Dipartimento di Politiche Pubbliche e Scelte Collettive – POLIS
Department of Public Policy and Public Choice – POLIS

Working paper n. 127

December 2008

Who likes circus animals?

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December 11, 2008

Abstract

Using a sample based on 268 questionnaires submitted to people attending the Acquatico Bellucci circus, Italy, this paper analyzes the circusgoers's preferences for circus animals. Results show that higher preferences for circus animals are related to frequency of consumption.

However, differently from what commonly expected, more educated and younger people seem to be less sensitive to the claims of animal welfare organizations.

JEL Classification: C2; D2; Z1.

Key Words: circus; demand; performing arts; Italy; attendance.

1 Introduction

Animals play a vital role in the performances of traditional circuses. However, world-wide there is a growing movement against the use of animals in the circus shows. Many animal welfare compaigners want wild animals banned from circuses, claiming it is undignified and wrong. Although this appears a questionable issue [Paladino, 1990; ECA, 2005], animal lobbies have induced Parlaments to produce more and more stringent legislations on animal welfare. These regulations are likely to preclude smaller circuses from having numbers with animals, as well as imposing growing costs on bigger circus which will impact on future shows, undermining the possibility for traditionl circuses to exist in the future.

Without going into the debate on animal rights, which is out of the scope of this study, an implicit assumption in such a debate is that circusgoers like circus animals. Is it true? The purpose of this paper is to empirical investigate such a question. To this aim, a sample of 268 questionnaires submitted to people attending Acquatico Bellucci circus in Alessandria (Italy) were used.

2 Method and data

Circusgoers's preferences for circus animals are represented by a continuous latent variable Y^*. However, since these preferences are not directly observable, the questionaire responses, Y, are used as a proxy for such preferences. The impact of independent variables on preferences for animal circus are assessed by applying the generalized ordered logit model, which relaxes the assumption of the standard ordinal regression analysis that the explanatory variables have equal effects across the levels of preference.

The generalized ordered logit model estimates a set of coefficients for each of the $M-1$ points at which the dependent variable can be dichotomized. It can be shown that the probabilities that Y will take on each of the values $1, ..., M$ are equal to

$$
\begin{aligned}
P\left(Y_i = 1\right) &= 1 - F\left(\mathbf{X}'_i \beta_1\right) \\
P\left(Y_i = j\right) &= F\left(\mathbf{X}_i \beta_{j-1}\right) - F\left(\mathbf{X}_i \beta_j\right) \quad j = 2, ..., M-1 \\
P\left(Y_i = M\right) &= F\left(\mathbf{X}_i \beta_{M-1}\right)
\end{aligned}
\tag{1}
$$

where β is a $K \times 1$ vector, X contains K explanatory variables, and $F(.)$ is the cumulative logistic function.

The design for this study was based on a structured questionnaire survey conducted in Alessandria (Italy), between 1 and 11 March 2007. A sample of people attending Acquatico Bellucci circus, intended to be representative of Italian circusgoers [Zanola, 2008], received a self-reported questionnaire consisting of 12 questions. 268 questionnaires were completed. Table 1 summarizes the main statistics.

[Insert Table 1 about here]

The dependent variable, *anima*, measures the preferences of circusgoers for circus animals. It is measured on a four-point scale with categories $1 = $ no preference, $2 = $

3

low preference, 3 = moderate preference, 4 = high preference. The independent variables are gender, $male$, a dummy variable which assumes value of 1 if male, 0 otherwise; education, edu, a dummy which assumes value of 1 if high school educated or higher, 0 otherwise; circusgoers age, $young$, a dummy which assume value of 1 if aged between 18 and 35 years old, 0 otherwise; younger than frequency, $freq$, a discrete continuous variable which registers how many times the individual went to circus within 3 years before.

3 Results

To evaluate the proportional odds assumption for the multivariate model, Brant test is performed. It indicates that the proportional odds assumption did not hold for some covariates. Hence, a generalized ordered logit model is estimated by using the GOLOGIT2 routine [Williams, 2006] in STATA 10.0. Table 2 displays results.

[Insert Table 2 about here]

The empirical evidence clearly shows that covariates that we have identified play a crucial role in shaping preferences for circus animals. In fact, positive coefficients indicate that higher values on the covariate make it more likely that respondent will be in a higher category of Y than current one. Not surprisingly, gender is a good predictor of preferences for circus animals. Culture and age are also good predictors of preferences. Yet interestingly, the positive sign of both coefficients is not the one that we would expected. In fact, it is commonly assumed that younger and more educated people are more sensitive to animal welfare claims, whereas positive coefficients indicate that higher value of the explanatory variables increase the likelihood of being in the a higher category of preferences. For the unconstrained explanatory variable, individuals become more supportive of circus animals with increasing frequency, but the greatest effect of frequency was to push individuals towards the most extremely positive judgement.

Although the analysis of the impact of a change in covariate on the response variable distribution using marginal probabilities is interesting in its own, the analysis of marginal probabilities may reveal a subtler insight. To this aim, the MFX2 routine in STATA 10.0 is used to estimate the marginal probability effects for a typical consumer, defined for every covariate by fixing the rest of the covariates at their mean (or their mode for categorial covariates). The results are summarized in Table 3.

[Insert Table 3 about here]

Examining Table 3, we find that a typical male consumer's probability is 3.7% less probable to report the preference for animal circus as low, and 8.6% more probable to report high preference. Furthermore, individuals perceive significantly higher values of preferences whether more educated and younger. For instance, a typical educated individual is 4,7% less likely to show low preferences, and 11% more likely to find the preference value high. Analogous results for the typical young consumer. Finally, a typical user is 11% more likely to love circus animals, supporting the notion that circus animal 'consumption' is an experience goods, for which future demand relies heavily on the perceived value of the experience after consumption.

4   Conclusion

This paper analyzed the preferences for circus animals by individuals who attended circus. Empirical findings suggest some interesting insights. Higher preferences for circus animals are related to frequency of consumption. However, differently from what commonly expected, more educated and younger people seem to be less sensitive to the claims of animal welfare organizations.

The market for circus is substantial worldwide. An understanding of the characteristics of circusgoers' preferences is undoubtedly useful to circus suppliers looking to preserve and expand their markets. All together these results could be a key concern for implementing such marketing strategies.

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Table 1. Preferences for circus animals

Variable	Obs	Mean	Std. Dev.	Min	Max
anima	233	2.7555	1.0928	1	4
male	268	.4589	.4992	0	1
edu	268	.6641	.4732	0	1
young	268	.4179	.4941	0	1
freq	260	1.1231	1.1425	0	3

Table 2. Preferences for circus animals

anima	Covariate	Coef.	Std.Dev.
1[+]	*male*	.4100***	.24551
	edu	.5570**	.2656
	young	.5957**	.2498
	freq	.2552	.1625
	cons	.4165	.3320
2[++]	*male*	.4100***	.2455
	edu	.5570**	.2656
	young	.5957**	.2498
	freq	.2285***	.1259
	cons	-.5904***	.3126
3[+++]	*male*	.4100***	.2455
	edu	.5570**	.2656
	young	.5957**	.2498
	freq	.5314*	.1285
	cons	-2.3328*	-3532
Wald χ^2	28.61		
Number of Obs	230		
McFadden Pseudo R^2	.049		

+ The first panel contrasts category 1 with categories 2,3, and 4; ++ the second panel contrast category 1 and 2 with categories 3 and 4; +++ the third panel contrasts category 1, 2, and 3 with category 4. *p<0.01, ** p<0.05, *** p<0.1.

Table 3. Marginal Probability Effects for Covariates

anima	Covariate	Coef.	Std.Dev.
No preference	*male*	-.0585***	.03495
	edu	-.08621**	.0442
	young	-.0844*	-0351
	freq	-.0369	.0231
Low preference	*male*	-.03681***	.0227
	edu	-.0467**	.0221
	young	-.0532**	.0236
	freq	-.0167	.0245
Moderate preference	*male*	.0096	.0090
	edu	.0228	.0177
	young	.0127	.0114
	freq	-.0567**	.0266
High preference	*male*	.0857***	.0516
	edu	.1101**	.0497
	young	.1248**	.0529
	freq	.1103*	.0263

*p<0.01, ** p<0.05, *** p<0.1

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