

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

**Working paper n. 99**

**October 2007**

**Major influences on circus attendance**

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*Periodico mensile on-line "POLIS Working Papers" - Iscrizione n.591 del 12/05/2006 - Tribunale di Alessandria*

# Major Influences on Circus Attendance<sup>\*</sup>

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## ABSTRACT

Although circus represents one of the most accessible art forms, the economics of the arts and culture has completely neglected to address this topic. This paper represents an attempt to fill in this lack by identifying the determinants of the demand for circus in Italy, both in terms of structural characteristics of the shows and socio-economic factors that impact on it. To this aim, we collect information on the tournée of the bigger circuses performing in Italy during 2005 and 2006. The results show a positive elasticity of demand to income and, differently from similar studies on performing arts, to ticket price. There also differences between circuses in the importance of numbers with animals.

**JEL classification:** C2; D2; Z1.

**Key words:** circus; demand; performing arts; Italy; attendance.

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<sup>\*</sup> Thanks are due to Antonello Scorcu for useful comments on a previous version of the paper. The usual disclaimers apply.

## 1. Introduction

Circuses can be dated to the Roman empire when the emperor held spectacular events at the Circus Maximus and the Coliseum in Rome, full of lions, elephants and chariot racing. With the fall of the Roman empire circus type entertainment did not disappear completely. Jugglers, horse trainers, clowns and acrobats continued to entertain at fairs and castles, in fact anywhere that they could generate some extra cash.

The modern circus was originated in 1768, when Philip Astley built the New British Riding School or Amphitheatre Riding Ring. It combined several exhibitions, such as cavalry horsemanship, clowning derived from the *commedia dell'arte*, vaulting as developed to highly skilled art in the sixteenth-century French courts. This form spread worldwide and became known as 'circus', 'zirkus', 'circo', 'cirque', 'tsirk', and so on (Burgess, 1974; Dupavillon, 1982; Dapporto and Sagot-Duvaurox, 2000).

Nowadays, internationally circus is flourishing. Canada, Russia, China, France, Belgium and Australia have national circus schools; Portugal, Sweden and Belgium have independent schools; Cirque du Soleil, founded by the Quebec government in 1985, has now several shows across four countries (Hall, 2002).

Circus represents a physical and visual art form that exists in its own right (not as an adjunct to theatre or dance) and it is one of the most accessible art forms that exist today (Hall, 2002). Although its cultural importance, however, economics has completely neglected to address this topic. There are two main reasons for this. First, the economics of arts has considered circus as a minor performing arts. Secondly, there are difficulties in the collection of reliable quantitative information on circus. This paper represents a first attempt to analyse the demand for circus in Italy.

The demand for performing arts have been extensively analysed in literature. Several papers are primarily interested in the impact of prices on live event attendances (Felton, 1989; Kracman, 1996; Levy-Garboua and Montmarquette, 1996; O'Hagan, 1996; Billie Hansen, 1997; Colbert et al., 1998). Other papers discuss the role of personal characteristics and the social environmental in which decisions are made (Upright, 2004; Ateca-Amestoy, 2005). There are also a number of studies focusing on the show specific characteristics (Abbè-Decarroux, 1994; Urrutiaguer, 2002; Werck and Heyndels, 2007). To our knowledge, however, there do not appear to be any investigations for circus.

In this study we use information on the tournée of the bigger circuses performing in Italy during 2005 and 2006 to identify the determinants of the demand for circus, both in terms of structural characteristics of the shows and socio-economic factors which impact on it. The results show a positive elasticity of demand to income and, differently from similar studies on performing arts,

to ticket price. There also differences between circuses in the importance of numbers with animals.

The rest of the paper may be briefly outlined as follows. Section 2 describes the current situation of circus in Italy. Empirical specification and data are shown in Section 3 and Section 4 respectively. The empirical findings are summarized in Section 5. Section 6 concludes.

## 2. Circus in Italy

In Italy the total number of circuses has been more or less stable during the years, although a number of shut-downs have been registered, replaced by new companies.<sup>1</sup> Depending on the season, the number of circus varies between 75 and 120-130 units. They are run by, more or less, 60 families. There are few big circuses whose staff can overcome one hundred units. The bigger circuses use to concentrate national activity during the autumn and the winter, going abroad during the summer (East Europe and North Africa). The rest of the circus companies is represented by small (and very small) circuses which use to work only in tourist locations during the summer.

In Italy although the State recognized the cultural promotion role of circus since 1968, the legislative pressure regarding licensing, animal welfare, disability discrimination, health and safety, rigging, child protection and insurance, has an administrative and economic impact on companies. Within this context, three main issues emerge: founding, performance grounds, and circus animals. Circus companies have enjoyed financial support for their practice since the Law 337/68. Afterwards, an important step was taken with the introduction of the Unified Fund for the Performing Arts (FUS, Fondo Unico per lo Spettacolo) in 1985. It defines the amount of grants to be allocated for performing arts (theatre, music, dance, and circus). The basic criteria for allocating funds to circus activities are based on a mix of both quantitative (decisions based on the size of audiences, number of productions, number of employees etc.) and qualitative aspects (discretionary judgements dealing with quality made by a consultative panel of experts). As a consequence, financial aid concerns all sorts of live performance productions as well as programming and it takes the form of granting subsidies to companies and festivals, supported for the creation of shows and the carrying out of promotion. However, in the wider context of grants for the arts, the number and value of awards to circus artists and companies is relatively small, and is going to be reduced.

The Law 337/68 also defined the administrative conditions for the circus tournée, even if it let the local authorities to provide the performance grounds. Unfortunately, some local authorities fail to provide understanding when dealing with circus and tend to touring circuses, which still suffer from a lack of appropriate performance grounds for which they pay hire fees. Very few big cities have public performance grounds for circus and it is not unlikely that circus companies must rent private ones or, as the case for the city of Rome, stay outside the ring of the city, in a close (small) town.

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<sup>1</sup> During the last years some important were closed (among the others, Florilegio by Darix Togni, Liana Nando Rinaldo Orfei circus, etc.).

Finally, there is a growing movement against the use of animals within the circus. In Italy circus involve approximately 1,300 captive animals. Animal rights activists complain that many of these animals are subjected to beatings, whippings, electrical charges and starvation, and are often drugged. Although this appears a questionable issue (Paladino, 1990; ECA, 2005), animal lobby has induced Parliament to produce a more stringent legislation on animal welfare which is going to preclude smaller circuses from having numbers with animals, as well as imposing growing costs on bigger circus which will impact on future programs.

The quality of work developed in the country is mixed. The bigger circuses, with some exceptions among the smaller, combine circus skills with narrative theatre-making and choreography fusions of forms by producing high quality shows. The attempt is to move from a very traditional skills-based raw entertainment to a more artistically challenging and innovative performance. By contrast, most of the smaller circuses tend to perform the same low quality shows across years. Table 1 shows the composition of the shows performed by the bigger circus in Italy in 2006, organized by techniques.<sup>2</sup>

[TABLE 1]

The percentage of numbers directly performed by owner family members vary between null in the case of Moscow circus, whose ownership is not referable to a single family, to around 50 percent. The percentage of numbers with animals varies between 17 and 46 percent. The number of exhibitions are then classified for techniques (Burgess, 1974). The average numbers of juggling performers (balancing, tossing, catching, kicking, twirling and spinning of objects; etc.) in the shows is 1.6, a value quite similar to acrobat performers (jumping rope; trampoline; etc.) which is 2.0, and vaulting (flying trapeze; tissue; etc.), whose value is 1.7. By contrast, the average numbers of equilibrium performers (balancing on rolling; hand balancing; human pyramids; etc.) is only 0.8. Finally, the residual category of others is quite heterogeneous and it includes contortionism, opening and closing numbers, clownery, etc.

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<sup>2</sup> The traditional classification by Burgess (1974) has been integrated to take account of some numbers recently developed.

### 3. Circus demand

The primary aim of the paper is to estimate the determinants of circus consumption in Italy. The basic model is drawn from the standard model of household consumption. We assume that a consumer has a utility function that can be written as a function of a private good,  $X$ , and circus consumption, which is treated as consisting of a set of  $N$  characteristics,  $Z = \{z_1, z_2, z_3, \dots, z_N\}$  (Lancaster, 1966). Taking  $X$  as the numeraire, and assuming that the consumer is initially endowed with an income  $Y$ , the consumer will maximize his utility subject to a budget constraint,  $X + P(Z) \leq Y$ . As a result, a demand function that takes into account output characteristics can be written as (Dewenter and Westermann, 2005; Werck and Heyndels, 2007):

$$Q = f(P, P_{other}, Y, Z) \quad (1)$$

The amount of circus demanded depends on the ticket price,  $P$ ; the price of substitutes,  $P_{other}$ ; the consumer income,  $Y$ ; and a vector of output characteristics,  $Z$ .

The demand for performing arts is commonly measured by number of paying attendances. However, due to the difficulty to collect suitable data from circuses to be able to determine box office, we use total number of available seats for all shows taken in a single city, defined as the number of seats multiplied for the number of performances taken place in a single location, *seat*. As a consequence caution is necessary since an overestimation can occur due to measurement error.

Circus prices vary across different weekdays, locations, and seasons, but these variations typically vanish with the use of aggregated data (Hand, 2002; Einav, 2003). Hence, in this study we use an average ticket price, weighted for the number of seats, *price*.

The price of other cultural goods is proxied by introducing a leisure price variable, *leis*, constructed as  $W(1-U)$ , where  $W$  is the regional hourly wage and  $U$  is the regional unemployment rate (Corning and Levy, 2002). This may also be interpreted as an additional component of total cost borne by consumers attending the circus to the extent that it is a time-intensive activity: an increase in the opportunity costs of going to circus, due to its intensiveness, may induce a reduction in consumption and, simultaneously, an expansion of rival activities.

The measure of income used in the analysis is per capita provincial income, *gdp*. Although most of previous studies on performing arts find a positive effect of income on demand, we are not

able to predict whether the income elasticity of demand for circus will be higher or lower than unity.

Demographic variables are also included in the model. The age of the individual is expected to be a predictor of attendance. In particular, the percentage of provincial population aged 0-14, *age*, is expected to be positively correlated to attendance. Furthermore, we also included the log of provincial population, *pop*, which is likely to be positively related to total circus consumption.

In order to examine the importance of the geographical location where circuses perform we introduce a set of dummies: *north*, which assumes value 1 if circus location is in the north of Italy, 0 otherwise; *centre*, which assumes value 1 if circus location is in the centre of Italy, 0 otherwise; *south* (excluded variable), which assumes value 1 if circus location is in the south of Italy, 0 otherwise.

Although our sample is composed of the bigger circuses performing in Italy, a smaller group of them (Americano, Medrano, and Moira Orfei) are used to informally coordinate about locations, policies, etc., and are commonly regarded as the most important in Italy. Hence, we introduce a dummy variable, *big*, which assumes value 1 for the Americano, Medrano, and Moira Orfei circuses, 0 otherwise.

Finally, following Lancaster, we need to identify characteristics that matter to consumers. To this aim, we use objectively determinable output characteristics, such as the number of exhibitions classified for techniques. Because of the amorphous quality of circus techniques, any attempt to classify them is somewhat arbitrary. In what follows, we identify two broad categories: *ani*, the total number of performers with animals in a show and all other numbers of performers, *other* (excluded variable).

Basic econometric specification is the following:

$$\ln seat_{ij} = \beta_0 + \beta_1 \ln price_i + \beta_2 \ln leis_j + \beta_3 \ln gdp_j + \beta_4 age_j + \beta_5 \ln pop_j + \beta_6 north_i + \beta_7 centre_i + \beta_8 big_i + \beta_9 anima_i + \varepsilon_i \quad (2)$$

where *i* indicates circus and *j* indicates city where circus performs.

#### 4. Data

Data consists of a sample of 174 observations regarding tournée of circuses performing in Italy during 2005 and 2006. Information on circus is collected from the web site “circusfans”,<sup>3</sup> while socio-economic variables are drawn from different institutional sources.<sup>4</sup> As discussed earlier, the sample is restricted to bigger circuses (over 750 seats). Descriptive statistics for the model variables are summarized in Table 2.

[TABLE 2]

Average number of seats for each location is around 24,000, which varies from a minimum of 2,000 for four days location (Acquatino Bellucci) to a maximum of 132,000 for forty-four days location in Naples (Medrano). Average circus ticket in the sample is 17.4 euros, with a maximum of 24.2 euros and a minimum of 13.1 euros. Average leisure price in the sample is 28.6 euros with a standard deviation of 12.6 percent. The average per capita income is approximately 21,030 euros, with a maximum of 43,800 and a minimum of 11,195 euros. Thirteen percent of the population in the sample are children under 15 year old. As far as the geographical distribution of circus performances are regarded around 60 percent are in the north of Italy, 15 percentage in the centre and less than 1/3 in the south of Italy. The importance of the Americano, Medrano, and Moira Orfei circuses is confirmed as 35 percent of total observations are referred to them. Finally, in the research sample the number of performers with animals in a show varies from a low of 3.0 to a high of 6.0, while in the case of all the other numbers the value varies from a low of 7.0 to a high of 12.0.

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<sup>3</sup> [www.circusfans.it](http://www.circusfans.it)

<sup>4</sup> See Appendix.

## 5. Results

The correlations between variables included in the analysis are presented in Table 3. There is a strong positive correlation between per capita income and leisure price ( $r = .70$ , significant at  $p < 0.1$  level), population lower than fifteen years old and per capita income ( $r = -0.76$ , significant at  $p < 0.1$  level), circus locations at the north and leisure price price ( $r = .74$ , significant at  $p < 0.1$  level) and bigger circuses and ticket price price ( $r = .91$ , significant at  $p < 0.1$  level). Although there is no formal cutoff value to use with the Variance Inflation Factor for determining presence of multicollinearity, values of VIF exceeding 10 are often regarded as indicating multicollinearity. In our case, the VIF is 4.23 and this leads to the conclusion that no multicollinearity exists between any of the independent variables.

[TABLE 3]

Table 4 reports results for equation (2), using OLS and IV estimators, respectively. Standard errors and variance-covariance matrices of the coefficients have been computed by using the Huber/White/sandwich heteroskedasticity-robust procedure due to heteroskedasticity.

[TABLE 4]

In testing for the correct model specification, we perform the link test. The link test computes a new regression model using as predictor variables the risk score from the original model plus its square (quadratic term). If the additional quadratic term is significant, there is evidence of model misspecification. In our case, both models display a non significant quadratic term, providing no evidence of incorrect model specification.

The goodness of fit values presented is 56 per cent in both models. Column (1) presents coefficients and standard deviations of the OLS regression model. All estimated coefficients are statistically significant, with the only exception of leisure price and population under 15 years old. Hence, two expected results are refuted by results: there seems to be no rivalry or complementarity with other leisure activities; younger people do not represent a preferential target of circus advertising.

Rather surprisingly, the results show that an increase in price impacts positively on circus consumption, resulting in a positive and significant sign of price elasticity. This may be explained by the use of total amount of disposable seats for each location as dependent variable. In fact, bigger circuses, which adopt higher average prices, usually stay longer in a single location and so a positive correlation between prices and seats is likely to be observed. Income

elasticity is positive and higher than unity, meaning that circus can be identified as a luxury good. Population as well displays a positive effect on circus consumption. The negative coefficients associated to circus locations in the north and the centre of Italy capture the preference of circuses for longer locations in the south of Italy where the demand is expected to be larger. Turning to circus dimension (or prestige), the higher the number of performing days from Americano, Medrano, and Moira Orfei circuses, the lower the demand for circus. A way to interpret this result is as follows. Since the quality of these circuses is high, the more they perform the lower the likelihood for a person attending them to ask for additional shows. As a consequence, the increase in total amount of demand due to additional performance days from the bigger does not compensate the reduction in total demand for other circuses. Finally, an unexpected result is that the relative impact of numbers with animals on circus consumption is negative.

Column (2) presents coefficients and standard deviations of the IV regression model. In order to account for somewhat spurious correlation between demand and per capita income, equation (2) was re-estimated by instrumental variables, using lagged values of per capita income as instruments. All coefficients display the same sign as in the OLS model, with the exception of per capita income which is not longer statistically significant. Again, results confirm a negative effect of numbers with animal on demand.

Although this result seems to suggest a partial success of the movement against the use of animals within the circus in influencing demand, however, additional investigation is necessary due to the aggregate nature of data. Furthermore, to the extent that bigger circuses impact on demand, it can be useful to separately analyze the two groups: the most important (Americano, Medrano, and Moira Orfei), and the others. Table 5 displays the results of the OLS and IV regression models.

#### [TABLE 5]

An F-test on the overall sample versus the three circuses and the other groups is run. The F-statistic calculated is 8.05. This far exceeds the critical value at the 1% level, allowing us to reject the null hypothesis. In Table 5 columns (1) and (2) report the OLS coefficients and the standard deviation of the two groups, respectively. All of the significant variables in the previously OLS estimation are also statistically significant here and display the same sign, with two exceptions in the case of the first group (Americano, Medrano, and Moira Orfei). The first is that price ticket is no longer statistically significant. The second is the positive impact of numbers with animals on circus consumption. This result contrasts with the previously OLS

estimation suggesting the importance of numbers with animals in attracting people for this group. The IV coefficients are reported in columns (3) and (4). Results are analogous to the previous model in the case of the other group, while in the most important group per capita income and location in the north are no longer statistically significant. Again, animals have a positive impact on demand.

## **6. Conclusion**

Several empirical papers have analyzed the demand for performing arts. However, to our knowledge, this is the first study focusing on demand for circus. In fact, both the low attention of cultural economics, which has often considered circus as a minor performing arts, and difficulties to collect quantitative information on circus, have prevented empirical investigations.

This study fills in this gap by analysing the demand for circus in Italy. To this aim, we collect information on the tournée of the bigger circuses performing in Italy during 2005 and 2006. This paper pointed out some interesting results. First, differently from other forms of performing arts, circus demand displays a positive elasticity to price. This may be partially explained by the use of total amount of disposable seats for each location as a proxy for price, which may result in bias the results.

Secondly, the movement against the use of animals within the circus (and the consequent stringent legislation on animal welfare) seems to succeed in influencing demand. In fact, the relative impact of numbers with animals on circus consumption is negative. However, the behaviour of the most important circuses contrasts with the full sample estimation suggesting the importance of numbers with animals in attracting people.

Thirdly, as far as the other independent variables are considered, this study shows that the income elasticity is positive, analogously to what found in similar studies on performing arts, as well as the effect of population on circus consumption.

What is done here though is just a beginning. Further work is necessary. This includes the use of different dependent variables (when available); an extension of the model to focus on supply side of the market; and the use of micro data to analyze individual preferences.

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**TABLE 1. Bigger Circuses in Italy (2006)**

Circus	Seats	Total number of performers	Numbers directly performed by property family members	Number of performers					
				Animals	Juggling	Equilibrium	Acrobat	Vaulting	Other
Mosca	5,000	12	0	2	1	1	1	3	4
Americano	4,000	15	7	6	1	1	1	2	4
Medrano	3,000	16	2	5	2	1	3	1	4
Nando Orfei - Errani	2,400	15	2	3	2	0	4	2	4
Embellriva	2,200	11	4	4	1	0	2	3	1
Moira	2,000	12	3	5	1	1	1	2	2
Lidia Togni	1,600	13	3	3	2	1	4	0	3
Stelle	1,200	13	6	6	2	0	1	2	2
Praga	1,200	14	6	4	2	2	2	1	3
Acquatico Bellucci	750	12	7	4	2	1	1	1	3

**TABLE 2. Descriptive Statistics**

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>
<i>seat</i>	23,990.23	24,000.08	2,000.00	132,000.00
<i>price</i>	17.36	3.20	13.13	24.25
<i>leis</i>	28.57	3.62	21.93	33.22
<i>gdp</i>	21,030.17	5,981.43	11,195.00	43,800.00
<i>age</i>	13.20	2.34	9.36	19.20
<i>pop</i>	584,404.90	473,032.00	89,852.00	2,624,467.00
<i>north</i>	0.57	0.50	0	1
<i>centre</i>	0.15	0.36	0	1
<i>south</i>	0.28	0.45	0	1
<i>big</i>	0,35	0,48	0	1
<i>ani</i>	4.48	1.11	2.00	6.00
<i>other</i>	7.97	1.26	7.00	12.00

**TABLE 3. Correlation matrix**

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	<i>price</i>	<i>leisure</i>	<i>gdp</i>	<i>age</i>	<i>pop</i>	<i>north</i>	<i>centre</i>	<i>big</i>	<i>anima</i>
<i>price</i>	1.0000								
<i>leis</i>	-0.1039	1.0000							
<i>gdp</i>	-0.1237	0.7145*	1.0000						
<i>age</i>	0.1973*	-0.6621*	-0.7620*	1.0000					
<i>pop</i>	0.1197	0.1069	0.2588*	0.1043	1.0000				
<i>north</i>	0.2412*	0.7416*	0.5974*	0.5244*	-0.0013	1.0000			
<i>centre</i>	0.1003	0.0945	0.0720	0.2114*	0.0443	0.4924*	1.0000		
<i>big</i>	0.9196*	-0.1106	-0.1571	0.1539	0.0328	0.2847*	0.1841	1.0000	
<i>anima</i>	0.3273*	0.1308	-0.0168	0.0323	-0.0716	0.0546	-0.0148	0.4519*	1.0000

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Note. \*p&lt;0.01.

**TABLE 4. Results (full sample)**

	<b>OLS</b> (1)	<b>IV</b> (2)
<i>price</i>	4.8366* (0.7768)	4.9665* (0.7876)
<i>leis</i>	-0.3610 (0.8960)	-0.1934 (0.9080)
<i>gdp</i>	1.4055* (0.3163)	0.9500 (0.7390)
<i>age</i>	-0.0410 (0.0401)	-0.0749 (0.0691)
<i>pop</i>	0.3593* (0.0914)	0.4141* (0.1150)
<i>north</i>	-0.9961* (0.3061)	-0.9618* (0.2979)
<i>centre</i>	-0.9779* (0.2806)	-0.9797 (0.2771)
<i>big</i>	-1.2845* (0.3000)	-1.3359* (0.3068)
<i>anima</i>	-0.0960** (0.0475)	-0.0936** (0.0467)
<i>cons</i>	-19.3140* (3.7466)	-16.0052* (6.7171)
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N	174	174
R-squared	0.56	0.56
F	24.01	21.33
linktest	0.19	0.16

Note. \*, \*\*, \*\*\*, significance at 1%, 5%, 10%.

**TABLE 5. Results (samples)**

	<b>Americano, Medrano, Moira Orfei</b>	<b>Other</b>	<b>Americano, Medrano, Moira Orfei</b>	<b>Other</b>
	<b>OLS</b>	<b>OLS</b>	<b>IV</b>	<b>IV</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<i>price</i>	0.7135 (2.5031)	5.6051* (0.7628)	1.5879 (3.2798)	5.5216* (0.7726)
<i>leis</i>	-0.0882 (1.1186)	-0.6263 (1.1916)	0.8404 (1.2380)	-0.8201 (1.2403)
<i>gdp</i>	1.9277* (0.4733)	1.1185* (0.3868)	-1.1074 (1.3164)	1.5131*** (0.9366)
<i>age</i>	0.1012 (0.0684)	-0.0490 (0.0474)	-0.1674 (0.1348)	-0.0261 (0.0703)
<i>pop</i>	0.3156** (0.06843)	0.3600* (0.1056)	0.7157* (0.2102)	0.3197* (0.1309)
<i>north</i>	-1.0168* (0.3854)	0.7109*** (0.3917)	-0.7534 (0.5288)	-0.7364** (0.3683)
<i>centre</i>	-0.8921* (0.3382)	-0.5655* (0.4017)	-0.8853* (0.4746)	-0.5534 (0.3925)
<i>anima</i>	0.8254* (0.2083)	0.1296*** (0.0546)	0.9867* (0.2663)	-0.1276** (0.0532)
<i>cons</i>	-20.1672** (8.5019)	-17.6596* (4.0850)	1.4925 (14.4208)	-20.4716* (7.2033)
N	61	113	61	113
R-squared	0.52	0.60	0.45	0.60
F	17.90	22.83	7.21	21.48

Note. \*, \*\*, \*\*\*, significance at 1%, 5%, 10%.

## Appendix. Sources of data

<b>Variables</b>	<b>Description</b>	<b>Source</b>
<i>seat</i>	Number of seats multiplied for the number of performances taken place in a single location	www.circusfans.it
<i>price</i>	Average ticket price, weighted for the number of seats	www.circusfans.it
<i>leis</i>	$W(1-U)$ , where $W$ is the regional hourly wage and $U$ is the regional unemployment rate	www.istat.it
<i>gdp</i>	Per capita provincial income	www.tagliacarne.it
<i>age</i>	Percentage of provincial population aged 0-14	www.istat.it
<i>pop</i>	Provincial population	www.istat.it
<i>north</i>	Dummy variable if circus location at north of Italy	www.circusfans.it
<i>centre</i>	Dummy variable if circus location at centre of Italy	www.circusfans.it
<i>big</i>	Dummy variable for Americano, Medrano, and Moira Orfei circuses	www.circusfans.it
<i>anima</i>	Numbers with animals in the show	www.circusfans.it

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### Periodicals:

KLEIN, B. (1980), “Transaction Cost Determinants of ‘Unfair’ Contractual Arrangements,” *American Economic Review*, 70(2), 356-362.

KLEIN, B., R. G. CRAWFORD and A. A. ALCHIAN (1978), “Vertical Integration, Appropriable Rents, and the Competitive Contracting Process,” *Journal of Law and Economics*, 21(2), 297-326.

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NELSON, R. R. and S. G. WINTER (1982), *An Evolutionary Theory of Economic Change*, 2nd ed., Harvard University Press: Cambridge, MA.

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STIGLITZ, J. E. (1989), “Imperfect Information in the Product Market,” pp. 769-847, in R. SCHMALENSEE and R. D. WILLIG (eds.), *Handbook of Industrial Organization*, Vol. I, North Holland: Amsterdam-London-New York-Tokyo.

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WILLIAMSON, O. E. (1993), “Redistribution and Efficiency: The Remediableness Standard,” Working paper, Center for the Study of Law and Society, University of California, Berkeley.