

Factors impacting wine prices' mark-up in restaurants

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Abstract:

Purpose: of the study is to analyse the determinants of wine price mark-up in restaurants. Wine sold at the restaurants is a substantial contributor of the restaurants' profitability and better understanding factors impacting mark-up is critical for the industry.

Methodology: Sommeliers around the world, mostly members of the International Sommeliers Association (ASI), have been approached to complete an internet based questionnaire, from February to May 2014. Of the 800 who started the survey, 267 fully completed the questionnaire, generating 1869 observations. We regress the declared mark-up against restaurant's and wine list characteristics, including managerial practices, and wine steward characteristics.

Findings: suggest to adopt a more holistic perspective on mark-up decision, based on various criterion including: the long experience of the sommeliers, the ability to 'capture' clients of the hotel attached to the restaurant, and a fine dining positioning.

Practical Implications: If the restaurants apply a simple rule of thumb to set wine prices, when focusing on every price segment, it appears that sommeliers doesn't matter that much. The restaurant positioning and style is more likely to explain a positive impact on wine prices' mark-up.

Keywords: Mark-up, wine, restaurant, sommelier

1. INTRODUCTION

Most sommeliers, if not all, have a good understanding and knowledge of the wines they sell. But designing and managing the wine list is a different job, requiring a different set of expertise. As such, the sommelier's managerial behavior seems critical in the success of a wine list and can be a substantial contributor of the restaurants' profitability. Part of the profitability of the wine list relates to the mark-up that is applied to the wines available on the list. A mark-up is the amount the restaurateur will charge in addition to the cost of purchase of the wine. The purpose of this study is to analyse empirically the determinants of wine price mark-up size in the case of restaurants and respond to the following question: what are the determinants of wine price markup size?

Thanks to an original survey conducted in 2014 with sommeliers, we regress the declared mark-up against restaurants characteristics, wine list characteristics and wine steward characteristics. Following a few words about mark-up determinants and the research protocol, we present the findings of the survey and its main managerial implications.

2. LITERATURE OVERVIEW

2.1. Wine lists and wine sales

Wine list is conceived as a way to differentiate restaurants (Berenguer et al., 2009; Gil et al., 2008) and as a merchandising tool (Yang and Lynn, 2009). Yang and Lynn (2009) show that some wine list characteristics, for example adding wines on the food menu, can increase wine sales, while a categorization of wines according to their style is associated with lower wine sales. In a restaurant revenue management approach (Thompson, 2010), wine is a relevant item to manage restaurant profitability. The wine list can contribute to restaurant performance and success through perceived quality, customer loyalty, customer satisfaction, etc. (see Sirieix et al., 2011 for a review).

2.2. Wine lists and wine steward

According to the OIV (2014), a wine steward or sommelier is "a professional from the vitivinicultural and catering sectors, wineries or other distributors that recommend and serve beverages at a professional level". Their field of activity is "the service of wine in the catering industry or in establishments selling wine, as well as the provision of specialized advice for those involved in the wine market to ensure good presentation and service of products". A "sommelier effect" has been documented in the empirical literature, especially on wine sales (Manske and Cordua, 2005): the sommelier education and training allows to develop employees training and to increase sales as well as to improve salesperson credibility who are perceived as trustworthy and competent. Ben Dewald (2008) addresses the advantages of employing a sommelier in fine dining restaurants and show that he allows to identify best product available to meet restaurant customers' expectations and to update the wine list more frequently than without any designated sommelier.

2.3 Markup size determinants

Differentiation allows firm to charge a markup, which is added to the marginal cost of production under monopolistic competition. As such, the markup size measure the competitive pressure (Ponikvar and Tajnikar, 2012). The mark-up size determinants are numerous. There are some firm-specific factors, connected with market power and firm's strategies (Schmalensee, 1989 ; Martin, 2001), some industry-specific factors (Sutton, 2001) like concentration, entry barriers, product differentiation, technology in the industry, demand dynamics, and some environmental and institutional factors (Dunn, 2002) such as antitrust policy, the role of unions, the economic trends (Motta, 2004). Usually, restaurants apply a proportionally smaller mark-up to higher priced wines (Amspacher, 2011) and the potential wine margin determine the buying decisions made by the restaurateur (Preszler and Schmidt, 2009).

If the cost of the wine and its expected selling price are key determinants of the mark-up decision, some other aspects investigated here may explain it. On one hand, the way the wine list is designed can improve the restaurant's performance. Most of the literature related to this subject focuses on this relationship. On the other hand, the sommelier's profile, skills and knowledge can generate positive effects on restaurant's wine sales. In this paper, we integrate these firm-specific elements, including the sommelier profile and the way the wine list is managed (purchase, update, etc.), to identify the determinants of wine-price mark-up size within a single industry context.

3. RESEARCH PROTOCOL

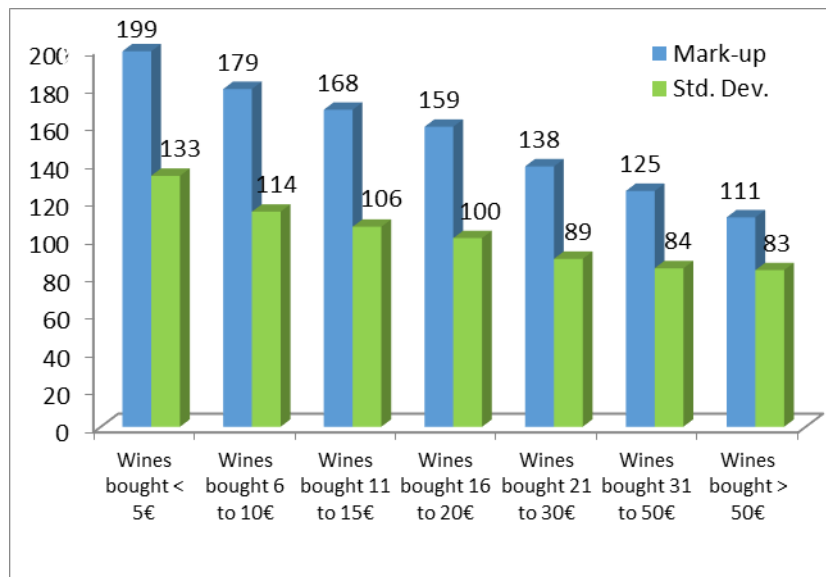
3.1. Data collection and sample

A survey with sommeliers was conducted online worldwide in February - May 2014. To recruit the participants, an invitation to participate was sent to all ASI (Sommeliers International Association) presidents. They in turn forwarded the invitation to all their members. Of the 800 who started the survey, 267 fully completed the questionnaire, generating 1869 observations (267 restaurants * 7 price segments → 1869 observations).

The mark-up definition was presented first to all respondents: "If you buy a bottle of wine 5€ (or \$5, RMB50, etc) and sell it 15€, it means that your mark-up equals 10€ (15-5=10). In percentage, it equals 200% ($[10/5]*100=200\%$)"; followed with the question: "What is the average mark-up (in %) that you apply for the wines (per bottle) available on your wines list/menu?".

As discussed by Amspacher (2011), we also found a negative correlation between the declared mark-up and the cost of wine bought (Figure 1).

Figure 1: Average mark-up (in %) per cost of wines bought (in euro)



Other characteristics than price segments include:

- Restaurants characteristics: location, size (number of seats), style, ownership, associated with a hotel, wine storage area, average cost of a meal (used as a proxy for the number of waiters), % of wine sales in the whole restaurant turnover.
- Wine list characteristics, design and management: person in charge of the wine list design, number of different wines, frequency of update, number of wines by the glass, suppliers' profile, buying en primeur wines (futures).
- Sommelier characteristics: gender, years of experience (proxy for age), qualification (certifications), other occupation in the restaurant.

More than 35 countries are represented in the survey and nearly half of the sommeliers who responded are located in Europe. About a quarter are located in Asia and 20% in South America.

3.2. Statistical approach

Our study being conducted within a given industry, we focus on firm-specific factors. We propose to estimate two different mark-up equations:

1. We regress the mark-up against a series of dummies for every price segment (1 if the wine has been purchased by the restaurant in the given price segment, 0 otherwise). We use pooled data and include some restaurants individual effect.
2. For every price segment, we estimate an equation where the markup size (M_i) is a function of restaurant's characteristics (R_i), wine list characteristics and design, including managerial practices (L_i), and wine steward characteristics (S_i):

$$M_i = \alpha + \sum_i \beta R_i + \sum_i \gamma L_i + \sum_i \delta S_i + \varepsilon_i$$

with α a constant term, β , γ , and δ parameters to be estimated, and ε an i.i.d. error term. Indeed the wine price mark-up exhibit a significant dispersion within every segment and it make sense to investigate the determinants of the mark-up size within each of these price segment. As frequently written in wine columns, two different restaurants can sell the same bottles at dramatically different prices: In New York City, “Silver Oak 2009 cabernet sauvignon from Napa, a mere \$200 on Tamarind Tribeca’s remarkably fair-priced list, costs more elsewhere, up to \$300 at Asiate in the Mandarin Oriental hotel” (Cuozzo, 2015).

4. RESULTS

The estimation results for every price segment are presented in the following table (Table 1). The individual restaurant effects are not significant while the dummy variables associated with every price range are very significant. It appears that the explanation of the mark-up size is entirely captured by these dummies and that the estimated coefficient decreases when the price paid by the restaurant to purchase the wine increases. As such, restaurants seem to apply a simple rule of thumb depending on the price paid to purchase the wine, as shown previously in the literature (Amspacher, 2011). It means that more mark-up determinants could be found for each individual segment rather than from a global perspective.

Table 1: Mark-up size equation estimation results

Price range	Coef.	t-stat
Wine purchased less than 5 euros per bottle	87.4382***	20.01
Wine purchased between 6 and 10 euros per bottle	67.573***	15.46
Wine purchased between 11 and 15 euros per bottle	56.7528***	12.99
Wine purchased between 16 and 20 euros per bottle	47.4682***	10.86
Wine purchased between 21 and 30 euros per bottle	26.5992***	6.09
Wine purchased between 31 and 50 euros per bottle	13.4082***	3.07
Wine purchased more than 50 euros per bottle	Ref.	
Intercept	111.8202***	36.19
Within R	0.2750	
Between R	0.0100	
Overall R [°]	0.0726	

[°] No unanimous agreement on which R to report in a panel. Wooldridge (2010) suggest to report the three measures.

*** significantly different from zero at 1%.

The detailed estimation results for every price segment are presented in the appendix 1. Very few explanatory variables are significant:

- Restaurants characteristics:
 - Restaurants and sommeliers located in Asia tend to have a negative impact on wines mark-up.
 - Being a fine dining style of restaurant and associated with a hotel tend to increase mark-up of wines.
 - In line with the style of the restaurant, the average cost of a meal impact positively mark-ups.
- Person in charge of the wine list:
 - Food and beverage manager has a negative effect on mark-up size.
 - The restaurant owner has a positive effect on mark-up size for the cheapest wines.
- Sommeliers' expertise and knowledge doesn't matter that much, except sommeliers with 10 years of experience or more, having a negative effect on the mark-up size for most expensive wines.

5. DISCUSSION and CONCLUSIONS

What are the determinants of wine price markup size for restaurants? We focus on firm-specific factors and, compared with the existing empirical literature, take into account the way the wine list is managed, not only its design like in previous research, and the sommelier's profile, as well as some restaurants characteristics.

The most interesting and almost intriguing finding is the absence of relationship between the sommelier's characteristics (expertise, etc) and wines price mark-up. We could have expected that sommeliers with a greater knowledge about wine (measured with a formal degree) would have been able to select 'original' wines for which they could charge more (greater mark-up). More than a degree, it seems that experienced sommelier know better how to sell their more expensive wines with a lower mark-up. While this is a firm-specific characteristic that depends on every restaurant's strategy and can create differentiation, regarding the mark-up size applied to wines by restaurants, sommelier doesn't matter.

Wines price mark-up is positively related with the style of the restaurant: the more expensive and fine dining the restaurant, the greater the mark-up applied to the wines price. This is interesting as the style of the restaurant itself (its image, positioning, etc) allows restauranteur to charge more on the cheapest wines (bought less than 20€). In the same vein, and for all wine price segments, the greater the average cost of the meal, the greater the mark-up applied to the wines price. In brief, most expensive restaurants attract clients with a greater willingness to spend money for their meal, whatever the mark-up applied to the wines. This in turn gives the opportunity to the restauranteur to apply greater mark-up to their wines, including the cheapest one:

- For wines bought less than 5€: mark-up of 162% for a casual restaurant vs. 237% for a fine dining restaurant;
- For wines bought between 6 and 10€: mark-up of 147% for a casual restaurant vs. 213% for a fine dining restaurant;
- For wines bought between 11 and 15€: mark-up of 142% for a casual restaurant vs. 198% for a fine dining restaurant;

- For wines bought between 16 and 20€: mark-up of 136% for a casual restaurant vs. 185% for a fine dining restaurant;

Being part of a hotel also gives the opportunity to generate greater mark-up, including for the cheapest wine:

- For wines bought less than 5€: mark-up of 184% for an independent restaurant vs. 225% for a restaurant part of a hotel;
- For wines bought between 5 and 10€: mark-up of 164% for an independent restaurant vs. 205% for a restaurant part of a hotel;
- For wines bought between 11 and 15€: mark-up of 152% for an independent restaurant vs. 196% for a restaurant part of a hotel;
- For wines bought between 16 and 20€: mark-up of 144% for an independent restaurant vs. 185% for a restaurant part of a hotel;

This may be explained by the fact that part of the clients going to the restaurant are also clients of the hotel, 'captive' clients, and go for a meal by convenience at the hotel's restaurant: easy to access, to go to, etc; and so are less regarding about the price of the meal.

In Asia, having the opportunity to bring your own bottle at the restaurant (for a small fee), and so a greater competition with entry level wines, may explain the negative impact of the location (Asia vs. other countries) on wine prices' mark-up.

More than the ability for the sommeliers to sell its wines at a greater mark-up, the fine dining positioning of the restaurant is a greater influencer of the applied mark-up. But we acknowledge the fact that more sommeliers characteristics should be added to better capture their impact on wine prices' mark-up, if any impact does exist. Our findings also suggest to adopt a more holistic view on mark-up decision: understand clients willingness to pay for wines and the positioning of the restaurant itself.

Appendix 1: Mark-up size equation estimation results per price segment

Variables	Wines purchased													
	Less than 5 €		6 to 10 €		11 to 15 €		16 to 20 €		21 to 30 €		31 to 50 €		More than 50 €	
	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.
Restaurant characteristics:														
North America	-43.456	-1.09	-23.701	-0.74	-11.508	-0.40	-1.015	-0.04	-2.47	-0.10	3.976	0.17	.507	0.02
South America	-40.564	-1.60	-33.235	-1.54	-38.890**	-1.99	-32.209*	-1.69	-23.333	-1.41	-14.859	-0.93	-8.368	-0.51
Asia	-48.928**	-1.98	-52.387**	-2.50	-48.699**	-2.57	-36.228*	-1.96	-20.383	-1.27	-10.376	-0.67	-10.353	-0.65
Europe	Ref.		Ref.		Ref.		Ref.		Ref.		Ref.		Ref.	
Less than 60 seats	-.473	-0.02	.262697	0.01	-9.643	-0.56	-15.118	-0.91	-3.506	-0.24	-5.663	-0.40	1.304	0.09
From 60 to 100 seats	-10.727	-0.50	-4.239516	-0.23	-18.473	-1.12	-26.933*	-1.67	-12.360	-0.88	-7.312	-0.54	-5.740	-0.41
More than 100 seats	Ref.				Ref.		Ref.		Ref.		Ref.		Ref.	
Casual or bistro style	17.849	0.64	19.788	0.84	33.922	1.58	26.289	1.26	5.000	0.28	5.563	0.32	3.048	0.17
Fine dining style	65.603**	2.42	60.268***	2.62	56.101***	2.70	43.485**	2.15	24.435	1.39	20.005	1.17	10.825	0.62
Other style	Ref.		Ref.		Ref.		Ref.		Ref.		Ref.		Ref.	
Chain	19.429	0.57	21.635	0.74	19.605	0.74	13.071	0.51	30.558	1.37	15.233	0.71	9.496	0.43
Franchise	-11.678	-0.18	-11.065	-0.20	-6.842	-0.14	-23.319	-0.48	4.799	0.11	-9.605	-0.24	-20.487	-0.49
Independent	7.359	0.28	13.521	0.61	19.985	1.00	17.382	0.90	16.367	0.97	11.623	0.71	9.047	0.54
Other kind of ownership	Ref.		Ref.		Ref.		Ref.		Ref.		Ref.		Ref.	
Associated with a hotel	30.41	1.49	37.26**	2.14	42.443***	2.70	36.886**	2.41	21.881	1.64	25.432**	1.98	21.515	1.62
Cellar or temperature controlled area to store wine	12.199	0.51	15.957	0.79	23.454	1.28	18.985	1.06	9.615	0.62	1.758	0.12	6.413	0.41
Average cost of a meal	.475***	2.73	.355**	2.41	.485***	0.000	.419***	3.23	.433***	3.82	.403***	3.68	.281**	2.50
% of wine sales	-.734	-1.39	-.5196	-1.16	-.369	-0.91	-.237	-0.60	-.189	-0.55	-.095	-0.28	-.103	-0.30

Variables	Wines purchased													
	Less than 5 €		6 to 10 €		11 to 15 €		16 to 20 €		21 to 30 €		31 to 50 €		More than 50 €	
	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.
Wine list characteristics:														
Number of different wines	-.004	-0.10	.005	0.16	-.003	-0.12	-.001	-0.03	.021	0.88	.016	0.70	.026	1.08
Number of wines offered by the glass	.285	0.44	-.074	-0.14	-.362	-0.73	-.406	-0.83	-.311	-0.73	-.242	-0.59	-.413	-0.98
Monthly update	-13.804	-0.59	-19.849	-1.00	-19.719	-1.10	-22.219	-1.27	-15.708	-1.03	-5.812	-0.39	-6.112	-0.40
Every 3 months update	-20.626	-0.82	-19.81661	-0.93	-24.392	-1.27	-25.588	-1.36	-20.617	-1.26	-13.858	-0.88	-8.095	-0.50
Every 6 month update	3.349	0.14	-1.223	-0.06	-2.185	-0.12	-12.431	-0.70	-7.906	-0.51	-4.464	-0.30	-10.74	-0.69
Less frequent update	Ref.		Ref.		Ref.		Ref.		Ref.		Ref.		Ref.	
Buy en primeur wines	-10.437	-0.53	-14.251	-0.85	-11.864	-0.78	-8.647	-0.58	-18.041	-1.40	-13.233	-1.06	-15.348	-1.20
% of wines purchased directly from the wine estate	-.233	-0.40	-.322	-0.74	-.121	-0.31	-.034	-0.09	-.044	-0.13	.191	0.59	.245	0.73
% of wines purchased from an	-.271	-0.43	-.248	-0.54	-.215	-0.52	-.216	-0.53	-.290	-0.83	-.276	-0.81	-.127	-0.36

agent														
% of wines purchased from a merchant or distributor	.296	0.56	.344	0.93	.446	1.33	.348	1.06	.149	0.52	.143	0.52	.098	0.35
% of wines purchased from an importer	-.001	-0.00	.026	0.07	.149	0.46	.238	0.76	.120	0.44	.135	0.51	.119	0.43
Sommelier in charge of wine list design	19.089	0.80	16.25	0.81	8.923	0.49	1.618	0.09	2.818	0.18	-6.35	-0.43	-19.392	-1.26
Food & beverage managers in charge of wine list design	-41.823*	-1.74	-38.23*	-1.88	-39.278**	-2.13	-39.692**	-2.20	-41.783***	-2.66	-36.869**	-2.43	-28.315**	-1.81
Chef in charge of wine list design	-53.783	-0.88	5.949	0.12	13.919	0.30	-23.618	-0.52	-21.200	-0.54	-44.670	-1.17	-57.352	-1.45
Owner in charge of wine list design	49.059**	2.08	35.366*	1.76	23.017	1.27	10.059	0.57	5.073	0.33	9.056	0.61	3.927	0.26
Other person in charge of the wine list	Ref.		Ref.		Ref.		Ref.		Ref.		Ref.		Ref.	

Variables	Wines purchased													
	Less than 5 €		6 to 10 €		11 to 15 €		16 to 20 €		21 to 30 €		31 to 50 €		More than 50 €	
	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.	Est. Coef.	t-stat.
Wine stewart characteristics:														
Gender (male=1)	28.372	1.17	16.741	0.82	12.293	0.67	12.674	0.70	-1.184	-0.08	4.166	0.28	7.982	0.51
More than 10 years of experience as sommelier	-14.574	-0.79	-13.72	-0.87	-6.857	-0.48	-17.963	-1.29	-17.707	-1.46	-24.416**	-2.08	-26.145**	-2.16
Sommelier certification	-5.232	-0.27	-5.516	-0.33	-8.804	-0.59	-17.67	-1.16	-16.362	-1.23	-7.602	-0.59	-7.031	-0.53
WSET level, 1, 2 or 3	3.221	0.16	-1.210	-0.07	-1.578	-0.10	-3.5	-0.23	-.374	-0.03	.098	0.01	-4.782	-0.36
WSET level 4	23.067	0.79	17.163	0.69	20.237	0.90	13.168	0.60	20.077	1.05	21.556	1.17	13.773	0.73
Title at sommelier competition	-7.691	-0.36	-10.699	-0.59	-12.690	-0.77	-18.485	-1.14	-8.577	-0.61	-8.328	-0.61	-9.277	-0.66
Other qualification	1.922	0.08	9.280	0.47	6.847	0.38	.162	0.01	-3.344	-0.22	4.852	0.33	12.952	0.86
Only sommelier	2.692	0.10	-5.619	-0.25	-7.617	-0.38	-6.422	-0.33	-.292	-0.02	-2.709	-0.16	-4.509	-0.27
Also waiter	-9.594	-0.43	2.298	0.12	-6.836	-0.40	-4.990	-0.30	-5.368	-0.37	-18.054	-1.29	-7.783	-0.54
Also wine director	15.340	0.68	20.934	1.10	19.877	1.15	24.091	1.44	9.976	0.68	8.367	0.59	11.619	0.80
Also food & beverage manager	-6.961	-0.27	18.334	0.84	15.292	0.78	9.536	0.50	14.877	0.89	2.887	0.18	2.363	0.14
Also restaurant manager	4.531	0.21	6.018	0.33	1.031	0.06	-3.065	-0.19	-6.604	-0.48	-12.297	-0.92	-2.065	-0.15
Also other function	Ref.		Ref.		Ref.		Ref.		Ref.		Ref.		Ref.	
	114.423*	1.70	99.025**	1.93	79.199*	1.71	110.133***	2.42	115.925***	2.93	102.93***	2.69	102.859***	2.61
Number of observations	267		267		267		267		267		267		267	
R	0.2275		0.2438		0.2770		0.2461		0.2647		0.2365		0.1744	

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