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Abstract: This paper examines the Italian theatre market from both the demand and supply side. The descriptive analysis shows that the Italian theatre market is, mainly, localized in the Northern and Central Italian regions for both patrons and companies, confirming a cultural divide between the Southern and the rest of the Italian regions also in the theatrical sector. Like many other European countries, the performing arts in Italy are subsided by public funds through the so-called *Fondo Unico per lo Spettacolo* (FUS)*,* thereby influencing theatre performance and attendance. As expected, the distribution of the FUS follows the localization of the theatrical companies. The empirical analysis is conducted using 34-year panel data (1980-2013) for the 20 Italian regions. By applying the seemingly unrelated regression (SUR) estimation technique, we identify the factors influencing theatre demand and supply. The estimated results confirm as determinants of theatre demand, price and consumer income and additionally, cultural capital (proxied by education), substitute goods (such as cinema) and other contextual factors (such as tourists flows and territorial area). In contrast, theatre supply is influenced by income, previous historical attendance, theatrical employment, and other contextual factors linked to territorial and public subsidies.

Keywords: Theatre demand, theatre supply, panel data, SUR, Italy.

JEL Classification: C23; D12; Z10

1. Introduction

Theatre, together with classical music, cinema and museum are often identified as part and parcel of Italian cultural identity. However, in order to be able to form part of the cultural identity of a country such cultural goods must be popular and consumed in an ongoing manner. Henceforth, the importance of studying the theatre is two-fold, permitting the identification of the role of the factors that both sustain cultural participation and cultural identity. In this paper we concentrate on the determinant of theatre attendance and theatre supply, since theatre, in its different facets is recognised worldwide as one of Italy´s most predominant cultural aspects.

The consumption of theatre and other cultural goods has been investigated in numerous studies applying different econometric techniques often via a single period based model using standard economic variables. In order to estimate aggregate demand for theatre, researchers model the relationship between price and income elasticities in the presence of other cultural economics goods. Zieba (2009), for example, provides estimates of price and income elasticities of demand for German public theatre, introducing in the classical demand function for theatre a full-income variable in addition to ticket price and consumer income. In a study of individual-level demand for the U.S., Ateca-Amestoy (2008) show the greater significance of cultural variables as opposed to economic ones in explaining different levels of attendance and additionally finds that economic variables work as deterrents to participation, whereas variables measuring different aspects of cultural capital explain both access and intensity of participation. One of the few attempts to study the demand for performing arts in Italy was compiled by Bonato et al. (1990), estimating a demand function for the period

1964–1985.Their results show that an increase in both real income and the performances offered produces a significant increase in attendance.

Indeed, to the best of our knowledge, we have not to date found any studies focusing either on the supply side or both on demand and supply for theatre, either for Italy or for that matter other countries. This study is an attempt to respond to the aforementioned gap in the literature by analysing the Italian theatre market simultaneously from both the demand and supply side.

The empirical analysis is based on a panel of twenty Italian regions over the period 1980–2013. Reliable panel data was constructed using two different sources: firstly, the Italian Society of Authors and Publishers (Società Italiana degli Autori ed Editori, SIAE) and secondly, the National Institute of Statistics (Istituto Nazionale di Statistica, ISTAT). The SIAE data allow us to study theatre demand (attendances) and supply (performances) model, whilst the data for the main control variables was taken from various publications elaborated by ISTAT.

Our estimated results, using the Seemingly Unrelated Regression (SUR) methodology, show that the demand side for theatre is influenced by price, income, cultural capital, substitute goods (such as cinema) and other contextual factors. The theatre supply is strongly related to income, previous demand, the employment in the sector and other contextual factors related to the region of localization of the theatrical activities and to public subsidies.

The rest of the paper is organised as follows. Section 2 presents some stylized facts on the Italian theatre market. Section 3 examines the literature review. Section 4 describes the econometric model and Section 5 presents the data employed. Section 6 describes the results, while Section 7 summarises the conclusions of the paper.

2. The Italian theatre market: patrons and companies

Amongst the players of the Italian theatre system, Sciarelli (2004) distinguishes three categories: theatre dedicated to production and distribution, theatre companies and operating theatres. The so-called repertory theatre company is characterized by a fixed 'place', where the production and distribution of performances takes place. Usually, the place is also available to host other events and plays. Falling into this category are the permanent theatre (*teatro stabile)*, theatre of tradition and the opera house. The permanent theatre is a form of public theatrical organization that can also be divided into three categories: public initiative, private initiative and innovative theatre. The distinction between public and private is found in the role of administrative and economic support for companies available from the local authorities where theatre is located. Innovative theatres are considered to be those that operate in the fields of production and promotion of experimental plays and theatre for children and young people. The objective of the Theatre of tradition is to produce and distribute the classical repertoire of the Italian theatre, preserving in this way its originality. Most of these theatres are located in the North of Italy and in Naples. The Italian opera houses, which in 1996 were converted into private foundations, are the theatres which offer operas, ballets, concerts etc. According to Sciarelli and Tortorella (2004), the performances that most attract theatregoers are the so-called "commedie musicali" (musical comedies) and recitals, usually performed by the most popular cinema and television entertainers.

As far as the infrastructure is concerned, taking into consideration those theatres where it is possible to perform arts events, we find that they are not particularly

numerous and are unevenly distributed across Italian regions. According to Sciarelli (2004), in 2001 more than half (50.9%) of the 1,988 active Italian theatres were located in the Northern regions, with 23.3% in the Central regions, and the remaining 25.8% in the Southern regions. The same territorial distribution applies for the 559 theatres that were not active. Figure 1 shows the number of operating and non-operating theatres per millions of inhabitants by territorial area for the year 2001. The graph here shows that the number of operating and non-operating theatres is higher in the North-Eastern area of the country followed by the Central and North-Western areas. Compared with the former, the Southern regions have a much lower number of theatres. Clearly, the endowment and distribution of theatrical infrastructures constrains the opportunity for growth and diversification on the supply side.

Figure 2 displays the number of tickets sold per capita aggregated for the four main Italian territorial areas (North-West, North-East, Centre and South) for the period1980-2013. This shows that despite the annual variation, for all areas the average number of tickets sold increased during the period 1980 to 2013. However, whilst three areas registered similar starting and ending points for the average number of tickets sold, for the Southern regions average ticket sales although on the increase are well below the average of the other three areas, thus indicating a clear territorial divide even in the case of theatre attendance.

In Italy, as in many other European countries, the performing arts are publicly subsidised. Italian subsidisation of the 'entertainment sector' is ensured by a Parliamentary Law (n.163) approved on the 30 April 1985 that established the Fund for the Performing Arts (*Fondo Unico per lo Spettacolo*-FUS). The intention of the government is to insure stability and continuity for all theatre activities via the FUS.

However, the crises of Italian public finance and the consequent reduction of subsidies have made the use of public resources a central theme in the management of opera houses. In this context, the expenditure review and the need to reduce misappropriation in spending became a priority objective when requiring funds for new quality projects. Therefore, it seems necessary to introduce the concepts of productivity and efficiency in theatre management.

The FUS (at 1985 constant values) has decreased continuously from an initial allocation of €357,480,000 at its start in 1985 to a recent all time low of €157,010,000 in 2013, representing an overall decrease of 56% since the fund was created (Figure 3). In 2013, the FUS allocation was divided in varying proportions between the different performing arts and cinema activities. Given the centuries-old Italian tradition of *bel canto*, the Opera Foundations received 47% of the 2013 FUS budget, followed by cinema (18.59%), music (14.10%), dance (2.6%) and circus (1.4%). Theatre and drama activities received 16.04% of the total annual allocation. The FUS contributions to theatres and companies are allocated according to quantitative (mainly production and running costs) and qualitative (mainly multiannual activity, artistic direction, innovation) criteria. To receive a contribution from the FUS, an Italian performing arts company must present a final report on the work performed, independent of box office revenues and spectator numbers (Figure 4).

3. Literature review

In Italy, despite the existence of a rapidly growing body of literature in the field of cultural economics (Fuortes 2002; Favaro and Frateschi2007; Sisto and Zanola 2010; Cellini and Cuccia 2013), the study of the demand for cultural goods is relatively

underdeveloped (Favaro and Frateschi 2007). To the best of our knowledge, there are no papers that analyze the Italian theatre market from both the demand and supply side. Only a few studies in the field of cultural economics have been conducted using data for other countries, and all of them have been applied to cinema activities (Cameron 1986; Dewenter and Westermann 2005).

One of the most consistent findings in the literature on arts participation has been the fact that traditional socioeconomic variables, such as income, education and employment are highly correlated with participation in the arts. This means that those in higher socioeconomic groups are more likely to be exposed to the arts in their schools or social networks. Cultural and arts classes at school persistently serve to increase later cultural participation (Kraaykamp 2003). Nagel et al. (2010) assert that such courses have a minor, albeit significant effect compared with the influence of family and educational levels. Income is another important factor, yet the empirical literature indicates that education plays a far greater determining role (O'Hagan, 1996; Borgonovi, 2004; Seaman, 2006). In fact, socioeconomic status may have a positive initial impact on the consumption of the arts. With respect to other determinants, the empirical literature on which factors lead individuals to participate in the arts has demonstrated that adult attendance is influenced by several other variables: past exposure, the price of substitute or complementary goods, the tourist flows and the characteristics of the territory central area, etc. (Seaman 2006; Ateca-Amestoy 2008; Borowiecky and Castiglione 2014).

4. Theoretical framework: theatre demand and supply

The demand for theatre is usually measured by theatre attendance (tickets sold), while the supply for theatre is measured by the number of performances. Both of them are deflated by population size in order to obtain theatre admission and theatre supply per capita. Assuming that the relationship is estimated in constant-elasticity form, we hence specify the empirical model as follows, with lower-case letters denoting the logarithms of the underlying variables:

$$\text{demand}: att_{it} = \alpha_0 + \alpha_1 pth_{it} + \alpha_2 pcin_{it} + \alpha_3 inc_{it} + \alpha_4 edu_{it} + \alpha_5 tur_{it} + \alpha_6 Area_i + u_{it} \tag{1}$$

$$\text{supply}: perf_{it} = \beta_0 + \beta_1 inc_{it} + \beta_2 att_{it-1} + \beta_3 empl_{it} + \beta_4 Area_i + \beta_5 Lazio_i + \beta_6 D1985 + v_{it}. \tag{2}$$

In equation (1) the demand for theatre in region i at time t, att_{it}, measured as the number of admissions per capita, is defined as a function of the price, pth_{it}; the price of the substitute or complementary good, $pcin_{it}$; per capita regional income, inc_{it}; the number of person with higher education on the labour force, edu_{it}; the mean permanence of domestic tourists in the region, tur_{it}; and a dummy variable indicating if the region is located in the Centre or North of Italy, $Area_i$. Finally, u_{it} is the stochastic disturbance representing measurement errors, a multitude of individually-unimportant omitted variables, and purely random influences.

While a negative relationship between theatre demand and ticket price is expected, given that according to demand theory as the price for a good increases the demand for the same good should decrease, in this case the magnitude of own price elasticity is the element of importance. A high elasticity indicates that theatre managers charge prices as revenue maximizing companies, whilst a low own price elasticity indicates that managers are not maximizing revenue and rely more on public subsidies.

On the other hand, the sign of the coefficient for cinema reveals whether it should be considered a substitute (positive sign) or complementary (negative sign) good. Borgonovi (2004) asserts that cinema is a complementary good for theatre, consistent with the omnivore theory on arts attendance (NEA 1993; Chan and Goldthorpe 2007). According to demand theory, the positive relationship between income and attendance implies that theatre is not an inferior good. Even though a positive relationship between income and theatre attendance is expected, it is important to investigate the income elasticity to check if theatre can be considered a normal or a luxury good. If the income elasticity is positive and greater than one, theatre could be considered a luxury good, while if the elasticity is positive but less than one, theatre could be considered a normal good. Economic theory, also, predicts that education is one of the main determinants of theatre attendance. Since education is likely to proxy for cultural capital, it is expected that the sign of the variable *edu* will be positive: the higher the level of educational achievement, the higher the likelihood of an individual attending performing arts activities. Following Borowiecki and Castiglione (2014) a positive relationship between the mean permanence of Italian tourists and theatre attendance is expected. Finally, given that the most important theatres are located in the Northern and Central regions of Italy a positive impact on theatre demand is, also, expected for operations in these territorial areas (as compared with the Southern regions of the country).

In equation (2) theatre supply, $perf_{it}$, measured as the total number of performances in region i at time t, is defined as a function of the income, inc_{it}; the attendance at time *t-1*, att_{it-1}; the number of the employees working in the theatrical sector, $empl_{it}$; and three dummy variables indicating the Italian territorial area, $Area_i$, the $Lazio_i$ region and the year of the introduction of the FUS, $D1985$. This last variable is

equal to 1 if the year is equal or greater that 1985 and 0 otherwise. Finally, similar to u_{it} in the former demand function, v_{it} is the stochastic disturbance in the supply function representing measurement errors, a multitude of individually-unimportant omitted variables, and purely random influences.

The expected sign for all these variables is positive. As regional income per capita increases it is reasonable to expect that theatre supply will increase as well, because richer areas are likely to allocate more money to leisure time activities. The same apply to theatre attendance in a previous period. If theatre attendance was high in the past, this positively influences current supply. The number of theatrical employees is expected to exert a positive influence on theatre attendance. A positive relationship is, also, expected between the dummy variable for the territorial area and the theatre supply. Since the *Lazio* region absorbs almost 50% of the annual public subsidies of the FUS, the variable is equal to 1 for the Lazio region and 0 otherwise. The expected sign is also positive in this case. Finally, a dummy variable, *D1985*, is introduced to control for the years that accounted for the FUS distribution. As mentioned previously, the *Fondo Unico per lo Spettacolo* was introduced in 1985 to help the performing arts sector and the cinema to partially cover the increasing difference between costs and revenue. We expect the introduction of the FUS to have a positive impact on the theatre supply.

5. Data

The data used in this analysis covers the 20 Italian regions over the period 1980–2013. The data comes from two sources: the Società Italiana degli Autori ed Editori (Italian

Authors and Publishers Association, SIAE) and the Istituto Nazionale di Statistica (National Institute of Statistics, ISTAT).

The SIAE data are taken from the *Annuario dello spettacolo* 1980-2013 (The yearbook of entertainment activities), which reports the number of performances, number of tickets sold, box office revenues, public expenditures and turnover per geographical area and region. We made use of the data contained in this survey F related to theatre admission, number of theatre performances and theatre and cinema ticket prices.

The regional value added per capita is taken from *Il reddito disponibile delle famiglie nelle regioni italiane* (The disposable income of families in the Italian regions – ISTAT 2013). The mean permanence of Italian tourists is taken from the ISTAT survey on the capacity of tourist accommodation establishments (Capacità e Movimento degli esercizi ricettivi). The number of employees of the theatrical sector is taken from the 1971-2011 Censuses carried out by ISTAT. Finally, regional-level data on population, labour force and education are obtained from the Annual survey on the labour force (La rilevazione annuale sulle forze di lavoro, ISTAT). All monetary variables are deflated to the 2010 price level index (ISTAT, 2013).

The definitions of the variables and sources of data are presented in Table 1, while Table 2 provides the sample summary statistics of the variables used. The average ticket price in Italy over the period 1980 to 2013 is €32.5, compared with a cinema price of €6.0. However, the standard deviation of the theatre ticket price is larger compared with the cinema price, meaning that a superstar theatre or actor will probably demand a premium price. The average mean permanence of Italian tourists is

nearly 5 nights, whilst the average number of theatre performances is 3,520. Finally, the average number of theatre employees is 1,775.

6. Results and Discussion

In order to simultaneously estimate equation (1) and equation (2), a Seemingly Unrelated Regression (SUR) procedure is applied, treating the theatre price as endogenous. The first step of our analysis is to test for stationarity in our data. We apply a variety of tests, and results show that the null hypothesis of unit root can be rejected at the one percent significance level. Therefore we conclude that our series is stationary for all the variables involved in the analysis and we proceed to estimate Equations (1) and (2) using a logarithmic scale.

The results are summarised in Table 3. The second and third columns of the table report the estimated coefficients of the demand function, whilst the fourth and fifth columns show the estimated coefficients of the supply function. As expected, the correlation coefficient between ticket price and theatre attendance is found to be negative and statistically significant, with an elasticity of -0.106. This means that an increase in ticket price implies a lower admission rate. The coefficient for the price of an alternative cultural good (in our case the cinema) is negative and statistically significant, meaning that a one percent increase in the price of cinema decreases theatre attendance by 0.289. This supports the hypothesis that cinema and theatre can be considered as complementary goods. As expected, the coefficient associated with per capita income is positive and significant at the one percent level, with an elasticity of 0.356, meaning that as income increases theatre attendance increases as well. The coefficient associated with the education of the labour force shows that as education

increases the consumption of theatre increases by one percent with theatre attendance increasing by 0.134. The last two results associated with theatre attendance confirm the main findings of the economic literature on cultural goods, which indicate that income and education are two important determinants (see Seaman 2006 for a review of the empirical literature). The coefficient associated with the mean permanence of Italian tourists in the region has a positive impact on theatre attendance, this confirming the findings of Borowiecki and Castiglione (2014) relating to the impact of Italian tourists on theatre attendance. Finally, the dummy variable representing the territorial areas for, Northern and Central Italy, clearly demonstrates that compared to the South of the country, demand is higher in the former regions.

The estimated results of the supply function are reported in the fourth and fifth columns of Table 3. The estimated coefficient confirms that income per capita is a strong determinant of theatre supply. Its coefficient is positive and statistically significant at the one percent level, meaning that theatre supply responds positively and increases by 0.507 as regional income per capita increases by one percent. Theatre supply is largely influenced by the past attendance, confirming that theatre companies behave in a rational way, since to plan the current number of performances they take into strong consideration the past demand for theatre. In fact, as the number for past attendance increases by one percent, theatre performances rise by 0.423. As expected, with an increase in the number of employees in the theatrical sector, supply increases by 0.082 as well. The estimated coefficient related to the dummy A*rea* in the case of theatre supply is not statistical significant, denoting that the territorial area is not influencing supply. This result cannot be confirmed given that if we consider just the *Lazio* region, it includes the capital city of Rome where many artists, companies and

public subsidies are located[1]. The importance of public subsidies is also confirmed by the estimated result related to the *D1985* dummy variable. In fact, the parameter is positive and highly significant with a coefficient of 0.133.

7. Conclusion

This paper analyses the Italian theatre market, both from a demand and supply perspective. In particular, the paper has two aims, the first is to provide some stylized facts on the Italian theatre market and the second one is to estimate an empirical model of theatre demand and supply. As far as the first aim is concerned, we conclude that the Italian theatre market is mainly localized in the Northern and Central Italian regions both for patrons and companies. In addition, we have a market that is highly subsidized. The companies receive public funds through the FUS, whilst the patrons receive indirect subsidies through prices that do not reflect economic criteria.

In terms of the econometric analysis, with respect to the previous literature which mainly focuses on the demand side, this paper innovates by introducing a simultaneous analysis of theatre demand and supply. The latter analysis is performed upon annual panel data for the twenty Italian regions over the years 1980–2013 constructed from data provided by the SIAE and ISTAT.

The estimated results, obtained using the seemingly unrelated regression methodology, on the one side confirming price and income as important determinants of the demand for theatre together with cultural capital (proxied by education), substitute goods (here, cinema) and other contextual factors (such as tourists flows and territorial area). On the other side, theatre supply is strongly influenced by income,

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[1] As a robustness check, we have also estimated the model without the dummy *Area* and results are not statistically different. Those results are available upon request from the authors.

previous attendance, theatrical employment, and other contextual factors linked to the territory and to public subsidies.

Whilst on the one hand this analysis confirms previous findings on demand, on the other hand it is also innovative for two main reasons. Firstly, because Italian theatre attendance is often left in the shade compared to other countries. Secondly, and most importantly, because our findings are obtained taking theatre demand and supply into account simultaneously.

Finally, since public subsidies are important determinants of theatre supply further analysis should explore whether or not these funds influence either the number of plays or the number of performances or both.

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Figures

Figure 1: Operating and non-operating theatres by territorial area per millions of inhabitants, year 2001
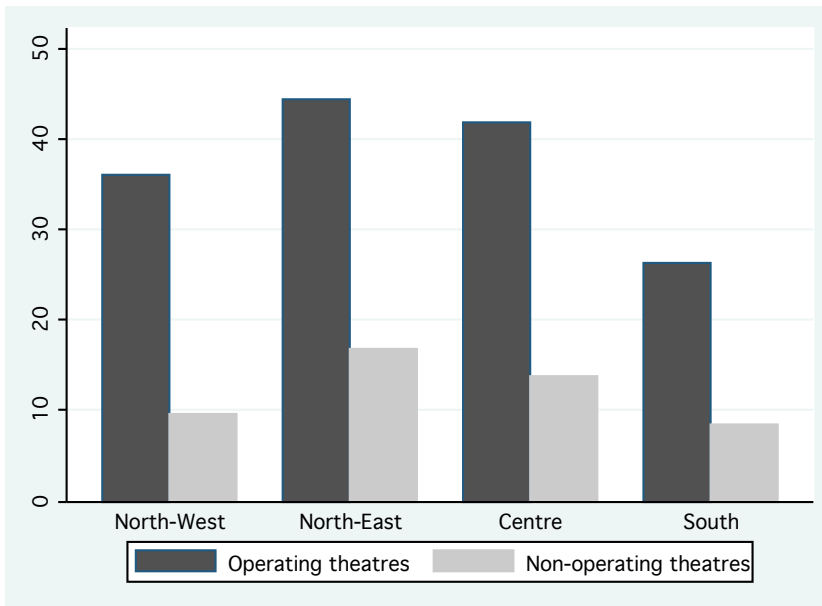

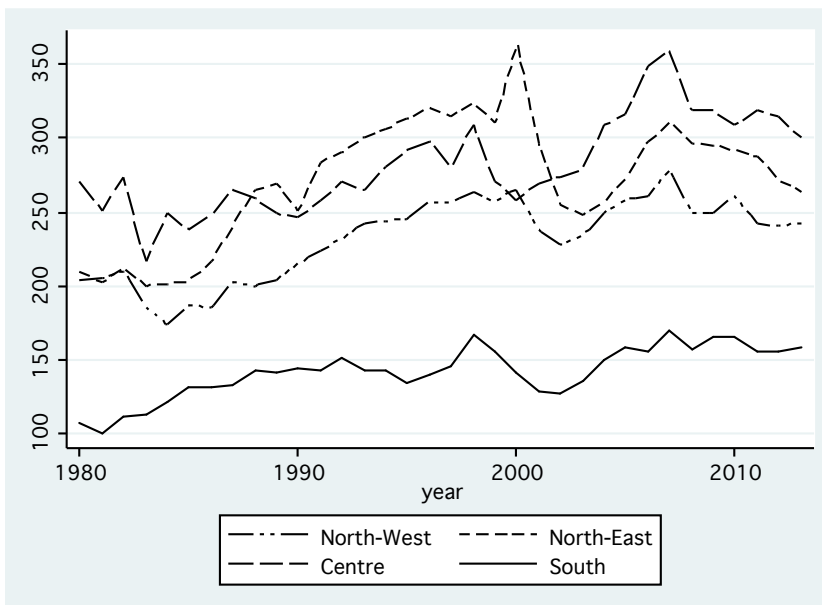Figure 2: Tickets sold per capita aggregated per territorial area (1980-2013)

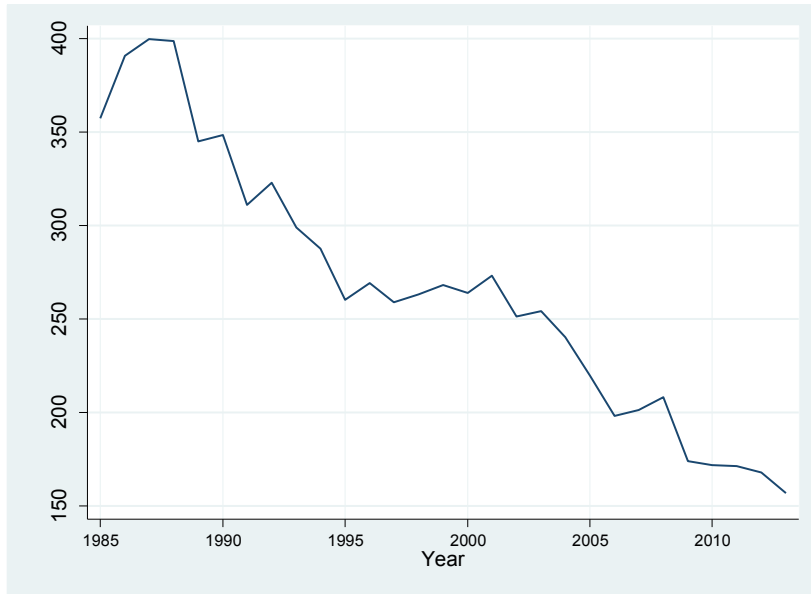Figure 3: FUS annual allocation, 1985-2013, constant price 1985

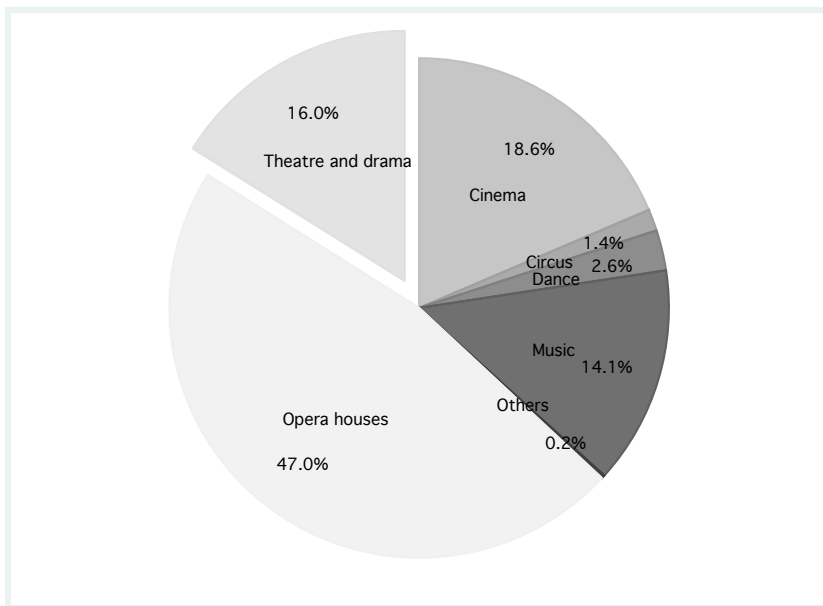Figure 4: FUS allocation by activities, 2013

Tables

Table 1: Data information

Variable	Definition	Source
Dependent variables		
Att	Theatre demand (attendance): per capita number of theatre tickets sold per year	SIAE-ISTAT
Perf	Theatre supply: number of theatre performances per capita	SIAE
Independent variables		
pTh	Theatre ticket price: ratio between total theatre revenue and theatre tickets sold	SIAE
pcin	Cinema ticket price: ratio between cinema total revenue and cinema tickets sold	SIAE
inc	Value Added per capita	ISTAT
edu	Ratio of individuals with a maximum of compulsory school education on the labour force	ISTAT
tur	Mean duration of stay of Italian tourists	ISTAT
empl	Number of theatre employees	ISTAT
Area	Dummy variable for territorial area north and centre of Italy	ISTAT
Lazio	Dummy variable for Lazio region	ISTAT
D1985	Dummy variable for the year of the introduction of FUS	SIAE

Table 2: Sample summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Att	680	0.202	0.095	0.003	0.922
Perf	680	3520.512	3830.396	21.000	18332.000
pTh	680	32.531	32.689	5.450	534.222
pcin	680	5.934	1.321	2.086	19.610
inc	680	60230.550	59150.910	2346.999	313296.500
edu	600	110.366	117.612	1.000	784.000
tur	680	4.848	2.448	0.337	39.612
empl	680	1775.518	2132.183	5.000	12004.600
Area	680	0.600	0.490	0	1
Lazio	680	0.050	0.218	0	1
D1985	680	0.853	0.354	0	1

Table 3: Seemingly unrelated regression results for the demand-supply theatre market

	Theatre_demand		Theatre_supply	
pTh	-0.106***	(0.033)		
pcin	-0.289***	(0.107)		
inc	0.356***	(0.113)	0.507***	(0.065)
edu	0.134***	(0.011)		
tur	0.086**	(0.036)		
att(t-1)			0.423***	(0.029)
empl			0.082***	(0.009)
Area	0.597***	(0.058)	-0.027	(0.040)
Lazio			0.568***	(0.047)
D1985			0.133***	(0.040)
cons	-0.517	(0.564)	-4.896***	(0.300)
Obs.	640		640	
R-sq	0.59		0.78	
chi2	930.16		2168.19	
p-value	0.000		0.000	

Note: The dependent variables are the per capita theatre attendance and the number of performances per capita. ***,**,* indicate estimates that are significantly different from zero at the 99%, 95% and 90% confidence levels, respectively.