

DIVERGENCES IN SUBJECTIVE QUALITY STANDARDS BETWEEN EXPERT OPINION AND CONSUMER OPINION: A “HAVANOMETRIC” ANALYSIS

(First draft : comments are welcome)

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1. Introduction

Some empirical studies have shown that expert's rating is an important determinant of price (Ashenfelter and Jones, 2000) and success (Ginsburgh and Van Ours, 2003). As a result, an increasing number of guidebooks and other consumer reports are available and benefit from an important audience. Nevertheless, the role of expert opinion and its ability to reflect true quality are discussed. If the expert is theoretically expected to make objective decisions, the empirical evidence does not allow to establish clear answers. Several authors find that the jury grade is essentially determined by sensory characteristics, i.e. subjective features [see e.g. Combris et al. (1997) in the case of wine or Freccia et al. (2003) in the case of cigars]. Reciprocally, Ashenfelter and Jones (2000) defend the idea that the experts' rating are not efficient to predict the prices of mature *Bordeaux* wines, because they do not incorporate all the useful publicly available information. This implies that goods quality expressed by a jury grade is not systematically function of intrinsic characteristics. Such a phenomenon may concern expertise in various areas. Ginsburgh and Van Ours (2003) have shown, in the case of music competition, that experts are influenced by the order and timing of appearance, whereas it is randomly assigned to competitors and independent from their quality. For Chossat and Gergaud (2003), to be well rated by guides, restaurants can either invest in cooking, i.e. in intrinsic quality of the meal, or in setting (cellar, cadre, service). In the area of wine (Landon and Smith, 1998) as well as in the area of cigar (Livat and Vaillant, 2005), individual and collective reputation may play an important role.

In this paper, we consider the Cuban cigars commercialized in France. We explore the relationship between the expert's rating of *le Havanoscope* (an annual French cigar's guidebook), and the various cigars objective and subjective characteristics. Our objective is to answer the following questions: in which measure do experts consider cigars as experience goods? do they consider that an inexperienced cigars smoker is able to know what a good cigar is? Which aromas do feature the best cigars following experts criteria? Are some aromas more recommended to experienced smokers? What is a good cigar?

2. Characteristics of the cigars and experts viewpoint

We use cross-section data from an annual French cigar's guidebook, *le Havanoscope*; our dataset concerns the 261 Cuban cigars commercialized in France in 2004. For each cigar, we know three kinds of information, related to its objective features and to evaluations given by the experts of *le Havanoscope*. These evaluations concern quality and subjective characteristics, like the presence of aromas or information about cigar's consumption.

Definitions of the objective features are shown in Table 1.

Table 1. Objective characteristics of the cigars

Variables	Definitions	Mean (S.D.)
Diameter	Diameter of the cigar, in mm.	16.42 (2.29)
Length	Length of the cigar, in mm.	139.64 (25.78)
Machine	1= machine rolled cigar, 0=hand rolled cigar	16.60%
Price	Price of the cigar in 2004, in euros.	6.56 (4.85)

The second category of variables, described in Table 2, is related to the cigar's global quality evaluation and to recommendations formulated by the experts.

Table 2. Quality and recommendations

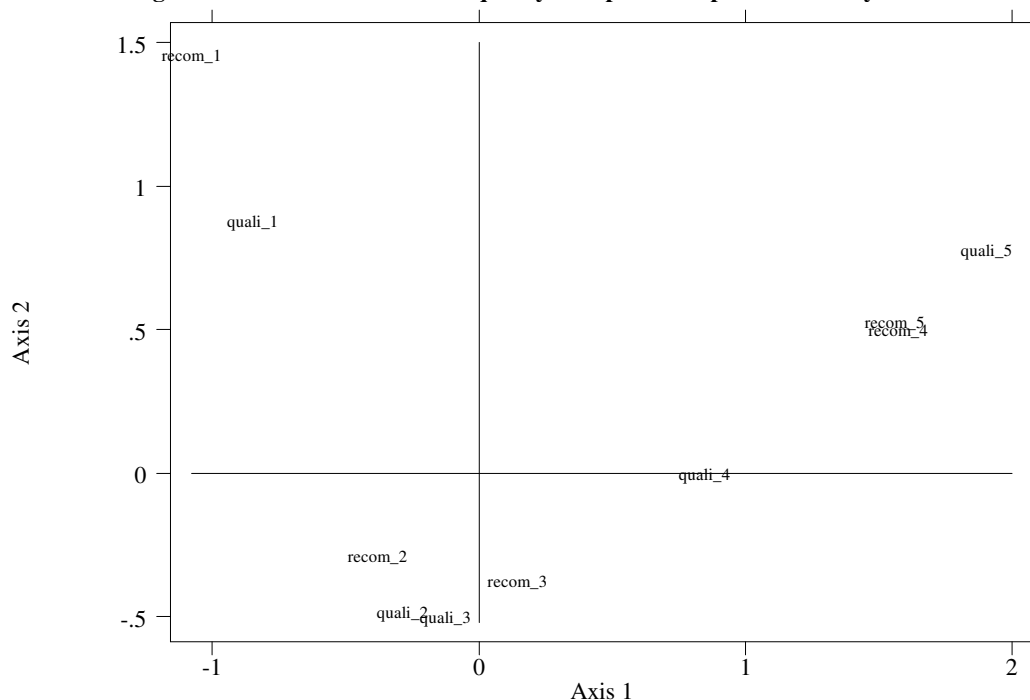
Variables	Definitions	Mean (S.D.)
Quality	Quality of the cigar in 2004, measured with a note coded on a scale of 1 to 5	2.63 (1.25)
Not recommended	1= cigar not recommended, 0 otherwise	11.2%
Every cigars smokers	1= cigar recommended to every cigars smokers, 0 otherwise	47.49%
Cigars lovers	1= cigar recommended to cigars lovers, 0 otherwise	24.32%
Experienced lovers	1= cigar recommended to experienced cigars lovers, 0 otherwise	8.49%
Very experienced lovers	1= cigar recommended to very experienced cigars lovers, 0 otherwise	8.49%

The higher the note measuring the quality, and the "better" the cigar is assumed to be. Experts complete this note with a recommendation: they indicate to which category of consumers each cigar seems the most appropriate. They distinguish 4 kinds of consumers, on the basis of their experience in cigars smoking¹; a fifth category is related to cigars that are not recommended. From a theoretical viewpoints, there are no reasons that better cigars are recommended to more experienced consumers. But a simple correspondence analysis shows another evidence: Figure 1 indicates a strong relationship between the note awarded to a cigar and the recommendation of the expert². This is a very interesting result proving that experts consider explicitly cigars as experience goods. This perspective assumes that an inexperienced cigars smoker is unable to know what a good cigar is.

¹ Descriptive statistics by category are presented in Annex.

² Cigars that are not recommended are noted "recom_1", cigars that are recommended to every cigars smokers are noted "recom_2", and so on. In Figure 1, 58.7% of inertia is explained by the first axis, and 33.7% is explained by the second axis.

Figure 1. Recommendation and quality: Simple correspondence analysis



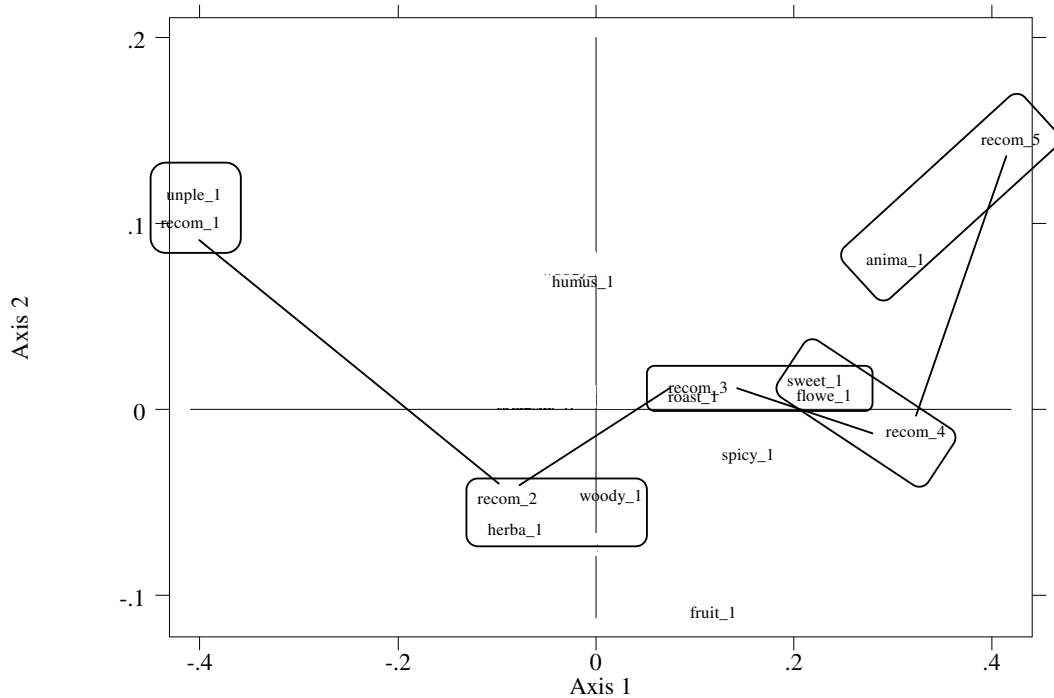
Subjective characteristics of the cigars are linked to the aromas perceived by the experts; the various kinds of aromas, described in Table 3, were categorized by using the Houvenaghel's classification (2005).

Table 3. Subjective characteristics of the cigars

Variables	Definitions	Mean (S.D.)
Aromas	Number of perceived aromas in the cigar	3.09 (1.29)
Herbaceous	1= herbaceous-flavored cigar (Eucalyptus, Hay, Fern, Herbs, Straw), 0 otherwise	33.20%
Woody (<i>Boisé</i>)	1= woody-flavored cigar (Tropical hardwood, Cedar, Lichen, Liquorice, Pine resine, Tree trunk), 0 otherwise	59.85%
Humus	1= humus-flavored cigar (Mushroom, Foliage, Damb grass, Soil-based compost, Peat, Truffles), 0 otherwise	53.67%
Spicy	1= spicy-flavored cigar (Cinnamon, Spice, Nutmeg, Chilli, Pepper, Vanilla), 0 otherwise	52.90%
Fruity	1= fruity-flavored cigar (Citrus fruit, Almonds, Bitter almonds, Quince, Walnut, Prune), 0 otherwise	2.70%
Flower	1= flower-flavored cigar (Acacia, Hawthorn, Dry flowers, Honey, Lime), 0 otherwise	23.94%
Animal	1= animal-flavored cigar (Leather, Cowshed, Game, Musk), 0 otherwise	20.46%
Sweet	1= sweet-flavored cigar (Brioche, Coffee with frothy milk, Chocolate, Candied fruits, Mocha cake, Ginger bread), 0 otherwise	18.92%
Roast	1= roast-flavored cigar (Cocoa, Coffee, Caramel, Hazelnut, Roast bread, Torrefaction), 0 otherwise	43.24%
Unpleasant	1= presence of an unpleasant taste (Ammonia, Burning horn, Coal tar, Metal, Mould, Oleaginous, Paper, Pharmaceutical, Dust), 0 otherwise	10.81%

By proceeding to a multiple correspondence analysis illustrated in Figure 2³, we are able to answer two questions about the aromatic structure of Cuban cigars and about experts preferences: Is there a complementary between some aromas, i.e. do some aromas frequently appear together? Do experts have favorite aromas?

Figure 2. Recommendations and aromas: Multiple correspondence analysis



First, we can observe that cigars featured by a not pleasant taste are logically not recommend. Second, it appears that there exists a complementary between some aromas: herbaceous- and woody-flavored cigars on the one hand; roast-, sweet-, flower- and spicy-flavored cigars on the other. This result is confirmed with the correlation matrix in Table 4:

Table 4. Aromas correlation matrix

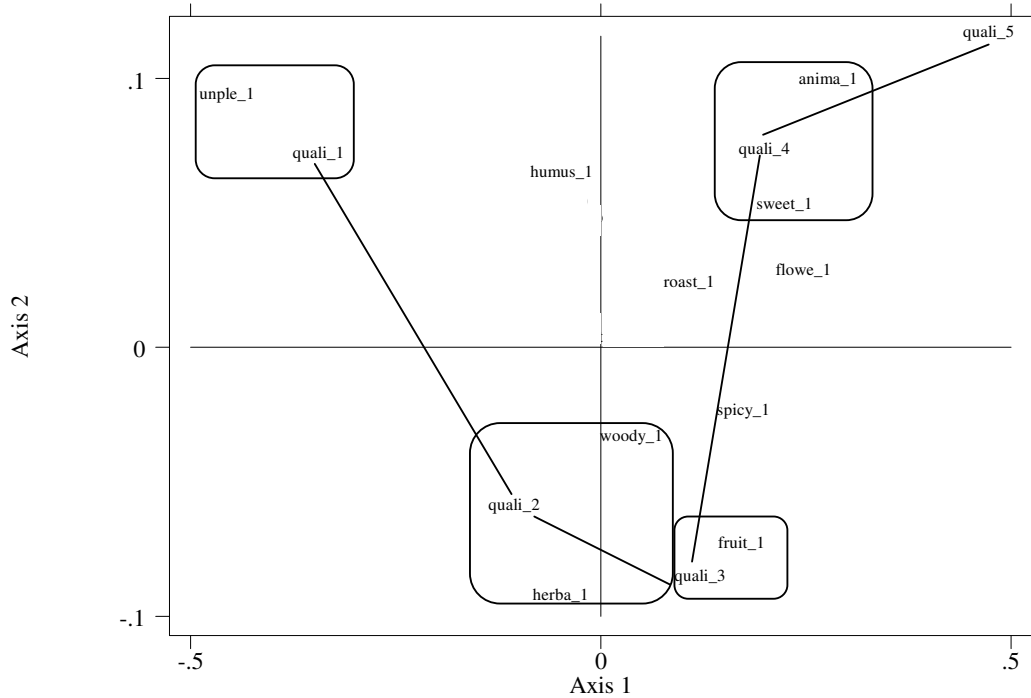
	Herbaceous	Woody	Humus	Spicy	Fruity	Flower	Animal	Sweet	Roast	Default
Herbaceous	1									
Woody	-.025	1								
Humus	-.266**	-.113*	1							
Spicy	-.057	.079	-.117*	1						
Fruity	-.016	-.009	-.036	.110*	1					
Flower	.027	-.057	-.114*	.185**	-.038	1				
Animal	-.073	-.073	.068	.210**	.033	.119*	1			
Sweet	-.089	-.027	-.026	.061	.041	.168**	.024	1		
Roast	-.102	-.048	-.08	-.019	-.001	.003	.137*	.155**	1	
Default	.045	-.121*	.024	-.269**	-.058	-.137*	-.115*	-.136*	-.128*	1

Note. **: Correlation is significant at the 0.01 level; *: Correlation is significant at the 0.05 level.

³ In Figure 2, 82.7% of inertia is explained by the first axis, and 10% is explained by the second axis.

Finally, Figure 2 indicates that woody-(the most common aroma) and herbaceous-flavored cigars are recommended to every cigars smokers, contrary to flower-, animal- and sweet-flavored cigars, and (to a lesser extent) roast- and spicy flavored cigars, that are strongly recommend by experts to experienced smokers. Do this mean that experts consider that these aromas feature the best cigars? A positive answer is provided with the multiple correspondence analysis illustrated in Figure 3⁴.

Figure 3. Quality and aromas: Multiple correspondence analysis



We finally possess information provided by experts about the consumption of each cigar (Table 5): the fact of being strong, its lighting and its combustion.

Table 5. Consumption of the cigars

Variables	Definitions	Mean
Strong	1= Strong cigar, 0 otherwise	54.44%
Lighting	1= Remark about lighting, 0 otherwise	54.44%
Combustion	1= Remark about combustion, 0 otherwise	23.17%
Default	1= Remark about a default linked to the consumption, 0 otherwise	39.00%

Are “Strong”, “Lighting” and “Combustion” qualities in a cigar? An answer can be obtained by estimating a hedonic quality equation.

3. Estimating a cigars quality equation

Our purpose is to explore the relationship between the quality of a cigar and its various objective and subjective characteristics presented in Table 1 and Table 3. The appropriate

⁴ In Figure 3, 84.6% of inertia is explained by the first axis, and 10.3% is explained by the second axis

model is an *ordered logit* model. Four equations have been estimated, in order to avoid multicollinearity problems. Estimation results are shown in Table 6.

Table 6. Ordered logit estimates of quality

	Coef.	Z	Coef.	z	Coef.	z	Coef.	Z
Length	0.017	(2.91)**	0.020	(3.37)**	0.017	(3.06)**	0.019	(3.31)**
Diameter	0.294	(3.97)**	0.300	(3.96)**	0.284	(4.23)**	0.298	(4.32)**
Machine	-0.757	(-1.78)	-0.500	(-1.14)	-0.962	(-2.39)**	-0.715	(-1.71)
Default			-2.902	(-8.19)**			-2.894	(-8.45)**
Strong	0.541	(1.76)	0.074	(0.27)	0.599	(2.00)*	0.027	(0.10)
Default*Strong	-1.516	(-3.47)**			-1.805	(-4.28)**		
Lighting	0.394	(1.29)	-0.116	(-0.44)	0.566	(1.91)	0.008	(0.03)
Default*Lighting	-1.489	(-3.24)**			-1.630	(-3.63)**		
Combustion	0.632	(1.63)	0.283	(0.90)	0.127	(0.37)	0.076	(0.26)
Default*Combust.	-1.171	(-1.84)			-0.387	(-0.65)		
Aromas					0.605	(4.93)**	0.587	(4.76)**
Herbaceous	-0.011	(-0.04)	-0.132	(-0.47)				
Woody	0.420	(1.52)	0.495	(1.78)				
Humus	-0.505	(-1.84)	-0.600	(-2.15)*				
Spicy	1.323	(4.60)**	1.141	(3.88)**				
Fruity	-0.228	(-0.31)	-0.012	(-0.02)				
Flower	1.006	(3.09)**	1.037	(3.20)**				
Animal	1.136	(3.37)**	1.288	(3.78)**				
Sweet	0.532	(1.58)	0.562	(1.65)				
Roast	0.834	(3.02)**	0.690	(2.45)*				
Unpleasant	-1.099	(-2.21)*	-1.103	(-2.12)*	-1.340	(-2.74)*	-1.306	(-2.53)*
Cut 1	5.953	(1.27)	4.948	(1.33)	6.300	(1.18)	5.413	(1.24)
Cut 2	8.311	(1.31)	7.676	(1.36)	8.418	(1.21)	7.862	(1.26)
Cut 3	10.857	(1.41)	10.419	(1.46)	10.748	(1.30)	10.340	(1.36)
Cut 4	12.977	(1.49)	12.604	(1.54)	12.661	(1.38)	12.284	(1.44)

Note. **: Coefficient is significant at the 0.01 level; *: Coefficient is significant at the 0.05 level.

First, we can observe that long and large cigars obtain higher notes. The fact that the value of the estimated parameter of diameter (about 0.3) is higher than those of the coefficient of length (about 0.2) can easily be explained as follows: a “chubby” cigar may appear as a bigger cigar than a long cigar. It is a question of marginal impact on the perceived size (“module”) of the cigar. Cigars that are machine-rolled are about one point down on hand-rolled cigars on average. Strong, good-lighting and good-combustion cigars are not significantly better noted, but a default associated with strong or lighting devaluates significantly the note. More generally, the presence of a default in the cigar devaluates strongly its note (about 3 points down). The presence of each further aroma increases significantly the evaluation of 0.6 point on average. This means that a cigar featured by 6 aromas (the highest number registered in the dataset) benefits from a premium of 3.6 points on average. Coefficients associated with the aromas categories confirm that unpleasant cigars are logically penalized, whereas spicy-, flower-, animal- and roast-flavored cigars obtains higher notes. These estimates must be analyzed cautiously, due to colinearity between these regressors.

4. Extensions

Convergent results are obtained by estimating recommendations equations [see Annex]. In order to measure the gap between experts preferences and consumers preferences, we will

question a sample of cigars smokers about their experience, the information they use to choose a cigar, their quality perception and their preferences as regards aromas.

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Annex

Table A1. Descriptive statistics

Variable	Whole sample N=261	Very experienced lovers N=22 (8.49%)	Experienced lovers N=22 (8.49%)	Cigars lovers N=63 (24.32%)	Every cigars smokers N=123 (47.49%)	Not recommended N=29 (11.2%)
Diameter	16.42 (2.29)	18.06 (1.98)	19.00 (1.47)	16.91 (2.32)	15.63 (2.03)	15.46 (1.52)
Length	139.64 (25.78)	166.23 (23.34)	161.09 (35.35)	143.19 (25.72)	132.46 (20.29)	125.97 (12.31)
Price	6.56 (4.85)	13.84 (6.60)	12.80 (4.94)	7.11 (3.63)	4.88 (2.93)	2.72 (1.83)
Quality	2.63 (1.25)	4.27 (0.94)	4.36 (0.66)	3.00 (0.93)	2.21 (0.84)	1.00 (0)
Machine	16.60%	0	0	7.94%	20.33%	44.83%
Aromas	3.09 (1.29)					
Herbaceous	33.20%	18.18%	27.27%	30.16%	35.77%	44.83%
Woody	59.85%	50.00%	81.82%	57.14%	62.60%	44.83%
Humus	53.67%	59.09%	54.55%	57.14%	50.41%	55.17%
Spicy	52.90%	86.36%	77.27%	65.08%	46.34%	10.34%
Fruity	2.70%	0	4.55%	1.59%	3.25%	3.45%
Flower	23.94%	63.64%	50.00%	22.22%	16.26%	10.34%
Animal	20.46%	63.64%	54.55%	26.98%	8.13%	0
Sweet	18.92%	40.91%	22.73%	26.98%	14.63%	0
Roast	43.24%	50.00%	68.18%	47.62%	40.65%	20.69%
Default	10.81%	4.55%	4.55%	3.17%	10.57%	37.93%
Strong	54.44%	77.27%	68.18%	63.49%	44.72%	48.28%
Lighting	54.44%	63.64%	63.64%	57.14%	54.47%	34.48%
Combustion	23.17%	22.73%	36.36%	26.98%	21.95%	10.34%
Default	39.00%	9.09%	9.09%	17.46%	46.34%	100.00%

Note. Standard Deviations in brackets.

Table A2. Ordered logit estimates of recommendation

	Coef.	z	Coef.	z	Coef.	z	Coef.	Z
Length	0.022	(3.78)**	0.021	(3.64)**	0.020	(3.54)**	0.018	(3.25)**
Diameter	0.154	(2.20)*	0.151	(2.15)*	0.194	(2.97)**	0.192	(2.95)**
Machine	-0.330	(-0.78)	-0.156	(-0.36)	-0.291	(-0.71)	-0.104	(-0.26)
Default			-1.755	(-4.94)**			-1.869	(-5.48)**
Strong	1.206	(3.78)**	0.707	(2.60)**	1.273	(4.13)**	0.643	(2.44)*
Default*Strong	-1.494	(-3.26)**			-1.886	(-4.31)**		
Lighting	0.253	(0.79)	0.129	(0.48)	0.463	(1.51)	0.268	(1.04)
Default*Lighting	-0.278	(-0.59)			-0.508	(-1.10)		
Combustion	0.689	(1.71)	0.701	(2.17)*	0.241	(0.67)	0.446	(1.50)
Default*Combust.	-0.120	(-0.19)			0.470	(0.79)		
Aromas					0.452	(3.74)**	0.412	(3.41)**
Herbaceous	-0.407	(-1.42)	-0.552	(-1.91)				
Woody	-0.175	(-0.63)	-0.223	(-0.80)				
Humus	0.130	(0.47)	0.056	(0.20)				
Spicy	0.999	(3.33)**	0.872	(2.89)**				
Fruity	-1.086	(-1.28)	-1.086	(-1.28)				
Flower	0.557	(1.67)	0.593	(1.81)				
Animal	1.657	(4.87)**	1.698	(4.99)**				
Sweet	0.794	(2.33)*	0.755	(2.23)				
Roast	0.252	(0.90)	0.164	(0.58)				
Unpleasant	-0.767	(-1.67)	-0.666	(-1.43)	-0.847	(-1.91)	-0.717	(-1.58)
<i>Cut 1</i>	3.770	(1.21)	2.542	(1.24)	4.727	(1.14)	3.489	(1.16)
<i>Cut 2</i>	7.656	(1.27)	6.684	(1.27)	8.326	(1.20)	7.303	(1.19)
<i>Cut 3</i>	9.877	(1.35)	8.935	(1.36)	10.285	(1.28)	9.236	(1.26)
<i>Cut 4</i>	11.093	(1.40)	10.161	(1.40)	11.351	(1.32)	10.291	(1.30)