub-appellations such as Saint-Emilion, Bordeaux Supérieur and Margaux. The empirical analysis also indicates that Bordeaux as an umbrella has a limited efficiency given that several appellations such as Côtes de Bourg, Graves and Sauternes among others are not even connected to Bordeaux wines in consumers’ mind.

This result is in line with a recent diagnosis of M. TROCARD, Director of the Comité Interprofessionnel des Vins de Bordeaux (CIVB). According to him, ”Bordeaux” as an umbrella is not strong enough to compete with the new world wines (Australia, California, Chile, New-Zealand, etc.); and this is the reason why he decided to advertise ”Bordeaux” twice more in 2002 than in 2001. Another strategy should be to communicate more on the link between ”Bordeaux” and some appellations such as Graves, Côtes de Bourg and Sauternes which do not appear significantly as Bordeaux wines in consumers’ mind.

This study suggests that a group’s reputation is a simple computation of its most famous members’ reputation and that only the leaders derive benefits from and contribute to the umbrella. In the present application, there is a 1/2 chance to get a positive and significant umbrella impact among the leaders against only a 1/6 chance among the followers. However, to get the maximum impact one has to be a follower among the leaders.

7 References


23In the present case, the followers do not contribute to the umbrella’s reputation, but do neither depreciate it anyway.


Appendix 1:

Table 1: Sample characteristics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Proportion (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>46.2</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>51.21</td>
<td></td>
</tr>
</tbody>
</table>

Socio-professional category:
- Upper-class: 21.63
- Middle-class: 60.65
- Lower-class: 17.18
- No answer: 0.54

Knowledge in wine:*
- Expert: 0.69
- Knowledgeable wine-lover: 3.3
- Fairly-knowledgeable wine-lover: 28.17
- Novice: 18.69
- Very limited knowledge: 33.52
- No knowledge: 14.81
- No opinion: 0.82

* As perceived by consumers.

Table 2: Wine-drinking habits (% of consumers)

<table>
<thead>
<tr>
<th>Consumption frequency</th>
<th>Red wine</th>
<th>White wine</th>
<th>Rosé wine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>11.9</td>
<td>2.74</td>
<td>1.39</td>
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<td>Weekly</td>
<td>26.48</td>
<td>19.44</td>
<td>7.57</td>
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<td>Monthly</td>
<td>27.31</td>
<td>30.97</td>
<td>13.17</td>
</tr>
<tr>
<td>Quarterly</td>
<td>13.83</td>
<td>20.24</td>
<td>13.06</td>
</tr>
<tr>
<td>Exceptionally</td>
<td>9.37</td>
<td>15.56</td>
<td>27.79</td>
</tr>
<tr>
<td>Never</td>
<td>10.68</td>
<td>10.62</td>
<td>36.29</td>
</tr>
<tr>
<td>Do not know</td>
<td>0.43</td>
<td>0.44</td>
<td>0.73</td>
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</table>
### Table 3: Goodwill and Reputation levels

<table>
<thead>
<tr>
<th>Appellation</th>
<th>Goodwill %</th>
<th>Rank</th>
<th>Reputation %</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bordeaux</td>
<td>33.95</td>
<td>1</td>
<td>50.08</td>
<td>1</td>
</tr>
<tr>
<td>Bordeaux Supérieur</td>
<td>2.74</td>
<td>7</td>
<td>25.21</td>
<td>3</td>
</tr>
<tr>
<td>Entre-deux-mers</td>
<td>2.6</td>
<td>8</td>
<td>7.65</td>
<td>9</td>
</tr>
<tr>
<td>Médoc</td>
<td>3.63</td>
<td>4</td>
<td>21.14</td>
<td>5</td>
</tr>
<tr>
<td>Graves</td>
<td>3.52</td>
<td>5</td>
<td>19.32</td>
<td>6</td>
</tr>
<tr>
<td>Saint-Emilion</td>
<td>10.12</td>
<td>2</td>
<td>25.6</td>
<td>2</td>
</tr>
<tr>
<td>Margaux</td>
<td>3.14</td>
<td>6</td>
<td>19.21</td>
<td>7</td>
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<tr>
<td>Côtes de Bourg</td>
<td>2.08</td>
<td>9</td>
<td>7.57</td>
<td>10</td>
</tr>
<tr>
<td>Prem. Côtes de Bord.</td>
<td>1.58</td>
<td>10</td>
<td>13.85</td>
<td>8</td>
</tr>
<tr>
<td>Sauternes</td>
<td>4.1</td>
<td>3</td>
<td>23.02</td>
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</tbody>
</table>

### Table 5: Box-Cox analysis between umbrella impact, contribution to the umbrella and reputation level

<table>
<thead>
<tr>
<th>Country</th>
<th>Umbrella Impact Coef.</th>
<th>Chi-squared</th>
<th>Contribution to the umbrella Coef.</th>
<th>Chi-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>dropped</td>
<td>-</td>
<td>dropped</td>
<td>-</td>
</tr>
<tr>
<td>Germany</td>
<td>0.289</td>
<td>0.811</td>
<td>0.594</td>
<td>0.964</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.585</td>
<td>2.418</td>
<td>0.847</td>
<td>1.429</td>
</tr>
<tr>
<td>Belgium</td>
<td>1.097</td>
<td>9.603***</td>
<td>0.020</td>
<td>0.001</td>
</tr>
<tr>
<td>Switzerland</td>
<td>0.151</td>
<td>0.201</td>
<td>0.640</td>
<td>0.991</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.230</td>
<td>0.478</td>
<td>0.349</td>
<td>0.307</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>-0.076</td>
<td>0.062</td>
<td>0.147</td>
<td>0.064</td>
</tr>
<tr>
<td>Reputation level</td>
<td>3.024</td>
<td>9.845***</td>
<td>4.975***</td>
<td>7.707</td>
</tr>
<tr>
<td>Constant</td>
<td>0.045</td>
<td>-</td>
<td>1.170</td>
<td>-</td>
</tr>
</tbody>
</table>

Value of $\lambda$:
- $\lambda = -1$: 29.30 (0.000) 69.01 (0.000)
- $\lambda = 0$: 2.44 (0.118) 15.03 (0.000)
- $\lambda = 1$: 5.57 (0.018) 0.00 (0.980)

Number of observations 43
LR (d.o.f.) 19.51 (7) 9.10 (7)
P-value 0.007 0.246

***, **, * Significantly different from 0 at the 1, 5 and 10% level respectively.

$Z$-stats considered for umbrella impact and contribution to the umbrella.
Table 4: How do people perceive Bordeaux wines? (% of answers)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Tasted during the last 12 months</td>
<td>23.55</td>
<td>10.15</td>
<td>7.77</td>
<td>18.63</td>
<td>7.6</td>
<td>20.55</td>
<td>5.86</td>
<td>4.72</td>
<td>4.69</td>
</tr>
<tr>
<td>Trendy</td>
<td>25.88</td>
<td>14.81</td>
<td>6.88</td>
<td>13.98</td>
<td>20.75</td>
<td>16.77</td>
<td>9.43</td>
<td>3.79</td>
<td>6.7</td>
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<tr>
<td>Usual</td>
<td>5.71</td>
<td>4.72</td>
<td>6.83</td>
<td>5.4</td>
<td>17.73</td>
<td>2.64</td>
<td>1.64</td>
<td>7.94</td>
<td>2.3</td>
</tr>
<tr>
<td>User-friendly</td>
<td>19.28</td>
<td>10.81</td>
<td>5.77</td>
<td>10.01</td>
<td>14.15</td>
<td>11.46</td>
<td>6.52</td>
<td>7.69</td>
<td>5.52</td>
</tr>
<tr>
<td>Formal</td>
<td>24.51</td>
<td>13.09</td>
<td>6.47</td>
<td>11.96</td>
<td>15.9</td>
<td>14.48</td>
<td>14.42</td>
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<tr>
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<td>7.98</td>
<td>6.99</td>
<td>7.77</td>
<td>16.7</td>
<td>6.04</td>
<td>2.38</td>
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<tr>
<td>May be tasted apart from meal</td>
<td>21.94</td>
<td>11.18</td>
<td>6.3</td>
<td>10.12</td>
<td>17.65</td>
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<td>5.55</td>
<td>2.8</td>
<td>6.86</td>
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<tr>
<td>Easy to drink</td>
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<td>8.48</td>
<td>5.99</td>
<td>9.18</td>
<td>17.73</td>
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<td>7.33</td>
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<td>Complicated</td>
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<td>6.69</td>
<td>8.13</td>
<td>6.32</td>
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<td>7.4</td>
<td>9.49</td>
<td>5.25</td>
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<tr>
<td>Will never buy</td>
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<td>4.38</td>
<td>8.73</td>
<td>4.58</td>
<td>10.81</td>
<td>5.18</td>
<td>8.45</td>
<td>3.66</td>
<td>5.12</td>
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<tr>
<td>Inspire confidence</td>
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<td>19</td>
<td>17.39</td>
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<td>7.55</td>
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<tr>
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<td>6.07</td>
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<td>16.12</td>
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<td>5.08</td>
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<td>13.81</td>
<td>8.98</td>
<td>6.47</td>
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</tr>
<tr>
<td>Festive</td>
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<td>23.27</td>
<td>8.57</td>
<td>19.6</td>
<td>16.21</td>
<td>25.87</td>
<td>20.03</td>
<td>6.47</td>
<td>13.07</td>
</tr>
</tbody>
</table>
Appendix 2:

Groups 1 and 2 formed by the kmeans cluster analysis on reputation level (Euclidean distance used)