PUBLIC POLICY AND THE PERFORMING ARTS: INTENDED AND UNINTENDED CONSEQUENCES OF PUBLIC SUBSIDIES

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Alle due persone grazie a cui questo manoscritto e' quello che e'. E' soprattutto la voglia di dedicarvi tempo ed energie che mi fa terminare questa tesi oggi, e non domani...

A Mattia,
Ci sono le pagine che ho scritto mentre eri nella mia pancia
E non lo sapevo ancora;
E quelle scritte in preda al panico appena ho saputo che c'eri;
Quelle che mi hai suggerito quando per la prima volta ti sei fatto sentire
E sembravi bolle d'aria che scoppiavano dentro;
E quelle che ho scritto mentre tu avevi il singhiozzo;
Quelle che ho scritto mentre ti dondolavo appena nato;
Quelle che ho immaginato mentre ti allattavo;
Quelle con con cui hai giocato mentre imparavi a camminare;
E poi ci sono le pagine brutte e piene di errori
O belle e importanti che non ho scritto:
Perche' le idee si sono perse, una Domenica sera,
Mentre mi si sono rotte le acque e tu hai deciso che era ora di nascere;
Perche' ero troppo stanca perche' ti svegliavi di notte per la fame;
Perche' era troppo bello guardarti dormire o giocare,
Alzare la testa mentre per la prima volta
Stavi a pancia in giu' sul divano bianco;

A Franco,
Perche' ci sei stato in questo come in tutto il resto.
Perche' tu hai giocato, dato da mangiare,
Fatto addormentare, cambiato, parlato a Mattia mentre io stavo scrivendo.
Per la mano che mi hai stretto per la prima volta tempo fa,
Vedendo un film in Priory Road;
E per la forza con cui mi hai stretto la mano un anno fa esatto.
Per le pagine che non hai scritto tu per rendere questo possible;
E per le cene cinesi e giapponesi consumate prima dell' ultimo
Treno della notte.
Per i fogli su cui questa tesi e' stampata.
Perche' ho vinto la scommessa su chi avrebbe finito prima;
Ma lascio a te il desiderio da esprimere;
Per la prima parola del primo proposal;
E per l' ultima parola che mi hai suggerito proprio ora.

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Abstract

The aim of my research is to assess intended and unintended consequences of public subsidies to non-profit institutions, particularly focusing on the performing arts. In recent years, one of the main objectives of public subsidies has been to curb prices, in order to encourage widespread attendance by removing a barrier for groups traditionally excluded from live performances. But do lower prices encourage attendance? Are people who normally do not participate in art events, such as those from disadvantaged socio-economic groups, prevented from doing so by high prices? And do the public subsidies necessary to lower prices have unintended consequences that might work against the objective of broader attendance – for instance, by 'crowding-out' private donations and thereby reducing overall support to performing arts institutions? In my thesis I address these questions using data from the United Kingdom and the United States.

In the first empirical component I explore to what extent admission prices influence the demand for live performances of wealthy, middle-class and deprived individuals. In the second part I assess to what extent public subsidies are correlated with attendance analysing the 2002 American Survey of Public Participation in the Arts. While the results of the price elasticity of the demand for performing arts study highlight a significant inverse correlation between attendance and prices, the analysis of the impact of public subsidies on attendance indicates that the former do not significantly influence the latter. Possible unintended consequences of government subsidies might prevent them from achieving their objective. I test the hypothesis that public subsidies displace private donations determining the apparent inconsistency between the findings that prices affect attendance and public subsidies do not. While public subsidies do not appear to be effective in stimulating attendance, results indicate that participation in art education is highly correlated with attendance. In the last part of the thesis I identify possible alternatives policy makers have to the use of public subsidies and concentrate on the provision of art education in public schools.

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Glossary

ACE = Arts Council of England

AEPESS = Arts Education in Public Elementary and Secondary Schools

EIN = Employer Identification Number

FES = Family Expenditure Survey

FIPS = Federal Information Processing Standards

GLS = Generalised Least Squares

IRS = Internal Revenue Service

NEA = National Endowment for the Arts

NCCS = National Center for Charitable Statistics

NCES = National Center for Education Statistics

NCSL = National Conference of State Legislatures

NTEE-CC = National Taxonomy of Exempt Entities Core Codes

OLS = Ordinary Least Squares

ONS = Office of National Statistics

PAT = Policy Action Team

REAP = Reviewing Education and the Arts Project

SOI = Statistics of Income

SPPA = Survey of Public Participation in the Arts

TCG = Theater Communication Group

TGI = Target Group Index

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1. Introduction

The fundamental aim of this research is to assess the intended and unintended consequences of public subsidies to non-profit performing arts institutions. Subsidies are often the most visible and controversial form of financial support to art organisations. In recent years one of the main objectives of public subsidies has been to keep prices low and to encourage widespread attendance by removing a barrier to access for those groups who have traditionally not enjoyed performing arts events. But do lower prices really encourage attendance? Are people who normally do not go to art events, such as those from lower socio-economic groups, prevented from doing so by high prices? And might the public subsidies necessary to permit lower prices have unintended consequences that might work against the objective of higher attendance – for instance, by 'crowding out' private donations and thereby perhaps reducing overall levels of support? This thesis addresses these questions in a series of empirical analyses using data from the United Kingdom and the United States.

Since William Baumol and William Bowen published their seminal economic analysis of the performing arts sector in 1966 (Baumol and Bowen, 1966), empirical research in the arts and culture has shown a sustained and steady growth. But important questions remain unanswered and decision makers,

politicians and art managers often lament the lack of empirical evidence that would enable them to develop sound cultural policies and art programmes.

One crucial question to which research has not yet provided a definitive answer is how attendance at performing arts events could be increased, particularly by improving access for the groups that are traditionally less represented such as the poor and the disadvantaged. Government agencies throughout the world provide financial support to performing arts organisations with the aim of promoting attendance by a broad range of population groups. However, the effectiveness of such public subsidies is still remarkably uncertain. Many managers of performing arts organisations are convinced that ticket prices are a major barrier to attendance for low-income groups. But, in an apparent paradox, they also believe that they could increase ticket prices substantially without losing many of the higher income members of their audiences. Is it true that, as this behaviour would suggest, ticket prices and their variations have a different effect on the attendance of individuals belonging to different socio-economic groups? Again, remarkably little is known about this.

The absence of supporting evidence and research has not stopped government activities in the area. Between 1998 and 2003 the Arts Council of England developed a "New Audiences" programme. It allocated 1,157 grants for a total of £20 million specifically to help removing a number of factors thought to prevent attendance by certain population groups; but the evidence on the role that these factors actually play in determining attendance was little more than anecdotal. The Arts Council as a whole allocated £309 million in grants[1] to the arts sectors in 2003/04, predominantly to performing arts organisations. In the Council's 2004 Annual Report, Chairman Sir Christopher Frayling summarised the mission of the Arts Council as follows *'quite simply, we want to extend world-class quality to more people'*. Similarly, the National Endowment for the Arts, counterpart of the Arts Council in the United States, emphasises in its

[1] The 2004 Annual Report of the Arts Council of England indicates an exact figure of £308,543,000 that excludes £159,466,000 of net lottery grant commitments and $50 million of operating costs.

mission statement that it is *'a public agency dedicated to bringing the arts to all Americans'*. There is ample evidence that this is a desirable goal in modern societies, because of the benefits brought about by the arts. But what policies could provide effective means to achieve the goal of broadening participation is far from clear.

Despite the substantial amounts of money spent on audience development programmes in England and in the United States, policy makers and art managers in these countries and elsewhere still have no way to estimate the potential and actual impact of their efforts in this direction. The absolute and relative importance of different factors that may determine attendance remains at best difficult to quantify. It is still largely unknown whether and to what degree ticket prices negatively influence the demand of people living on low incomes. And if they do impact negatively it is not known whether this arises because of lack of economic resources, lack of knowledge to understand live performances, lack of interest, lack of peers with whom to attend or simply lack of performances nearby or public transportation to get to concert halls and theatres.

And there is a further question. If lower prices do indeed encourage poor people to attend the performing arts, how can government policy achieve these lower prices? The conventional policy adopted by governments is to provide the institutions concerned with subsidies. But what if these subsidies partially or wholly crowd-out non-governmental support? Then prices might not fall, and the policy is vitiated. What should governments do then to encourage more participation?

It is within this framework, and with the needs of policy makers primarily in my mind, that I conceived the investigation reported in this thesis. The basic idea behind my work is to apply economic principles and econometric methods, as well as evidence from different social sciences, to the study of the determinants of attendance in the performing arts sector. My interest lies, in particular, in the impact that ticket prices have on attendance, in the impact of

government subsidies on overall support and hence on ticket prices, and in the use policy makers can make of subsidies and other levers in their efforts to promote broader attendance at live performances.

1.1. Aim and objectives

The aim of this research is to explore the complex relationships between the demand for performing arts by different population groups, in terms of attendance at live events, the price of admission to such events, the cost structure of performing arts organisations and the financial support provided to these organisations by public agencies and private donors. The key issue at stake is whether the provision of public subsidies to performing arts organisations will ultimately produce the intended effect of increasing and broadening attendance. If not, why not? And if not, what public policies could be more effective in the pursuit of this goal?

The thesis breaks down this overarching question into a number of more specific research questions amenable to direct empirical investigation within the time frame available. These are as follows.

1. Is government intervention to promote attendance legitimate?
Many of the social sciences, including economics, sociology, political science, and psychology, as well as medicine and public health, have provided arguments that could justify public support of the arts. I reviewed such arguments in two steps: first, by exploring the economic arguments for public intervention in the arts sector; then by drawing upon literature from other disciplines in search for evidence that participation in the arts in general and in live performances in particular produces individual and social benefits that economists would classify as positive externalities. My review suggests that, on the whole,

government intervention in the arts sector is justified on efficiency grounds. Efficiency arguments developed in economics include the identification of public goods and positive externalities such as feelings of national pride and option value. Positive externalities identified outside of the economic literature consist in cognitive benefits, health benefits and social capital production associated with participation in the arts. These benefits are greater with widespread attendance and in particular when attendance is extended to disadvantaged and excluded social groups, such as people with low incomes, low educational attainment, and those who are part of ethnic, cultural and racial minorities. Such groups are traditionally less likely to attend performing arts events and to enjoy the benefits associated with participation (other things being equal, positive externalities are larger when people from these groups participate in the arts).

Additionally, performing arts organisations are subject to chronic financial instability because of what ahs been termed Baumol's "cost disease" (Baumol, 1967). As the performing arts are a labour intensive sector, they are likely to display slower than average productivity gains over time. However, wages in the performing arts sector have to rise in line with those in other industries, which tends to generate a gap between expenditures and revenues that must be covered either by prices rising faster than general inflation or by increases in revenues from public and private support. Although Baumol himself has argued that the cost disease is largely a fiscal illusion (Baumol, 1993) most believe that if cost increases are to be met by price rises, the demand for live performances, especially by low-income groups, will suffer. The market, when left to operate on its own, is unable to guarantee an efficient level of engagement in the arts, therefore society does not enjoy the positive externalities of the arts to the full (efficiency argument in favour of government intervention) and not all individuals in society will have equal access to the individual benefits (equity argument). One of the hypotheses of the thesis is that the high prices that are necessary to cover high labour costs at least partially account for group differences in attendance rates.

2. Is there an income gradient in the responsiveness of the demand for live performances to changes in prices?

While there is a considerable literature on the price elasticity of the demand for live performances, virtually all available empirical studies examine overall demand functions and do not consider whether the effect price changes have on the demand for live performances depends on income. Evidence from time-series data of performing arts organisations documents a weak relationship between average quantities of tickets sold and average ticket prices. Such line of research fails to account for the socio-economic characteristics of audiences. As a result, while such studies serve arts managers well in their attempts to maximise ticket income, they are less useful to policy makers who need to develop policies aimed at broadening attendance in the arts. Most often what happens is that policy makers (and art managers interested in audience development), simply rely on anecdotal evidence and assume that the demand of different groups in the population responds differently to changes in prices and develop policies consistent with this assumption, for instance price differentiation policies. I test the validity of this assumption using survey data on expenditures on live performances for the period 1987 to 2000, linked to detailed retail price indices of live performances and complements/substitutes to test this assumption. My findings indicate that while ticket prices of live performances influence attendance generally, the response of different income groups to price changes is similarly inelastic, with a ten percent increase in prices accompanied by a nine percent drop in attendance.

3. Are public subsidies effective in stimulating attendance by reducing the reliance of performing arts organisations on ticket income?

Public subsidies have traditionally been used as a means to fill the "income gap" while avoiding ticket price increases. I assess whether this is a sound strategy using data from the 2002 Survey of Public Participation in the Arts, linked with information on public support from the tax returns of theatre companies, to identify the effect of subsidies on attendance at theatre performances in the United States. While my analysis of the price elasticity of the demand for

performing arts highlights a significant inverse correlation between attendance and prices, my analysis of the impact of public subsidies on attendance indicates that the former do not significantly influence the latter. The apparent inconsistency between the findings of the two analyses suggests that public subsidies might have unwanted consequences at the organisational level that prevent prices from falling despite increases in support levels[2].

4. What factors might prevent public subsidies from achieving their goals?

A possible cause for the lack of association between public subsidies and attendance is that public subsidies might not translate into lower ticket prices. This could happen if subsidies inhibited private donations, making it impossible for performing arts organisations to lower prices. To test the hypothesis that crowding-out effects are at play in the performing arts arena, I develop two models to assess institutional and sectoral crowding effects in the United States and apply them to a sample of American non-profit theatre companies followed in the period 1997 to 2001. My findings indicate that in some organisations a crowding out effect does takes place but in others the crowding effect is of the opposite sign (crowding-in). The relationship between public subsidies and private donations at the institutional level depends on many factors, most notably the size of public grants, whether they represent an increase or a decrease over the previous period and whether grants come from federal, state or local governments[3]. The sectoral crowding out effect hypothesis considers the possible displacement of private donations by public subsidies jointly for all organisations. I study the sectoral crowding effect of federal support for the arts in the United States using data on the grants awarded by the National

[2] A preliminary version of the analysis presented in chapter Five on the influence of total unearned income on performing arts attendance led to the publication of a paper in Applied Economics [Borgonovi, F. (2004) Performing arts attendance: an economic approach. *Applied Economics* 36(17):1871-1885].

[3] The analysis of the institutional crowding effect of government grants on private donations in the American theatre sector was presented at the 7th International Association on Arts and Cultural Management that was held in Milan in 2003 and led to a manuscript that is currently forthcoming in Public Choice.

Endowment for the Arts in the period 1955 to 1999, and find that federal grants and private support are independent [4].

5. Do policy makers have alternatives to the use of public subsidies to increase attendance in the performing arts?

Public subsidies do not appear to be particularly effective in delivering the objective of improving attendance in the performing arts, especially for the less well off. However such an objective is at the core of many governments' cultural policies. Is there an alternative to subsidies to achieve this end?

The thesis undertakes an analysis of arts attendance in the United State. This suggests that art education is the strongest single factor affecting attendance. The main policy implication is therefore that securing high quality art education in various forms of art in public schools might be the best way forward to broaden attendance at live performances. Public policies can be relatively successful in guaranteeing minimum standards of art education in terms of numbers of courses offered, duration of classes and other "quantity" measures. However ensuring that different schools offer art classes of agreed "quality" standards is harder and requires significantly more time, financial resources and commitment.

The term attendance is used in the literature to indicate different domains of people's engagement in the performing arts, ranging from attendance at live events as a member of an audience; to participation through the media to non-live performances and even personal engagement as a creator, either an amateur or a professional performer (McCarthy et al., 2001a). I will concentrate on the first type of participatory activity – being a member of an audience at live performances – as this is the activity where inequalities are the most pronounced.

[4] The analysis of the sectoral crowding effect of federal grants on private donations was presented at the biannual conference of the Association for Cultural Economics International held in Rotterdam in 2002 and led to the publication of a paper in the Journal of Cultural Economics [Borgonovi, F, O'Hare, M (2004) The impact of the National Endowment for the

1.2. Structure of the thesis

The remainder of this thesis is structured as follows. Chapter Two illustrates the results of my literature review focusing on arguments developed in economics, sociology, psychology, political science and medical research, on the benefits of the arts and arts attendance. Chapter Three contains a review of the characteristics of performing arts audiences. The chapter includes current evidence on attendance in the performing arts in the United States and England and shows how the literature has consistently reported low attendance rates among disadvantaged groups. In the second part of Chapter Three I analyse the structure of the performing arts sector and why this is likely to determine chronic financial instability and a subsequent need for organisations to increase prices or look for support from public and private sources. In Chapter Four I report my analysis of how different socio-economic groups react to changes in the prices of live performances. As the results reported in Chapter Four indicate that ticket prices have an effect on attendance (the higher they are, the lower the attendance levels), in Chapter Five I develop a model to analyse the impact of public subsidies on attendance. The results of the latter indicate that public policies are not effective in stimulating attendance. This means that organisations that receive public support apparently do not use the additional financial resources they have to lower ticket prices. In Chapter Six I explore whether public subsidies have unintended consequences that are potentially responsible for the lack of association between public subsidies and attendance. I empirically test theories suggesting that public support tends to inhibit private donations. Finally in Chapter Seven I identify what alternatives policy makers have to the use of subsidies, with a focus on arts education, and whether such alternatives would be more effective in delivering the objective of broadening attendance.

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arts in the United States: institutional and sectoral effects on private funding. *Journal of Cultural Economics* 28(1):21-36].

Chapter 2.

Justifications for public support of the arts

'In these challenging times, when some are questioning the value of the arts and when public support for the arts is under siege from so many quarters, we must remember that these pursuits are not a luxury that we can live without – they are a vital part of our national character, the motivating spirit that makes us who we are'
William J. Clinton – U.S. President

'I am certain that after the dust of centuries has passed over our cities, we, too, will be remembered not for our victories or defeats in battles or politics, but for our contribution to the human spirit'
John F. Kennedy – U.S. President

'We believe that enhancing the cultural, sporting and creative life of the nation is a vital part of Government. The activities that we sponsor and support as a Department have a fundamental impact on the quality of life for all our citizens. They provide enjoyment and inspiration. They help to foster individual fulfilment and well-being. They help to bind us together as a community. They are important for the quality of education. They assist with the work of social regeneration. And in themselves, and with the allied importance of tourism, they form a crucial part of our nation's economy'
Chris Smith – UK Secretary of State, Department for Culture, Media and Sport

In this chapter I review the literature on the justifications for government intervention in the arts. The review presented discusses instrumental benefits that the arts produce, however these are not the main reason why people engage in arts activities. While the thought that attending a play or listening to music enhances a person's academic achievement or reduce her stress levels might be appealing to policy makers and researchers, it is *not* why people have attended, attend and probably will attend performing arts events in the future. Many believe that justifying public support of the arts on the basis of instrumental benefits has been and probably should be counterproductive. The arts are certainly not the best way to improve people's performance in mathematics (otherwise concert halls would be fully booked in the evenings before exams at high school or University). Similarly very few women would trade their anaesthetist for a violin player when they are giving birth. Sure, music can be relaxing, but an epidural is superior to any piece of music that has ever been written or performed as a form of pain relief. If people start to believe that the arts are worth of public support only as far as they bring about benefits to the economy, people's health or ability to learn, they will soon be abandoned as other activities allow the achievement of such goals better and more cost-effectively. However the empirical evidence on the intrinsic benefits of the arts is almost non-existent and the gathering of such evidence is beyond the scope of this research. Therefore while I briefly introduce the nature of such benefits, the main body of the chapter concentrates on the instrumental value of the arts.

People produce, attend, admire and support the arts and have done so since the dawn of human civilisation because in their view enjoying the arts adds value to the experience of life itself. To the degree that it is accepted that governments and states should do more for their citizens than simply provide law and order, guarantee economic development so that basic biological needs can be met, and should instead aim at improving quality of life of its members, then public support of the arts should be considered as legitimate. *'The initial response to a compelling work of art is often an uncommon feeling of rapt absorption, or captivation – of deep involvement, admiration and even wonder'* (McCarthy et al, 2004). Tessa Jowell, Secretary of State for the Arts, Culture and Sport recently stated that *'sixty years ago Beveridge set this country a challenge: slaying the five giants of physical poverty – want, disease, ignorance, squalor and idleness. At the beginning of this century, in a country hugely richer than it was at the end of the second world war, it is time to slay a sixth giant – the poverty of aspiration which compromises all our attempts to lift people out of physical poverty. Engagement with culture can*

help alleviate this poverty of aspiration – but there is a huge gulf between the haves and have nots. Government must take this gulf as seriously as the other great issues of national identity, personal well being and quality of life' (Jowell, 2004).

While experiencing the arts can be challenging and always require an active form of engagement, appreciating the arts can yield *pleasure*, something higher and different from *comfort*, which is what other forms of entertainment, leisure and daily activity deliver (Scitovsky, 1992).

A large number of people believe that life is not worth living if one is unable to perceive, experience and feel. What the arts offer is the pure perception of others, be it other people, other objects or other feelings. The aesthetic experience has been described as: *'complete interpenetration of self and the world of objects and events'* (Dewey, 1934); *'loss of self in a moment of absorption'* (Cuno, 2004); *'art is an exhilarating emancipation, a magic venture out of our own precincts and into something rich and strange'* (Weinstein, 2003); *'you loose your sense of time, you're completely enraptured, you're completely caught up in what you're doing, and you're sort of swayed by the possibilities you see. [...] If that becomes too powerful, then you get up, because the excitement is too great. [...] The idea is to be so ... so saturated with it that there's no future or past, it's just an extended present in which you're ... making meaning'* [1] (Csikszentmihalyi, 1997).

Others point out how the arts should be considered together with other basic human necessities because *'art is like a staple, like bread or wine or a warm winter coat in winter. Man's spirit grows hungry for art in the same way his stomach for food'* (Stone, 1961) and *'participating in the arts and engaging in creative endeavours are an essential part of human development'* (NEA, 2003).

[1] The quote is from poet Mark Strand who was interviewed by Csikszentmihalyi for his 1997 book on creativity.

2.1. Efficiency arguments: the economic rationale for public support for the arts.

Efficiency arguments use the framework of welfare economics and identify market failures in the technical Paretian sense. The unsolved problem of most efficiency arguments is that they provide a necessary but not a sufficient condition for public support for the arts. The existence of a market failure identifies inefficiency, but social preferences do not necessarily demand correction of all inefficient situations. Moreover most public interventions distort the behaviour of economic actors and thus could potentially result in sub-optimal conditions even when compared to the original inefficiency (Stiglitz, 2000). If we believed that inefficiency always requires action we needed to accept the idea of public intervention for all inefficient allocations. What follows is an account of the principal market failures arguments identified in the economic literature.

2.1.1. Public Goods.

Economic theory defines as public those goods that posses the characteristics of non-excludability and non-rivalry in consumption (Stiglitz, 2000). Certain art goods fall within the definition of pure public goods, but they are not as many as most art supporters would like. As Netzer (1978) notes *"few artistic goods and services meet the criteria that characterize pure public goods"*. Architectural structures, historical monuments, urban spaces and digital/digitised art are the only art goods that can be defined as public under the economic definition of the term. They can be enjoyed by anybody passing by and the utility derived by individual *a* does not diminish the utility that all other *n* individuals enjoy. Although theoretically the possibility of exclusion exists (barriers that prevent people from viewing from the street can be constructed) in most cases this would alter the very nature of the monument/architectural structure or be very hard to enforce.

Apart from the cited architectural goods, all other artistic goods can, with reasonable costs, become excludable and rival. Museums and galleries are very often regarded as mixed goods, excludable but non-rival within a certain capacity. Even though the capacity of exhibiting spaces is often so large as to have us think

of it as non-rival, "superstar" museums and galleries (the ones that are most likely to get public subsidies in most countries today) are sometimes extremely crowded, up to a point when the experience is greatly undermined by the presence of other visitors. The marginal cost of a new visitor is thus positive and a charge for the visit is thus not only possible, but also desirable in economic terms. For theatres, concert halls, opera houses and music halls entrance charged and fixed capacity determine both the rivalry in consumption and the excludability components.

The economic theory predicts that the competitive market will not generate a Pareto efficient allocation of public goods. Instead these will be under produced because of free riding problems. Only public provision of pure public goods can guarantee an optimal production.

Contrary to the theory of market failures based on the rationality assumption of the economic actors, Rabin (1997) found that private citizens are sometimes demanding and willing to fund the provision of public goods in excess of what economic theory would predict. This "irrational" behaviour greatly depends upon expectations about others: when people believe others will contribute, no matter what "rationality dictates", they are ready to contribute too. Strong social pressure as that registered to a certain degree among the wealthiest in the United States, guarantees the provision of public goods, financed through voluntary contributions, at a level far greater than expected[2].

2.1.2. Externalities.

Goods that are either rival, excludable or both cannot be classified as public goods but may possess qualities or produce benefits that could justify their support. Sir Lionel Robbins argued that the arts produce externalities for *"the benefit is not merely discriminate ... the positive effects of the fostering of art and learning and the preservation of culture are not restricted to those immediately prepared to pay cash but diffuse themselves to the benefit of much wider sections of the community*

[2] This is particularly true of the United States at the beginning of the 20th century when there were virtually no tax deductions for charitable contributions and marginal tax rates were minimal. Minimal tax rates eliminate the incentive created by tax deductions. This means that the extensive philanthropic activity of the Harkness, Ford, Rockefeller, Mellon, Carnegie etc... was purely motivated by altruism/social pressure/search for status rather than tax incentives.

in much the same way as the benefits of the apparatus of public hygiene or of a well-planned urban landscape." (Robbins, 1963).

An externality is a consequence (either positive or negative) that cannot be captured through the price mechanism. A competitive market with no public intervention determines an underproduction of goods carrying positive externalities (because those who accidentally produce them are not rewarded) and an overproduction of goods carrying negative externalities (because those who accidentally produce them are not charged) (Stiglitz, 2000).

Many authors agree that the arts produce positive externalities contributing to feelings of **national pride**, national identity and international prestige (Baumol & Bowen, 1966; Peacock, 1969; Towse, 1994; Cwi, 1980; Fullerton, 1991; Pommerehne & Frey, 1990; O'Hagan, 1998). Nevertheless as Peacock (1969) and others point out (Austen-Smith, 1980; Towse, 1994) the pride derived by artistic achievements is not qualitatively different from the feelings of national prestige deriving from alternative sources. If we justify the arts on the basis of national prestige then *"how do we compare subsidizing the Arts with the subsidizing of Concorde, or, say, the fares of Leeds United to play Milan?"* (Peacock, 1969). Some may say that the national pride feelings deriving from the arts are qualitatively different from the pride deriving from sports, thus the former should be subsidised and not the latter, but that has not yet been proved. Moreover given the extensive TV and radio audiences for Manchester United matches or for the Six Nations Championships and the fairly poor audiences of the Royal Opera House broadcast live on the radio and on BBC2, serious doubts arise as to whether national pride feelings deriving from the arts surpass quantitatively those deriving from sports. Finally many would argue that feelings of national pride are not necessarily a meritorious, desirable and positive outcome.

Whether "national pride" is a valid justification or not, government support for the arts[3] in Britain begun as a means to foster national pride. The Chancellor of the Exchequer justified to the House of Commons government support to establish the National Gallery in 1820 *"to be consistent with the true dignity of a great nation [...] to give magnificent encouragement to the support and promotion of the fine arts"* (Bennett, 1995). Also when people are asked whether they are in favour of

[3] Government support was essentially support for visual arts: museums and galleries as no support was granted to performing arts groups.

government support of the arts a majority of both attenders and non-attenders report that they are and that national pride is a main factor determining their judgement (Thorsby and Withers, 1986; Morrison and West, 1986).

Baumol and Bowen (1966) identified two key justifications for public support of the arts in the **future generations** and **option value** arguments. They maintain: *"funds must be provided today if the arts are to be kept alive for tomorrow. A program to preserve the arts for the nation's posterity is a case of indiscriminate benefits par excellence"*. It is argued that some artistic goods and activities share some characteristics with natural resources. Once they are destroyed or disappeared they might be gone forever or a substantial amount of time and resources is needed in order for a tradition to be re-established (Baumol & Bowen, 1966; Peacock, 1969; Netzer, 1978, Towse 1994; Cwi, 1980; Pommerehne & Frey, 1990; O'Hagan 1998). As long as we believe that original works of art cannot be perfectly reproduced because there is an ontological difference even between an original work and the most perfect reproduction (Danto, 1981) then the destruction of a painting, a sculpture or a monument will mean their permanent disappearance from tradition and heritage. A society might then be willing to support through government money the conservation of those art goods that would otherwise face destruction. This means that people are willing to pay today in order to reserve the possibility for either themselves (option demand argument) or their heirs and future generations (future generations argument) to appreciate and engage in art activities.

Towse (1994) and Cwi (1980) identify the assumptions at the basis of this argument: *i)* future generations are assumed to have the same tastes as the current one (or the proponents of public intervention in the current one) and that *ii)* future generations will have the same technological possibilities of the current generation. Fullerton (1991) suggests that *"many private firms make current investments necessary to provide for the demands of future generations. The case depends on some reason that private arts organizations without subsidies would not see sufficient future profit opportunities from current preservation. Economists may suggest that they see no future profit for the same reason they see no current profit."*

Another critique is raised by Tullock (1964). He argues that public investment that redistributes income to future generations from the present one, assuming positive rates of economic growth, may signify a redistribution of consumption possibilities

and benefits to those with a higher average per capita income. In this light a policy that consciously invested on "tomorrow's rich" rather than "today's poor" might become less persuasive that it first appeared to be. The same Baumol and Bowen concede that *"it is demonstrably false that the arts 'when once destroyed can never be supplied'"* but they argue that *"their rehabilitation is not likely to be quick and easy"* (Baumol & Bowen, 1966). Moreover Throsby and Withers (1979) point out that there are means for those willing to reserve for themselves the opportunity to participate in the arts in the future, to do so: charitable contributions and donations. However no one can guarantee to the donor that herself or her offspring will enjoy a large enough share of such donations and as a consequence free–rider problems are likely to arise. The fact that apart from the United States, charitable donations to art institutions do not cover a large fraction of revenues of art institutions could be viewed as evidence that donations are not the effective means suggested by Throsby and Withers. Moreover even in the United States, private donations come almost exclusively from those who attend live performances rather than from those who do not at the moment and would like to support performing arts organisations for future use (Hansman, 1981).

Netzer (1978) proposes an externality-based argument that originates from the fact that "*some forms of art are **interdependent***". He proposes a model where individual *H* who is a consumer of art form *a* derives a benefit from the flourishing of art from *b* because art works support one another through the exchange of material, experiences, ideas, provision of training and opportunities for professionals. Moreover people who participate in one art form are also heavy consumers of a variety of different art forms (Baumol & Bowen, 1966; Throsby & Withers, 1979). This means that, for example, a prosperous theatre centre is likely to attract opera houses, jazz and poetry reading clubs not only because it will promote ideas and material likely to be used in these other art forms, but also because it will attract an audience and people more responsive to stimuli from arts organizations than the general population. Again, this argument is not a justification. The phenomenon identified by Netzer simply explains a particular relationship among art forms; it does not state why the government should support the arts. To base the decision to support the arts on the fact that once you support them they will not only benefit from the direct support but also indirectly from the support to other art forms is a sort of tautology.

A number of empirical studies evaluate the existence of positive externalities among those who do not attend the arts. When people are asked whether they support government funding of the arts, a large majority is in favour. Indeed surveys carried out in the United States, England and Australia indicate that many more people support government spending on the arts than attend them (American Council for the Arts, 1992; Throsby and Withers, 1985; Morrison and West, 1986). For example in England 61% of people who do not attend the arts are in favour of public subsidies (compared to 84% of attenders) and 92% believe that children should have the opportunity to attend the arts (compared to 98% of attenders hold the same opinion) (Fenn at al, 2005). A critique that has been raised to survey results is that people do not state their true preferences while answering questions in a survey setting. However evidence on voters' preferences in two referenda in Switzerland on the use of public money to support the arts suggests that survey results should be considered accurate and that public support for government intervention in the arts cannot be explained without considering the existence of positive externalities (Frey, 2003; Schulze and Ursprung (2000).

2.1.3. Economic benefits

Some economists point out the economic benefits that the arts produce (to name just a few: Netzer, 1978; Towse, 1994; Cwi, 1980; Fullerton, 1991; O'Hagan, 1998; Van Puffelen, 1987). The first economic impact studies in the United States were commissioned by the National Endowment for the Arts (NEA) in the late 1970's (NEA, 1977; NEA, 1981) while the first thorough analysis for Britain was carried out by Myerscough approximately a decade later (Myerscough, 1988). When assessing the benefits the arts can bring, economic impact studies include both direct and indirect effects. Most studies estimate multipliers to assess the effect that spending on the arts produce in other sectors of the economy. Multipliers are then used to estimate two impacts: supply impacts (expenditures arts organisations make to purchase goods and services necessary for their operations) and household impacts (expenditures consumers of arts activities make in other sectors of the economy as a result of their arts consumption – e.g. restaurants, hotels, transportation).

The assumption behind the use of multipliers is that without spending on the arts these "secondary" expenditures in other sectors of the economy would not have taken place and therefore they represent a spillover effect of the arts industries (Reeves, 2002). However estimating these spillover effects can be difficult because of leakage problems and how net the measured values really are (Throsby, 2001). The lack of common definitions of the arts, of the cultural industries and of the leisure sector causes large variations in the estimates of the secondary effects arts and cultural industries have. Because of such differences in the economic multipliers different studies estimate, calculations of the effect of a USD (or GBP) spent on the arts range between 1.3 and 2.8 (Kelly and Kelly, 2000; NEA, 1977; Myerscouch, 1988; Arts Council of Wales, 1998, Reeves, 2002; Throsby 2001).

A second source of positive economic benefits resides in the fact that companies that employ highly educated workers prefer to relocate to places where employees have as wide range as possible of recreational activities. Vibrant art centres are symbolically important as they help establish a reputation of excellence and good taste. The most recent of NEA funded reports underlines how the arts *"restore and revitalize community by serving as a centrepiece for downtown redevelopment and cultural renewal, improve the urban quality of life"* (NGA Center for Best Practices, 2001). A museum or an art centre can revitalise decadent industrial cities by attracting tourism, residents and firms, as in the widely cited case of Bilbao and the Guggenheim Museum (Gomez, 1998; Plaza, 2000).

Strom (2003) analyses websites of public and quasi-public development offices, chambers of commerce and business promotion organisation of 65 of the largest cities in the United States. The aim of the study is to assess to what extent these organisations give prominence to arts and culture as means to attract businesses. An organisation gives high prominence to the arts and culture if these are mentioned on the homepage. An organisation gives low prominence to arts and culture if there is no reference to them on the website or references can be found several clicks from the homepage. Table 2.1 summarises Strom's findings. The results show that generally developers believe that arts and cultural organisations are considered important by businesses and that at the margin companies prefer to be based where the arts and culture flourish.

Table 2.1 Arts and culture as development tools: do urban planners believe they matter?

	All organisations (N=242)		Private non profit (N=143)		Downtown organisations (N=57)	
Prominence	N	%	N	%	N	%
0	77	32	20	21	10	17
1	60	25	37	26	5	9
2	56	25	34	24	10	17
3	49	20	42	29	22	39

0= No reference to art and culture on website
1= Arts and culture somewhere on website but several clicks away from homepage
2=Arts and culture in lifestyle, entertainment and quality of life section which is prominent on homepage
3= Arts and culture prominent on homepage or one click away
SOURCE: Strom, 2003.

A study of Philadelphia during the 1980s suggests that those neighbourhoods with high participation in the arts were likely to have higher than average growth in both income and population (Stern and Seifert, 1998b). Population growth is often a measure of the vitality of a city or of a neighbourhood. After controlling for ethnic composition and poverty status, mainstream cultural participation was an important factor in determining population changes between 1990 and 2000 in Philadelphia. Block groups with high cultural participation rates were nearly two and a half times more likely to experience population growth than block groups with low participation rates (Stern, 2001).

Some also argue that the arts are a labour intensive sector and thus can create many (and possibly very rewarding) jobs (Cwi, 1980). Strom (2003) reviews employment data in the United States and concludes that the economic impacts of the arts and culture on employment are not as large as some portray as in most cases they employ less than 2% of the workforce. Studies conducted in Great Britain reveal slightly higher employment rates in the arts and cultural sector: research commissioned by the Arts Council of Wales sets the figure at 2.6% (Arts Council of Wales, 1998) while according to research sponsored by the Arts Council of England (ACE) they employed 2.5% of the workforce in 2000 (Davies and Lindley, 2003) and 2.4% in 1994 (O'Brien and Feist, 1995) and 2.4% in 1999 (Selwood, 2001).

Towse (1994) and Throsby & Withers (1979) argue that the performing arts are a stagnant sector and thus supporting them would mean overall lower levels of

economic growth[4]. The arts are not the ideal way to create jobs since workers in the arts sector are usually paid lower wages than workers in other parts of the economy. However as jobs in the arts and cultural industries often yield psychic benefits on top of monetary compensation, the increase in workers' well-being should be taken into account when assessing impact.

Almost all economists that have been cited so far also agree that the fact that the arts promote a strong economy is by no means a justification of public intervention. Even when there are economic spillover effects deriving from the arts, they cannot be more than supplementary (Abbing, 1980; Carroll, 1992). Tennis and golf clubs, pubs and shops attract firms and residents. Another issue is the redistribution effect highlighted by Grampp (1989). If and when the arts attract tourism in one city, they do so at the expenses of another city. If the arts are subsidised in city *a* and not in city *b*, they will attract tourism to city *a* simply because admission prices in city *a* relative to those in city *b* are lower (or the quality of the event/good is higher). This means that in the long run no increase in total tourist activity will be detected as a consequence of subsidies: *i)* there will be a redistribution of tourists from non-subsidised art centres to subsidised ones and *ii)* increases in subsidies in both cities will occur in order to maintain local art centres competitive in the national and international market. As a result in the end nobody will benefit from increased tourism apart from arts managers and organizations that will have at least part of their budgets covered by certain annual government funds.

The claim some make that an increase in visitors will result in higher real wages, higher purchasing power or higher profits for the workers and owners of the businesses that are collateral to the arts – restaurants, bars, hotels etc... – is without foundation (at least in the long period). New establishments will open in the subsidised arts centres (possibly having moved from the unsubsidised ones) and profits and wages will soon return to equilibrium. The price of a new art centre with many restoration activities will be the decay of another art centre/city. This means that at the aggregate level subsidies are not only not justified on the basis of the economic externalities, but that such subsidies may also be undesirable. Traditionally strong arts pressure groups are to be found in the richest parts of a country and public subsidies disproportionately favour those areas. The economic

[4] As a consequence of low or non-existent productivity gains.

development argument is not only not applicable in these cases, but also as illustrated in the critique to the argument leads to a redistribution of resources favouring richer areas.

Finally a vision of the arts purely as an economic activity used to renew and regenerate neighbourhoods and cities to boost the economy and attract businesses and high-income residents is likely to produce negative social impacts as well as positive ones. Without adequate planning and a conscious effort of development officers and policy makers, rising prices in the revitalised areas will result in gentrification processes. Traditional businesses and residents will be "forced" out of the areas and ultimately will not enjoy the benefits that the arts created (Zukin, 1982). Also, because public support based on economic impact arguments tends to favour large art centres and centrally located organisations, where the audience is likely to be a member of the economic and cultural elites, they usually have a negligible impact on access and diversity and again do not promote an integration of communities and social inclusion (Stern and Seifert, 1994).

2.2. The social impact of the arts: arguments developed outside the traditional economic literature.

This section reviews the literature on justifications for public support of the arts developed in disciplines such as medicine, psychology and sociology. While some of the arguments analysed in this section have also been used by economists, the work of the latter mainly followed rather than initiated a debate. Landry et al (1993) define the social impacts of the arts as *'those effects that go beyond the artefacts and the enactment of the event or performance itself and have a continuing influence upon, and directly touch, people's lives'*. These effects are produced by people's participation in arts activities (either as a member of an audience or as an amateur artist) and they consist in positive externalities that benefit society at large when individuals participate. Examples include improvements in cognitive abilities and in the health of those individuals who take part in art activities; the creation of social bonds and of communal meaning in communities where people take part in the arts. While improvements in one's

cognitive abilities benefit primarily the individual concerned in terms of future income, relationships etc..., they also benefit society at large. When positive externalities exist, government intervention is justified on the basis of efficiency arguments.

A second distinction present in the literature analysing the social impact of arts participation is between instrumental and intrinsic benefits. Instrumental benefits are the result of people's participation in the arts but could equally result from different activities. For example increases in children's cognitive abilities or people's health status could be the result of yoga or practicing sports as well as of arts participation. Physical exercise has been recognised for centuries as a source of physical health and mental velocity. A Latin proverb says *"mens sana in corpore sano"* [5]. Intrinsic benefits are the positive effects that are produced by people's participation in the arts and are inherently and solely the product of art participation.

2.2.1. Instrumental benefits

While in the 1980's the attention on the instrumental value of the arts was lead by economists trying to assess the economic impact of the arts, researchers in the 1990's begun identifying other forms of social benefits produced by arts participation (Belfiore, 2002). Economic impact arguments are used primarily to justify support for capital projects and generally to fund ongoing operations of art organisations. Social impact arguments on the contrary tend to be used by those advocating support for participatory art programmes, projects devoted to promote access and inclusion and community art organisations.

Both in Britain and the United States the National Endowment for the Arts and the Arts Council of England are increasingly promoting initiatives to address socio-economic problems. Governments and art organisations emphasise the contribution the arts can make to alleviate the symptoms social exclusion and regenerate neighbourhood and communities. The Department for Culture, Media and Sports in the United Kingdom emphasises that *"the arts, sports, cultural and recreational activity can contribute to neighbourhood renewal and make a real difference to*

[5] *Healthy mind in healthy body.*

health, crime, employment and education in deprived communities" (DCMS, 1999). Peter Hewitt, the Chairman of the Arts Council of England argues that *"being involved with the arts can have a lasting and transforming effect on many aspects of people's lives. This is true not just for individuals, but also for neighbourhoods, communities, regions and entire generations, whose sense of identity and purpose can be changed through art"* and that *"The arts provide spaces to explore differences. The results can be greater understanding and tolerance or, at their best, a sense of shared excitement and celebration of the miraculous richness and variety of cultural identity and endeavour"* (Hewitt, 2003). Similarly the National Endowment for the Arts states that *"Community life and development are enhanced by the presence and availability of the arts, artists, and arts organizations"* (NEA, 2003).

While arts advocacy groups and government arts agencies highlight the positive role the arts have in promoting social inclusion and neighbourhood renewal, they do so mostly on the basis of anecdotal and limited qualitative evidence (Coalter, 2001). There is little empirical evidence on the impact of arts and cultural programmes on quality of life, community structures and neighbourhood renewal (Shaw, 1999; Belfiore, 2002). Most of the evaluation of the social impact of artistic programmes relies heavily on self-reported measures, small samples, and is conducted facing cultural resistance from arts organisations (Matarasso, 1996; Shaw, 1999; Jermyn, 2001).

Standard evaluation practices to assess the social benefits of arts programme include administering questionnaires to participants in arts events and government funded arts projects asking them whether the arts made them feel more confident, made them change their ideas about anything, encouraged them to try something new, made them feel different about the place where they live etc.... The aim of such questionnaires is often to assess long-term impact of arts programmes on people's perceptions of their neighbourhoods, their perceived self-efficacy and self-esteem and their ability to enter/re-enter the job market. However a careful analysis of the questionnaires used in evaluations of the social impact of arts programmes reveals that they are often inadequate (Merli, 2002).

The Cabinet Office (2000) defines social exclusion as *"a shorthand term for what can happen when people or areas suffer from a combination of linked problems such as unemployment, poor skills, low incomes, poor housing, high crime*

environments, bad health and family background". The literature highlights three areas in which arts participation can promote social inclusion and be part of government policies that are aimed at tackling poverty, disadvantage and social divide.

1) Educational and personal growth promotion – cognitive benefits.
2) Health promotion – health benefits.
3) Social capital, community and neighbourhood renewal – social capital.

Support to the arts can be justified as a means of tackling social exclusion, poverty and social divide to the degree that it improves health and educational outcomes and foster social capital, thus resulting in a positive domino effect. Because low-income groups are also the ones who predominantly experience poor health (Evans et al, 1994), low skills (West and Pennell, 2003), and lack of social capital (Putnam, 2000) measures that can help such groups improve their outcomes benefit society at large. Studies show that deprived neighbourhoods with a high concentration of people that suffer from social exclusion can further depress the chances of individuals to escape a spiral of poverty and deprivation (Wilson, 1987). Additional positive externalities thus reside in the effects produced by increases in educational and health outcomes of individuals living in areas of concentrated poverty on the other members of the neighbourhood and of the community.

The following sections review the literature on instrumental social benefits identified in sociology, psychology, political science and medicine.

2.2.1.1. Cognitive benefits.

Since the publication of a study on the so-called "Mozart effect" (Rauscher et al., 1993) policy makers and supporters of the arts have justified support for the arts on the basis of the benefits arts education and engagement have on academic achievement. Newborns in the American state of Georgia now receive a free classical music CD and all day care centres in Florida are required to play at least 30 minutes of classical music daily (Hetland and Winner, 2004). The National Endowment for the Arts while submitting to Congress the strategic plan for the

2003-2008 period highlighted how *"learning in the arts makes a positive contribution to our young people's academic achievement, interpersonal skills, confidence, motivation to succeed, and preparation for work"* (NEA, 2003). A study published in *Nature* described a temporary increase in spatial reasoning among college students after briefly listened to the *Allegro con Spirito* from Mozart's Sonata for Two Pianos in D major, K448. The prestige of the journal meant that the Rauscher study received a degree of attention that previous studies on cognitive transfers from arts education to nonarts outcomes did not receive.

The REAP project (Reviewing Education and the Arts Project) reviewed the findings of ten meta-analyses of the effects of instruction in various art forms on general cognitive skills. While three analyses indicate positive causal effects, five suggest that there is no evidence to justify a claim of cognitive transfers, and in two cases the results are inconclusive.

Positive cognitive transfers.

Virtually all studies on the effect of classroom drama on verbal achievement indicate a clear case of positive causal transfers (Kardash and Wright, 1986; Podlozny, 2000). Classroom drama consists in using acting techniques within the classroom curriculum and is therefore different from drama classes or acting in plays. Reviews of almost 250 published and unpublished empirical studies agree that there is a strong positive association between classroom drama and verbal achievement. The use of randomised trials with a "drama" group receiving classroom drama and a "control" group not receiving it indicate a strong causal relationship between drama and verbal achievement. Verbal achievement outcomes include oral recall, reading achievement, reading readiness, oral language development and children were tested both on material used in the class and on new material. Some studies indicate that drama was more effective in promoting verbal skills among children from low socio-economic status populations than among children from families with high household incomes and with parents with high educational attainment (Smilansky, 1968; Podlozny, 2000).

Empirical analyses of the effect of music listening on spatial reasoning also show a strong positive effect of music (Rausher et al., 1993; Rausher et al., 1995; Rausher and Shaw, 1998; Hetland, 2000). Experiments consisted in having a "music" group listen to classical and modern music, and a "control" group either remaining in silence of listen to relaxing noises. Both groups subsequently took tests to evaluate

their spatial reasoning skills and the music groups consistently outperformed control groups. A similar but separate effect concerns the cognitive transfers of music instruction on spatial reasoning. The effect described above (Mozart effect) consists in an increased performance in spatial reasoning experienced by adults after briefly listening to music. Studies on the effect of music instruction on spatial reasoning involve children taking up to two years of music instruction. Control groups included children taking language, computer or mathematics courses. Meta-analytic reviews of 27 studies indicate that there is a strong positive association and that the effect is higher for individual lessons. Finally Ho et al. (2003) document that music improves verbal but not visual memory. In the experiment the more students had studied music the better they performed. A follow up after one year from the initial study also reported progress among those students that continued their music training, while those that dropped out did not improve their performance. However such students kept performing better than students with no prior music training.

Independence

Numerous studies suggest that there is a strong correlation between arts participation and various academic indicators (Catterall, 1998; Catterall et al., 1999; Heath, 1998; DiMaggio, 1982; Murfee, 1995; OECD, 2001). However these studies do not take into account the possibility that children who enrol in art courses or who participate in art activities are different from those not enrolling in art courses. Differences in test scores might not be the result of the courses themselves but of heterogeneity between children (Eisner, 2001; Hetland and Winner, 2004). Studies with an experimental design allow researchers to control for self-selection and therefore test for the existence of a positive causality between arts participation and standardised test scores. A meta-analysis reviewing 24 studies with an experimental structure indicates that there is no evidence supporting the claim that the arts enhance academic performance.

Hetland and Winner (2004) also review the evidence on whether visual arts instruction can improve reading. Two sets of studies are examined: those comparing arts-only instruction with no special training and those that compare an art-reading-integrated programme with a control group receiving reading only training. In both circumstances there is no evidence of any cognitive transfer taking place. Finally Butzlaff (2000) concludes that music listening does not improve reading abilities.

Inconclusive evidence

Reviews of available evidence on the cognitive transfers of dance on spatial reasoning and of music and mathematics are inconclusive. The very small number of empirical studies examining the relationship between dance and spatial reasoning (Keinanen et al., 2000) and music and mathematics (Graziano et al., 1999) means that further evidence is needed to ascertain whether there are causal links between these forms of art and non art skills (Hetland and Winner, 2004).

The literature reviewed above assesses the impact of specific art activities on specific academic skills. A number of studies examine the impact of attending arts events on general academic indicators. Robson (2003) for example shows how 16 year olds who attended artistic activities were more likely to achieve a college degree than those who did not. However the study did not control for subject heterogeneity and therefore differences in rates of college graduation among participants and non-participants might be due to differences in the characteristics of individuals in the two groups. Bourdieu (1977; Bourdieu and Passeron, 1977) also document a positive association between a student' cultural resources and school success. They find that this influence is due primarily to the teachers' attitudes towards students who participate in cultural activities. They tend to give them more attention and assistance, consider them brighter and more gifted than other students. Improvements in academic achievement resulting from positive discrimination and differential treatment are not a desirable outcome. However the fact that students who participate in artistic and cultural activities are usually more articulate and better at communicating than those who do not might be at the basis of teacher's biases and surely improvements in communication skills is a worthy goal.

Engagement in the arts can help government policies aimed at reducing social exclusion and poverty by providing a strong skills base that makes individual less susceptible to unemployment in a rapidly changing labour market (DCMS PAT10, 1999). As Galbraith (1960) has shown creativity is the value added that employers look in potential workers and one of the most important at the basis of modern labour markets. Western economies rely mostly on productivity increases produced by innovation and creativity. While the agricultural and manufacturing sectors employ fewer and fewer workers, the "knowledge" economy keeps expanding. While most people concentrate on the need for science and technology education to

support such an economic system at the expense of the arts and other humanities, Galbraith and others warn against the dangers of such a strategy (Galbraith, 1960). "*The essence of scientific advances comes through creativity and that the creative process is, to a large degree, stimulated by the arts.*" (Henry, 1981). Currently most of the academic curriculum is based on activities and subjects that stimulate the left part of the brain and therefore help develop sequential, rational and analytical thought. The arts and cultural activities and education stimulate the right part of the brain and help develop intuition, imagination and the ability to analyse many and complex situations simultaneously (Kane and Kane, 1979).

Psychologists have long discussed the influence on individuals of one's perception of being able to influence circumstances and to change one's situation (D' Amico and Cardaci, 2003; Bandura and Locke, 2003; Fry and Debats, 2002). Perceived self-efficacy has been recognised as an essential element of people's ability to learn: it increases one's confidence in solving problems, induces expectations of success both by the individual and teachers/others, and it helps cope with stress, frustration and failure in a positive way that enhances learning rather than inhibit it (Zimmerman, 1995). Research shows that participation in the arts can improve people's confidence and perception of being in control and through this promote learning (Matarasso, 1997; DCMS, 1999). While research conducted by the National Foundation for Education Research did not find that engagement in arts programme boosts academic performance, it revealed that arts participation favours a sense of enjoyment, relieves tension and promotes a sense of fulfilment (Harland et al, 2000). Gardner (1999) claims that there is not a single form of intelligence but rather eight different types of intelligence and ways of learning: language, logical, mathematical, spatial, musical, naturalist, kinaesthetic, interpersonal and intrapersonal. Although everybody can learn in each of these different ways, personal strength in these means of learning varies across individuals. The arts can be used to teach some people traditional academic subjects more effectively because they involve the use of other forms of intelligence (Bransford, 1979). Students who perform poorly on traditional academic measures might perform much better on subjects that involve the use of other forms of intelligence. Success in arts related courses might lead to lower dropout rates and re-engagement in education.

Finally there is some evidence that participation in the arts as a teenager is highly correlated with personal income as an adult, membership to voluntary

organisations and participation in adult education courses, other things being equal (Robson, 2003). These results are based on the use of an English cohort study – the British Cohort Study 1970 – that contains information on a sample of people born in 1970. The study followed up children at regular intervals and data on participation in a number of arts activities at age 16 was related to economic and social outcomes when the same people were 29. Even when controlling for a number of other factors, attending theatre plays, reading and writing for pleasure and going to music events at age 16 was positively correlated with personal income at age 29.

2.2.1.2. Health benefits.

Experiments conducted with groups experiencing the arts and control groups not exposed to arts activities consistently show that the arts can improve health. The relationship between attending cultural events such as theatre, concerts or exhibitions, and a reduction in levels of blood pressure and hormonal benefits is statistically significant (Konlaan et al, 2000). Participation in the arts and cultural activities can also improve survival: Bygren et al (1996) report that mortality is higher among people who rarely attend art events compared to people who often participate, even when other factors were controlled for. Palmer et al (1999) documents decreases in pain and stress among people who had blood taken in a room with visual arts compared to those in a room with no visual arts.

A large body of literature shows how music in particular has therapeutic effects. Music can be used to prevent stress-induced responses, anxiety, increased heart rate and systolic blood pressure among undergraduate students preparing for oral examination (Taylor-Piliae, 2002). Anxiety reductions (measured in terms of blood pressure, respiratory rates, changes in salivary cortisol) thanks to music listening have also been reported among patients recovering from acute myocardial infarction (White, 1999; Bolwerk, 1990), patients undergoing cancer treatments such as chemotherapy (Smith et al, 2001; Staricoff and Loppert, 2003; Sabo and Michael, 1996; Weber et al, 1997), conscious patients in the operating theatre (Thompson and Kam, 1995; Seukeran and Vestey, 1997) and undergoing ambulatory surgery (Golden et al, 2001; McGreevy, 1990; Hains, 1996; Augustin

and Hains, 1996; Bampton and Draper, 1997; Chlan et al, 2000) and patients in pre-surgical situations (Miluk-Kolasa et al, 1994; Hayes et al, 2003).

Those who are exposed to music listening before they undergo, and while they recover from painful operations, or who suffer from chronic pain generally report lower levels of pain than control groups (Beck, 1991). Listening to music while recovering from coronary bypass operations contributes to increases in the ability to sleep and reduces self-reported pain intensity (Zimmerman et al, 1996), while music played during the operation does not produce positive health outcomes (Blankfield et al, 1995). Similarly chronic pain of cancer patients is also beneficially reduced by music exposure (Zimmerman et al, 1989). Music has a positive and significant impact as an analgesic for chronic and acute pain (Good, 1996), pain resulting from operations (Nilsson et al, 2001; 2003) and gynaecological procedures (Davis, 1992). Heitz et al (1992) finds that while patients in post-general anaesthesia care who listen to music do not report different levels of pain or need different sedative doses, they generally request sedatives with significant delays compared to the control group.

As in the case of cognitive benefits, the fact that enjoying the arts reduces stress levels and improves quality of life constitutes a positive outcome of art participation especially at the individual level. Research has shown that high stress levels are a major determinant of poor performance and low productivity. Because societies gain from a workforce that is more productive, public support of the arts is justified as a measure that governments take to promote economic growth. When governments directly provide health care to their citizens, arts participation can be a cost-effective means of reducing stress levels thereby reducing people's needs for more expensive treatments. While these social spillovers of individual participation justify government measures aimed at promoting widespread engagement with the arts, there is some evidence justifying policies aimed at promoting participation especially among disadvantaged groups.

The Whitehall studies (Whitehall I and II) reveal an inverse social gradient in morbidity and mortality among British civil servants. Marmot and the research team identify psychosocial stress and low control at work as the main reasons for differences in cardiovascular disease among low rank and high rank civil servants. Because of the beneficial impact on stress levels that arts participation has, policies should be especially targeted at increasing participation among those groups that

tend to suffer the most from high stress levels such as people with little control over their life and work.

2.2.1.3. Social capital

In 'Making democracy work' Robert Putnam first used the term social capital to describe why and how *'communities that sing together'* improve the functioning of democratic institutions. In his study of Italian regional government he discovered a very strong relationship between the number of choral societies and the effectiveness of local governments (Putnam, 1993).

Few concepts have ever attracted as large an interest in economics, sociology and political science as the idea of social capital, however large differences exist in what is meant by the term. The basic idea of social capital is that social relations can form a capital asset and benefit individuals, communities or both. Pierre Bourdieu (1983) defines social capital as the resources that individuals have to develop *'durable and more or less institutionalised networks of relationships of mutual acquaintance and recognition'*. James Coleman (1990) refers to social capital as *'those aspects of a social structure that facilitate the actions of actors within the structure'*. While Bourdieu and Coleman consider social capital an individual asset, Putnam explores to what extent social capital can be viewed as a collective asset. He defines social capital as *'the features of social organisation such as trust, norms and networks, that can improve the efficiency of society by facilitating co-ordinated actions'* (Putnam, 1993) and *'the connections among individuals and social networks and the norms of reciprocity and trustworthiness that arise from them.'* (Putnam, 2000).

Social capital has been shown to have a positive impact on educational outcomes (Coleman, 1988) democratic institutions (Putnam, 1993, 2000) and more recently research has identified a strong relationship between social capital and mortality, health status and violent crime (Galea et al. 2002, Kawachi and Kennedy 1997 and 1999).

Social capital is recognised alongside financial capital and human capital and indicates the value of social networks. Individuals and communities endowed with

high social capital enjoy the benefits produced by the cooperation, trust and reciprocity that strong social ties produce. Social capital is created, for example by friendship networks, neighbourhoods, churches, schools, bridge clubs, civic associations, bars and art organisations (Putnam, 2000). The arts have been described as a tool to foster social capital as they inspire civic pride, they foster community cohesion and strengthen democratic institutions (Goss, 2000; Center for Arts and Culture 2001; Strom, 2001). They are *'a uniquely enjoyable way to build social capital'* (Putnam et al, 2003).

A study on associational membership in the United States, Germany and Sweden shows how cultural associations foster social capital more than other forms of associations (Stolle and Rochon, 1998). When comparing the impact of different associational membership on social capital indicators such as generalised trust, political trust and efficacy, optimism, tolerance and free ridership, cultural associations outperformed all other associational groups[6]. After adjusting for age, education, gender, race and community size, members of cultural organisations displayed higher levels of cooperative spirit, norms of reciprocity and collective thinking beyond the boundaries of the members of the group than non-members and members of other associations.

Neighbourhoods with high arts attendance are more likely to host a large number of non-profit and voluntary organisations (Stern and Seifert, 1994). Participation in arts activities and membership in voluntary organisations are highly correlated (Jeannotte, 2003; Robson, 2003; Putnam, 2000). Participation in voluntary work can be seen as an indicator of the extent to which people care about one another and are prepared to sacrifice their time and efforts for the community. The arts and culture influence people's willingness to invest in their communities because arts education and participation in the arts and culture develop people's empathy, communication and compassion[7] skills (Schwartz, 2000). The arts make an extensive use of symbols and metaphors as in order to appreciate the meaning of a painting, a performance or other cultural events, people need to exercise their abilities to understand what other people feel and want to tell. The arts can teach

[6] Stolle and Rochon categorised associations in the sample into different groups according to the main aim of the association: political, economic, group rights community, personal interest, cultural and social.
[7] Compassion comes from the Latin *cum patire:* to feel with.

"to put oneself in other people's shoes" and this is the first and necessary step to be prepared to invest in other people and community life.

However while the studies cited above highlight positive correlations between arts attendance and measures of social capital, the direction of the relationship is not clear (arts attendance might determine organisational membership to the same degree that organisational membership might determine arts attendance). It is also possible (if not likely) that factors not included in the analyses determine both arts attendance and social capital outcomes.

Alesina and La Ferrara find that indicators of social capital, such as individual level social trust, participation in voluntary membership organisations are reduced in the presence of ethnic, racial and income heterogeneity at the metropolitan level (Alesina and La Ferrara, 2000; 2002). After controlling for individual socio-economic status, the higher the heterogeneity, the lower the social trust and organisational membership. This detrimental impact of heterogeneity on group cohesion, an important component of social capital, has also been found in other contexts. The negative impact of heterogeneity and indices of social capital is consistent with the distinction present in part of the literature between two forms of social capital: *bridging* and *bonding* social capital. *Bonding* social capital ties together people on the basis of homogeneity, social ties are formed among people who share some characteristics, such as socio-economic background, ethnic or racial origin and cultural identity. *Bridging* social capital brings together people who are from heterogeneous backgrounds and establishes groups whose membership spans across people with different socio-economic backgrounds (Putnam, 2000; McCarthy et al, 2004).

Arts attendance helps members of a community to get connected and provides an opportunity to develop social contacts (Lowe, 2000; Griffiths, 1993; Stern, 2000). Many have shown that the arts can provide a safe heaven where people's differences can be explored and examined in a non confrontational way, where diversity can be perceived as enriching and as a source of strength for communities, rather than something that will inevitably lead to mistrust and conflict (Schwartz, 2000; Matarasso, 1997). While in the literature the arts are often claimed to be excellent means to create *bridging* social capital (Putnam, 2000; McCarthy et al, 2004), most reviews overlook the historical importance of the arts as a means of class and group division, as activities indicating distinction

and status (Veblen, 1899; Bourdieu, 1984; Daly, 2005). People attended and attend the "highbrow" art because they enjoyed music, ballet, opera or theatre but also because they are symbols that reaffirm one's place as educated and "upper class". The attention devoted by most scholars studying social capital to the creation of bridging social capital is due to the fact that it is harder to create than bonding social capital and it is especially important with the increasing social diversity of our communities.

Chapter 3.

The performing arts sector

3.1. Evidence on attendance at performing arts events

Despite government interventions aimed at addressing inequalities in attendance at performing arts events and the benefits that arts attendance produces, large disparities still exist among different social groups. It is almost forty years since Baumol and Bowen conducted the first systematic analysis of the audience of performing arts institutions in the United States and England (Baumol and Bowen, 1966) and available evidence indicates that the audience of performing arts events is still wealthier, better educated, whiter and from an higher social class than the general population (Cwi, 1985; Lefkin, 1998; McCarthy et al., 2001a; Nichols, 2003). While the first empirical studies of public participation in the arts are based on institutional surveys carried out by performing arts organisations on their audiences, since the late '70s early '80s scientific investigations are predominantly based on the analysis of population based surveys.

Institutional surveys date as back as the 1920's, where museums in the United States begun to consistently conduct surveys of their visitors (Dickenson, 1992). Through the years the audience does not seem to have changed much: groups of white, affluent, young professionals dominate participation rates. According to Dickenson's research of museum surveys from the 1930's to 1990's the socio-economic status of the museum audience is remarkably different from that of the population at large. In a study 1930 on the audience of the Philadelphia Museum of Art Dickenson identified that gender was related to participation (women outnumber men 54.8% compared to 45.2%) and that professionals and academics

(students and teachers) were participating more than any other occupational category (students former 14% of the audience, professionals 39% and working class only 8%). A 1952 survey of visitors of the Milwaukee Public Museum showed that the museum had a very young audience, with only 5% of visitors aged 50 or over. The 1959-60 Museum Visitor Survey of the Royal Ontario Museum raised some concerns among the management because visitors appeared to earn higher incomes than the population at large. Notably the managers attributed such overrepresenation to the fact that the museum was based in an affluent area and that respondents were likely to have inflated their incomes not to feel embarrassed (Dickenson, 1992).

DiMaggio et al (DiMaggio & Useem, 1983; DiMaggio et al., 1978) performed a comprehensive review of 268 audience surveys carried out by American performing arts institutions and museums. They noted a large increase in the number of surveys commissioned after the early 1970's: while they found almost no survey dating back 1966 or earlier, 80% of their review included surveys carried out in 1972 or later (DiMaggio, 1983). Similarly Baumol and Bowen (1966) were able to identify only a handful of surveys on performing arts audiences carried out before their path breaking 1966 study.

DiMaggio at al. illustrated that females were only marginally more likely to attend than their male counterparts (men were 49% of the population and 46% of museum and 43% of performing arts visitors). They also noted large variations in the participation rates of the two sexes by art form and opening hours[8]. The report highlighted how the median age of art audiences was similar to that of the general population, indicating no real correlation between age and participation. Educational attainment of adult audience members was higher in the studies surveyed than that of the general population, although there was a considerable variation among studies (13.9% of population had a college degree, while the median percentage of college graduates in the audience was 54%). Educational attainment varied according to art form, it was higher among the performing arts audience (61.8% of the visitors had a college degree) than among the art museums' (48%); ballet and dance participants reported higher education (65% with college degree) than theatre audiences (58%); and art museums had a larger proportion of

[8] Male participation during week-ends increased significantly. This is probably due to working patterns in the '70s, with male participation in the labour force being double that of their female counterparts.

the audience with a college degree than science and history museums (34.4%). Participation of professionals was disproportionately high in the audiences (15% in the population, 55.9% in the audience). There were few variations among art forms (museums were less likely to present an overrepresentation of professionals than performing arts, and non-art museums were more likely to be attended by blue-collar workers than art museums or any other performing art). Finally the art audience had higher incomes compared to the population (the median income of opera visitors was $21,024 and that of history museum' $16,757, the median family income in the U.S. was $10,778 in 1960 and $14,476 in 1975).

While DiMaggio's study was a review of surveys differing in terms of reliability of the data, sampling and questionnaire design and form of interview, Baumol and Bowen (1966) developed the first systematic analysis of the audience of the performing arts in the United States. Their study was based on a questionnaire administered to 50% of the audience of performing art events between 1963-1965 (Baumol and Bowen, 1966). Most of the questionnaires were administered in large metropolitan areas and the response rate was almost exactly 50% (N=29,413).

Contrary to previous research Baumol and Bowen found a prevalence of males in their audiences[9] (53% in their study while they were 48% of the population according to 1960 Census figures). They also found that (not counting people aged 18 or less) the audience of the performing arts was younger than the population in general. As in DiMaggio et al. (1978), there was an over-representation of professionals in the performing arts audience (63% male professionals in the audience vs. 12.7% in the general population and 63.2% female professionals in the audience vs. 14% in the general population) and an under-representation of blue-collar workers (for males 2.6% in the audience vs. 57.5% in the population and for females 1.9% in the audience vs. 39.3% in the population). The difference in the incomes of the art audience and the general population found by Baumol and Bowen was remarkable: the median income of performing arts audience members was double that of the general population. Differences in educational attainment were once again striking: while among males 55% of art audience members went

[9] As argued by Throsby & Withers (1979) this could be due to the design of the study that Baumol and Bowen employed. Questionnaires were inserted randomly in programmes. People often attend performances as part of a couple and it is likely that males tended to complete the questionnaires even when they were placed on their partner's programme.

to graduate school only 5.3% of the population did the same, among females the proportions were 31.6% and 2%.

In order to ascertain whether the findings of their study were applicable only in the United States or not, Baumol and Bowen (1966) developed a similar analysis of the characteristics of the performing art audience in England. The English part of their study conveyed results that were remarkably similar to those of the analysis of the American audience. Incomes were almost double among audience members (£1676 compared to £990 in the population at large); approximately 45% among audience members left school aged 20 or over while this percentage dropped to 3% in the population. Finally professionals represented almost 60% of the audience members and less than 10% of the general population.

In 1979-80 Cwi (1985) surveyed the audience of five American symphony orchestras (N=3546). The research team used a questionnaire very similar to the one used by Baumol & Bowen, as an explicit aim of the study was to assess whether the art audience had grown closer to the general population since the mid-sixties. The results obtained by Cwi were very similar to those obtained by Baumol & Bowen: approximately 70% of audience members were professionals (69% in Baumol & Bowen), 39% had graduate training (46% in Baumol and Bowen). Income was the only variable that suggested a shift in participation from the mid sixties to the late seventies: while in Baumol & Bowen the median family income was 90% higher than the median family income of the population, in Cwi the median income of symphony audiences was 50% higher than that of the population. Cwi acknowledged that the gap between the art audience and the population had grown smaller. This was due to changes in the population that had grown more educated (in 1960 7% of the population aged 25 or over was a college graduate and 40% had eight years or less of schooling, in 1980 17% had a college degree and 18% had eight years or less of schooling). This increase in educational attainment was coupled by an increase in incomes and a shift in occupational status towards professional and other "white-collar" professions.

The analyses based on institutional data such as the ones presented in the brief review above, are severely limited by the fact that they can only compare the characteristics of the audience with those of the general population without controlling for possible associations existing among different factors. Moreover such studies have to rely on external data such Census information to infer the

characteristics of the population. Population based surveys use samples of the population at large and collect information on both participants and non-participants. The use of population-based surveys allows researchers to identify relative associations among a number of socio-economic characteristics and attendance at performing arts events.

Two main series of surveys on public participation in the arts have been conducted in the United States: the Survey of Public Participation in the Arts series (SPPA), commissioned by the National Endowment for the Arts and conducted in 1982, 1987, 1992, 1997 and 2002 and the Americans and the Arts series, conducted by Louis Harris and Associates in 1973, 1975, 1980, 1984, 1987, 1992 and 1996. There are three main sources of population-based attendance data for the United Kingdom: the Target Group Index (TGI) series (annual since 1986), the General Household Survey (GHS) leisure component series (1973 1977 1980 1983 1986 1987 1990-91 1993-94 1996-97 and 2002-03) and the ONS Omnibus surveys conducted in 1991 and 2001 and 2003.

Robinson (1989) has shown how differences in the design, structure, question wording and mode of interview mean that comparability across survey series even for the same country is limited. Participation rates in theatre, opera, classical music and dance are almost twice as high in the SPPA series compared to the Americans and the Arts series. As the General Social Survey (GSS) contained a module on participation in the arts in 1993, Tepper (1998) compared participation rates for the US using GSS data and data from the 1992 SPPA and found big differences in the two. Limits however exist not only in terms of comparability across different surveys, but also within each survey series when there are changes in the structure, design and response rates (NEA, 1998).

Despite differences in the country under consideration, type of survey (institutional or population-based) and in survey design and methodology, the evidence on the characteristics of the performing arts audience emerging from most of the available data is similar and is consistent with the view that there are major inequalities in attendance at arts performances.

Table 3.1 summarises finding from the TGI series on attendance at a number of performing arts events between 1986/87 and 2001/02.

Table 3.1 Attendance rates at performing arts events 'these days'– Great Britain

	1986/87	1991/92	1996/97	1999/00	2000/01	2001/02	2003/04
Plays	*23*	*23*	*24*	*23*	*23*	*24*	*26*
Classical music	*12*	*12*	*12*	*12*	*12*	*12*	*13*
Ballet	*6*	*6*	*7*	*6*	*6*	*6*	*8*
Opera	*5*	*6*	*7*	*6*	*6*	*6*	*7*
Contemporary dance	*4*	*3*	*4*	*4*	*4*	*5*	*6*

SOURCE: Target Group Index, BMRB International.

TGI surveys derive responses from the question "About how often these days do you go to the following [art event]?" among an annual sample of approximately 25,000 individuals aged 15 or over. While the TGI surveys is the only series of surveys available in Great Britain covering arts attendance since 1986, the timeframe considered in the analysis 'these days' is too subjective to allow researchers to establish reliable attendance rates and derive trends. However unless large differences exist in how different socio-economic groups perceive the timeframe 'these days', the TGI survey can be used to establish whether there are differences in attendance rates among different groups in the population. Table 3.2 presents findings on attendance rates by social grade from the 1996/97 TGI survey.

Table 3.2 Profile of current performing arts attenders by social grade – Great Britain

Social Grade	Theatre	Ballet	Opera	Classical music	Contemporary dance	Total
AB	41.5	44.7	48.4	45.3	32.8	21.3
C1	32.8	32.1	31.8	30.9	35.2	27.6
C2	13.1	12.5	9.4	11.9	16.9	22.5
DE	12.6	10.6	10.4	11.9	15	28.5
Total	100	100	100	100	100	100
Sample	**5,299**	**1480**	**1455**	**2679**	**988**	**25,386**

A Professional B Managerial/intermediate C1 Skilled non-manual
C2 Skilled manual D Partly skilled E Unskilled
SOURCE: ONS Omnibus Survey 2001.

Table 3.3 Participation in live performances in the last 12 months by socio-economic background – England

	Theatre	Opera	Classical music	Ballet	Dance
GROSS INCOME					
All	26.67	5.61	9.77	1.64	10.64
<£5,200	19.69	3.72	6.99	1.54	7.82
£5200-£10400	20.69	3.69	6.47	0.83	9.37
£10400-£15600	23.83	5.06	9.36	2.01	10.72
£15600-£20800	32.17	4.98	9.86	1.38	14.47
£20800-£26000	33.37	8.43	12.24	3.23	11.78
£26000-£36400	38.90	8.75	18.17	1.75	13.46
£36400+	51.60	14.98	21.64	2.50	13.87
EDUCATION*					
All	26.88	5.74	9.90	1.62	10.59
No edu	12.70	0.00	3.17	6.35	7.94
Left at 14	13.42	3.02	6.03	0.30	5.66
15-18	23.31	4.11	7.40	1.48	9.70
19-25	42.48	12.98	20.99	3.00	14.65
25+	41.91	10.61	19.36	2.39	13.26
Still in edu	38.49	3.87	4.75	0.35	17.22

** Education categories in England are calculated using the age at which respondents complete full-time education.*
SOURCE: ONS Omnibus Survey 2001.

Table 3.4 Arts attendance rates by income and educational attainment – United States

	Theatre		Opera		Classical music		Ballet		Other Dance	
	1997	2002	1997	2002	1997	2002	1997	2002	1997	2002
Education										
Grade school	3.1	1.1	0.2	0.2	2.1	1.5	1.5	0.4	7.3	2.2
Some high school	7.2	3.7	1.5	0.8	3.9	1.9	1.8	0.8	6.6	1.7
High school graduate	9.1	5.7	1.7	0.8	8.3	4.5	3.6	1.3	9.2	3.4
Some college	18.9	12.7	5.2	2.8	18.1	11.5	6.5	3.9	13.7	7.3
College graduate	27.7	22.5	10.2	6.4	28	21.9	10.8	7.2	17.8	9.9
Graduate school	37.2	31.8	14.3	10.9	44.5	34.1	14.4	12.9	24.7	14.8
Income										
$<10,000	9.6	5.3	1.8	1.3	4.3	6.7	1.6	1.5	7.2	2.7
$10,001-20,000	7.4	5.4	1.9	1.6	8.2	5.2	3.2	1.9	7.6	3.8
$20,001-30,000	9.9	6.0	2.4	1.6	9.7	6.3	3.7	2.4	9.4	3.8
$30,001-40,000	15.5	10.0	2.5	2.6	13.1	10.3	4.6	2.8	12.7	6.1
$40,001-50,000	15.3	12.2	4.5	2.4	14.8	12.9	6.0	3.6	13.0	5.8
$50,001-75,000	19.8	14.0	7.5	3.4	22.1	12.4	8.1	4.3	15.8	7.5
$75,001-100,000	27	21.8	5.8	5.8	26.3	19.9	9.6	7.2	20.2	10.1
>$100,000*	31.9		13.3		35.0		13.3		18.7	

** In 2002 the last category of income is $75,001 or more.*
SOURCE: NEA, 1997; Nichols, 2003.

Although most studies have shown both income and educational attainment to be strongly associated with attendance (Baumol and Bowen, 1966; Throsby and Withers, 1979; DiMaggio and Useem, 1983; McCarthy et al., 2001a), estimates

indicate that education is a better predictor of attendance than income (DiMaggio et al, 1978), even when isolating for the relative effect played by the two covariates (Gray, 1998; McCarthy et al., 2001b). After controlling for other socio-economic characteristics, Peterson et al (2000) find the gender effect to be statistically significant only for older cohorts for all performing art events apart from ballet, where the effect was significant also for younger ones.

Participation rates in performing arts among minority groups are lower than among the white majority. Using data from the 1980's, DiMaggio and Ostrower (1992) find that whites are twice as likely as African Americans to attend a classical music, a theatre, a ballet or an opera performance. Controlling for other socio-economic characteristics revealed that differences in participation rates among whites and African Americans were due at least partially to their ethnicity and not to other factors.

3.2. Cost structure of the performing arts: the Baumol's cost disease.

3.2.1. The facts

Baumol and Bowen (1966) identify in the nature of live performing arts organisations the origin of their financial problems. The Baumol' s cost disease "condemns" the cost of live performances to grow while costs of goods produced in the manufacturing sector decrease. Baumol and Bowen suggest that while technological development influences most sectors of the economy and increases the productivity of the labour they employ, the performing arts sector enjoys far fewer technological improvements[10] and thus suffers a "productivity lag". When rising costs are not met by a correspondent growth in earnings, performing arts organisations suffer what Baumol calls an "income gap".

[10] Baumol (1987) illustrates the cost disease comparing the costs of watchmaking and those of musical performance over the centuries: *"toward the end of the 17th century a Swiss craftsman could produce about 12 watches per year. Three centuries later that same amount of labour produces 1200 (non-quartz) watches. But a piece of music written three centuries ago by Purcell or Scarlatti takes exactly as many person hours to perform today as it did in 1685 and uses as much equipment."*

Productivity increases are generally determined by one (or more) of the following factors: *(1)* economies of scale, *(2)* increased labour skill, *(3)* increased capital per worker, *(4)* improved technology and processes (e.g. management) (Heilbrun, 2003) and *(5)* improved product design. Productivity gains are most likely to occur in manufacturing industries and certain services (for example banking, carwash, etc...). In the manufacturing sector work is a means of production, but in the performing arts work is an end in itself – the singer singing, the actor playing - and this makes increases in output per hour very hard to achieve (Baumol and Bowen, 1966). If wages of people working in the performing arts did not grow in line with wage increases in other sectors of the economy (that are possible because of productivity increases), the performing arts would be starved of labour supply (Brooks, 1997).

The unbalanced growth model as described by Baumol (1967; 1987) is built under the following assumptions:

1. There are only two sectors in the economy: ***P***, the performing arts sector and ***M***, the manufacturing sector. ***P*** is a stagnant sector because there are no productivity gains[11], while ***M*** is a non-stagnant sector where considerable productivity gains can occur.

2. The production function in both sectors is determined by only one factor: labour ***L***. Equations (3.1.) and (3.2.) indicate the production functions in the two sectors, where at time t Y_{pt} is the production function of sector P; Y_{mt} is the production function of sector M; r is the productivity growth rate, a and b are constants >0

$$Y_{pt}=aL_{pt} \qquad (3.1.)$$

$$Y_{mt}=bL_{mt}e^{rt} \qquad (3.2.)$$

3. Wages in the two sectors of the economy are and remain equal.

[11] Although productivity gains can be registered in the case of the performing arts (lower travel time for touring performances, lower peripheral costs, possible profits from recordings etc...) the reality is that there are, at least for now, large gaps between productivity gains in labour intensive sectors and capital intensive sectors.

4. Wages growth is determined by the productivity gains in the manufacturing sector.

$$W_t = We^{rt} \tag{3.3.}$$

Where W_t represents wages at time t per unity of labour in the two sectors and W is a constant.

Baumol maintains that C_p, cost per unity of output in the performing arts sector, relative to the cost per unity of output in the manufacturing sector will grow virtually without limits while C_m will remain constant:

$$C_p = \frac{W_t L_{pt}}{Y_{pt}} = \frac{We^{rt} L_{pt}}{aL_{pt}} = \frac{We^{rt}}{a} \tag{3.4.}$$

$$C_m = \frac{W_t L_{mt}}{Y_{mt}} = \frac{We^{rt} L_{mt}}{bL_{mt} e^{rt}} = \frac{W}{b} \tag{3.5.}$$

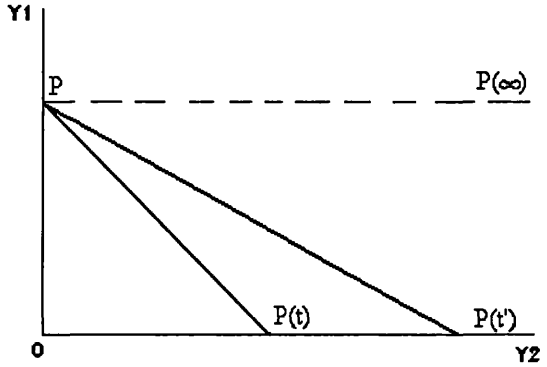
$$\frac{C_p}{C_m} = \frac{\frac{L_{pt}}{Y_{pt}}}{\frac{L_{mt}}{Y_{mt}}} = \frac{be^{rt}}{a} \tag{3.6.}$$

Baumol's conclusion is that through time the cost per unit of output of the performing arts sector, relative to the cost of the manufacturing sectors will rise. Wages in the performing arts sector through time will have to rise in line with wages in other parts of the economy, even though productivity gains in the arts sector will be far fewer.

Bradford (1969) however leads to a different conclusion *"through time the cost per unit of output of sector 2 (manufacturing), relative to that of sector 1 (performing arts), will fall to zero in the limit, while the set of feasible output combinations will continually expand"* [manufacturing and performing arts have been added].

Given $Y_{pt}=aL_{pt}$ and $Y_{mt}=bL_{mt}\ e^{rt}$ as defined above, the production possibility frontier at time t, PP(t) can be viewed below in figure 3.1 *PP(t)* has a slope equal to $-a/be^{rt}$, Y_p intercept at aL_t and Y_m intercept at bL_te^{rt}. If we consider an economy with a fixed total labour force represented by the sum of L_p and L_m, through time the production possibility frontier *PP(t)* will first move to *PP(t')* and progressively shift to *PP(∞)*.

Figure 3.1 The consequence of differences in labour productivity



SOURCE: Bradford, 1969.

Through time the absolute value of the slope will become smaller and smaller and at the limit will fall to zero. This means that the opportunity cost of a unit of Y_m[12] will decrease correspondingly[13].

Baumol's analysis continues examining what would happen in a situation where the elasticity of demand for the two outputs (manufacturing goods and performing arts events) were unitary.

$$\frac{C_pY_p}{C_mY_m}=\frac{We^{rt}L_{pt}}{We^{rt}L_{mt}}=\frac{L_{pt}}{L_{mt}}=A \quad \text{Where } A \text{ is a constant} \qquad (3.7.)$$

The output ratio is:

$$\frac{Y_p}{Y_m}=\frac{aL_{pt}}{bL_{mt}e^{rt}}=\frac{aA}{be^{rt}} \qquad (3.8.)$$

[12] The opportunity cost of a unit of Y_m indicates the amount of Y_p that must be given up in order to obtain an extra unit of Y_m.

[13] With an expanding labour force the pattern of the shift in the curve remains unchanged, although the intercept Y_p moves progressively away from the origin. With a shrinking labour force the opposite is true (Bradford, 1969).

Through time the output ratio approaches zero as t grows and goes to ∞.

$$\lim_{t\to\infty} \frac{aA}{be^{rt}} = 0$$

Baumol (1967) claims that the output ratio tends towards zero because of a decline in the numerator while in fact what drives the output ratio towards zero is an increase in the denominator (output in the manufacturing sector) (Keren, 1972). The performing arts sector, under the assumption of a demand elasticity equal to one, produces a constant, rather than a decreasing output.

The analysis of Baumol's argument demonstrates that, contrary to Baumol's and Bowen's original predictions, society as a whole will *increasingly be able to support stagnant sectors of the economy* such as the arts, provided that this type of sector is limited (in size) compared to the non-stagnant ones. A society where considerable productivity gains can be detected in the majority of sectors (this is the nature of the cost disease), achieves higher consumption opportunities because of productivity increases. The increase in performing arts costs relative to manufacturing products and goods creates the illusion that society is unable to afford live performances, while in fact society as a whole will enjoy a higher standard of living (Frey, 2003).

Politicians and private citizens alike interrogate themselves about continuous annual increases in the share of public resources allocated to the stagnant sectors of the economy, in the face of a constant or deteriorating supply. Without knowledge of the cost disease and its origin this can be (an often is) interpreted as the proof that stagnant sectors will progressively erode society's well being. As a consequence societies might be ready to dismiss "non strictly" essential stagnant sectors and the public funding allocated to them.

3.2.2. The evidence

Baumol and Bowen present time series data on cost variations in the performing arts sector to support their productivity lag hypothesis (Baumol and Bowen, 1966). They provide empirical evidence from the United States, Great Britain and

Sweden, but they also report of more anecdotal indications of a growing income gap from Italy (pp 300-301).

Using time series data for the 1950s and 1960s of costs per performance of the Royal Opera House, Royal Shakespeare Theatre and regional orchestras they find that costs of live performances grew at an annual rate of 7-10 per cent, while the general price level grew at about 4 per cent (pp 200-201). When comparing two points in time, costs per performance of London theatres in the 1771-75 and 1963-64 seasons, they conclude that while costs have risen 13.6 times over the period, general price levels rose only by 6.2 times (Baumol and Bowen, 1966 pp 182-83).

Data from the New York Philharmonic (1842-1964 period) and the Cincinnati Symphony Orchestra (1920-1964) reveal a very similar picture. In the case of the New York Philharmonic, costs per concerts grew at an annual rate of 2.5 per cent, while the price index was up by only 1 per cent per year. The annual growth rate for the Cincinnati Symphony Orchestra was 2.2 per cent, while for wholesale prices it was 0.4 per cent. A very similar picture emerges when looking at the growth in costs of several Broadway performances in various periods between 1913-1961 (Baumol and Bowen, 1966 pp 196), orchestras and opera companies (pp 199).

There is evidence however that in periods of high inflation the hypothesis of a cost disease is not confirmed (Felton, 1994b; Baumol and Baumol, 1980). Stagnant labour costs are consistent with a reduction or total disappearance of the cost disease. Performers' wages are the main factor responsible for increases in costs in the performing arts sector and they are notoriously slow in responding to rapid increases in prices.

When expenditures and income grow at the same rate, the income gap grows in absolute size, while its relative size remains stable. When expenditures grow faster than the growth in income, both the absolute and the relative income gap grow. Baumol and Bowen predict that both the absolute and the relative income gap will grow through time: *"because of the economic structure of the performing arts, these financial pressures are here to stay, and there are fundamental reasons for expecting the income gap to widen steadily with the passage of time"* (Baumol and Bowen, 1966 pp 161). Data from the New York Philharmonic, the Cincinnati Orchestra, the Metropolitan Opera and eleven major US orchestras indicate that the

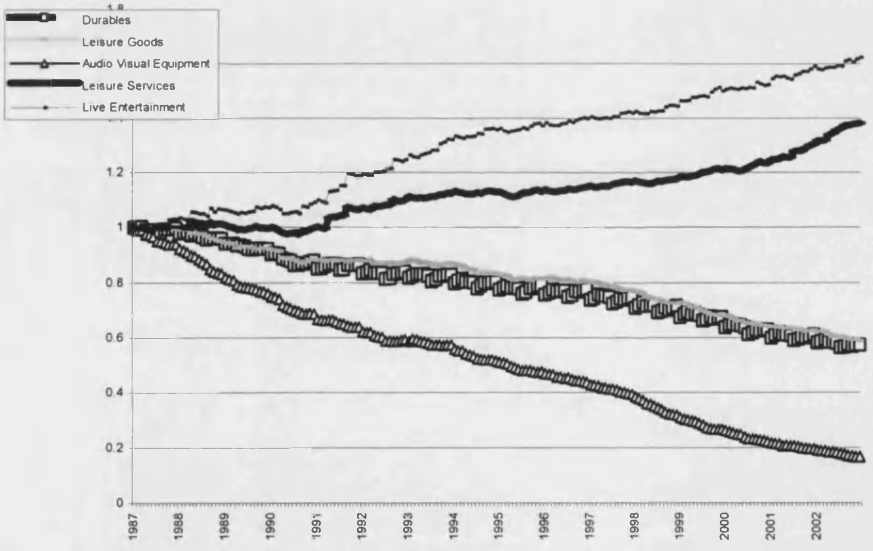
income gap has been steadily growing among performing arts organisations (Baumol and Bowen, 1966 pp 291). Baumol and Bowen obtain very similar results using financial data of Swedish performing arts organisations covering the period between the late 1940s and the early 1960s. While the income gap grew by more than 10% a year, prices grew only by 3.9% (Baumol and Bowen, 1966 pp298-299). The American Symphony Orchestra League reports that between 1971 and 1991 the income gap of the average symphony orchestra increased by 150 percent and a similar picture emerges from reports on opera companies by Opera America.

However there is also some evidence that the income gap has not increased and that contrary to Baumol's initial expectations, earned income has kept pace with expenditures (Heilbrun and Gray, 2001; Throsby, 1994). In the 1965-71 period, the income gap fell for ballet and modern dance while it grew for symphony orchestras and non-profit theatres (Ford Foundation, 1974) and in the 1970s it fell for ballet, modern dance, non-profit theatres and symphony orchestras (Schwartz and Peters, 1983). In the 1980s and early 1990s the income gap declined in all performing art forms apart from modern dance (Felton, 1994a). Volpe (2001) also found no evidence of a growing income gap in US symphony orchestras and concluded that this was due to conscious strategies that orchestras put in place to limit budget deficits. An analysis of 25 US orchestras over a 21 years period (1971/72 to 1991/92) shows that while the income gap grew in absolute terms, the share of total expenditures covered by earned income did not change (Felton, 1994b). Similar results apply for opera and ballet companies, while modern dance companies were the only performing art to suffer from an increase in the income gap.

According to some, the stability of the income gap in the second half of the 21st century was determined by the fact that as expenditures rose, prices rose at a rate that was much higher than the general price level, without having a detrimental effect on attendance (Heilbrun, 2003). When considering growth in admission prices to performing arts organisations, Baumol and Bowen show figures indicating that prices rose in line with the wholesale price index. Comparing prices of the Drury Lane theatre in London in 1760 and the Royal Shakespeare Theatre, they find that while ticket prices went up by 0.8 per cent per year, in the same period the wholesale price index went up by 1 per cent per year (pp 265). The same result stems from other theatrical data from the 1880's.

Baumol and Bowen's price analysis for the United Kingdom is limited by the use of data on prices at two points in time and by the fact that they analyse ticket prices of single theatre organisations. Evidence on substantial price increases in the British performing arts sector, is provided in figure 3.2. The figure shows data from the United Kingdom on how prices of consumer durables, leisure goods, audio-visual equipment, leisure services and live entertainment changed between 1987 and 2002. While the relative price of those items most likely to enjoy productivity increases such as consumer durables and leisure goods[14] decreased significantly in the period considered, the relative prices of leisure services increased. When comparing the leisure items in detail by analysing the relative price changes of one leisure good - audio-visual equipment - and one leisure service - live entertainment – the difference in trends of prices over time is even more striking. Taking January 1987 as the base year when the relative price of both items was 1, in December 2002 the price index of audio-visual equipment had dropped to 0.17 while the price index of live entertainment had increased to 1.62.

Figure 3.2 Baumol's cost disease and price changes in the United Kingdom. 1987-2002.



Data on monthly Retail Price Indices for the United Kingdom for the 1987-2002 period. January 1987=100. All indices are adjusted by the general RPI.

[14] Leisure goods includes audio-visual equipment, CDs and tapes, toys, photographic and sports goods, books and newspapers and gardening products.

3.2.3. Implications for arts and cultural policy: effect on access and diversity

The conclusion that societies will enjoy higher consumption opportunities of live performances needs to be reformulated in the following manner. Year by year societies *will be able to* consume more and more live performances[15] and at the same time they will be able to consume higher quantities of manufacturing products (Baumol, 1992; 1993; Baumol and Baumol, 1985). The share of resources allocated to the two sectors will ultimately depend upon *i)* people's preference structures (the utilities related to the consumption of the two types of goods), *ii)* the costs of live performances and manufacturing products and *iii)* income levels.

Most empirical studies on the effect of income on the demand for performing arts events indicate that the income elasticity of the demand is higher than 1 (see section 4.2 for a detailed review of the literature). This means that live performances are luxury goods and that economic growth resulting in higher incomes will more than proportionally increase their demand (Cowen and Grier, 1996). Economic theory however predicts that this income effect will be offset by increases in relative price levels: the higher the prices of performing arts events will be, the lower their demand.

The cost disease in itself does not provide a rationale for government intervention. It describes the cost structure of a sector of the economy and it represents an attempt to understand why this specific sector is subject to chronic financial instability (Throsby & Withers, 1979). It states that under an assumption of stable preferences, the change in relative prices will determine a decrease in the consumption of performing arts events if *i)* rising costs are to be met entirely by increases in market prices and *ii)* the demand is elastic.

As shown in previous sections of this chapter, increases in relative costs of performing arts industries have indeed been met by substantial increases in ticket prices. But do prices have a detrimental effect on attendance levels? And is there an income gradient in the responsiveness of the demand to changes in prices? It is possible that changes in prices do not influence attendance decisions of parts of the population while they determine significant changes in demand levels in others.

[15] Even with increasing real costs and admission prices.

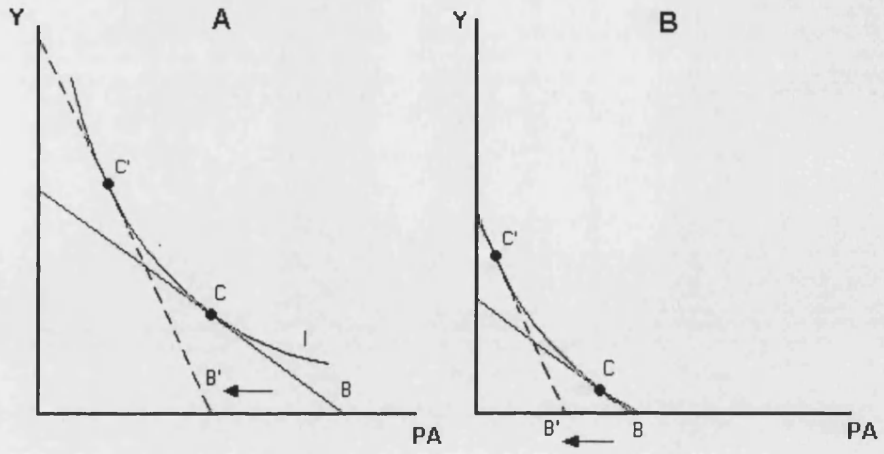
While overall attendance rates have not been affected by increases in prices far higher than the general inflation levels, attendance among some groups in the population might decline as prices grow (Heilbrun and Gray, 2001).

If the income gap is met by increases in the cost of admission to performances and preference schedules vary in the population because of one's upbringing, social class, income, educational attainment and early experience of the arts it is possible that the cost disease is going to affect people's participation levels to different degrees. If the satisfaction that people gain from engaging in art activities differs, so will their reaction to changes in market prices of admission to performances.

Later chapters of this thesis will be devoted to assessing to what extent the hypothesis that changes in prices affect differently the attendance of different groups in the population and to what extent public policies can overcome this. If participation in the performing arts brings a number of benefits to participants and society at large and price levels disproportionately affect attendance rates of those in disadvantaged groups, both equity and efficiency arguments invoke government intervention. Although increases in prices might play a significant role in determining low participation rates among disadvantaged communities, other factors could be even more important, such as lack of art education and early socialisation in the arts. This thesis addresses this issue and analyses to what extent prices deter attendance and whether other factors better explain low attendance rates among disadvantaged groups.

Figure 3.3 shows the effect of the change in relative prices on consumption of performing arts events PA and other goods Y when preferences are stable (indifference curve I) for two income groups **A** – high income – and **B** – low income. The budget constraint B shifts to B' and the combination of expenditures on Y and PA change from C to C' (where PA decreases and Y increases).

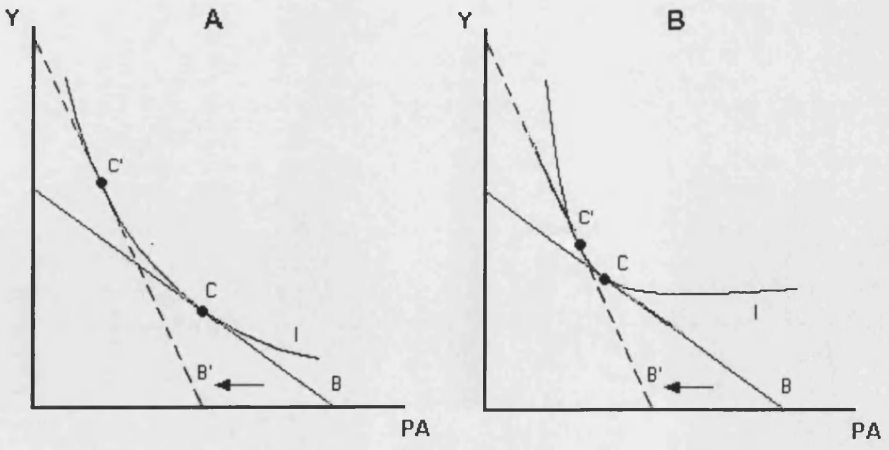
Figure 3.3 The effect of changes in prices when budgets differ



When people in different income groups have same preferences for the performing arts, the effect on their demand of rising relative costs met by increases in market prices will be similar. In the literature the effect on consumption of changes in relative prices is analysed using models that assume the situation presented in figure 3.3, i.e. that the price elasticity of demand of people in different income groups is the same.

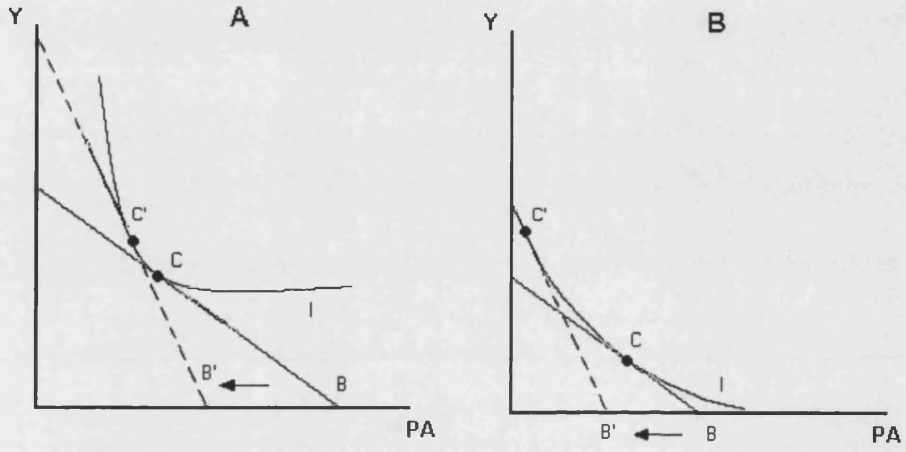
If preferences are not the same among different groups the enjoyment that these groups derive from engaging in art activities differs greatly. It is therefore reasonable to expect that increases in relative prices will disproportionately affect the participation of some groups and not others. This situation is shown in figure 3.4 where person **A** is highly sensitive to changes in prices, while person **B** is not.

Figure 3.4 The effect of changes in prices when preferences differ



One of the hypothesis that this thesis aims at testing is whether preferences for the performing arts are randomly distributed or whether people in disadvantaged groups belong disproportionately to the category of people with undeveloped tastes for the arts. If this were to be the case, a change in relative prices would have the effect shown in figure 3.5 on those with high incomes and developed tastes for the arts (group **A**) and those with low incomes and undeveloped tastes for the arts (group **B**).

Figure 3.5 The effect of changes in prices when budgets and preferences differ



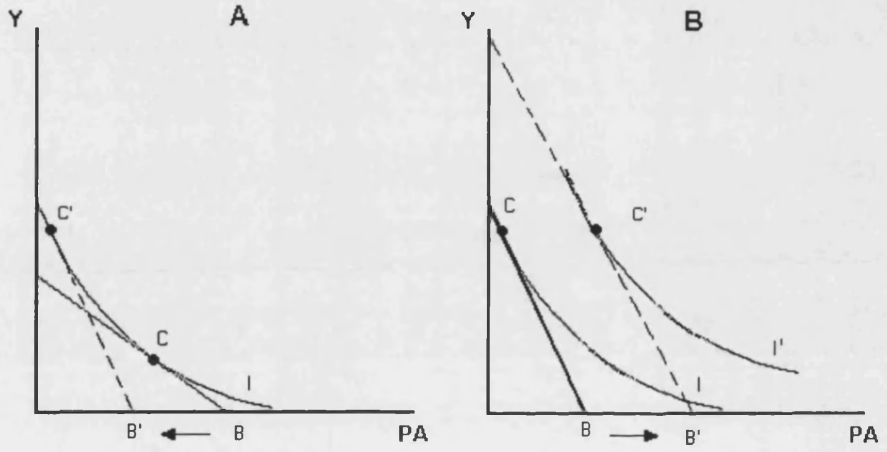
The aim of the thesis is to provide a detailed analysis of the differential impact of prices on attendance among different groups in the population and test the hypothesis that disadvantaged groups are disproportionately affected by rising relative prices of performances.

Baumol's analysis suggests two alternative (but not mutually exclusive) forms of government intervention: *i)* meeting the income gap through subsidies to performing arts organisations if prices affect people's demand for performing arts events and/or *ii)* reducing the income gap by modifying people's preferences for the performing arts, for example through art education provision. The thesis examines to what extent these two strategies are effective in increasing attendance among those groups that have traditionally enjoyed low attendance rates.

Figure 3.6 represents the first option governments can use to reverse the effect on relative prises of raising productivity in the *Y* sectors of the economy: subsidising the performing arts to balance the income gap. This model presupposes that

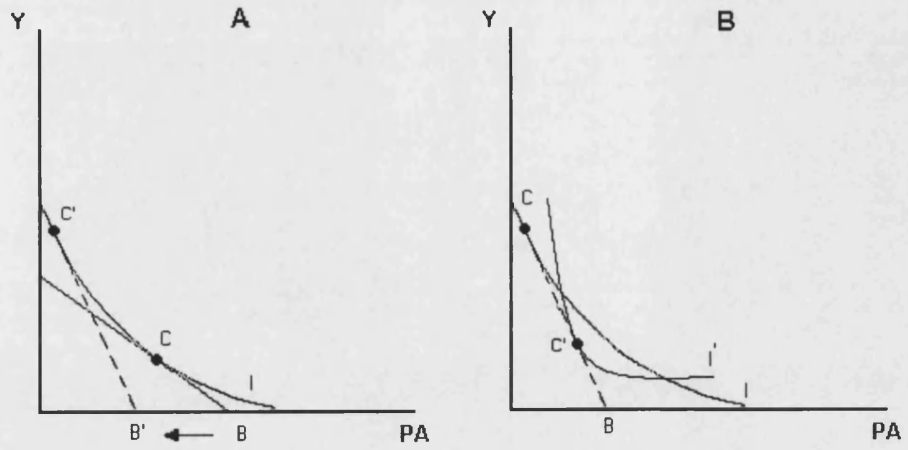
preferences for *Y* and *PA* remain constant and as a result of government action consumption of *PA* remain unchanged. The budget constraint *B* shifts outwards to *B'*, and the preference schedule shifts from I to I'. If the subsidies are financed through taxes raised among high-income groups, the budget constraint of people in low income groups shift outwards but the slope remains unchanged. Low-income groups now consume the same amount of Y goods they consumed as a result of the effect of the cost disease on relative prices, but they also consume a higher quantity of *PA* than they would have done without the subsidy.

Figure 3.6 Compensating the income gap: the effect of government subsidies



A second strategy that can reverse the decline in performing arts expenditures consists in changing preference structures through art education programmes, early exposure to events and other forms of socialisation processes. The effect of a government programme aimed at shifting preferences is a change in the marginal rate of substitution between *Y* and *PA*. People are prepared to forgo consumption of more manufactured goods *Y* for each unit of performing arts events *PA*. This model is represented in figure 3.7 where the budget constraint *B* remains unchanged while the indifference curve *I* shifts to *I'*.

Figure 3.7 Compensating the income gap: the effect of policies aimed at changing preferences



Chapter 4.

Is there an income gradient in the responsiveness of the demand for live performances to changes in prices? Evidence from England.

"It is not necessarily true that attendance is going to fall in any catastrophic manner by the imposition of charges – though the idea that it will not fall at all seems to me equally implausible. [...] But to pretend that the price of a few cigarettes or a pint of beer is going to cause severe hardship or deprivation to many classes of people is to treat the subject less seriously than it deserves".

Sir Lionel Robbins, 1971

4.1. Introduction.

In order to encourage attendance and reduce disparities in attendance rates in live performances more and more non-profit fine arts organisations are putting outreach to new audiences at the top of their priorities lists. As section 3.1 has highlighted not only are performing arts audiences richer, more educated, and "whiter" than the population overall, but the situation has not evolved over time and the socio-economic profile of the overall audience has remained fairly stable.

The empirical evidence to date describes a highly price-inelastic demand and therefore seems to suggest that reducing admission prices will not dramatically alter the current situation. However such evidence is based on studies that use time series data from performing arts institutions and model the relationship that ticket prices have on the number of tickets sold. This relationship might be dominated by the response of the majority, upper-income audience and hides a price response from the relatively small groups of *i)* nonattenders who decide to attend when

prices fall and *ii)* low-income attenders already in the audience who may depart when prices rise. Consequently we do not know whether prices play a different role in determining the demand for performing arts events among different groups in the population (defined in terms of income, educational attainment, ethnic background, etc...).

In most countries performing arts organisations receive support from both central and local governments. Data from the 1997 Economic Census for the United States and from the 1997/98 Digest of Arts Statistics for England show that while public support represents a substantial share of total revenues in England, it is quantitatively less important in the United States.

Table 4.1 Sources of revenues of performing arts organisations in 1997 - US

Sources of revenues	Opera	Theatre Companies	Dance Companies	Symphony Orchestras and Chamber Music Organisations
Membership dues and fees	0.70%	1%	1.20%	2.50%
Admissions	37.70%	49.20%	30%	32.80%
Government	3.10%	5.10%	6.90%	4.70%
NEA	*0.40%*	*0.50%*	*1.20%*	*0.40%*
Other	*2.70%*	*4.60%*	*5.70%*	*4.30%*
Private Contributions	41.70%	23.90%	37.70%	34.20%
Individuals	*25.70%*	*10.30%*	*16.20%*	*15.40%*
Foundations	*5.30%*	*6.90%*	*12%*	*6.90%*
Business and Industry	*4.70%*	*5.50%*	*8%*	*9.40%*
Other	*6%*	*1.20%*	*1.50%*	*2.50%*
Other	16.90%	20.80%	24.20%	25.80%
TOTAL	100%	100%	100%	100%

SOURCE: U.S. Census Bureau, 2000.

Table 4.2. Sources of revenues of performing arts organisations in 1997/98 England

Sources of Revenues	Performing arts* (1994/5)	Dance** (1997/8)	Drama and mime** (1997/8)	Music** (1997/8)
Arts Councils/Regional Arts Boards	27%	51%	34%	39%
Local authorities/other public sources	12%	5%	11%	5%
Sponsorships, contributed income	12%	6%	6%	9%
Earned income	49%	38%	49%	47%
Total	**100%**	**100%**	**100%**	**100%**

* **SOURCE:** Casey et al, 1996.

** **SOURCE:** Arts Council of England, 2000.

Subsidies and grants have been allocated in the attempt to guarantee admission prices far lower than what would be required to cover the cost of maintaining performing arts venues, producing and performing plays, concerts, operas and ballet. However these have not resulted in audiences that reflect the socio-economic characteristics of the population. It is largely believed that further price cuts might expand the performing arts audience vertically, making it more inclusive of minorities and groups with disadvantaged socio-economic status. Recent moves of the British government guaranteeing free museum admissions to national museum's permanent collections highlight the trend. While free admission to performing arts organisations is neither feasible (because of the low capacity of performing arts venues it would simply cause rationing by queuing and a secondary black market) nor efficient (because seats are rival) further reductions in admission fees are possible. The National Theatre in London in 2003 and 2004 offered a number of shows with a £10 pricing policy. However while the scheme was designed to improve access and favour attendance of those who never or seldom experience the performing arts, anecdotal evidence suggests that this goal was not met and the main beneficiaries of the programme were people who usually attend National Theatre productions anyway.

The aim of this chapter is to fill the gap on the availability of quantitative evidence on the effect that price variations have on the demand for live performances of people with different incomes. The study is based on data from the Family Expenditure Survey (FES) linked to data on retail price variations of live entertainment activities and a number of substitutes for the period 1987-2000.

4.2. The effect of price on participation: the state of the art

The empirical evidence on the effect prices have on attendance mainly derives from studies that look at the price elasticity of the demand for the performing arts. The empirical literature generally reports a highly inelastic demand, i.e. increases in prices are not accompanied by a proportional reduction in attendance. In a number of cases positive price elasticity of the demand for performing arts events have also been estimated, with increases in prices resulting in increases in attendance (Throsby, 1983).

A study of the demand for Broadway theatre performances (Moore, 1966) found a price elasticity of demand of -0.33 to -0.63[1] and a subsequent study (Carson & Mobilia, 1989) of –0.375 and –0.1318. Gapinsky (1986) assessed the price elasticity of London theatre, opera, symphony and dance companies for the 1972-83 period. Estimates are of a price elasticity of –0.05 to –0.10 for theatres, of –0.12 to -0.25 for opera, -0.19 to –0.35 for symphony orchestras and –0.18 to –0.81 for dance companies. Gapinsky (1984) estimated a price elasticity of around -0.657 for Shakespeare performances in two English theatres and Touchstone (1980) a price elasticity of -0.5 for American theatres. Touchstone (1980) also found an inelastic demand for opera (ε = -0.804), for symphonies (ε = -0.5), and for ballet (ε = -0.4012). Lange and Luksetich (1984) estimate an inelastic demand for symphony orchestra performances (ε = -0.489). Splitting the overall figure into major orchestras (orchestras with budgets of $500,000 or more in 1970) and metropolitan orchestras reveals large differences. While major orchestras have an inelastic demand (ε = -0.39) the demand for metropolitan orchestras is elastic (ε = -1.258). A study of the performing arts in the period 1929-1973 in the United States (Withers, 1980) indicates an inelastic demand with a value of -0.67 to -0.9[2] while a similar study by Houthakker and Taylor (1970) for the 1929-1964 period estimates a price elasticity of –0.18.

Zanardi (1998) shows how price has a minor negative effect on attendance at theatre, museums and exhibitions, classical music concerts and cinema in Italy in 1994. Felton (1989) estimated the price elasticity of demand at the organisation level and found significant differences in three opera companies studied. While the San Francisco Opera has a price elasticity of -1.62, the San Diego Opera of -1 and the Houston Grand Opera of -0.64. A further study by Felton (1992) on opera, symphony orchestras and ballet companies in the United States confirms a fundamentally inelastic demand for all the three art forms even though large variations exist among the three organisations in terms of location and type of public attracted. Some organisations such as the New York Philarmonic present an elastic demand (ε = -1.18) and some even exhibit a positive elasticity such as the

[1] The differences in the values of the elasticity depend on the methods used for the estimation.

[2] The two values -0.67 and -0.9 correspond to the entire period 1929-1973 using two different estimation models. However if two sub-periods are considered 1929-48 and 1949-73, the price elasticity using a model called "time-allocation model", it becomes greater than 1 in absolute value: -1.07 for the pre World War II period and -1.19 for the post war period.

Houston Milwaukee Ballet Company (ε = +0.27), the Winston Salem Ballet Company (ε = +0.40), the Houseton Ballet Company (ε = +1.34), Pittsburgh and Dallas Opera Companies (ε = +0.59 and ε = +0.46) and Cleveland Symphony Orchestra (ε = +0.20).

The fact that the demand is inelastic does not mean that increases in prices will not affect or only marginally affect attendance. It means that increases in prices will be associated with a less than proportional decrease in the number of people attending and that this will have a positive impact on total revenues. A decrease of 6% in participation associated with an increase of 10% in ticket prices might be considered a substantial decrease. It might also signify that the audience will lose all of its low income/low educational background/ethnic minorities attendance. It is possible that the demand is inelastic for parts of the population and highly elastic for others and the price elasticity of the demand is a measure that does not convey the information necessary to predict what would happen.

The line of research summarised above is based on the use of time series of financial data from performing arts institutions containing information on ticket revenues and quantity of tickets sold per fiscal year. These aggregate data are used to calculate average ticket prices as the ratio of total ticket revenues and quantity of tickets sold. The limitation of this kind of studies is that they concentrate on the effect that price changes have only on the number of people attending and the effect on total revenues. Very little can be inferred from the literature as to the role of socio-economic characteristics in the price-participation relationship. As a result the existing literature can explain overall effects of price changes on current audiences, but not whether price reductions can expand the audience vertically making it more inclusive of minorities and groups with disadvantaged socio-economic status.

In the literature there are no attempts to analyse the effect that personal income or social class have on the price-attendance relation. The use of aggregate data makes it impossible to ascertain whether the price elasticity of demand is the same among low and high-income groups, among people with a high educational background and people with a low one. Consequently the demand elasticity studies reviewed above cannot be used to formulate effective price differentiation strategies or public policies designed at improving access and diversity.

A study on two ballet productions (*Giselle* and *Sleeping Beauty*) of the Royal Opera House in Covent Garden attempts to evaluate the price elasticity of demand for each of three seating categories (Schimmelpennig, 1997). Seating categories and thus ticket prices could be used as a proxy for the income of those purchasing the tickets as it is reasonable to expect that wealthy people are more likely to buy very expensive tickets and low income people slightly cheaper ones for the same performance[3]. The demand for more expensive seats can be used to "estimate" the responsiveness to price changes of higher income groups, while the demand for cheaper seating categories can be thought of as a proxy for the demand of lower income groups. The main problem of this approach is that the relationship between seats and "income" of the audience member is not fixed and higher income people can move "down the seating ladder" when prices increase, if they so wish. Schimmelpennig (1997) found a significantly high price elasticity for the two productions and differences in the elasticities associated with the different seating categories. The price elasticity of the most and least expensive tickets had very high values: $\varepsilon = -3.48$ (Giselle) and $\varepsilon = -5.56$ (Sleeping Beauty) for the most expensive and $\varepsilon = -3.02$ (Giselle) and $\varepsilon = -4.30$ (Sleeping Beauty) for the least expensive. The tickets in the middle had a price elasticity greater than 1 but significantly less than the one found for the other two categories: $\varepsilon = -1.34$ (Giselle) and $\varepsilon = -1.72$ (Sleeping Beauty)[4].

The aim of this chapter is to assess how prices affect the demand for performing arts events not only overall but also among different income groups in the population. Groups are defined in terms of income as income is one of the characteristics most correlated with attendance (see section 3.1). Moreover there is some empirical evidence that supports the hypothesis that an income gradient determines the price-attendance relationship. Baumol and Bowen (1966) report that households with lower incomes are more likely to buy less expensive theatre seats than other households. Kirchberg's (1998) analysis of how personal income

[3] This is especially true in the case of ballet where the average of the capacity filled was 75% in 1996/97 and was very similar in the preceding ten years (Arts Council of England, 2000). The same figure for the Royal Ballet in the same year was 87% (Arts Council of England, 2000). The availability of tickets means that people can choose the ticket price according to their wishes without being conditioned by the unavailability of a preferred choice.

[4] The study by Schimmelpenning (1997) highlights the possibility that seating affects the value of the price elasticity. While his findings strengthen the hypothesis of a seating gradient in the demand elasticity, the results should be considered as conclusive evidence as the study relies on a very small sample size (two productions).

influences the subjective perception of price as a barrier to visiting museums in Germany also confirms that the effect that price has on participation varies among income groups.

The literature reports of a highly variable income elasticity of the demand, with some studies estimating it to be as little as 0.348 (Moore 1966) and some as high as 5.782 (Carson and Mobilia, 1989). Differences in estimates are primarily due to the different measures of income adopted in the analyses (wage income, full income, etc...), period in which the analyses were conducted and the type of performing art organisation under consideration. Table 4.3 briefly summarises the findings in the literature on the income elasticity of the demand for performing arts events.

Table 4.3 Review of the evidence on the income elasticity of the demand

Author	Period	Organisation	Income measure	Estimates
Moore (1966)	1928-63	Broadway theatres	Permanent income	Ranging between 0.348 to 1.030 (variations due to econometric model used to estimate the demand)
Gapinski (1984)	1965-80	Shakespeare performances	Real per capita income	1.327
Houthakker and Taylor (1970)	1929-64	Performing arts	Real per capita income	0.74
Carson and Mobilia (1989)	1975-88	Broadway theatres	Real personal income	5.782 fall, winter and spring 4.7435 summer
Felton (1989)	1975-86	Operas	Real per capita income	NS
Felton (1992)	1979-87	Operas	Real per capita income	NS (large companies) NS (small)
		Symphony Orchestras		0.767 (very large) 1.048 (large) NS (small and very small)
		Dance/Ballet companies		3.088 (large) 1.868 (small)
Withers (1980)	1929-73	Performing arts	Wage income	1.08 (29-73) 0.64 (29-48) 1.55 (49-73)
			Full income	2.74 (29-73) 1.43 (29-48) 2.78 (49-73)

NS= statistically not significant

Most studies in the literature estimate an income elasticity of the demand higher than 1. This suggests that performing arts events can be considered as a luxury good: increases in income correspond to more than proportional increases in the

demand for performing arts events. Similarly, as personal income decreases, the demand falls more than proportionally. It is expected that as economic resources increase people increase their demand for performing arts events and that they will do so more than proportionally.

4.3. Data and methods: The Family Expenditure Survey.

The analysis of the effect of income on the price-attendance relationship is based on data from the Family Expenditure Survey (FES) and covers a 15 year period (1987-2000). Although the use of a survey to study the responsiveness of the demand to price changes presents a number of challenges it also has numerous benefits when compared to the use of time-series of institutional data. The FES is a continuous survey of a random sample of private households in the United Kingdom carried out by the Office for National Statistics. It has an annual sample of around 11,500 households and a response rate of 60%. The survey contains data on monthly household expenditures on goods and services as well as household income. Data is collected throughout the year to cover for seasonal variations in expenditures. In addition to expenditure and income data, the FES collects information on socio-economic characteristics of the households, e.g. composition, size, social class, occupation and age of the head of household. Data is collected from individuals through a diary of daily expenditures that respondents are asked to keep for two weeks. At the end of the two week period an interview is arranged with respondents and retrospective information is collected on monthly irregular and infrequent expenditures. Among these are expenditures on live professional performing arts events.

Do changes in prices determine changes in the demand for performing arts events? And is the responsiveness of the demand to price changes different among different income groups? Previous studies provide a partial answer to the first question. I say partial because due to the use of a limited number of institutions to estimate overall demand functions, generalisations are hard to make. Through the analyses presented in this chapter I attempt to provide *(a)* "better" estimates of overall demand functions and *(b)* an answer to the question of whether there is an income gradient in the responsiveness of the demand to price changes. The use of a survey such as the FES means that estimates are not based on a non-randomly chosen

sample of performing arts organisations, but on a sample of the population and official price indices in the industry. Information on price variations of live entertainment activities and possible complements and substitutes comes from the detailed monthly retail price index tables published by the Office for National Statistics. As the FES does not have a longitudinal structure, it is not possible to model directly changes in the demand for performing arts following changes in prices as households sampled in the FES change each month and each year. It is possible however to generate a panel structure indirectly using FES household data analysing the behaviour of groups of households in the population rather than individual households. The sample is large enough to generate pseudo panels using groups as observations and assess how group behaviour changes following changes in prices.

Three steps have been followed to generate the groups:

STEP 1 Determination of a measure of household economic resources.

Although income data is present in the FES, weekly income is likely to fluctuate considerably and therefore it is not a good measure of people's economic resources. Consumption represents a better indicator of people's overall resources and lifestyle possibilities. Poterba (1989) states that *'if households base their spending plans on their lifetime income, then consumption provides a more accurate measure of resources than does annual income'* and Cutler and Katz (1992) argue that *'economic theory suggests that permanent income or consumption is a more accurate measure of the distribution of resources than is current income'*. Total expenditures are the best proxy for overall consumption as the latter is often difficult to measure (Levy and DeLeire, 2003; Slesnick, 1993; Cutler and Katz, 1992; Poterba, 1989).

STEP 2 Equivalisation of total household expenditures so that the expenditure variable reflects the ability of households with a different composition to satisfy the needs of their members.

Larger families report higher expenditures than smaller family units even when their economic resources are more limited. Young babies have more limited needs than adults and therefore a household incurs in more limited expenditures to meet those needs. Adjustments have to be made to take into account: *a)* the number of people in each household and *b)* the age of each component. Weights have been generated to construct an equivalence scale for the FES sample using a variation of

the AHC McClements Scale (McClements, 1977). Table 4.4 summarises the weights used for each component of the household.

Table 4.4 Equivalisation weights for the 1987-2000 Family Expenditure Survey

Household member	Equivalence scale
Head of household	0.55
Subsequent adults (>22)	0.45
Young adults (16-22)	0.38
Each dependant age:	
10-15	0.27
5-9	0.22
2-4	0.18
0-1	0.07

Some examples will help explain the idea of equivalisation. The baseline family, household ***A***, is a childless couple with both household members aged 23 or more: the total equivalence scale for this household is 0.55+0.45=1. Family ***B*** consists of a married couple with 3 children aged 1, 3 and 11 and one elderly relative living with them. It has a total equivalence scale of (0.55+0.45+0.07+0.18+0.27+0.45)=1.97. The two families have the same standard of living when for example household ***A*** has total expenditures of £10,000 and household ***B*** has total expenditures of £19700 (£10,000*1.97). This means that when the two households have both expenditures of £10,000, the standard of living of family ***B*** is equivalent to the standard of living of family ***A*** when family ***A*** has total expenditures of £5,076.142 (£10,000/1.97).

Equivalence scales have been calculated for each household in the FES dataset for the years 1987-2000. Total equivalised household expenditures $EQEXP_i$ have been calculated as the ratio of total household expenditures EXP_i to household equivalence scale ES_i. The equivalence scale ES_i differs between households according to the number of individuals in each household and their age.

$$EQEXP_i = EXP_i / ES_i$$

STEP3 Division of the FES sample into three groups according to their equivalised economic resources $EQEXP_i$.

Equivalised household expenditures have been used to generate the three groups. For each period in the sample, households have been allocated to one of three

groups according to their relative position in the total equivalised expenditure distribution. The first group consists of households with equivalised household expenditures in the bottom third of the distribution (first tercile), the second group consists of households with equivalised household expenditures in the second third of the distribution (second tercile) and the third group consists of households in the top third of the distribution (third tercile). As there are three groups for each period *t* (period 1 corresponds to the first quarter of 1987, period 2 corresponds to the second quarter of 1987 etc...), the total number of possible observations is 180 (3 groups*4 quarters*15 years). The first group corresponds to households with low economic resources, the second group to households with medium economic resources and the third group to households with high economic resources.

Although I assigned "group membership" on the basis of total equivalised expenditures, for sake of simplicity in the remaining parts of the chapter I will refer to the three groups as income groups. The grouping of households in the 1987-2000 FES sample has been used to develop four models that aim at determining the effect of prices on the demand for the performing arts. The reason for having a number of models rather than a single one is that assumptions are needed to develop econometric analyses. The aim of the chapter is to assess what is the effect of changes in prices on the demand for live performances of people on different incomes and I achieve this aim by ansewring four questions:

1) What is the effect of price changes on the demand for live performances overall and for the three income groups analysed separately?

2) Do changes in prices affect the number of people who attend live performances overall and in each of the three income groups?

3) What would be the effect of price changes on the demand for live performances overall and for the three income groups if the socio-demographic characteristics of the households in the three groups did not change between groups and over time?

4) What would be the effect of price changes on the demand for live performances overall and for the three income groups if the socio-demographic characteristics of the households in the three groups did not change between groups and over time and the real average income of households in each group did not change over time?

Model 1

What is the effect of price changes on the demand for live performances overall and for the three income groups analysed separately?

The first model rests on a strong assumption: the only factor likely to determine household expenditures on performing arts events that differs in families across the three groups is their income. Households comprising the three groups are similar and the only difference between them is how economically endowed they are. For example this implies that equal numbers of low educational attainment families are present in the "wealthy" group, the "middle class" group and the "poor" group. A second derived assumption is that there are no changes in the characteristics of families (in the population) over time. This means that the characteristics of families present in each group and each period are the same.

Average current expenditures on the performing arts and average equivalised total expenditures are calculated for each group for each period.

$$EQEXP_{igt} = \frac{1}{N}\sum_{i=1}^{N} EQEXP_{igt} \qquad (4.1)$$

$$PA\_EXP_{igt} = \frac{1}{N}\sum_{i=1}^{N} PA\_EXP_{igt} \qquad (4.2)$$

Where $i=(1.....N)$ represents households within each group, $g=(1,2,3)$ represents the group and t represents the period $t=(1,.....56)$; $EQEXP_{igt}$ represents average equivalised total expenditures of the N households in group g in period t; $EQEXP_{igt}$ represents total equivalised expenditures of household i in group g in period t; PA_EXP_{igt} represents average expenditures on live performances of the N households in group g in period t; and PA_EXP_{igt} represents expenditures on live performances of household i in group g in period t.

The aim of the analysis is to determine the impact of price changes on changes in quantities of performing arts events consumed by households, to this effect

percentage changes of all variables have been calculated for each group, quarter and year using the first quarter of 1987 as a base. Equations (4.3 to 4.5) illustrate the procedure used to construct the percentage change variables: EQE_g (total equivalised expenditures) and PA_Q_g (quantity of live performances consumed by households) used in the regression model described by equation (4.6).

$$EQE_g = \frac{EQEXP_{igt} - EQEXP_{ig(t-1)}}{EQEXP_{ig(t-1)}} * 100 \qquad (4.3)$$

$$PA\_E_g = \frac{PA\_EXP_{igt} - PA\_EXP_{ig(t-1)}}{PA\_EXP_{ig(t-1)}} * 100 \qquad (4.4)$$

$$PA\_Q_g = \frac{(PA\_E_g - P_{PA})}{(1 + \frac{P_{PA}}{100})} \qquad (4.5)$$

Where P_{PA} represents percentage change of the price of performing arts events. The resulting transformed FES dataset has a panel structure and is based on first differences in quantities demanded of live performances and of prices of live performances and possible complements and substitutes. The use of first differencing means that the model does not suffer from the problems usually to be found in panel data and a simple OLS regression can be used to estimate model (4.6).

$$PA\_Q_g = \alpha + \beta_1 P_{PA} + \beta_2 P_{OTR} + \beta_3 EQE_g + \varepsilon \qquad (4.6)$$

P_{OTR} a vector of percentage changes of prices of possible complements and substitutes of the performing arts. A detailed description of P_{OTR} can be found in table 4.6.

Model 2

Do changes in prices affect the number of people who attend live performances overall and in each of the three income groups?

Participation in live performances is neither frequent nor common and few individuals report expenditures in each month. According to the 2001 ONS Omnibus Survey on participation in the arts in England only 5% of respondents attended a play or drama in the 4 weeks before the interview took place, 3% attended a classical music performance and 1% an opera or operetta performance (Skelton et al, 2002).

A simple analysis of the impact of price changes on average household demand for live performances would not be adequate to support public policies aimed at broadening access to the performing arts by influencing prices. In fact, price changes may produce two distinct effects on the demand for live performances: *i)* they may change the frequency of attendance by those who used to attend before the price change (and possibly change the overall amount they spend on this), and *ii)* they may change the number of people attending. If the aim of public policies is to lower admission fees in order to expand the audience vertically, increase access, their main objective is to produce the second type of effect and increase the number of people experiencing the performing arts. An analysis based on a model using the number of consumers as the dependent variable is more appropriate as an empirical basis for the development of such policies. Such analysis can be used to determine whether changes in prices encourage new people to attend performing arts events or whether they discourage some fringe consumers to continue their participation. Model 2) uses the number of people in each group in each period reporting some expenditures on the performing arts as the dependent variable.

As the number of households present in each group differs between group and period, the dependent variable is defined as the ratio of households with positive expenditures on the performing arts to the total number of individuals present in the group in each period.

$$PA\_NUM_{gt} = \frac{NPA_{gt}}{TOT_{gt}} \qquad (4.7)$$

Where NPA_{gt} represents the number of households in group g in period t reporting positive expenditures on the performing arts and TOT_{gt} represents the total number of households sampled in the FES in group g in period t.

$$PA\_NUM_g = \frac{PA\_NUM_{gt} - PA\_NUM_{g(t-1)}}{PA\_NUM_{g(t-1)}} * 100 \qquad (4.8)$$

$$PA\_NUM_g = \alpha + \beta_1 P_{PA} + \beta_2 P_{OTR} + \beta EQE_g + \varepsilon \qquad (4.9)$$

Regression 4.9 is used to estimate the effect of changes in prices, P_{PA} and P_{OTR}, and in total equivalised expenditures *EQEXP* on the number of people attending the performing arts.

Model 3

What would be the effect of price changes on the demand for live performances overall and for the three income groups if the socio-demographic characteristics of the households in the three groups did not change between groups and over time?

The third model used to estimate the responsiveness of the demand to price changes relaxes the assumption that the households in the three groups and in the different periods differ only because of how economically endowed they are. It uses a two stages technique to control for a number of non-economic factors that might determine the demand for the performing arts.

In the first stage an OLS model is developed, estimating performing arts expenditures as a function of the following household characteristics: region of residence, whether the head of the household works, is not in paid work or whether she is retired, educational level of the head of the household, number and age of the children present in the household. Table 4.5 provides a brief description and summary statistics of these control variables.

Table 4.5 List of control variables and summary statistics

Variable	Description
REG1	Region of residence. Dichotomous. North and North West
REG2	Region of residence. Dichotomous. Midlands and East Anglia
REG3	Region of residence. Dichotomous. Greater London
REG4	Region of residence. Dichotomous. South East
REG5	Region of residence. Dichotomous. South West and Wales
REG6	Region of residence. Dichotomous. Scotland
REG7	Region of residence. Dichotomous. Northern Ireland
EQEXP	Equivalised household expenditures
WORK	Whether head of household is currently in a paid job. Dichotomous 0=No ; 1=Yes
NWORK	Whether head of household is currently not in a paid occupation. Dichotomous 0=No ; 1=Yes
PENSION	Whether head of household is currently retired. Dichotomous 0=No ; 1=Yes
EDU	Educational level of the head of the household. Age at which head completed full time education
INFANT	Number of children aged 0-1
BABY	Number of children aged 2-4
CHSMLL	Number of children aged 5-9
CHOLD	Number of children aged 10-15

First stage OLS regressions have been run using equation (4.10) for each year and group to estimate performing arts expenditures as a function of socio-demographic characteristics.

$$\begin{aligned} PA\_EXP &= \alpha + \beta_1 EDU + \beta_2 NWORK + \\ &+ \beta_3 PENSION + \beta_4 REG_2 + \beta_5 REG_3 + \\ &+ \beta_6 REG_4 + \beta_7 REG_5 + \beta_8 REG_6 + \beta_9 REG_7 + \\ &+ \beta_{10} INFANT + \beta_{11} BABY + \beta_{12} CHSMLL + \\ &+ \beta_{13} CHOLD + \beta_{14} EQEXP + \varepsilon \end{aligned} \qquad (4.10)$$

The results from the first stage regressions are used to estimate the impact of economic resources on the responsiveness of the demand of live performances to price changes, keeping other factors constant. In order to do this the estimated coefficients of the control variables (excluding *EQEXP*) for each regression (the $\hat{\beta}$) have been multiplied by the overall mean values of each of the control variables. Mean values for the control variables were calculated on the pooled dataset, including households from all groups and periods. In the case of *EQEXP* the estimated coefficient $\hat{\beta}_{14}$ was multiplied by the in-sample mean (mean of total equivalised expenditures of households of group *g* in period *t*).

$$\hat{PA\_EXP} = \hat{\alpha} + \hat{\beta}_1 \overline{EDU} + \hat{\beta}_2 \overline{NWORK} +$$
$$+ \hat{\beta}_3 \overline{PENSION} + \hat{\beta}_4 \overline{REG_2} + \hat{\beta}_5 \overline{REG_3} +$$
$$+ \hat{\beta}_6 \overline{REG_4} + \hat{\beta}_7 \overline{REG_5} + \hat{\beta}_8 \overline{REG_6} + \hat{\beta}_9 \overline{REG_7} + \quad (4.11)$$
$$+ \hat{\beta}_{10} \overline{INFANT} + \hat{\beta}_{11} \overline{BABY} + \hat{\beta}_{12} \overline{CHSMLL} +$$
$$+ \hat{\beta}_{13} \overline{CHOLD} + \hat{\beta}_{14} \overline{\overline{EQEXP}} + \hat{\varepsilon}$$

$\hat{PA\_EXP}$ represents the average expenditures on the performing arts that each group had if households in each group and in each period had exactly the same characteristics and if these characteristics corresponded to the characteristics of the average household (apart from *EQEXP* that correspond to the average equivalised expenditures of the N households in group *g* in period *t*). As factors such as educational attainment, work participation, region of residence and number of children are likely to influence participation in the arts, a change in these household characteristics between the panels and over time might determine biased estimates of the effect of price on the demand for performing arts events. Consider the example where the number of children per family decreases over time, while the prices of performing arts events increase. Ignoring the fact that households are not the same in different periods might result in estimates of an insignificant effect of prices on the demand for performing arts events, or even of a positive price elasticity. Similarly lower expenditures in the first group (low income group) might be due to the fact that these families have lower levels of educational attainment, have a higher number of children and their members are more likely to be out of work than families in the third group (high income group).

The resulting $\hat{PA\_EXP}$ estimates were used to calculate first percentage changes in expenditures, and then were transformed into percentage changes in quantities using equation (4.5). Changes in quantities constitute the dependent variable in the second stage regression as described in equation (4.12) below.

$$\hat{PA\_EST\_Q} = \alpha + \beta_1 P_{PA} + \beta_2 P_{OTR} + \varepsilon \quad (4.12)$$

Model 4

What would be the effect of price changes on the demand for live performances overall and for the three income groups if the socio-demographic characteristics of the households in the three groups did not change between groups and over time and the real average income of households in each group did not change over time?

The last model closely resembles model 3. The difference between the two models is that while model 3 reports estimates indicating the effect that price changes would have on the demand for live performances if household socio-demographic characteristics did not change over time, model 4 also controls for changes in income levels within each group. Households in each period were allocated to one of the three income groups according to their position on the "income" distribution. While this ranks households it does not reflect whether income levels in the three groups changed over time. Average income levels of households in each of the three groups have changed considerably in the 15 years period covered in the analysis. The gap between the resources available to households in the high income group and households in the low income group also changed over time.

While estimates of $PA\_\hat{}EXP$ in model 3 were obtained using the in-sample value of equivalised expenditures $\overline{\overline{EQEXP}}$, estimates in model 4 were obtained using $\overline{\overline{EQEXP\_C}}$. This corresponds to the mean equivalised total expenditure for the three groups in the base period (first quarter of 1987) adjusted to take into account increases in overall price levels. The model determines what would happen to expenditures on performing arts events if the socio-demographic characteristics of the households in the three groups were the same over time and among groups AND the income the three groups had in the different periods grew in line with inflation.

$$\begin{aligned} \hat{PA\_EXP\_C} &= \hat{\alpha} + \hat{\beta}_1 \overline{EDU} + \hat{\beta}_2 \overline{NWORK} + \\ &+ \hat{\beta}_3 \overline{PENSION} + \hat{\beta}_4 \overline{REG_2} + \hat{\beta}_5 \overline{REG_3} + \hat{\beta}_6 \overline{REG_4} + \\ &+ \hat{\beta}_7 \overline{REG_5} + \hat{\beta}_8 \overline{REG_6} + \hat{\beta}_9 \overline{REG_7} + \hat{\beta}_{10} \overline{INFANT} + \\ &+ \hat{\beta}_{11} \overline{BABY} + \hat{\beta}_{12} \overline{CHSMLL} + \hat{\beta}_{13} \overline{CHOLD} + \hat{\beta}_{14} \overline{EQEXP\_C} + \hat{\varepsilon} \end{aligned} \tag{4.13}$$

The resulting $\hat{PA\_EXP\_C}$ estimates have been used to calculate first percentage changes in expenditures, and then have been transformed in percentage changes in quantities using equation (4.5). Changes in quantities constitute the dependent variable in the second stage regression as described in equation (4.14) below.

$$\hat{PA\_EST\_Q\_C} = \alpha + \beta_1 P_{PA} + \beta_2 P_{OTR} + \varepsilon \tag{4.14}$$

4.3.1. Description of independent variables

Table 4.6 contains a description and summary statistics of the dependent and independent variables used to estimate equations (4.6), (4.9), (4.12) and (4.14) while table 4.7 reports the correlation matrices for the independent variables (two sets of price indices).

Table 4.6 Description and summary statistics of independent variables

Variables	Description	Min	Max	Mean (SE)
PA_Q	Percentage change in the quantity of performing arts consumed	-78.093	391.931	17.902 (77.376)
PA_NUM	Percentage change in the number of people consuming performing arts events	-60.412	242.171	8.634 (47.272)
PA_EST_Q	Percentage change in the estimated quantity of performing arts events consumed (model 3)	-9.595	5.910	-1.710 (1.978)
PA_EST_Q_C	Percentage change in the estimated quantity of performing arts events consumed (model 4)	-9.400	7.002	-1.715 (2.054)
PRICE INDEX				
P_{PA}	Percentage changes in the prices of live performances	.249	4.903	1.777 (1.062)
P_{OTR}				
P_{DRB}	Percentage changes in the prices of consumer durables	-3.124	2.358	.147 (1.571)
P_{RST}	Percentage changes in the prices of restaurant meals	.528	3.351	1.280 (.565)
P_{AUDIO}	Percentage change in the prices of audio-visual equipment	-5.525	.569	-1.669 (1.524)
PRICE RATIO INDEX				
P_{PA}	Percentage change in the ratio of prices of live performances and general inflation level	-1.788	4.049	.784 (.995)
P_{OTR}				
P_{DRB}	Percentage change in the ratio of prices of consumer durables and general inflation level	-3.673	1.884	-.832 (1.343)
P_{RST}	Percentage change in the ratio of prices of restaurant meals and general inflation level	-1.814	1.974	.293 (.656)
P_{AUDIO}	Percentage change in the ratio of prices of audio-visual equipment and general inflation level	-6.080	.541	-2.630 (1.423)
EQEXP	Percentage change in equivalised total expenditures	-31.82	36.978	1.749 (7.736)

Two sets of price indices have been calculated and have been used in the final analyses. The first set (called *PRICE INDEX* in the results tables) corresponds to the percentage changes in quarterly price indices of performing arts events, restaurant meals, consumer durables and audio-visual equipment. The second set, *PRICE RATIO INDEX*, corresponds to the ratio of the performing arts, consumer durables, restaurant meals and audio-visual equipment price indices and the general price level. Consequently this index indicates how the prices of certain goods and services increased or decreased compared to the rest of the economy. Percentage changes in this index have been used in the final analyses and the results are indicated in the second columns.

The correlation matrices in table 4.7 indicate that correlations between *EQEXP* and P_{DRB}, P_{PA} and P_{DRB}, P_{PA} and P_{RST} are fairly high, especially in the *PRICE INDEX* set. However the correlations are not as high as to create multicollinearity problems and invalidate interpretations of estimated coefficients.

Table 4.7 Correlation matrices

PRICE CHANGE	***EQEXP***	P_{DRB}	P_{RST}	P_{AUDIO}	P_{PA}
EQEXP	1				
P_{DRB}	**0.505**	1			
P_{RST}	0.205	0.278	1		
P_{AUDIO}	0.078	0.483	0.442	1	
P_{PA}	0.434	**0.659**	**0.579**	0.385	1

PRICE RATIO CHANGES	***EQEXP***	P_{DRB}	P_{RST}	P_{AUDIO}	P_{PA}
EQEXP	1				
P_{DRB}	0.398	1			
P_{RST}	-0.214	-0.020	1		
P_{AUDIO}	-0.092	0.365	0.316	1	
P_{PA}	0.202	**0.528**	**0.521**	0.296	1

Models 1) and 2) include within group changes in average total equivalised expenditures. As group membership is calculated using the position households have in the expenditure distribution, average equivalised expenditures are likely to change. Society as a whole can become wealthier or the gap between different groups in the population can increase or shrink. Models 3) and 4) do not include this variable as it is used in the first stage regressions to estimate performing arts expenditures.

Restaurant meals could be either a complement or a substitute of live performances. Attending performing arts events is a social activity, people seldom attend a theatre performance or a classical music concert alone. When people decide to go out and get entertained, they might decide to use their time attending live performances or to go to a restaurant and enjoy the food, the wine and each other's company. Restaurant meals and performing arts events could be substitutes if the two are viewed as alternative ways of using leisure time. However it is quite possible that the two are complements and that when people decide to go out they have first a meal with friends and then attend a performance or *viceversa* go to a

performance and then have dinner. Most theatres and music halls have a number of restaurants close by. Restaurants often offer pre or post dinner set meals to attract theatregoers. If this second effect were to prevail the relationship between the prices of restaurant meals and attendance at performing arts events would be negative: the higher the prices of restaurant meals, the lower the attendance. If restaurant bills increase, the cost of the "evening out" package increases and therefore becomes less appealing to possible consumers, with the result of depressing performing arts attendance.

Similarly changes in the prices of audio-visual equipment could have two possible effects on performing arts attendance. Watching a movie on DVD or on the TV is an entertainment activity that for some can replace attending performing arts events. It represents a cheaper type of leisure activity and to that degree it constitutes a valid substitute to performing arts attendance. Moreover the quality of the musical product that one can find in CDs is far higher than that to be found in most live performances: while in a CD one can listen to the performance of *Die Meistersinger von Nürnberg* conducted by Horst Stein and played by the Bayreuther Festspiele, live events in a local music hall are likely to be performed by far less capable artists. Unless people find a value added from enjoying a live performance rather than a recording, audio-visual reproductions are likely to be good substitutes of performing arts (Frey and Pommerehne, 1987).

If the relationship between audio-visual recordings and the performing arts is of substitution, the relationship between changes in the prices of audio-visual recordings and the demand for performing arts events should be positive. Increases in the prices of those goods should result in a higher demand for the performing arts and decreases in prices in a lower demand. If, on the other hand listening to music performances is a way for consumers to develop their tastes for the arts and increase their knowledge of the performing arts product and live performances are perceived as inherently different from recordings, audio-visual material and the performing arts could be complements. This happens to the extent that people's attendance is discouraged by the lack of information on an experience good such as performing arts events and audio-video recordings can increase people's confidence and ultimately the appeal of live performances.

The effect of changes in the prices of consumer durables on the demand for performing art events could also be twofold: to the extent that durables are a necessity and people cannot avoid purchasing them, increases in their prices reduces household disposable income and therefore the demand for performing arts events. On the other hand if durables and performing arts are substitutes, increases in the prices of consumer durables will determine an increase in the demand for performing arts events.

4.4. Results

Tables 4.8 to 4.15 report the results from the econometric analyses of models 1), 2), 3) and 4). They show how the demand for performing arts events responds to changes in the prices of these events and possible complements and substitutes: restaurant meals, audio-visual equipment and consumer durables. Results for each model show two tables: the first reports results using the entire sample while the second reports results for the three groups analysed separately. While the first set of tables answer the question "do price changes affect the demand for performing arts events?" the second set answers the question "does income affect the way in which households modify their consumption of live performances in response to changes in prices?", or in other words "is there an economic gradient shaping the price-attendance relationship?"

Results from the first model indicate that changes in the prices of the performing arts do not influence the demand for these events. The overall effect of P_{PA} is statistically insignificant in both price specifications. The model as a whole appears to be unable to explain the variance in the demand. Changes in equivalised income, in the prices of consumer durables, restaurant meals and audio-visual equipment do not explain variations in the demand for performing arts events. The R^2 is extremely low and the F test reported at the bottom of table 4.8 indicates that the model is inadequate in explaining variations in the demand for live performances. Results from the group analyses reported in table 4.9 also confirm the inadequacy of the model. Price levels do not appear to significantly influence household decisions on attendance and factors not included in the model are much more important in determining variations in the demand.

Table 4.8 Model 1: the effect of price changes on the demand for performing arts events

Dependent variable PA_Q	*PRICE INDEX*		*PRICE RATIO INDEX*	
Independent variables	Coef.	SE	Coef.	SE
Constant	1.436	21.756	5.404	15.894
	(0.07)		(0.34)	
EQEXP	-1.387	0.952	-1.334	0.909
	(-1.46)		(-1.47)	
P_{DRB}	4.240	6.182	2.072	6.571
	(0.69)		(0.32)	
P_{RST}	6.271	14.461	-3.163	12.910
	(0.43)		(-0.25)	
P_{AUDIO}	-6.882	5.096	-6.446	5.020
	(-1.35)		(-1.28)	
P_{PA}	-0.703	9.215	0.678	9.403
	(-0.08)		(0.07)	
	N=165		N=165	
	F(5, 159)= 0.70		F(5, 159)= 0.77	
	R^2=2.15		R^2=2.36	

** Significance greater than 0.01 ** Significance greater than 0.05 *** Significance greater than 0.10*
t statistics in parenthesis.

Table 4.9 Model 1: Group analysis

GROUP 1

Dependent variable PA_Q	*PRICE INDEX*		*PRICE RATIO INDEX*	
Independent variables	Coef.	SE	Coef.	SE
Constant	12.633	53.837	27.740	39.829
	(0.23)		(0.7)	
EQEXP	-3.934***	2.047	-3.724***	1.975
	(-1.92)		(-1.89)	
P_{DRB}	11.267	14.672	6.141	15.956
	(0.77)		(0.38)	
P_{RST}	24.348	36.434	-1.123	31.720
	(0.67)		(-0.04)	
P_{AUDIO}	-12.009	12.448	-10.675	12.353
	(-0.96)		(-0.86)	
P_{PA}	-12.155	22.919	-8.707	23.275
	(-0.53)		(-0.37)	
	N=55		N=55	
	F(5, 49)= 0.91		F(5, 49)= 0.94	
	R^2=8.53		R^2=8.76	

GROUP 2				
Independent variables	Coef.	SE	Coef.	SE
Constant	-4.670	32.718	-10.234	23.764
	(-0.14)		(-0.43)	
EQEXP	1.903	1.944	1.712	1.803
	(0.98)		(0.95)	
P_{DRB}	-7.306	9.953	-6.451	10.299
	(-0.73)		(-0.63)	
P_{RST}	2.245	21.558	6.256	19.557
	(0.1)		(0.32)	
P_{AUDIO}	-3.067	7.757	-3.585	7.587
	(-0.4)		(-0.47)	
P_{PA}	3.719	13.821	3.560	14.157
	(0.27)		(0.25)	
	N=55		N=55	
	F(5, 49)= 0.39		F(5, 49)= 0.37	
	R^2=3.81		R^2=3.66	
GROUP 3				
Independent variables	Coef.	SE	Coef.	SE
Constant	9.332	15.066	1.610	10.875
	(0.62)		(0.15)	
EQEXP	0.074	0.656	-0.107	0.628
	(0.11)		(-0.17)	
P_{DRB}	-0.322	4.410	-0.536	4.588
	(-0.07)		(-0.12)	
P_{RST}	-4.825	9.817	-3.701	9.080
	(-0.49)		(-0.41)	
P_{AUDIO}	-0.617	3.598	-1.201	3.522
	(-0.17)		(-0.34)	
P_{PA}	0.091	6.373	0.627	6.552
	(0.01)		(0.1)	
	N=55		N=55	
	F(5, 49)= 0.13		F(5, 49)= 0.12	
	R^2=1.30		R^2=1.17	

** Significance greater than 0.01 ** Significance greater than 0.05 *** Significance greater than 0.10*
t statistics in parenthesis.

Results from the second model indicate the effect of prices on the number of people consuming performing arts events, independent of the number of times each of them decides to attend. The model overall appears to be able to explain approximately a quarter of the variance in the demand for live performances and performs much better than model 1). Increases in overall levels of economic resources appear to be accompanied by an increase in the number of people consuming the performing arts. A 10% increase in the economic resources households have at their disposal results in a 10% increase in the number of people who attend live performances. This is consistent with previous estimates reported

in table 4.3. Increases in average economic well-being translate into a higher number of people attending live performances.

Consumer durables and performing arts events appear to be predominantly substitutes: increases of 1% in the prices of durables result in a 15% increase in the number of people attending performing arts events. Increases in the prices of audio-visual equipment are accompanied by a decrease in the number of people attending performing arts events: a 1% price increase determines a 7% decrease in attendance rates. Estimations based on the price ratio set are very similar, with coefficients of –8.214 for audio-visual equipment and of 18.118 for consumer durables. Even in this case the model explains only about a quarter of the total variance in the number of people attending performing arts events and performing arts prices are not statistically significant.

Table 4.10 Model 2: The effect of price changes on the number of people consuming performing arts events

Dependent var. ***PA_NUM***	***PRICE INDEX***		***PRICE RATIO INDEX***	
Independent variables	Coef.	SE	Coef.	SE
Constant	2.410	11.783	1.816	8.558
	(0.2)		(0.21)	
EQEXP	1.067**	0.515	1.055**	0.489
	(2.07)		(2.16)	
P_{DRB}	15.758*	3.348	18.118*	3.538
	(4.71)		(5.12)	
P_{RST}	-15.011***	7.832	-6.946	6.951
	(-1.92)		(-1)	
P_{AUDIO}	-7.849*	2.760	-8.214*	2.703
	(-2.84)		(-3.04)	
P_{PA}	6.687	4.991	5.338	5.063
	(1.34)		(1.05)	
	N=165		N=165	
	F(5, 159)= 9.55*		F(5, 159)= 10.13*	
	R^2=23.10		R^2=24.16	

** Significance greater than 0.01 ** Significance greater than 0.05 *** Significance greater than 0.10*
t statistics in parenthesis.

The group analysis reveals that differences exist in the way the three groups respond to changes in their economic well being and price levels. Increases in economic well being determine a substantial increase in attendance rates only for the low income group. This is consistent with expectations and as members of this group are interested in expanding what due to economic constraints often remains a potential demand for performing arts events. Marginal increases in their economic

resources allow them to express this demand: a 10% increase in total equivalised expenditures corresponds to a 18% increase in the number of people attending live performances. The first group also views consumer durables and performing arts events as alternative uses of what are scarce economic resources: a 1% increase in the prices of durables results in a 31% increase in the number of people consuming performing arts events. If, as a consequence of small (in percentage terms) price increases, people decide to have the washing machine fixed, rather than buy a new one or live with an old refrigerator that works well, because of the high unit value of such items households have at their disposal a considerable amount of resources. Since the unitary value of tickets for live performances is small in comparison people who enjoy live performances can significantly increase their attendance levels. Restaurant meals appear to be a complement of live performances for the second group. The group with medium economic resources seems to view restaurant meals and live events as parts of a "package" and once the prices of parts of these increase, the entire package becomes less appealing.

Table 4.11 Model 2: group analysis

GROUP 1

Dependent var. ***PA_NUM***	***PRICE INDEX***		***PRICE RATIO INDEX***	
Independent variables	Coef.	SE	Coef.	SE
Constant	7.629	28.535	9.767	20.964
	(0.27)		(0.47)	
EQEXP	1.868***	1.085	1.836***	1.040
	(1.72)		(1.77)	
P_{DRB}	31.048*	7.777	34.334*	8.399
	(3.99)		(4.09)	
P_{RST}	-11.578	19.311	-2.245	16.696
	(-0.6)		(-0.13)	
P_{AUDIO}	-15.993**	6.598	-16.374**	6.502
	(-2.42)		(-2.52)	
P_{PA}	-1.838	12.147	-3.602	12.251
	(-0.15)		(-0.29)	
	N=55		N=55	
	F(5, 49)= 5.07*		F(5, 49)= 5.31*	
	R^2=34.09		R^2=35.16	

GROUP 2				
Independent variables	Coef.	SE	Coef.	SE
Constant	10.763	15.808	2.636	11.284
	(0.68)		(0.23)	
EQEXP	0.757	0.939	0.501	0.856
	(0.81)		(0.59)	
P_{DRB}	5.556	4.809	9.807**	4.891
	(1.16)		(2.01)	
P_{RST}	-22.135**	10.416	-5.839	9.286
	(-2.13)		(-0.63)	
P_{AUDIO}	-0.871	3.748	-1.976	3.603
	(-0.23)		(-0.55)	
P_{PA}	11.229***	6.678	9.112	6.723
	(1.68)		(1.36)	
	N=55		N=55	
	F(5, 49)= 4.01*		F(5, 49)= 4.47*	
	R^2=29.02		R^2=31.34	
GROUP 3				
Independent variables	Coef.	SE	Coef.	SE
Constant	-0.765	9.560	-5.665	6.911
	(-0.08)		(-0.82)	
EQEXP	-0.073	0.416	-0.142	0.399
	(-0.18)		(-0.36)	
P_{DRB}	3.997	2.798	5.271***	2.916
	(1.43)		(1.81)	
P_{RST}	-11.373***	6.229	-5.279	5.770
	(-1.83)		(-0.91)	
P_{AUDIO}	-3.065	2.283	-3.561	2.238
	(-1.34)		(-1.59)	
P_{PA}	6.807***	4.044	6.170	4.163
	(1.68)		(1.48)	
	N=55		N=55	
	F(5, 49)= 3**		F(5, 49)= 2.95**	
	R^2=23.44		R^2=23.11	

** Significance greater than 0.01 ** Significance greater than 0.05 *** Significance greater than 0.10*
t statistics in parenthesis.

The results from the two previous models indicate that prices of performing arts events do not influence people's demand. However as indicated in section 4.3 the first two models are based on the assumption that households do not change over time and between the three groups. It is possible, however that this assumption is wrong and household characteristics that are likely to influence household demand for performing arts events are not stable. This would explain the inability of the previous models, especially of model 1), to explain variations in the demand for performing arts events. If average household group characteristics vary in the different periods, and they have an effect that is opposite to the effect of price changes, then not taking such characteristics into account biases estimates of the

effect of price changes. In the reference period performing arts prices have followed an upward trend, both when calculated as simple price indices and as price ratio indices. Increases in price levels should deter attendance, other things being equal.

At the same time over the reference period the characteristics of the households in the three groups have evolved in a way that is likely to determine a higher attendance. Higher educational attainment, lower number of young children and a higher concentration in regions with a higher number of performing arts venues and better transportation should boost participation and "annul" the effect of price changes.

The analyses based on equations (4.12) and (4.14) of *PA_EST_Q* and *PA_EST_Q_C* control for variations in educational attainment, number of children, region of residence and economic well-being and in doing so should provide more accurate estimates of the responsiveness of the demand of live performances to price changes.

Results for model 3) are presented in table 4.12 and they indicate that the demand for performing arts events is inelastic, although the coefficient is very close to 1. Increases in 10% of ticket prices determine a decrease of 9.8% in the demand. Estimates based on the price ratio indices indicate that a 10% increase in the prices of the performing arts, compared to the rest of the economy produce a 10% decrease in the demand for performing arts. A 10% increase in the price ratio index of restaurant meals determines a 7.7% increase in performing arts demand. When eating out at a restaurant becomes relatively more expensive, the performing arts benefit as the two appear to be good substitutes. The significance of the coefficients of P_{PA} and the fact that the estimates are in line with previous empirical analyses indicates that household characteristics significantly influence expenditures on the performing arts and determine the overall insignificance of model 1). Still R^2 results indicate that the model explains only about a quarter of the variance of the demand for live performances.

Table 4.12 Model 3: controlling for household socio-demographic characteristics

Dependent var. ***PA_EST_Q***	***PRICE INDEX***		***PRICE RATIO INDEX***	
Independent variables	Coef.	SE	Coef.	SE
Constant	0.105	0.478	-1.135*	0.372
	(0.22)		(-3.05)	
P_{DRB}	0.082	0.127	0.118	0.147
	(0.64)		(0.81)	
P_{RST}	-0.061	0.322	0.779*	0.295
	(-0.19)		(2.64)	
P_{AUDIO}	0.005	0.110	-0.053	0.115
	(0.04)		(-0.46)	
P_{PA}	-0.980*	0.205	-1.077*	0.217
	(-4.78)		(-4.95)	
	N=165		N=165	
	F(4, 160)= 12.98*		F(4, 160)= 8.67*	
	R^2=24.50		R^2=17.81	

** Significance greater than 0.01 ** Significance greater than 0.05 *** Significance greater than 0.10*
t statistics in parenthesis

Results from the group analyses reveal how there are no large group differences in the responsiveness of the demand to changes in the prices of live performances. The simple price index results suggest that a 10% increase in P_{PA} would reduce the demand of the first group by 9.92%, of the second group by 9.09% and of the third group by 10.39%. Given the fact that the dependent variable is constituted by estimated, rather than actual numbers, these differences in values are well within the margin of estimation error. Estimates using the price ratio index reveal a relatively higher responsiveness of the demand to changes in the prices of performing arts events compared to the prices in the rest of the economy. A 10% change in how much more expensive (or cheap) performing arts events are compared to the rest of the economy determine an 11% drop (increase) in the demand of the first group, of 10% in the second group and 11% in the third group.

The hypothesis that the amount of economic resources people have modifies the way in which households respond to changes in the prices of performing arts events is not confirmed by the data. Estimates indicate that there is not much of a difference between the behaviour of households with low, medium and high economic resources, which appear to react in a similar fashin to price changes. However, it is interesting to note that the model explains 76% of the total variance in the demand for the low income group, the model explains only 21% for the high income group.

Restaurant meals and the performing arts are substitutes for people with low economic resources, while changes in the prices of restaurant meals and performing arts demand are independent in the case of people with medium and high economic resources. This is consistent with the view that as those relatively worse off have only a limited budget for entertainment activities, going to the restaurant or attending a performance are alternatives, rather than parts of an "evening out" package.

Table 4.13 Model 3: group analysis

GROUP 1				
Dependent var. *PA_EST_Q*	***PRICE INDEX***		***PRICE RATIO INDEX***	
Independent variables	Coef.	SE	Coef.	SE
Constant	-0.159	0.272	-1.293*	0.270
	(-0.58)		(-4.79)	
P_{DRB}	0.048	0.073	0.120	0.107
	(0.67)		(1.12)	
P_{RST}	0.111	0.184	1.011*	0.215
	(0.6)		(4.71)	
P_{AUDIO}	-0.039	0.063	-0.097	0.084
	(-0.61)		(-1.16)	
P_{PA}	-0.992*	0.117	-1.103*	0.158
	(-8.48)		(-6.98)	
	N=55		N=55	
	F(4, 50)= 40.90*		F(4, 50)= 17.70*	
	R^2=76.59		R^2=58.61	
GROUP 2				
Independent variables	Coef.	SE	Coef.	SE
Constant	0.544	0.981	-0.596	0.753
	(0.55)		(-0.79)	
P_{DRB}	0.086	0.262	0.135	0.298
	(0.33)		(0.45)	
P_{RST}	-0.269	0.662	0.561	0.598
	(-0.41)		(0.94)	
P_{AUDIO}	0.212	0.227	0.161	0.233
	(0.94)		(0.69)	
P_{PA}	-0.909**	0.421	-1.008**	0.440
	(-2.16)		(-2.29)	
	N=55		N=55	
	F(4, 50)= 2.64**		F(4, 50)= 17.9*	
	R^2=17.45		R^2=12.56	

GROUP 3				
Independent variables	Coef.	SE	Coef.	SE
Constant	-0.069	1.054	-1.515***	0.812
	(-0.07)		(-1.87)	
P_{DRB}	0.110	0.281	0.100	0.321
	(0.39)		(0.31)	
P_{RST}	-0.023	0.712	0.766	0.646
	(-0.03)		(1.19)	
P_{AUDIO}	-0.160	0.243	-0.223	0.251
	(-0.66)		(-0.89)	
P_{PA}	-1.039**	0.453	-1.118**	0.475
	(-2.3)		(-2.36)	
	N=55		N=55	
	F(4, 50)= 3.45**		F(4, 50)= 2.45***	
	R^2=21.64		R^2=16.37	

** Significance greater than 0.01 ** Significance greater than 0.05 *** Significance greater than 0.10*
t statistics in parenthesis.

In model 3) first stage estimates of household expenditures on performing arts events are based on actual households' equivalised total expenditures. Increases in the economic resources enjoyed by the three groups over the study period are reflected in the final estimates and could potentially downwardly bias second stage results. Estimates in model 4) are based on estimated, rather than actual equivalised total expenditures. Expenditures on performing arts events are based on the assumption that equivalised total expenditures of the three groups have grown in line with overall price levels using the first quarter of 1987 as the base period. Second stage estimates indicate how responsive to price changes is the demand of performing arts keeping both socio-demographic and economic household characteristics constant.

The results presented in table 4.14 are very similar to those presented in table 4.12 for model 3). A 10% increase (decrease) in the price of performing arts corresponds to a 10% decrease (increase) in their demand. The price ratio estimates also indicate a statistically significant substitution effect between restaurant meals and the performing arts.

Table 4.14 Model 4: controlling for socio-demographic and economic household characteristics

Dependent var. *PA_EST_Q_C*	*PRICE INDEX*		*PRICE RATIO INDEX*	
Independent variables	Coef.	SE	Coef.	SE
Constant	0.273	0.489	-1.072*	0.382
	(0.56)		(-2.81)	
P_{DRB}	0.000	0.130	0.039	0.151
	(0)		(0.26)	
P_{RST}	-0.092	0.330	0.818*	0.304
	(-0.28)		(2.69)	
P_{AUDIO}	0.056	0.113	-0.006	0.118
	(0.49)		(-0.05)	
P_{PA}	-1.000*	0.210	-1.104*	0.223
	(-4.77)		(-4.94)	
	N=165		N=165	
	F(4, 160)= 14.59*		F(4, 160)= 9.64*	
	R^2=26.72		R^2=19.42	

** Significance greater than 0.01 ** Significance greater than 0.05 *** Significance greater than 0.10*
t statistics in parenthesis.

The group analyses of model 4) closely mirror those of model 3). The estimated coefficients for P_{PA} are very similar in the three groups and in the two models, with a 10% price change producing a 9.92% change in group 1, a 9.44% change in group 2 and a 10.65% change in group 3. As in model 3) restaurant meals and performing arts events are substitutes, according to the estimates of the price ratio index analysis, with a 10% increase in the prices of restaurant bills compared to price changes in the rest of the economy producing a 10% increase in the demand for performances. As in model 3) while the model explains 78% of the variance in the low income group, model 4 explains only 23% of the variance in the high income group.

Table 4.15 Model 4: group analysis

GROUP 1				
Dependent var. ***PA_EST_Q_C***	***PRICE INDEX***		***PRICE RATIO INDEX***	
Independent variables	Coef.	SE	Coef.	SE
Constant	-0.122	0.262	-1.282*	0.267
	(-0.47)		(-4.8)	
P_{DRB}	0.026	0.070	0.098	0.106
	(0.37)		(0.92)	
P_{RST}	0.099	0.177	1.014*	0.212
	(0.56)		(4.78)	
P_{AUDIO}	-0.024	0.061	-0.083	0.083
	(-0.4)		(-1)	
P_{PA}	-0.992*	0.113	-1.105*	0.156
	(-8.81)		(-7.07)	
	N=55		N=55	
	F(4, 50)= 45.75*		F(4, 50)= 18.70*	
	R^2=78.54		R^2=59.94	
GROUP 2				
Independent variables	Coef.	SE	Coef.	SE
Constant	0.887	1.041	-0.487	0.805
	(0.85)		(-0.61)	
P_{DRB}	-0.063	0.278	-0.008	0.319
	(-0.23)		(-0.03)	
P_{RST}	-0.355	0.703	0.634	0.640
	(-0.5)		(0.99)	
P_{AUDIO}	0.300	0.240	0.239	0.249
	(1.25)		(0.96)	
P_{PA}	-0.944**	0.447	-1.059**	0.471
	(-2.11)		(-2.25)	
	N=55		N=55	
	F(4, 50)= 2.19**		F(4, 50)= 3.30**	
	R^2=20.91		R^2=14.91	
GROUP 3				
Independent variables	Coef.	SE	Coef.	SE
Constant	0.055	1.048	-1.447***	0.810
	(0.05)		(-1.79)	
P_{DRB}	0.037	0.280	0.028	0.321
	(0.13)		(0.09)	
P_{RST}	-0.020	0.708	0.807	0.644
	(-0.03)		(1.25)	
P_{AUDIO}	-0.109	0.242	-0.174	0.251
	(-0.45)		(-0.69)	
P_{PA}	-1.065**	0.450	-1.148**	0.474
	(-2.37)		(-2.42)	
	N=55		N=55	
	F(4, 50) =3.87*		F(4, 50)= 2.74**	
	R^2=23.62		R^2=17.96	

** Significance greater than 0.01 ** Significance greater than 0.05 *** Significance greater than 0.10*
t statistics in parenthesis.

4.5. Conclusions

Over the time considered in the analysis (1987-2000) on the whole the cost disease produced price increases in the performing arts sector, both in absolute terms and relative to the price changes that occurred in the rest of the economy. The socio-demographic profile of households on different levels in the income distribution differs and over the period considered the socio-economic profile of the UK population changed. The aim of the chapter was to assess whether changes in prices determine changes in the demand for live performances and whether the responsiveness of the demand to price changes differs by income group. The chapter reports estimates from four models. The first two models estimate the effect of price changes on the demand for live performances without controlling for differences in the characteristics of families in the high, medium and low income groups and for over-time changes in these characteristics. The last two models control for a number of factors: region of residency, employment record, educational level of the head of the household and the number and age of children present in the household.

While one of the hypotheses was that people in different income groups responded differently to changes in prices, the main finding is that this is not the case. After controlling for differences in the socio-demographic characteristics of households in the three groups, results suggest that families with high, medium and low incomes respond to changes in prices very similarly. Estimates on the effect of changes in prices on the demand for live performances indicate that prices matter: a 10% price increase is accompanied by a 10% decrease in the demand. However while price changes account for three fourth of the variance in the demand for live performances of households in the low income group, they account for only one fourth of the variance in the demand of households in the high income groups.

In the following chapters I examine whether public subsidies can successfully reduce ticket prices and promote greater and broader attendance in the performing arts, what factors might prevent them from influencing ticket prices and whether there are alternatives that governments can use to support attendance.

Chapter 5.

Public subsidies and private support as determinants of performing arts attendance: evidence from the United States.

5.1. Introduction

In the previous chapter the English Family Expenditure Survey has been used to assess the impact of prices on attendance in performing arts events. Results indicate that while ticket prices have a significant effect on the demand for live performances, the reaction to price changes of different income groups is similar. Since the analysis reveals an association between prices and attendance (the higher the price, the lower the attendance and the lower the price, the higher the attendance), public subsidies could influence attendance by allowing performing arts organisations to have to rely less heavily on earned income to cover costs. The aim of this chapter is to examine whether public subsidies influence attendance using the American non-profit theatre sector as a case study.

The first part of the chapter discusses datasets used to analyse attendance in theatre performances. The following section describes in detail the independent variables introduced in the models, the reasons for their inclusion and advances hypotheses on their possible effects. Section 5.4 presents results from the estimation of simple logistic

regression as well as from an adjacent-category ordered logistic regression while section 5.5 contains concluding remarks.

5.2. Data

The basic dataset used in the empirical analysis, the 2002 Survey of Public Participation in the Arts (SPPA), has been linked to two datasets created using financial information on non-profit theatre companies present in the Core Files of the National Centre for Charitable Statistics. The linkage allows to account for the influence of public subsidies on attendance. The SPPA survey contains detailed information on individual socio-economic characteristics and performing arts attendance but it does not contain any information on the characteristics of performing arts organisations.

The first linked dataset, the 2001 Core Files dataset is used to generate the concentration of performing arts organisations in the county where the respondent lives. The second linked dataset, the Theatre Matched Dataset contains information on the average share of total income covered by government subsidies of theatre organisations in the state where the respondent lives. Because of the use of such variables it is possible to make an assessment of whether public subsidies have an impact on attendance at non-profit theatre performances.

5.2.1. Survey of Public Participation in the Arts

The first empirical studies of public participation in the arts were based on institutional surveys carried out by performing arts organisations on their audiences. However since the late '70s and early '80s scientific investigations have been predominantly based on the analysis of population based surveys (see section 3.1 in chapter Three). The analyses based on institutional data were severely limited by the fact that they could only compare the characteristics of the audience with those of the general population

without controlling for possible associations existing among different factors. Moreover such studies had to rely on external data such as census information to infer the characteristics of the population. In contrast population based surveys use samples of the population at large and collect information on both participants and non-participants. The use of population based surveys has allowed researchers to identify relative associations among a number of socio-economic characteristics and attendance at performing arts events.

Five Surveys of Public Participation in the Arts have been carried out so far: in 1982, 1987, 1992, 1997 and 2002. The data used here to estimate the demand for performing arts events in the United States come from the 2002 SPPA. The 2002 SPPA, was carried out by the U.S. Census Bureau as a supplement to the Current Population Survey and commissioned by the National Endowment for the Arts. Changes in the body responsible for carrying out the survey resulted in different survey designs and structure being adopted in the five SPPA surveys. In 2002 telephone interviews were arranged with 90% of respondents, while for the remaining 10% personal face-to-face interviews were used. Data on all adults aged 18 or over present in selected household was collected. The 2002 survey is most similar to the 1992 survey in terms of question wording, response rate and survey design. Comparisons between the 1992 and the 2002 surveys should be made with caution as a number of factors differ between the two surveys: *1)* they were attached as supplements to very different surveys (National Crime Survey in 1992 and Current Population Survey in 2002); *2)* they were conducted in different seasons and *3)* the mode of interview was partially different. It is unknown precisely to what extent the topic of prior questions is likely to influence results and what effect season and mode of interview play in terms of findings. It is however well documented that framing effects play a major role in determining responses to survey questions (see Kahneman and Tversky, 1979; Tversky and Kahneman, 1981; Kahneman et al., 1982 as basic reference texts).

Response rates vary widely among the SPPA surveys. The response rate for 2002 was 70%, which is comparable to the second half of the 1992 survey, 68%, while the overall response rate for 1992 was 75%. The 2002 SPPA was conducted in the period August 2001-August 2002 and a total of 17,135 completed surveys were collected from a sample of U.S. households. The survey used a stratified, multi-stage, clustered

design and a weighting procedure was adopted to make the sample representative of the U.S. population by age, gender, race and Hispanic origin.

5.2.2. The National Centre for Charitable Statistics 2001 Core Files Database.

The National Centre for Charitable Statistics (NCCS) at the Urban Institute develops and disseminates a number of datasets on the finances of non-profit organisations in the United States. The dataset used to construct the variable measuring the concentration variable comes from the Core Files, a collection of annual data created by the NCCS based on the Internal Revenue Service's annual Return Transaction Files. All organisations that are required to file Form 990 (all non-profit organisations under subsection 501(c)(3) with gross receipts over $25,000) are included in the dataset and in 2001 the Core Files included a total of 264,821 organisations.

While the IRS statistics represent the basis upon which the Core Files are developed the NCCS enhances the data by verifying information provided by the IRS and by adding several variables. The NCCS classifies organisations present in the dataset using the National Taxonomy of Exempt Entities Core Codes (NTEE-CC) as well as assigning a FIPS state and county code converting zip-codes in county codes. NTEE-CC codes were used in the study to discriminate non-profit performing arts organisations[1], while FIPS state and county codes were used to link the variables that were created using the 2001 Core File to the main 2002 SPPA dataset. The 2001 Core Files are used to generate the variable *NUMBER* representing the number of performing arts organisations present in the county where the respondent lives.

The important feature of the Core Files is that they contain basic financial information on almost all non-profit organisations in the United States. A second dataset provided by the NCCS, Statistics of Income (SOI) has been widely used in the non-profit literature (for example Andreoni and Payne, 2003). However while the SOI dataset contains information on all non-profit organisations with $10 million or more in assets,

[1] NTEE classification A60, A61, A62, A63, A65, A68, A69, A6A.

it contains only a sample of smaller organisations. In total it accounts for approximately 11,000 organisations compared with the 264,821 of the Core Files. The advantage of the SOI datasets is that it reports financial variables in greater detail, for example differentiating among different sources of donative revenues into government support and private donations. In order to account for the influence that public subsidies alone have on performing arts attendance I constructed a dataset using all non-profit theatres present in the Core 1996-99 Files and matching it to information on government support received by these organisations using the original Internal Revenue Service 990 forms.

5.2.3. The NCCS Theatre Matched Dataset

In order to obtain a detailed measure to study the influence of public subsidies on attendance I created a new dataset using the Core Files and original IRS 990 forms for non-profit theatres. Public subsidies include aid from agencies at the federal level such as the National Endowment for the Arts grants, state level (support from State Art Councils) and local level (support from city and county). The NCCS theatre matched dataset combines data from the "Core 1996-1999 data for tax exempt organisations under section 501(c)(3)" and the scanned images of the IRS forms 990 for each theatre organisation. I matched data on all non-profit theatres present in the "Core Files" for the fiscal years 1997/98 and 1998/99.

The Core NCCS dataset was used to identify non-profit theatres using main NTEE code (*A* for Arts, Culture and Humanities) and subcategory (*A65* for Theatre) as sorting variables. Using the Employer Identification Number (EIN) of each theatre present in the Core file dataset, I matched theatres to original IRS 990 forms to extract information on total income and subsidies. The initial Core File contained a total of 2414 non-profit theatres. Of these 400 theatres could not be used in the matching process with IRS 990 forms because of non-matching EIN numbers or because records showed that the main activity of the organisation present in the Core File was educational or other, not to produce theatrical performances. Furthermore 523 theatres were small enough to file form IRS form 990-EZ and therefore their records did not

contain any information on government grants received. A total of 1491 non-profit theatres were used to calculate the *GVNMT* index in 51 states.

The matched dataset has been used to generate the variable *GOVNMT* that represents the share of total revenues that are covered by government subsidies and is linked to the 2002 SPPA dataset using the state where respondents live.

The value of *GOVNMT* for each state has been derived by calculating:

1) The share of total revenues that are covered by government subsidies for each theatre present in the dataset for two financial years: 1997/98 and 1998/99.
2) The two-year average for each theatre.
3) The average of this measure for all theatres in each state.

$$GOVNMT=100*\sum_{i=1}^{N}\frac{1}{N}\sum_{t=1}^{T}\left(\frac{1}{T}*\frac{GOV_{it}}{TOTREV_{it}}\right) \qquad (5.1)$$

Where $i=1,...,N$ represents theatres in each state and $t=1,2$ is fiscal year.

The two-year average has been calculated to minimise the influence of annual variations in government support on the final *GOVNMT* measure. Only organisations filing IRS form 990 have been considered and very small theatres filing IRS form 990 – EZ are not present in the sample[2].

[2] Form 990-EZ can be filed instead of form 990 if the organisation's gross receipts during the year are less than $100,000 and its total assets at the end of the year are less than $250,000. Form 990-EZ is shorter and less detailed and groups together all forms of donations, including government grants.

Table 5.1 *GVNMT* index by state

STATE	*GVNMT index*
AK	18.116
AL	10.484
AR	3.756
AZ	7.646
CA	6.908
CO	13.572
CT	13.302
DC	6.974
DE	23.327
FL	11.485
GA	6.435
HI	19.932
IA	1.944
ID	0.933
IL	3.559
IN	5.884
KY	14.114
LA	7.7142
MA	6.198
MD	7.860
ME	1.273
MI	4.430
MN	9.613
MO	6.401
MS	6.586
MT	0.296
NC	8.163
ND	4.724
NE	10.289
NH	0
NJ	4.828
NM	3.110
NV	1.368
NY	10.209
OH	7.533
OK	13.054
OR	2.042
PA	4.654
RI	4.559
SC	8.108
SD	5.551
TN	11.339
TX	9.533
UT	11.685
VA	5.236
VT	0.589
WA	4.688
WI	5.351
WV	20.182
WY	1.546

While the Core Files contain information on other performing art forms such as opera, classical music, ballet and dance, the NTEE sorting codes are not as detailed and precise as in the case of theatre. In the case of theatre I could not consider only a limited number of organisations because retrieved records did not correspond to theatre companies. On the other hand initial analyses indicated that the lack of a match in the case of the other art forms was substantial.

5.3. Methodology

The 2002 SPPA contains information on whether a person attended theatre performances as well as the frequency of such visits. Two dependent variables have been generated. The first consists of a dichotomous variable that takes into account simple participation in the previous 12 months; while the second consists in an ordered variable that discriminates participants into occasional and frequent attenders. Occasional visitors are defined as people who attended one or two performances in the last 12 months, while frequent visitors are those who attended three times or more. While in the original SPPA survey frequency of attendance is coded as a continuous variable, few people attend performances more than three times per year. Table 5.2 provides a brief description of the sets of dependent variables used in the econometric analysis.

Table 5.2 List of dependent variables

Variables	Description
DRAMA	Respondent attended a theatre performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
FQDRAMA	Frequency of participation in theatre performances 1=Never took part in last 12 months ; 2=Occasional participant (took part once or twice) ; 3=Frequent participant (took part three times or more)

The aim of the study is to know what properties of a population member make it more likely that he or she would attend at least one event (in the first model) or more likely to attend either at all or frequently (in the second). The categorical form of the

dependent variables makes ordinary regression techniques unsuitable, but logistic regression and ordered logistic regression models are designed for these data. Logistic regression estimates the probability π of an event occurring as a function of various explanatory factors. Equation (5.2) presents the basic logistic model used in the estimation of the demand for theatre performances:

Logistic regression model

$$Log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \tag{5.2}$$

Where $Log\left(\frac{\pi}{1-\pi}\right)$ is *Logit* (π) (5.3)

$$\pi = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3)}} \tag{5.4}$$

Ordered logistic regression is used whenever the dependent variable is in the form of ordered categories. Common examples of ordinal outcomes include attitudes of respondents towards a certain issue (strongly disagree, disagree, agree, strongly agree), performance indicators (excellent, satisfactory, insufficient), etc... (Hosmer and Lemeshow, 2000). For estimation purposes the actual values taken by the dependent variables are irrelevant, but higher values are assumed to correspond to higher outcomes. Equation (5.5) presents the basic ordered regression model.

Ordered logistic regression model

$$Log\left(\frac{p(Y=j)}{p(Y=(j-1))}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \tag{5.5}$$

for j=1 to 3

X_1, X_2 and X_3 in equations (5.2) and (5.5) are vectors representing control variables: X_1 is a vector on individual characteristics, X_2 is a vector of participation in performing arts activities and X_3 is a vector of art education variables.

$$X_1 = \begin{bmatrix} AGE \\ SEX \\ RACE \\ EDU \\ INCOME \\ MOMEDU \\ DADEDU \\ OCCUP \\ TV \\ WORK \\ NUMBER \\ SUPPORT \end{bmatrix} ; X_2 = \begin{bmatrix} DRAMA \\ CLASSICAL \\ OPERA \\ BALLET \\ DANCE \\ MUSEUM \end{bmatrix} ; X_3 = \begin{bmatrix} DRAMACL \\ MUSICCL \\ MUSICAPPCL \\ BALLETCL \\ DANCECL \\ ARTCL \\ VISUALCL \end{bmatrix} \quad (5.6)$$

Table 5.3 List of control variables

Variables	Description
SEX	Gender - Dichotomous variable 0=Female 1=Male
AGE	Age categories (Dichotomised in final analysis). Reference group category 1=18-24 2=25-34 ; 3=35-44 ; 4=45-54 ; 5=55-64 ; 6=65-74 ; 7=75+
EDU	Education level. Categorical variable. 1=No diploma ; 2=High school graduate ; 3=Some college no degree ; 4=Associate degree ; 5=Bsc. Degree ; 6=Msc. Degree ; 7=Professional degree and PhD
INCOME	Family Income. Categorical variable 1=<$5,000 ; 2=$5,000-$7,500 ; 3=$7,500-$10,000 ; 4=$10,000-$12,500 ; 5=$12,500-$15,000 ; 6=$15,000-$20,000 ; 7=$20,000-$25,000 ; 8=$25,000-$30,000 ; 9=$30,000-$35,000 ; 10=$35,000-$40,000 ; 11=$40,000-$50,000 ; 12=$50,000-$60,000 ; 13=$60,000-$75,000 ; 14=>$75,000
RACE	Racial/Ethnic background. Reference group 1=White non Hispanics. (Dichotomised in final analysis) 2=African-Americans ; 3=Hispanics ; 4=Other
OCCUP	Occupational status. (Dichotomised in final analysis) Reference group 1=Professional 2=Executives, administration and managerial ; 3=White collar/service sector ; 4=Manual ; 5=Not in employment
MOMEDU	Education level of the mother. Categorical variable. Same categories as *EDU*
DADEDU	Education level of the father. Categorical variable. Same categories as *EDU*
WATCHTV	Hours of TV watched per day capped at 11 (11=11+)
NUMBER	Number of performing arts organizations in the county where respondent lives.
GOVNMT	Average percentage share of total revenues that are covered by government revenues.
MUSEUM	Respondent visited art museums in the last 12 months. Dichotomous variable 0=No ; 1=Yes
WORK	Number of hours worked weekly 0=Not in employment ; 1=1-20 ; 2=21-34 ; 3=35-39 ; 4=40 ; 5=41-49 ; 6=50 or more
BALLETCL	Ballet classes. Dichotomous variable. 0=No ; 1=Yes
CLASSICAL	Respondent attended a classical music performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
OPERA	Respondent attended an opera performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
BALLET	Respondent attended a ballet performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
DANCE	Respondent attended a dance performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
DRAMACL	Theatre classes. Dichotomous variable. 0=No ; 1=Yes
MUSICCL	Music classes (voice training or playing an instrument). Dichotomous variable. 0=No ; 1=Yes
MUSICAPPCL	Music appreciation classes. Dichotomous variable. 0=No ; 1=Yes
DANCECL	Dance classes (any from apart from ballet). Dichotomous variable. 0=No ; 1=Yes
VISUALCL	Visual art classes (sculpture, painting, print making, photography, or film making). Dichotomous variable. 0=No ; 1=Yes
ARTCL	Art appreciation and art history classes. Dichotomous variable. 0=No ; 1=Yes

5.3.1. Control variables

The variable *GVNMT* represents the share of total revenues received in the form of government support by non-profit theatre organisations in the state where respondents live. The hypothesis is that more people tend to attend more often if organisations receive a higher share of their income from public sources. Interaction terms between

the variable *GVNMT* and socio-economic characteristics have been introduced to test whether its effect on attendance varies by socio-economic group. If, for example the interaction term between race and *GVNMT* is significant, it means that different ethnic groups are affected to a different degree by government grants to theatre organisations.

Most demand studies based on surveys such as the 2002 SPPA fail to take into account the **price of participation** (Gray, 1998). Such price is determined by: *a)* the admission ticket of a particular event, *b)* the geographic density of an adequate supply in the area (which in turn influences transport costs, amount of time needed to enjoy an event, etc...) *c)* the opportunity cost of time and *d)* the shadow price determined by the human capital and learning-by-consuming that the individual accumulated (Stigler and Becker, 1977).

Omitting a number of the aforementioned components of the price variable is mainly determined by the nature of the data used, as surveys generally contain only information on characteristics of individuals sampled. The inclusion of individual level characteristics such as educational attainment of the parents as a proxy for family socialisation processes and art education received should take into account the effect produced by human capital and learning-by-consuming processes on participation. The variable number of hours worked in the last week and household income are two measures of the opportunity cost of time.

The variable *NUMBER* quantifies the number of performing art organisations present in the county where the respondent lives. It is a proxy for **transport costs** and availability of **adequate supply** of performing art events. When analysing neighbourhood effects on participation rates in different block groups in the Philadelphia metropolitan area, Stern and Seifert (Stern, 1997; Stern and Seifert, 1998a) document that the presence of arts and cultural organisations is the strongest predictor of attendance.

Art education has consistently been the best predictor of attendance at both the performing arts (Orend, 1989; Bergonzi and Smith, 1996) and art museums (Gray, 1998). The importance of this variable lies not only in the empirical evidence, but also in the theory: art works are metaphorical representations and as metaphors their

meaning depends on the sensibility of the perceiver himself (Schwartz, 2000). The importance of metaphors is that in order to grasp their meaning we need to use interpretation skills and shared cultural capital. "An object *o* is then an artwork only under an interpretation *I*, where *I* is a sort of function that transfigures *o* into an artwork *I(o)=W*" (Danto, 1981). It is not clear whether such skills are *generic* or *art specific*. If interpretation abilities are *generic*, once developed they can be applied to any art form. For example art history classes should have an effect on the likelihood of attending an opera performance. If interpretation skills are *art specific*, only exposure to classes where relevant material is taught makes a difference in terms of attendance. In this case theatre classes, for example, are highly associated with participation in theatre but not ballet and *vice versa*. Psychological research indicates that these skills should be art specific as the practice of different art forms draws on very different cognitive abilities (Wolf and Gardiner, 1979). On the contrary most of the sociological literature considers different art forms as all part of a coherent status culture. *"Milieus that inculcate an interest in any single artistic discipline will also be likely to inculcate an interest in any other culture form"* (Bourdieu, 1984). Finally art education could have an effect by providing a socialisation environment, where people are exposed to a context where the arts are valued and where one can start engaging in artistic activities.

Time constraints determine substitution effects among leisure activities (Vogel, 1990). The nature of the performing arts make them particularly susceptible to time constraints as they require planning and time in extended uninterrupted blocks (McCarthy et al., 2001b). **Possible substitute activities** include television watching, visiting art museums as well as participation in other performing arts events. However the overall association among these independent variables and attendance is determined by the interaction of time constraints and other effects that differ by type of leisure activity considered. The hypothesis is that substitution effects will prevail in the case of television watching, while museum visits and attendance at other performing arts events will produce a complementary effect.

The human capital (Stigler and Becker, 1977) and taste development approaches (McCain, 1979; McCain, 1986) suggest that the substitution effect will be offset by a complementary effect. Participation in one set of art activities is likely to increase people's human capital and the skills that are necessary to understand, enjoy and fully

appreciate the performing arts. The two effects will compensate each other and, at least in the case of those activities that require the same skills to be enjoyed (such as dance and ballet, opera and classical music, theatre and opera), complementarity is expected to dominate. A high positive correlation is also expected because people who enjoy one performing art form tend to enjoy spending their leisure time pursuing activities that are more participatory (Danto, 1981) and not purely recreational (Scitovsky, 1992). Finally different performing arts share the same venues and information on different art forms is provided in packs by organising institutions, or is advertised through the same channels. Art centers tend to be geographically concentrated, with opera houses, concert halls and theatres being close together. Familiarity with location and venue, availability of information on programs and performances should therefore make the complementary effect even more prominent.

Age categories are considered in the model to control for life cycle effects such as *a)* entrance in the labour market, *b)* childbearing and care, *c)* ill health and lower mobility. Age however can also influence participation rates through learning-by-consuming processes (McCain, 1979; McCain, 1986; McCain, 1995) and human capital development (Stigler and Becker, 1977). Both the learning-by-consuming and the human capital approaches emphasize the fact that the more performances one attends, the more enjoyable they become. Taking part in a performing art event is an active process that requires skills and a considerable knowledge on the part of the consumer and these develop through training and participation. According to some (Thaler and Shefrin, 1981) these "addictive" processes start producing a positive influence on participation rates only after a threshold is reached. The older a person is, the more likely she is to have reached such threshold or to have accumulated a high level of human capital. However as life-cycle and addiction can have opposite effects on attendance, uncertainty on the direction of the relationship between age and attendance remains. While the life-cycle effect suggests a relationship that is first increasing with entrance in the labour market, decreases with child care, increases when children have left home and finally decreases with ill health and problems associated with old age; the human capital approach hypothesises a positive linear relationship between participation and age. The effect of age is introduced in the model through the use of age categories, where the young adults group is used as the reference.

General educational attainment is expected to have a positive linear relationship with attendance: the higher the educational attainment, the higher the likelihood of a person participating in performing arts activities. With respect to **income**, a number of factors could determine the positive correlation with attendance at live performances that has consistently been reported in the literature. A number of factors could determine the positive association between income and participation. First of all income implies ability (or inability) to pay for leisure activities and if the performing arts are a normal good, economic theory predicts a positive income elasticity (Heilbrun and Gray, 1993; Frey and Pommerehne, 1989; Baumol and Bowen, 1966; Netzer, 1978; Throsby and Withers, 1979; Felton, 1992). One might expect the effect of disposable income on participation rates to vary according to the type of performing art institution considered, with the effect being the greatest for those activities, such as classical music and opera performances, where attendance is most expensive. The positive effect of disposable income on participation is partly offset by the effect that a higher income has on the value of time. In particular the opportunity cost of participating in the performing arts rather than working increases as wage income increases. People with higher wage incomes (but not those with high investment income and wealth, which is the group that historically set arts consumption conventions) face a pressure to divert their leisure expenditures towards goods and activities that are have a higher monetary cost and lower time requirements (Withers, 1980; Scitovsky, 1992).

A second mechanism through which income can influence attendance resides in the correlation that exists between current income and family income during childhood (Bowles and Gintis, 2002) and the influence that childhood experiences have on attendance in theatre performances. A high family income determines a greater possibility for the child to be supported in his/her socialisation and learning processes. While data on parental income is not present in the 2002 SPPA dataset, the information on current income and parental educational attainment can be used to account for the effect of family background and environment on individual participation in the performing arts. As DiMaggio and Useem (1978) pointed out looking at the transmission of cultural interests and attitudes by social class "this intergenerational reproduction of cultural interests is likely to extend to aesthetic tastes

as well". Variables measuring the **educational attainment of the mother and of the father** were included in the model as parental education is a good proxy of the social class of the family of origin. The introduction of controls such as art education, labour market participation and number of hours worked is expected to eliminate possible **gender** effects.

As described in section 3.1, professionals and people working in upper managerial occupations report higher attendance rates than other groups. The effect of **occupational status** on participation is at least partially the result of the higher income and educational attainment that individuals engaged in these jobs enjoy. According to Veblen (1899) and Bourdieu (1984) elites use attendance in the performing arts as a mark of social distinction, as a cue to signify and reinforce membership in the upper middle-class. When attendance comes to signify belonging to a given social class, people who want to reaffirm their standing conform to the norm and participate. In order to maintain and reinforce the signal value of class membership that participation in highbrow art activities has, informal sanctions and barriers are put in place to prevent participation of people belonging to lower classes. Occupational category was therefore included in the model to test for such effects.

DiMaggio and Ostrower (1992) show that some **racial/ethnic differences** in attendance rates persist after controlling for other socio-economic characteristics. Most theatre performances put on stage in the United States are part of a European tradition and differences could be determined by two factors. First cultural differences might exist among different groups and a lack of supply of culturally diverse performances might fail to meet the demands of ethnically diverse audiences. This is confirmed by the results of DiMaggio and Ostrower (1992) who find that when jazz performances were considered, African Americans participated significantly more than whites. Secondly given that minority groups have traditionally had low attendance rates in "elite" performing arts, the expectation among these groups as well as the white majority is that they will keep not attending and in a way, that they are not supposed to attend. Since the early 1980's performing arts institutions have devoted an increasing attention to the needs and preferences of different groups in the population and have been encouraged by the National Endowment for the Arts and State Arts Councils to widen their audiences. By reducing, at least partially, the first reason for non-

attendance among minority groups these initiatives might have provoked a domino effect. The more varied the arts audience is, the more minority groups feel encouraged to attend as it becomes socially acceptable for them to do so. Therefore although racial/ethnic differences might still play a role in defining participation patterns, the hypothesis is that such differences are small.

5.4. Results

Table 5.5 contains results for the basic logistic regression model fitted using attendance rates in theatre while table 5.6 uses the ordered variable that has been constructed to reflect differences in participating behaviour among non-attenders, occasional and frequent attenders. The observations used in the analysis are weighted by age, gender and ethnic background to be representative of the general U.S. population. As the correlation matrix in table 5.4 shows the estimated coefficients in the three models are not affected by multicollinearity bias.

Table 5.4 Correlation matrix

	SEX	AGE	RACE	INCOME	EDU	MOMEDU	DADEDU	WATCHTV	OCCUP	NUMBER	WORK	MUSEUM	DRAMACL	MUSICCL	MUSICAPCL	BALLETCL	DANCECL	VISUALCL	ARTCL	GOVNMT
SEX	1.000																			
AGE	0.011	1.000																		
RACE	-0.023	-0.140	1.000																	
INCOME	0.100	-0.043	-0.181	1.000																
EDU	0.049	0.017	-0.135	0.395	1.000															
MOMEDU	0.008	-0.278	-0.122	0.193	0.351	1.000														
DADEDU	0.025	-0.250	-0.096	0.213	0.389	0.645	1.000													
WATCHTV	0.016	0.144	0.036	-0.205	-0.242	-0.164	-0.185	1.000												
OCCUP	-0.021	0.260	0.064	-0.351	-0.430	-0.246	-0.227	0.300	1.000											
NUMBER	0.019	-0.019	0.242	-0.047	-0.037	-0.032	0.000	0.030	0.030	1.000										
WORK	0.233	-0.301	-0.015	0.309	0.213	0.130	0.106	-0.278	-0.706	-0.021	1.000									
MUSEUM	-0.013	-0.005	-0.088	0.222	0.352	0.219	0.240	-0.161	-0.216	0.051	0.091	1.000								
DRAMACL	-0.031	-0.094	-0.067	0.030	0.122	0.160	0.146	-0.048	-0.102	0.026	0.041	0.158	1.000							
MUSICCL	-0.072	-0.063	-0.177	0.150	0.295	0.275	0.239	-0.138	-0.179	-0.040	0.080	0.230	0.241	1.000						
MUSICAPCL	-0.045	-0.011	-0.125	0.135	0.290	0.196	0.164	-0.061	-0.143	-0.009	0.058	0.231	0.198	0.345	1.000					
BALLETCL	-0.243	-0.090	-0.076	0.079	0.139	0.204	0.179	-0.061	-0.095	0.032	-0.001	0.147	0.209	0.240	0.183	1.000				
DANCECL	-0.215	0.001	-0.090	0.070	0.159	0.144	0.139	-0.059	-0.086	-0.021	-0.019	0.180	0.256	0.291	0.224	0.421	1.000			
VISUALCL	-0.059	-0.086	-0.085	0.096	0.193	0.195	0.194	-0.088	-0.134	0.017	0.066	0.250	0.247	0.341	0.263	0.194	0.251	1.000		
ARTCL	-0.042	-0.030	-0.150	0.187	0.350	0.227	0.220	-0.115	-0.184	-0.007	0.091	0.319	0.198	0.329	0.574	0.211	0.237	0.404	1.000	
GOVNMT	0.006	-0.01	0.092	-0.01	0.007	-0.01	0.014	0.016	0	---	-0.01	-0.03	0.012	-0.033	0.009	-0	-0.01	-0.01	0.01	1.000

The basic ordered logistic regression model, the constrained cumulative logit model also called proportional odds model, assumes consistency of effect across response categories. It restricts the β coefficients to be the same for every dividing point j. A proportional odds model was fitted using the set of ordered dependent variables and the proportionality of the odds assumption was tested using *i)* the approximate likelihood ratio test of proportionality of odds across response categories on the unweighted data (Wolfe and Gould, 1998) *ii)* a Wald test on the weighted data. Test results are reported at the bottom of table 5.6 and the highly significant p values suggest that the coefficients are not equal across categories. An adjacent-category logistic model was consequently fitted to estimate the odds of being an occasional participant vs. being a non-participant and of being a frequent participant vs. being an occasional participant. Table 5.6 reports odds ratio results for this model.

5.4.1. The influence of public subsidies on attendance.

Contrary to expectations and to the findings presented in chapter Four, there was hardly any association between the share of total income covered by public subsidies and attendance. After controlling for individual socio-economic characteristics, people who live in states where non-profit theatre organisations receive a high share of their revenues from government sources are not more likely than individual from states with low levels of government support to attend theatre performances. The relationship between the variable *GVNMT* and theatre attendance is not statistically significant in either the simple logistic regression model or the ordered logistic regression. This means that should policy makers decide to increase public subsidies to increase the share of unearned revenues organisations receive, they would not be successful in encouraging attendance, not even among low-income groups. Interaction terms between the *GVNMT* variable and socio-economic characteristics were insignificant, suggesting that there is no difference in the effect that the share of total income covered by public subsidies has on attendance of different socio-economic groups.

Table 5.5 Government subsidies as a determinant of attendance in theatre performances

Dependent variable: DRAMA	OR	t stat
SEX	0.889	-0.96
AGE2	0.687*	-1.79
AGE3	0.600***	-2.37
AGE4	0.755	-1.3
AGE5	0.713	-1.33
AGE6	0.941	-0.2
AGE7	0.363***	-2.78
AFRICAN-AM	0.744	-1.28
HISP	0.959	-0.18
OTHER	0.702	-1.47
INCOME	1.071***	3.23
EDU	1.175***	3.5
MOMEDU	1.029	0.63
DADEDU	1.027	0.7
WATCHTV	0.921**	-2.23
OCCUPATION2	1.120	0.62
OCCUPATION3	1.044	0.25
OCCUPATION4	0.604*	-1.73
OCCUPATION5	0.689	-1.45
NUMBER	1.001**	2.15
GVNMT	0.999	-0.05
WORK	0.924	-1.6
MUSEUM	2.988***	8.58
DRAMACL	1.465**	2.26
MUSICCL	1.102	0.74
MUAPCL	1.197	1.23
BALLETCL	1.088	0.44
DANCECL	1.047	0.3
VISUALCL	1.055	0.38
ARTCL	1.184	1.1
CLASSICAL	2.50***	6.45
OPERA	1.471*	1.82
BALLET	1.024	0.12
DANCE	1.890***	3.89
	N=4149	
	F(34, 4115)= 17.69	

*Significance level *10% ** 5% *** 1%*

Table 5.6 The effect of public subsidies. Ordered logistic regression results

Dependent variable FQDRAMA	*OCCASIONAL VS. NON PARTICIPANTS*		*FREQUENT VS. OCCASIONAL*	
	OR	t stat	OR	t stat
SEX	0.745**	-2.27	1.505*	1.93
AGE2	0.803	-0.95	0.546	-1.49
AGE3	0.710	-1.43	0.490*	-1.82
AGE4	0.908	-0.41	0.494*	-1.77
AGE5	0.747	-1.05	0.870	-0.31
AGE6	1.122	0.36	0.506	-1.24
AGE7	0.216***	-2.62	2.830	1.53
AFRICAN-AM	0.675	-1.56	1.436	0.77
HISP	0.852	-0.64	1.328	0.67
OTHER	0.690	-1.43	0.815	-0.42
INCOME	1.061***	2.5	1.05	1.25
EDU	1.193***	3.41	1.024	0.3
MOMEDU	1.041	0.84	0.993	-0.09
DADEDU	1.032	0.76	0.999	-0.01
WATCHTV	0.940	-1.49	0.913	-1.18
OCCUPATION2	1.340	1.44	0.550**	-1.99
OCCUPATION3	1.278	1.27	0.491***	-2.42
OCCUPATION4	0.870	-0.45	0.141**	-2.23
OCCUPATION5	0.855	-0.54	0.493*	-1.65
NUMBER	1.001	1.27	1.001	1.55
GVNMT	0.996	-0.25	1.016	0.54
WORK	0.948	-0.95	0.924	-1.01
MUSEUM	3.185***	8.23	0.994	-0.02
DRAMACL	1.519**	2.3	1.320	1.06
CLASSICAL	2.326***	5.37	1.517*	1.74
OPERA	1.119	0.45	1.842**	2.11
BALLET	0.946	-0.23	1.407	1.16
DANCE	1.784***	3.15	1.264	0.97
	N=4063			
	F(56, 4007)= 14.04			

5.4.2. If public subsidies do not determine attendance, what does?

While section 5.4.1 describes the lack of a significant statistical relationship between public subsidies and attendance, tables 5.5 and 5.6 highlight how other factors are correlated with attendance in theatre performances.

One of the hypotheses of the study was that in the literature traditional socio-economic variables such as income, educational attainment, racial/ ethnic background and occupational status are highly correlated with attendance because of omitted variables such as family background and particularly whether a person received art education. The analysis presented in this chapter allows to disentangle these effects and fully

appreciate the impact of participation in art education activities and family background characteristics on attendance at theatre performances.

In the basic logistic regression models participation in all types of performing arts related classes and visual art courses are included to understand whether interpretation skills and socialisation effects are *generic* or *art specific*. The first column of table 5.5 shows that attendance in theatre performances is positively associated with **theatre classes**, while there is no statistically significant relationship with other forms of art education. The ordered logistic regression results suggest that while theatre education matters in terms of attending theatre performances occasionally, it does not have any impact on whether a person becomes a frequent participant. While art education influences the propensity people have to engage with the performing arts, other factors might be more important in determining how frequently they do so (for example time constraints, economic resources, geographical proximity etc...). The correlation between attendance and standard socio-economic characteristics such as income, educational attainment and ethnic background is much smaller than in previous demand studies, after controlling for the effect played by art education. Interaction terms between the art education variables and socio-economic characteristic such as ethnicity, income and educational attainment are not significant in any of the models. Art education appears to have the same effect on attendance for all social groups.

When simple attendance rates are considered no **gender effect** is estimated: after controlling for other characteristics males and females have the same probability of having attended theatre performances in the previous year. However the ordered logistic regression model reveals that gender differences exist between occasional and frequent visitors. While females tend to be more likely to attend theatre performances than males, males tend to be frequent attenders. More women go to live performances, but when men go, they go more often. Contrary to expectations **ethnic origin** and **family background,** as measured by mother's and father's educational attainment, do not seem to play a major independent effect on attendance in theatre performances.

The **age** category variables indicate a life cycle effect on theatre attendance: when people have children and are very old (and possibly ill), their attendance levels drop. The more a person **watches television**, the less likely she is to attend theatre

performances. However television watching is not correlated with how frequently she participates. Museum visits are highly correlated with attendance in all performing art forms. Attendance in other performing arts and art museum visits are positively associated with whether a person attends theatre performances or not, while it is less associated with frequency of attendance. A complementary effect is estimated between theatre and classical music, dance and opera (although the relationship is statistically significant only at the 10% level).

Educational attainment is strongly associated with attendance rates, while it is not an important predictor or frequency of attendance. When considering the detailed frequency of attendance model education remains highly associated with occasional attendance, while it does not influence the number of times people attend theatre performances. These results confirm previous studies on the important association existing between level of general education and attendance in the fine arts, although they suggest that within the performing arts, there are large differences in terms of the effect that educational attainment plays with respect to attendance rates and frequency of attendance.

After having controlled for other factors, people in all **occupational categories** tend to have similar attendance rates in live performances. Occupational status however plays a major role in determining frequency of attendance. People in professional occupations attend theatre performances frequently more than any other group. The fine arts played a major role in shaping class distinction in the past when cultural capital could be easily transformed in economic and social capital by the upper-middle class (DiMaggio and Useem, 1983; Bourdieu, 1973). However the transformation in the symbolic value of art participation as well as changes in labour markets and leisure time usage that are in act in American society might have loosened the relationship between social class and attendance. However while more people with non-professional backgrounds experience theatre performances, frequent attendance remains a privilege of the upper class. To test the hypothesis that the relationship between occupational status and participation differs across birth cohorts, a model with interaction terms between the age categories and occupational status was tested, but the coefficients were insignificant.

Contrary to previous studies showing a strong association between **income** and attendance in the performing arts, the results in table 5.5 show that the effect is statistically significant but the effect is quantitatively small when compared to the estimates for educational attainment and participation in other performing arts activities and visits to art museums. The results of table 5.6 using frequency of participation closely mirror those estimated using attendance rates and show that there is an income effect determining occasional participation, while income does not play a role in the decision to attend three times or more in a year.

Another indication of the importance of economic resources in determining inequalities in participation is represented by the extent to which people with different incomes are satisfied with their current attendance levels. The 2002 SPPA asks respondents (independently of their current attendance record) whether they would like to attend more often or not. *WLDRAMA* is a dichotomous variable assuming value zero when people would not like to participate more often in theatre performances, and value one when people would like to participate more often.

The logistic regression model presented in table 5.7 shows the relative association between income and satisfaction with current attendance. The dependent variable used is coded so that an odds ratio of less than one describes the situation where the higher the income, the less likely people are to be dissatisfied with their current participation. After having controlled for other covariates, logistic regression estimates indicate that there is not a statistically significant association between income and satisfaction/dissatisfaction with current attendance.

Table 5.7 Odds ratios of the effect of income on satisfaction with current participation

Dependent variable: *WLDRAMA*	coeff	(t stat)
INCOME	1.022	1.51
Personal characteristic controls	YES	
Family education controls	YES	
Art education controls	YES	
Frequency of current participation in relevant activity	YES	
Price controls	YES	
	N=4037 F(34, 4003)= 14.54	

*Significance level *10% ** 5% *** 1%*

5.5. Conclusions

The results presented in this chapter report a lack of a statistically significant correlation between public subsidies and attendance in theatre performances. As such they are inconsistent with the findings of chapter Four that document a negative association between prices and the demand for live performances. The conflict inherent to the results presented in the two chapters might be due to a number of factors:

Hypothesis 1. Public subsidies do not influence price because they have a negative impact on private donations.

If public subsidies inhibit private support, the relationship between ticket prices and public subsidies will be mitigated by the negative effect public grants have on private donations. The hypothesis is that public subsidies have an unwanted negative impact on other sources of unearned revenues, namely donations from individuals, corporations and foundations. Because of their negative impact on private donations, while increases in public subsidies determine price reductions, other things being

equal, such a positive correlation cannot be observed. This hypothesis would justify differences in the results reported in the analysis of attendance and prices in chapter Four and public subsidies and attendance in this chapter. This hypothesis will be tested in chapter Six using data on a panel of non-profit US theatre companies followed for the period 1997-2001 and on US federal grants for the arts and private donations for the period 1955-1999. Results indicate that on average public subsidies do not displace private donations and therefore crowding effects cannot be considered a major force altering the effectiveness of public subsidies in influencing attendance.

Hypothesis 2. Differences in production functions.

Organisations receiving larger shares of their incomes from public subsidies might decide to use such funds on factors that are not likely to modify people's attendance rates and frequency of attendance, for example, management wages. While the stated goal of public subsidies is to increase attendance (and promote high quality art), in the United States subsidies are mostly awarded to cover the costs of specific projects (for example the National Endowment for the Arts grants) or as lump sums (for example the City of San Francisco allocates subsidies with revenues from hotel tax revenues). These forms of subsidy are most likely to have an effect on the rent seeking behaviour of art managers and artists (Hansmann, 1981; Frey and Pommerehne, 1987). If this were to be the case organisations receiving public subsidies would not use the additional financial resources represented by subsidies to reduce prices but to pursuit other goals such as increase quality above optimal levels and increase the wages and/or benefits for the management and artistic personnel. Decreases in the effectiveness in the use of resources, increases in wastes and in other factors not positively affecting attendance following the award of public subsidies could be at the basis of the conflicting results presented in this chapter and chapter Four. Public subsidies can be used to either keep quality constant and reduce admission tickets or increase the quality of the productions while keeping prices unchanged and both these factors positively affect attendance. Abbé-Decarroux (1994) and Lange and Luksetich (1984) show how quality considerations play a role in determining the demand for performing arts events. This hypothesis will not be tested in the thesis and represents a challenge for future research.

Hypothesis 3. Context differences in the studies of performing arts attendance in England and theatre attendance in the United States determine the inconsistencies.

A final hypothesis considers the effect played by differences in the structure of the datasets used in the analyses, heterogeneity in the sector analysed (performing arts sector vs. non-profit theatre sector) and context specific factors (England vs. United States) in determining differences. The Family Expenditure Survey is a continuous non-longitudinal survey carried out by the Office of National Statistics with the purpose of determining weights for the calculation of general inflation rates. The Survey of Public Participation in the Arts is a survey commissioned by the National Endowment for the Arts with the purpose of assessing people's engagement in the artistic and cultural life and has been carried out every five years since 1982. Cultural differences and differences existing among art forms could also play a role. It was impossible within the framework of this thesis to ascertain the role played by these factors because of lack of access to suitable data.

Chapter 6.

Unintended consequences of public subsidies: an analysis of the American non-profit theatre sector.

6.1. Introduction

The aim of this chapter is to examine what factors determine the inconsistencies in the findings of chapters Four and Five on the influence of admission prices and public subsidies on attendance. In this chapter I analyse whether government subsidies have unintended consequences that might prevent them from influencing admission prices and as a result attendance. The hypothesis is that public subsidies inhibit the amount of private support that individual donors, corporations and foundations are willing to allocate to performing art organisations. If public grants negatively influence the amount of private donations performing arts organisations raise, this effect could counterbalance the positive effect public subsidies have on the financial resources of performing arts organisations and result in the ineffectiveness of public subsidies in influencing prices. In the presence of displacement effects, marginal increases in government support result in comparable decreases in private. As a result the share of revenues covered by unearned revenues remains constant, and public subsidies cannot have any appreciable effect on admission prices and ultimately on attendance.

6.2. Crowding out versus crowding in: evidence and explanations

While traditionally researchers have evaluated the effect of fiscal policies on the incentive of individuals and corporations to donate to the arts (Feld et al, 1983; O'Hagan, 1998), government subsidies also have the potential to modify decisions of individuals, corporations and foundations on whether they want to donate to the arts and how much they want to commit. The question "does government direct support stimulate or inhibit philanthropic donations?" is at the basis of a growing literature on the *crowding effect* of public support to non-profit organisations on private donations. The crowding effect can be described on a number of dimensions: direction, intensity and whether it occurs at the institutional or sectoral level. In terms of direction a *crowding out* corresponds to the situation where public support inhibits donations while *crowding in* occurs when public support stimulates private donations. The literature also distinguishes between total and partial effects to indicate the intensity of the relationship (Clotfelter 1985). In the presence of a total effect changes in public support produce equal changes in private donations, while in the case of a partial effect such changes produce a less than (or more than) equal response in private donations.

A further distinction concerns the level at which the crowding effect is studied and identifies institutional and sectoral effects. Government spending may affect private donations received by the single institution in a way, or to a degree that is different from the effect that public support has on an entire sector. At the micro level the institutional crowding effect makes private patrons more (or less) likely to give to organisations that receive public support rather than to others, even if aggregate spending is constant. The sectoral crowding effect modifies total private giving to a sector as a consequence of changes in public support, even if recipient organisations are no more likely than others to get funded by private donors (Kingma, 1989). The literature is roughly evenly split with the earlier literature concentrating on the sectoral effect and more recent studies focusing primarily on the institutional effect.

This chapter considers the institutional crowding effect using data from a panel of non-profit American theatres and the sectoral effect that the National Endowment

for the Arts produces on the American non-profit art sector. It is necessary to study both types of crowding effects as they operate through distinct mechanisms and a sectoral crowding in effect could theoretically coexist with independence or crowding out at the institutional level. If this were to be the case, public policies aimed at minimising the institutional crowding out effect on donations would have to be designed using formulae where specific allocations were somehow independent from the organisations that received them.

The hypothesis of the analysis is that public subsidies crowd out private donations and because of this public subsidies do not have an impact of ticket prices and attendance. The analysis of the institutional crowding effect develops the existing literature by considering two components of the effect of public support on private donations: the first considers the effect of the *level* of public support on private donations and the second the effect of *changes* in public support levels on private donations.

With few exceptions, empirical studies of the crowding effect consider government support as homogenous and no distinction is made with respect to the type of agency that awards public grants. In the institutional crowding effect analysis federal, state and local funding are considered separately as they are most likely to exert a very different influence on private donations. The sectoral analysis considers the influence of federal grants alone. The analysis of the sectoral crowding effect is based on time series data on National Endowment for the Arts appropriations and spending, GDP and population estimates, income tax rates and private giving to the arts and other nonprofit sectors.

The empirical evidence on the direction and intensity of the crowding effect of public support on private donations is mixed. Most studies analyse the crowding effect in the United States, although there are examples of similar studies in Canada (Day and Devlin, 1996), the United Kingdom (Khanna et al., 1995) and Germany (Paque', 1982). The studies differ greatly in terms of period covered – from pre-WWII period (Abrams and Schmitz, 1978) to the late 1990's (Andreoni and Payne, 2003; Brooks, 2003), non-profit sectors analysed and type of government support awarded.

At the institutional level, some studies find a total crowding out effect (Roberts, 1984); others report a partial crowding out effect in the social services field (Steinberg, 1985; Andreoni and Payne, 2003), public radio stations (Kingma, 1989) and a variety of non-profit organisations (Payne, 1998). Schiff (1985) presents evidence that in certain circumstances a moderate crowding in effect can occur. Khanna et al. (1995) also find a partial crowding in effect of government support on UK health organisations and independence in the case of religion and social welfare organisations. When the sectoral crowding effect of public support on individual charitable contributions is considered, Lindsey and Steinberg (1990) report a partial crowding out effect of federal support, while a crowding in effect of federal grants on state spending. Similarly Abrams and Schmitz (1978) report a partial crowding out effect of federal expenditures on health, education and welfare organisations and Jones (1983) a partial crowding out of total government expenditure on non-profits. Reece (1979) on the other hand finds independence among public support and private donations to religious, educational and political organisations.

Kingma (1989) attributed the inconsistencies on the direction and intensity of the crowding effect in the literature to the use of a broad definition of recipients and of government support. However the review of the available empirical studies in the non-profit art sector reveals that even when the analysis is restricted to a fairly homogenous recipient category, such inconsistencies remain. The great majority of the crowding effect studies in the arts are sector specific and the evidence that they provide is again mixed, with some reporting a crowding in effect (Smith, 2003; Paque', 1982), others a crowding out effect (Andreoni and Payne, 2003; Hughes and Luksetich, 1997) or independence (Brooks, 1999).

While discrepancies among studies have often been attributed to differences in the effects *among* non-profit sectors and geographical areas, Brooks argues that at the institutional level the assumption of linearity of the relationship between public support and private donations could be at the basis of such inconsistencies (Brooks 2000; 2003). Brook's findings on the crowding effect for American symphony orchestras and public radio stations seem to confirm that a non-linear specification of public support is indeed more appropriate. Brook's model considers a non-constant crowding effect, where the relationship between levels of government spending and levels of private donations takes an inverted U shape. Initially

crowding in occurs and the higher the level of public support awarded to nonprofit institutions, the higher the level of private donations. However after a certain point crowding out dominates and the higher the level of public support the lower the level of private donations (Brooks, 2000).

The bulk of the literature on the impact of government spending on private donations assumes a negative relationship between public and private support and sets itself the goal of testing whether the crowding out effect is total or partial (Nyborg and Rege, 2003). However the theoretical framework upon which this assumption is usually based, the interdependent utility model, provides a strong justification also for the crowding in effect. In such a model the utility function of donors and recipients are interdependent and the utility that donor *A* derives from making a private donation depends on the utility that recipient *B* derives from that same donation. The fundamental assumption that has been traditionally made by proponents of this model is that the greater the need of recipients, the higher the marginal utility of donors (Abrams and Schmitz, 1978). As recipients are less needy once they receive public funding and need is at the basis of the desire to donate, donors have an incentive to shift their giving and fund organisations not receiving public support and as a result crowding out will occur (Warr, 1982; Roberts, 1984; Vickrey, 1962; Becker, 1974). In the presence of simple interdependent utility functions where recipients' utility is the only factor determining donations, the donors' marginal utility decreases with government support because the latter lowers the utility of additional donations for recipient organisations (Abrams and Schmitz, 1978). In this system the only donations observed are the ones of patrons with a weight attached to recipients' utilities that is higher than the one agreed in the social contract determining levels of public support (Hochman and Rodgers, 1973).

However the interdependent utility framework can also be used to justify the crowding in effect: the additional support that public grants provide at low levels of total donative revenues (public and private) allows recipients to expand their activities and undertake new and/or better projects. In these cases rather than a decrease in need, public support corresponds to an expanded set of opportunities and possible uses of private contributions, a higher marginal utility of donations for the recipients and therefore the donors. The interdependent utility framework can be reinterpreted taking into account the positive effect that initial levels of public

support have on the prospects and activities of non-profit organisations. This provides a strong theoretical argument for the inverted *U* shape of the crowding effect empirically found by Brooks (2000; 2003). Low levels of government subsidies leverage donations. As public support increases the *crowding in* effect gets progressively smaller up to a point where *crowding out* starts dominating, gradually becoming larger and larger.

Other factors may also contribute to a partial crowding out effect. Examples of aspects affecting the utility function of donors are warm-glow effects (Boulding, 1962; Amos, 1982; Andreoni, 1989; Andreoni, 1993); level of control (Andreoni, 2001); private benefits associated with being a patron (Amos, 1982; Andreoni, 2001); social pressure (Nyborg and Rege, 2003; Rose-Ackerman, 1986; Rabin, 1997) and aversion for dependent recipients (Borgonovi and O'Hare, 2002). Last but not least, motivation crowding theory suggests that if individuals are given incentives to undertake activities that they were planning on undertaking altruistically, their motivation will decrease and as a result a crowding out will occur (Frey and Jegen, 1999; Frey and Oberholzer, 1997).

There are also additional aspects that could determine a positive influence of public support on private donations. They reside in the fact that if donors derive utility from giving to "needy and deserving recipients", some potential donors might be impeded because of lack of information on recipients' suitability and/or lack of screening ability. When government grants are accompanied by information activities, the associated decrease in uncertainty can stimulate private giving and partly offset the negative effect of declining recipients' need (Rose-Ackerman, 1986; Bolton and Katok, 1998). There is some empirical evidence that the form of support governments use to allocate resources affects the impact on philanthropic donations (Schiff, 1985; Day and Devlin, 1996).

An alternative theory views the crowding out effect as the result of reduced fundraising efforts of organisations receiving government support (Andreoni and Payne, 2003). This model presupposes that the decrease in need following public grants makes organisations less active in looking for private funds, while private patrons donate less as a response to less aggressive fundraising campaigns. The marginal utility of a donation remains unchanged for the donors while it decreases for the recipients that consequently increase the share of spending allocated to core

activities. However as in the case of the interdependent utility function model, low levels of public support are unlikely to greatly reduce fundraising efforts and, on the contrary, might stimulate them. If organisations receive some form of public support they might in fact feel encouraged to invest in planning more ambitious activities that require additional private support. In order to formally incorporate such positive influence some public granting bodies have developed matching requirements that condition the award of public support on the ability of the non-profit organisation to find additional private resources as a match (Schuster, 1989; 1985; Hausmann, 1981).

6.3. The institutional crowding effect

An important feature of the interdependent utility function and of the fundraising model is that in both cases the *level* of public support plays a role in explaining the *level* of private support and therefore the existence, intensity and direction of the crowding effect. These models predict that two organisations *A* and *B* that have the same level of public support will attract, other things being equal, the same level of private donations and that the correlation will be positive at first and then negative, being well described by an inverted *U* shape. However the models analysed above fail to fully consider the effect of *changes* in levels of public support. As a consequence they predict the same crowding effect in the case of organisation *A* that received increases in public support and organisation *B* that saw its public support cut from the levels reached in previous years, if the amount of support they receive in year *t* is the same.

Advocates of the crowding in effect have long pointed out that public support leverages private donations because it can signal quality, managerial ability and increase the reputation of recipient organisations (Hodsoll, 1984; NEA, 1998; Wyszomirsky and Mulcahy, 1995; Mulcahy, 1992). Given the high competition that exists for public support among non-profit organisations, *changes* in public support might influence private donation *levels* in a way that is different and independent from the effect that *levels* of public support have on *levels* of private donations. The use of the reputational effect to account for the additional influence that public support has on private contributions, could be an important factor in

explaining donation levels ignored by previous empirical studies (Khanna, et al, 1995). Connolly (1997) explores the relationship between internal and external funding of academic research and finds that because of the signaling effect that contributions from one source have on others, the higher the funding from one source is, the higher the additional funding the institution can expect to receive from other sources. Similarly Vesterlund (2003) shows how, contrary to what the interdependent utility framework and standard economic theory predicts, fundraisers announce past contributions and that they do so because an announcement strategy functions as a signal of institutional quality.

6.3.1. Data

The dataset used to analyse the effect of public support on private contributions at the institutional level comes from a total of 82 American theatres that are members of Theatre Communication Group (TCG). Since 1974 TCG conducts an annual survey *(Theatre Facts)* on the finances of its member theatres. In 2001 a total of 363 theatres responded, 197 of which completed a full in-depth questionnaire. The panel of 82 trend theatres used in the analysis includes those theatres that completed the questionnaire in the 1997-2001 period (five years). As six theatres did not complete the questionnaire in 2001 the panel is unbalanced and consists of a total of 404 observations. The TCG dataset contains information on a panel of both large and small theatres (total income ranges between $200,000 and $58M constant 1997 dollars) and constitutes an adequate sample of American non-profit theatres.

Table 6.1 TCG Theatre sample composition, by state

State	N	Percentage
AL	1	1.219512
AR	1	1.219512
AZ	3	3.658537
CA	10	12.19512
CO	1	1.219512
CT	4	4.878049
DC	2	2.439024
DE	1	1.219512
FL	2	2.439024
GA	2	2.439024
HI	1	1.219512
IL	2	2.439024
IN	1	1.219512
KY	2	2.439024
MA	3	3.658537
MD	3	3.658537
MI	2	2.439024
MN	3	3.658537
MO	1	1.219512
NH	1	1.219512
NJ	3	3.658537
NY	7	8.536585
OH	2	2.439024
OR	1	1.219512
PA	5	6.097561
RI	1	1.219512
TN	2	2.439024
TX	4	4.878049
UT	1	1.219512
VA	3	3.658537
WA	5	6.097561
WI	2	2.439024
Total	**82**	**100**

The important feature of the TCG panel is that unlike the data used in most previous empirical studies on the crowding effect, it differentiates public support into federal, state and local (city and county) funding. As noted above, one of the hypotheses is that different forms of public support have distinct effects on private donations and such a separation in the data is therefore fundamental. According to the 1997 Economic Census, federal public support accounts for 0.5% of theatre revenues, while non federal funding accounts for just less than 6% of total revenues of non-profit theatres (U.S. Census Bureau, 2000). As one of the aims of the analysis is to test whether the impact of federal, state and local spending

differs, it is important that grants from each of these funding sources are allocated with similar formulae. In the case of theatres federal and state support come almost exclusively from the National Endowment for the Arts (federal support) and from State Arts Agencies (state support).

Table 6.2 provides a brief description and summary statistics of variables used in the model. Table 6.3 summarises partial correlations among the model covariates. All monetary variables are in constant 1997 dollars and all variables have been coded adjusting for scale of operation (number of performances given in year *t*) as in Brooks (2000). The dependent variable "private contributions" aggregates donations from individuals, foundations and corporations. Government support is disaggregated into federal, state and local contributions. The correlation matrix suggests that there is no multicollinearity problem among the model covariates, apart from the variables *TIME* and NEA_{it} (NEA real budgets consistently decreased in the five years under consideration) and the variables $TICK_{it}$ and $QUALITY_{it}$ (a strong correlation between quality and ticket income seems logical as high quality performances are usually sold out and consequently generate a higher income per performance). The lack of a strong correlation between level and change in public support is especially important as severe collinearity among the public support measures would affect the interpretation of the regression results.

Table 6.2 Description of variables and summary statistics (panel 1997-2001)

Variable	Definition	Mean (Std. Dev)	Min	Max
D_{it}	Private giving divided by number of performances	389.486 (4127.043)	40	27789.93
PUB_{it}	Total government spending divided by number of performances	860.088 (1582.354)	0	18334.18
$PUBSQ_{it}$	Quadratic term total government	3237399 (2.17e+07)	0	336142156
ΔPUB_{it}	Change in public support ($PUBLIC_{it}$ - $PUBLIC_{it-1}$)	83.097 (1111.602)	-6617.96	12694.35
FD_{it}	Federal spending divided by number of performances	87.587 (171.069)	0	1308.537
$FDSQ_{it}$	Quadratic term federal	36863.78 (152766.6)	0	1712269
ΔFED_{it}	Change in federal spending (FD_{it} - FD_{it-1})	-3.631 (109.298)	-837.41	380.04
$STATE_{it}$	Total state support divided by number of performances	378.354 (652.388)	0	6617.963
$STATESQ_{it}$	Quadratic term - state support	567709.4 (2942190)	0	43800000
$\Delta STATE_{it}$	Change in state spending ($STATE_{it}$ -$STATE_{it-1}$)	1.397 (602.559)	-6617.96	3569.466
LOC_{it}	Total local support divided by number of performances	394.146 (1397.305)	0	17707.46
$LOCSQ_{it}$	Quadratic term - local support	2102979 (19400000)	0	314000000
ΔLOC_{it}	Change in local spending ($LOCAL_{it}$ -$LOCAL_{it-1}$)	85.693 (970.221)	-4968.177	13330.32
$DVLOP_{it}$	Total development expenses divided by number of performances	543.708 (626.151)	0	5375.383
$TICK_{it}$	Total ticket income divided by number of performances	6222.056 (5216.099)	236.317	39360.32
$TIME$	Time trend	3	1	5
$DISPOS_{it}$	Median per capita disposable income in the state where the theatre is located	23895.82 (2798.518)	17325	31149.3
$QUALITY_{it}$	Ratio of artistic payroll to number of performances	3038.448 (2113.88)	351.523	20631.62
$THEATRE_{it}$	Number of theatres for 100,000 people in the state where the theatre is located	0.634 (0.313)	0.261	2.119
SAA_{it}	State Arts Agency appropriation of the state where the theatre is located	14100000 (15700000)	482951	61900000
NEA_t	National Endowment for the Arts appropriations	95100000 (2828044)	90800000	99500000

Table 6.3 Correlation matrix of independent variables included in the model

	PUB_{it}	ΔPUB_{it}	FD_{it}	ΔFED_{it}	$STATE_{it}$	$\Delta STATE_{it}$	LOC_{it}	ΔLOC_{it}
PUB_{it}	1.00							
ΔPUB_{it}	-0.090	1.00						
FD_{it}	----	----	1.00					
ΔFED_{it}	----	----	-0.370	1.00				
$STATE_{it}$	----	----	0.106	-0.027	1.00			
$\Delta STATE_{it}$	----	----	0.026	0.013	-0.551	1.00		
LOC_{it}	----	----	-0.014	-0.006	0.043	0.032	1.00	
ΔLOC_{it}	----	----	0.060	0.060	0.047	-0.059	0.022	1.00
$DVLOP_{it}$	0.304	0.132	0.162	-0.042	0.237	0.026	0.202	0.140
$TICK_{it}$	0.358	0.065	0.291	-0.035	0.312	-0.042	0.203	0.105
$TIME$	0.081	-.005	-0.002	0.015	0.011	0.012	0.090	-0.015
$DISPOS_{it}$	0.098	-0.028	0.414	-0.024	0.184	-0.040	-0.050	-0.004
$QUALITY_{it}$	0.438	0.051	0.363	-0.026	0.405	-0.066	0.212	0.102
$THEATRE_{it}$	-0.040	-0.017	0.554	0.004	-0.068	-0.015	-0.093	-0.010
SAA_{it}	0.013	0.030	-0.063	-0.021	-0.025	0.031	0.039	0.018
NEA_t	-0.078	-0.000	0.002	-0.011	-0.005	-0.021	-0.090	0.014

	$DVLOP_{it}$	$TICK_{it}$	$TIME$	$DISPOS_{it}$	$QUALITY_{it}$	$THEATRE_{it}$	SAA_{it}	NEA_{it}
PUB_{it}								
ΔPUB_{it}								
FD_{it}								
ΔFED_{it}								
$STATE_{it}$								
$\Delta STATE_{it}$								
LOC_{it}								
ΔLOC_{it}								
$DVLOP_{it}$	1.00							
$TICK_{it}$	0.543	1.00						
$TIME$	0.121	0.064	1.00					
$DISPOS_{it}$	0.238	0.201	0.217	1.00				
$QUALITY_{it}$	0.465	0.793	0.095	0.257	1.00			
$THEATRE_{it}$	0.109	0.117	-0.032	0.506	0.115	1.00		
SAA_{it}	0.182	0.186	0.207	0.264	0.101	0.063	1.00	
NEA_{it}	-0.123	-0.063	-0.995	-0.220	-0.094	0.032	-0.200	1.00

There are two main hypotheses associated with the institutional crowding effect:

1) Level and Change: The relationship between public and private support to non-profit organisations depends on both the *level* and the *change* in public support. While the relationship between levels of public and levels of private support takes an inverted *U* shape, the relationship between changes in public support and levels of private donations is linear.

$$\boldsymbol{D_{it}} = \beta_1 + \beta_2 \boldsymbol{PUB_{it}} + \beta_3 \boldsymbol{PUBSQ_{it}} + \beta_4 \Delta \boldsymbol{PUB_{it}} + \beta_5 \boldsymbol{X_{it}} + \boldsymbol{u_{it}} \qquad (6.1)$$

Where $i=(1.....82)$ denotes theatre; $t=(1.....5)$ denotes year; $\boldsymbol{u_{it}} = \mu_i + \varepsilon_{it}$ represents the structure of the error terms and X_{it} is a vector of other characteristics such as fundraising expenditures, ticket income, number of theatres present in the

state where the theatre is located, state median per capita disposable income, State Arts Agency and NEA appropriations, the payroll ratio and a time trend.

2) Type of support: Different sources of government spending – federal, state and local – have a different impact on private donations, both in terms of *level* and in terms of *change*.

$$\boldsymbol{D_{it} = \beta_1 + \beta_2 FD_{it} + \beta_3 STATE_{it} + \beta_4 LOC_{it} + \beta_5 X_{it} + u_{it}} \qquad (6.2)$$

Where $\boldsymbol{FD_{it}}$, $\boldsymbol{STATE_{it}}$ and $\boldsymbol{LOC_{it}}$ are vectors that contain the linear, quadratic and change terms of federal, state and local support and X_i is a vector of other characteristics: fundraising expenditures, quality, ticket revenues, per capita disposable income, theatre concentration, and shifts in state and federal programmes in support of the arts.

As suggested in the introduction an unresolved problem of most crowding effect studies is that if the allocation criteria used by private and public donors coincide or are very similar, a positive correlation between the two sources of support will mask a correlation between the two and a separate variable. While **fundraising expenses** are an indication of the effort and managerial ability to attract donative revenues, quality and its effect on private donations have not been considered by previous crowding effect studies. This analysis is based on the use of the **payroll ratio** (ratio of artistic payroll to number of performances) as a proxy for the quality of the production offered by theatres in the sample. Lange and Luksetich first used a similar payroll ratio index (ratio of artistic payroll to total payroll) to indicate quality in their estimation of the demand for Broadway performances (Lange and Luksetich, 1984). The hypothesis is that high quality theatres will invest more in their artistic activity compared to management and other wage expenses and therefore the higher the ratio, the higher the artistic quality.

As people respond to fundraising campaigns and every previous empirical study shows the positive effect that fundraising expenditures have on private donations, the variable $DVLOP_{it}$ controls for this influence and the hypothesis is of a strong and positive correlation between fundraising expenditures and private donations. Another factor considered in the analysis is the average amount of **ticket revenues**

that each performance accrues to the organisation. This represents both the scale of operation and to a degree the demand for performances of theatre *i*.

A large fraction of donations to theatre companies comes from individuals (individuals account for 10.3% of total revenues, while corporate donations represent 5.5% and foundations 6.9% according to the 1997 Economic Census). Individual patrons give locally and since it is predominantly the very wealthy who donate to art institutions (Independent Sector, 1994), **disposable income** in the state where the theatre is located was added to the model. Sectoral studies usually estimate the effect of government spending on individual donations using time-series data (Schwartz, 1970; Abrams and Schmitz, 1978) and one of the factors that they often consider is the effect of changes in federal income tax rates on donations. Taxes have two effects on donations: *i)* by lowering disposable income they tend to reduce donations; *ii)* as donations are fully deductible, changes in federal income tax rates modify the price of donating thus increasing donations. If m=marginal tax rate and D the donation, the price of donating is $P=(1-m)D$. Federal tax rates did not change much in the 1997-2001 period – the top federal income tax rate has fallen from 39.5% in 1997 to 39.1% in 2001. The data used in the analysis consist of panels of organisations located in different states followed for five years. Incorporating variations in state income tax would seem like an attractive option to include the price of donating in the model. However calculating a homogenous highest marginal state income tax is difficult as fiscal legislations differ greatly among states in terms of deductibility of donations, existence of an income tax and deductibility of federal income tax paid when calculating state income tax. It was therefore decided not to take into account the price effect of taxes while median per capita disposable income was used to include in the analysis the impact that taxes (and not just income tax) have on the ability to donate.

A state with many theatres relative to its population is more likely to be a state where people have more developed tastes for theatre performances and therefore theatres in such a state are more likely to receive private donations. However, more theatres also mean more competition for what are limited funds from both public and private sources and in this case theatres in states with a higher theatre concentration may be less likely, other things being equal, to receive private donations. The **number of theatres per 100,000 people** present in the state

controls for such effects. However this variable is introduced without prior hypotheses as to the direction of the relationship given the contrasting forces at play.

As the model estimates the effect that changes in public support have on levels of private donations, and these are assumed to be due to organisational changes rather than changes in the budgets available to government agencies, two variables are constructed to control for **shifts in state and federal budget availability**: SAA_{it} and NEA_t. Finally the model controls for possible historical trends in private donations to theatre companies through the variable *TIME*.

6.3.2. Methodology

Ordinary least squares are not an appropriate estimation method for panel data as the estimates are likely to suffer from heteroskedasticity and autocorrelation within the panels (Greene, 1997). Generalised least squares have been used to account for the fact that 82 theatres have been followed for a period of five years. Table 6.6 presents regression estimates for model (6.1) using OLS and GLS random effect estimators to show the bias induced by OLS estimation. Table 6.8 presents regression estimates for model (6.2) using GLS. Relevant test statistics and their results are reported at the bottom of each table.

Tables 6.6 and 6.8 report the Breusch and Pagan Lagrangian multiplier test for random effects. In each case they indicate that the random effects specification is more appropriate than OLS on the pooled sample. The Hausman specification test has been used to assess the adherence of the dataset used in the analysis to the assumptions at the basis of the random effects model. In all the cases considered the Hausman test indicates that there are no theatre specific effects and that μ_i can be considered a random variable with mean zero, $E(\mu_i)=0$ and that the covariance between μ_i and the independent variables present in the model is zero. The hypothesis that fixed and random effects coefficient are the same can be rejected in both cases at the 1% confidence level.

Crowding effect models like the one presented in this study often exhibit another violation of a key assumptions of regression analysis, as public funding cannot be considered an exogenous covariate. In most circumstances it is possible to imagine public support as an endogenous variable (Brooks, 1999). The most widely used technique to address the problem of an endogenous independent variable is to find an instrument that is highly correlated with the independent but not with the dependent variable (Kingma, 1989; Day and Devlin, 1996).

Contrary to most previous studies, the model includes variables, such as the quality index, that are likely to determine the endogeneity of public support if omitted from the model. Moreover the American art field exhibits specificities that suggest using a model based on information lags and that views public support as exogenous rather than using a two stage least squares technique (Brooks, 2000; 2003; Smith, 2003; Andreoni and Payne, 2003). Specifically the allocation procedure of government spending at both the federal, state and local level ensures exogeneity. At the federal level the NEA awards funding for projects using panels of experts that make recommendations using artistic quality and adherence of the proposed project to the funding guidelines as criteria. The matching requirements are an incentive for art organisations to look for private donations, but often other resources are used as a match (Borgonovi and O'Hare, 2002). At no stage in the process the NEA or the panels consider the amounts of private donations received by an applicant and recommend funding accordingly. Likewise at the local level, most state arts agencies and county/city arts councils award their support to those organisations that best address the funding priorities decided by public authorities (Heilbrun and Gray, 2001) and private donations are unlikely to significantly influence allocation decisions.

Although theoretical reasons support the hypothesis that public support is exogenous, a second stage least squares model was developed to test the exogeneity of the public support variables.

$$D_{it} = \beta_1 + \beta_2 PUB_{it} + \beta_3 Y_{it} + \beta_4 X_{it} + u_{it} \quad (6.3)$$

$$PUB_{it} = \beta_1 + \beta_2 X_{it} + \beta_3 Z_{it} + \varepsilon_{it} \quad (6.4)$$

X_{it} is a vector of characteristics that are thought to influence both private donations and public support.

The following table describes the instrumental variables used to estimate equation (6.3). Z_{it} is a vector of characteristics that are correlated with public support but not private donations and is used as an instrument for PUB_{it} in equation (6.3). Vector Z_{it} contains a set of political variables that have been previously used by Andreoni and Payne (2003) and Payne (1998) as instruments for PUB_{it} and although those studies were different from the one presented in this paper, it makes sense to start with variables that have already proved to be good instruments for PUB_{it}. Z_{it} also includes a set of variables that have not been used before and that are more likely to be valid and relevant in the non-profit theatre context.

Z_{it}	**Economic instruments:**	- *GROSS* - *EXPEND*
	Political instruments:	- *STATE_LOW* - *STATE_UP* - *HOUSE* - *SENATE*

Table 6.4 List of instruments used in the second stage regression

Variable	Definition	Source of data
Z_{it}		
GROSS	Per capita gross State product	Bureau of Economic Analysis
EXPEND	Per capita government expenditures in the State	Statistical Abstracts of the US
STATE_LOW	Percentage democrats in lower house - state legislature	Statistical Abstracts of the US
STATE_UP	Percentage democrats in upper house - state legislature	Statistical Abstracts of the US
HOUSE	Percentage democrats in US House of Representatives	Statistical Abstracts of the US
SENATE	Number of democrats in US Senate	Statistical Abstracts of the US

The two stage least squares results support the hypothesis that a one year lag measure of public support better reflects the relationship between public support and private donations in the American non-profit theatre sector. Hausman test results in fact indicate that public support and private donations should not be considered as endogenous and are not jointly determined.

Table 6.5 Two stage least square results

Dependent variable= PRIVATE	*Coefficients*	*SE*
*Cons*tant	-4996.03 (-0.51)	9811.055
PUB_{it}	1.437 (1.07)	1.341
$DVLOP_{it}$	1.185 (0.96)	1.234
$TICK_{it}$	0.274* (3.4)	0.080
$QUALITY_{it}$	0.070 (0.28)	0.252
$TIME_t$	67.252 (0.36)	186.898
$THEATRE_{it}$	1426.148 (0.65)	2181.956
SAA_{it}	5.52E-06 (0.19)	2.94E-05
NEA_{it}	3.38E-05 (0.37)	9.11E-05
$DISPOS_{it}$	0.03 (0.15)	0.196
FDN_GIVE_{it}	-9.858 (-0.12)	82.293
$ENTERTAIN_{it}$	-0.046 (-1.21)	0.038
$ESTATE_{it}$	-53.864 (-0.42)	129.383
$RETURNS_{it}$	21592.61 (0.39)	55791.94
$ASSETS_{it}$	1.23E-05 (0.32)	3.86E-05
N_FDN_{it}	-0.115 (-0.28)	0.413
N=394		
Hausman specification χ^2 (6)=0.81		
Wald χ^2 (15)= 195.49		

Since government grants allocated in year *t* are awarded and communicated to the general public in *t-1*, the government spending measures used in the econometric model are current rather than lagged by one year. This ensures that the effective lag present in the model is a one-year lag rather than a two-years lag.

6.3.3. Results

When considering aggregate government support, the econometric results in table 6.6 are consistent with the theoretical framework developed in section 6.2 and the findings previously indicated by Brooks (2000; 2003). They indicate that the relationship among levels of public support and private donations is non linear and exhibits an inverted *U* shape. Low levels of government support correspond to low levels of private donations; at higher levels private donations increase, but after a certain threshold is reached the higher the level of public support, the lower the level of private donations. At $10,550 the marginal effect of *levels* of public support is zero. Before such threshold there is a positive (although declining effect) or public support levels; while after this a negative effect starts occurring. Initially private donors appear to be feeling the "value added" in terms of information and expanded possibility that government grants provide. Besides the impact on perceived need is negligible and private donors are unlikely to feel that low levels

of public support mean a substantial degree of government control. The positive effect of small government grants could also be due to the fact that private donors feel positively towards a diversified funding base as it implies greater managerial ability and better sustainability prospects (Borgonovi and O'Hare, 2002). Figure 6.1 shows the relationship between levels of public and private support as predicted by the model estimated in table 6.6, keeping change in public support constant.

Table 6.6 The crowding effect of public support on private donations (1997-2001)

Dependent variable= PRIVATE	**OLS model** [a]		**GLS model** [b]	
Independent variables	***Coefficients***	***SE***	***Coefficients***	***SE***
Constant	27242.58 (0.53)	51343.73	26427.08 (0.70)	37599.24
PUB_{it}	0.611** (2.03)	0.301	1.266* (3.93)	0.322
$PUBSQ_{it}$	-0.00001 (-0.49)	0.00002	-.00006* (-2.61)	.00002
ΔPUB_{it}	0.538* (3.58)	0.150	.636* (4.74)	0.134
$DVLOP_{it}$	2.176 * (5.72)	0.380	2.157* (4.88)	0.442
$TICK_{it}$	0.267 * (4.84)	0.055	0.225* (3.06)	0.073
$THEATRE_{it}$	-253.64 (-0.43)	584.87	44.06 (0.05)	906.46
$DISPOS_{it}$	0.098 (1.36)	0.073	0.055 (0.50)	0.109
SAA_{it}	0.00001 (1.12)	0.00001	0.00002 (1.35)	0.00001
$QUALITY_{it}$	0.016 (0.12)	0.134	0.063 (0.41)	0.156
TIME	-783.16 (-0.55)	1415.79	-761.71 (-0.74)	1028.007
NEA_{it}	-0.0002 (-0.57)	0.0005	-0.0002 (-0.75)	0.00036
Breush Pagan Lagrangian multiplier χ^2 (1)=103.55 * Hausman specification χ^2 (11)=10.29	N=322 R^2=0.50 F(11, 310)=28.32		N=322 R^2=0.49 Wald χ^2 (11)=183.37*	

** Significance greater than 0.01 ** Significance greater than 0.05 ° Significance greater than 0.10*

[a] *t statistics in parenthesis* [b] *z statistics in parenthesis*

Figure 6.1 Predicted levels of private donations as a function of levels of public support.

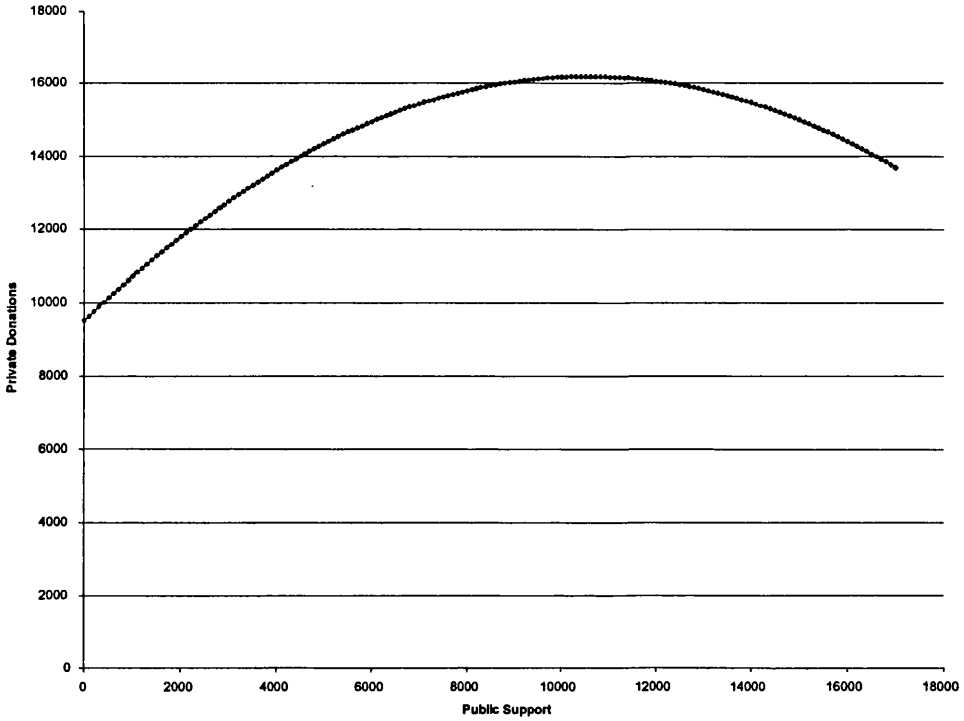
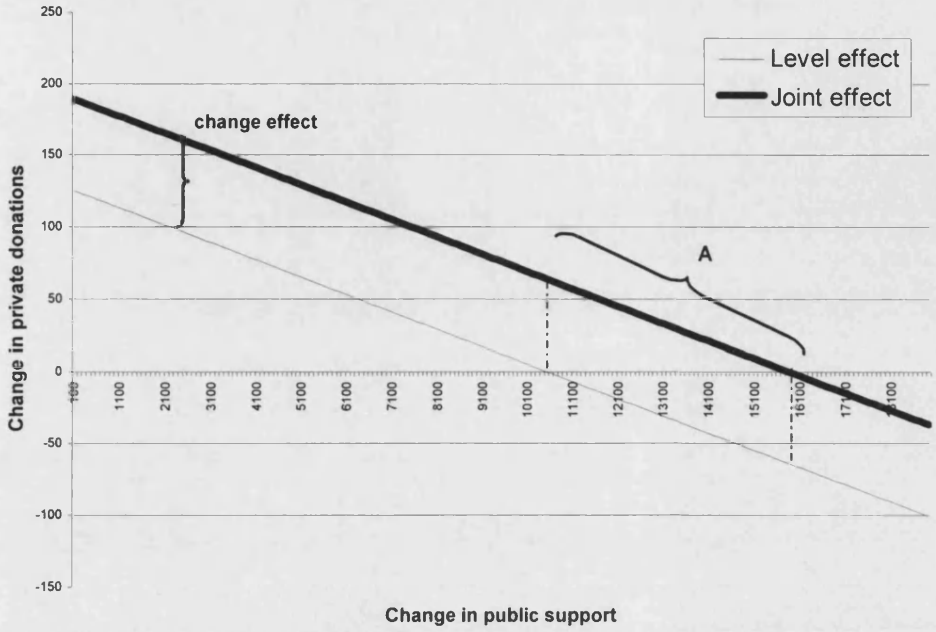


Table 6.6 confirms the first hypothesis and indicates that the institutional crowding effect is determined by two factors: *level* of public support and *change* in public support levels. While the first component produces a non-constant effect, the second component represented by changes in public support has a linear positive effect on private donations. Keeping initial levels of public support constant, increases in grants from government agencies produce increases in private donations ($0.64 cents per dollar), while decreases are associated to decreases in private donations. *Ceteris paribus* the significance of ΔPUB_{it} shows that the level of private support of two organisations that receive the same level of public support differs according to whether such a level represents an increase or a decrease in government grants. This illustrates the additional effect produced by the signal that public agencies send to private donors whenever they change their allocation levels to a certain organisation.

Figure 6.2 shows the joint crowding effect and its two components: level effect and change effect. The thicker line represents the joint crowding effect, while the fine

line represents the level effect. The change effect is constant and positive and as a result of its action the fine line shifts upwards to become the solid line.

Figure 6.2 Joint crowding effect, level effect and change effect



Keeping other factors constant, the figure shows that while a crowding out starts occurring at approx. $10,550 in the case of the level effect, this threshold is much higher approx. $16,000 in the case of the joint crowding effect. In the first part of the curve the use of the simple level effect determines an underestimation of the intensity of the crowding in effect. Similarly in the last part of the curve, the level effect overestimates the extent to which a crowding out occurs. Even more problematic is the situation in the section of the curve denominated *A* in the figure, where the use of the simple level effect leads to a misinterpretation not only of the intensity, but also of the direction of the crowding effect: while there is still a partial crowding in effect, the model predicts a partial crowding out.

In the first part of the curve described in figure 6.1 the additional effect produced by changes reinforces the main effect and produces a shift in the intensity of the joint crowding effect, but not in the direction. As public support levels get closer to the point at which the positive impact of the level effect decreases, increases in public grants lead to an outcome where not only the intensity, but also the direction changes. Finally in the case of very high levels of public support, the positive

effect exercised by the change is not sufficient to compensate for the strong negative effect produced by the high level of public support. Both level and joint effects are negative, although the joint effect is smaller.

Table 6.7 compares the crowding effect public subsidies on private donations in four organisations that receive a $1,000 increase in subsidies but start from different levels. Organisation *A* has low levels of public subsidies and thus enjoys the greatest crowding in effect: an increase in subsidies from $5,000 to $6,000 corresponds to a $1,242 increase in private donations. Organisation *D* that has the same $1,000 increase in public subsidies has a reduction in private subsidies of $198.

Table 6.7 The crowding effect of public support on private donations

	Public support $_t$	Public support $_{t+1}$	Level effect	Change effect	Joint crowding effect
Organisation A	$5,000	$6,000	$606	$636	$1,242
Organisation B	$10,000	$11,000	-$6	$636	$642
Organisation C	$15,000	$16,000	-$594	$636	-$42
Organisation D	$17000	$18000	-$834	$636	-$198

Calculations based on the model presented in table 6.6.

Table 6.8 shows estimation results for equation (6.2) when public support is disaggregated into federal, state and local and confirms the second hypothesis, namely that the effects induced by different public sources should be considered separately. Only local support exhibits a quadratic crowding effect induced by *level* and a linear crowding in effect determined by *change* as in the case of aggregate support. The only public spending term that is statistically significant in the case of federal support is the linear level variable FD_{it} while in the case of state support both level and change effects determine crowding in and act as reinforcements of each other.

Table 6.8 The crowding effect of federal, state and local support on private donations (1997-2001)

Dependent variable= PRIVATE	Federal, state and local spending	
Independent variables	*Coefficients*	*SE*
Constant	24649.91 (0.65)	38153.66
FD_{it}	5.145** (2.05)	2.515
$FDSQ_{it}$	-0.003 (-1.21)	0.002
ΔFED_{it}	1.112 (0.80)	1.399
$STATE_{it}$	1.420 ** (2.24)	0.634
$STATESQ_{it}$	-0.00009 (-0.80)	0.0001
$\Delta STATE_{it}$	0.841* (2.58)	0.326
LOC_{it}	1.270* (3.11)	0.408
$LOCSQ_{it}$	-0.00007 * (-2.28)	0.00003
ΔLOC_{it}	0.504* (3.45)	0.146
$DVLOP_{it}$	2.012 * (4.47)	0.450
$TICK_{it}$	0.221 * (2.99)	0.073
TIME	-684.07 (-0.66)	1039.14
$DISPOS_{it}$	0.032 (0.29)	0.112
$QUALITY_{it}$	0.050 (0.31)	0.162
$THEATRE_{it}$	-111.71 (-0.11)	1041.39
SAA_{it}	0.00002 (1.39)	0.00001
NEA_t	-0.0002 (-0.68)	0.0003
	N=322 R^2=0.49	
	Wald χ^2 (17)= 190.26*	
	Breush Pagan χ^2 (1)= 97.64 *	
	Hausman χ^2(17)= 20.81	

z statistics in parenthesis
** Significance greater than 0.01 ** Significance greater than 0.05 ° Significance greater than 0.10*

The results presented in table 6.6 and 6.8 provide a useful interpretation for the inconsistencies on the intensity and direction of the crowding effect present in the literature previously described. Andreoni and Payne (2003) use tax return data of social services and art organisations and report a crowding out effect. As most organisations in the dataset[1] used by Andreoni and Payne have very high levels of public support[2], which according to the model presented is consistent with a crowding out effect as in the case of Payne (1998)[3]. The findings are also consistent with the results obtained by Smith (2003) who reports a more than proportional crowding in effect of federal grants to non-profit dance companies.

Two reasons determine the type of effect that federal, state and local support exert on private donations: the size of typical grants, changes in support and the

[1] The National Centre for Charitable Statistics (NCCS) Statistics of Income dataset includes all organisations with $10 million in assets and only a sample of smaller organisations.
[2] Mean of public support for art organisations $1.193 million, mean of public support for social service organisations $2.711.
[3] The mean of public support to organisations present in the sample is $1.87 million.

allocation procedure used to award funding. National Endowment for the Arts grants (federal support) are typically very small and therefore no awards are present in the descending section of the level effect curve. Besides the allocation procedure based on recommendations of panels of experts and the fact that grants are awarded to projects, rather than institutional support could again play a role in the fact that no crowding out effect was observed in the case of federal support. Theatres receive a much higher proportion of their total support from State Arts Agencies than from federal sources and therefore the fact that the analysis does not show an inverted *U* shape relationship should be found in the nature of the allocation procedure, rather than the typical size of awards. State support is not as consistent as federal support and different schemes are present in different states, however grants are generally dependent on quality assessment of recipient organisations and support is given to foster artistic merit, creativity and innovation. The bulk of local support is on the other hand predominantly awarded as a form of support to the local economy, using systems like hotel tax revenues that are distributed more evenly among recipient organisations and a crowding out effect occurs.

Like the time trend, the variables used to control for the effect of federal and state budget contractions/expansions – NEA_t and SAA_{it} – are not significant in any of the models. The insignificance of time trend suggests that there is no overall trend (either upwards or downwards) that makes private donations increase or decrease over the five years of the data, but a longer series might reveal one. Likewise a larger variation in budget allocations to the arts present in longer time series might reveal a significant effect of these components on private donations. Fundraising expenditures are positively associated to increases in private donations as expected and as indicated in the literature (see Clotfelter, 1985 for a review) and the coefficient is highly significant in all models. Ticket income is highly related to private donations; *ceteris paribus* the higher the income, the higher the level of private contributions. This can equally be the effect of the scale of operation and of the higher ability of large organisations to inform about their programs, activities and needs. The positive association between private donations and ticket income per performance might also result from the fact that both are the outcome of a high demand for those performances.

The payroll ratio is not significant in any of the three specifications and this might be the result either of the strong correlation with the ticket income variable or of its inadequacy in indicating quality. Better indices of quality should be developed to take into account an important factor in determining private donations among non-profit organisations. As Throsby's analysis (1983) indicates it is very difficult to measure the overall quality of performances and the wage of performers might not be the most appropriate indication of either subjective or objective quality criteria. In the case of performing art organisations the use of critic reviews could serve this purpose, while in other sectors performance indicators such as hospital mortality in health and league tables with exam results in education could be used. However all these crude measures lack insight in other dimensions that potential donors might feel as indicating quality in a non-profit activity for example the capacity to cater for disadvantaged communities.

6.4. The sectoral crowding effect

This section examines the impact of the National Endowment for the Arts on private donations to the arts. The aim of the analysis is to assess whether public funding generates a sectoral crowding out effect on private giving. The NEA is a federal agency operating at arm's length (Netzer, 1978) and it is often viewed as the most prominent source of public support to the arts in the United States.

The NEA awards a large number of small grants (NEA, 2002a) with matching requirements for projects (Schuster, 1985; 1989; 1995; DiMaggio, 1983; 1986) rather than institutional support. Panels of experts recommend to the NEA Chairman and an oversight council meritorious applications and recommendations need to be formally approved before support is awarded (Wyszomirski and Mulcahy, 1995; Mulcahy, 1992).

The usual approach to the sectoral crowding effect focuses on total federal financial commitment and assumes that increases and decreases in NEA budget will have a direct impact on private donations. However a sectoral crowding effect can also take place when total private giving is influenced by the mere existence of

relevant public agencies, or attention given to them in public media, and this "salience" effect is considered in the analysis.

6.4.1. Empirical analysis

The sectoral effect of the NEA could operate through several distinct mechanisms. The simplest is that the ongoing existence of such an agency symbolises collective concern for the arts and people respond to that manifestation by giving when they otherwise would not. A more complex mechanism would be for donors to perceive government funding to increase the marginal value of their own dollars, in the form of a sort of generalised matching grant process. A third possibility is that changes in private donations are the result of the *salience* of the government program. When, for example, the NEA was founded (and again when it was under public attack in the eighties) it received much attention from the media and the public, while its continued year-to-year operation is little noticed. Under this model, public attention to public support motivates private giving while the support itself has little effect. Model (6.5) is used to test the hypothesis of a sectoral effect of NEA grants on private donations to the arts. The model used in the analysis is based on data that cover the 1955-1999 period and can be expressed as follows:

$$ART_t = \alpha + \beta_1 GDP_t + \beta_2 INCTAX_t + \beta_3 TOT\_ART_t + \beta_4 TIME_t + \quad (6.5)$$
$$+ \beta_5 NEA_t + \beta_6 PERIOD2 + \beta_7 PERIOD3 + \varepsilon$$

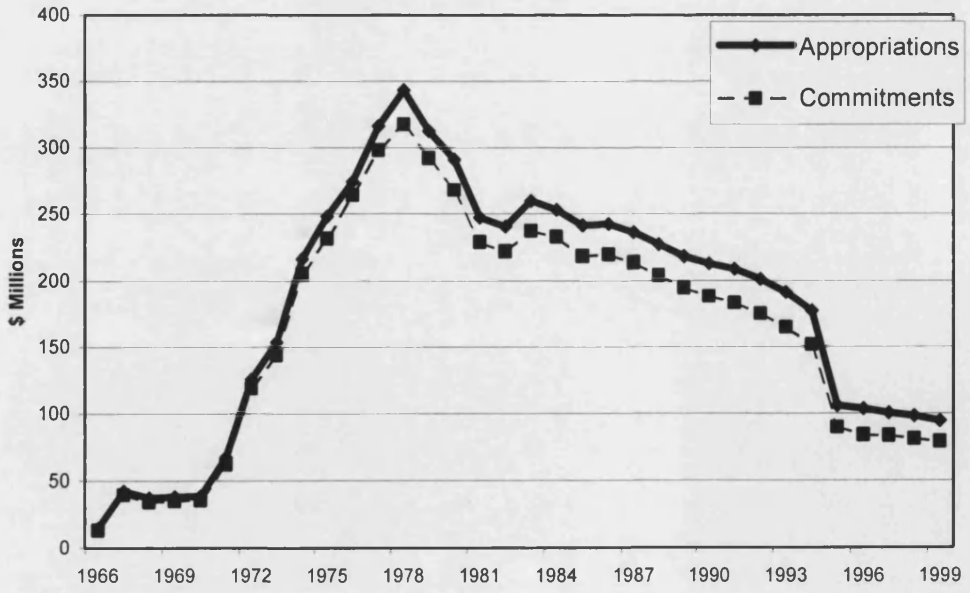
The following table summarises the variables used in the analysis. All variables are indexed by year t and all money variables are in $million.

Table 6.9 List of variables

ART = Total charitable donations to the arts from the private sector
GDP = GDP
INCTAX = Highest marginal federal income tax rates
TOT_ART = Total charitable donations to the nonprofit sector minus donations to the arts
TIME = Years since 1955
NEA = NEA appropriations
NEAGRANTS= NEA commitments
NEALAGG1 = NEA appropriations in t-1
PERIOD1 = Comparison period representing the period 1955-1964 before the NEA was created
PERIOD2 = Dummy variable representing the 1965-1982 period (creation and rapid expansion of NEA budgets)
Dichotomous =1 if 1965-1982 ; =0 otherwise
PERIOD 3 = Dummy variable representing the 1983-1999 period (decline in real appropriations)
Dichotomous =1 if 1983-1999 ; =0 otherwise

Data on both NEA appropriations and commitments are used in the analysis. While the first indicates salience (the importance of the NEA in public attention), the second indicates actual spending. While appropriations are widely advertised, commitments are not and people are likely to have better information on appropriations than actual spending. We also assess whether the influence of NEA support on charitable giving is determined by appropriations in year *t* or decisions on appropriations made in *t-1*.

Figure 6.3 NEA appropriations and commitments 1965-2000



Constant Dollars. Base year 1999.
SOURCE: National Endowment for the Arts, 2002b.

Ordinary Least Squares produce downward biased standard errors estimates because OLS assumes no serial correlation in the error terms. The Durbin-Watson statistics for the OLS estimates do not allow to reject the hypothesis of serial correlation at the 5% significance level (see table 6.10). Given the small number of observations an iterated Prais-Winstein model was fitted to take into account a first order serial correlation in the errors (Greene, 1997). Model (6.5) was fitted using NEA appropriations and commitments. The first column in table 6.10 contains estimates for model (6.5) using current NEA appropriations, the second column uses NEA appropriations lagged by one period and the third column uses current NEA commitments. The results of all three specifications are very similar, even though administrative expenses have changed over the years both in absolute terms and as a percentage of total appropriations. Lagged and current NEA appropriations variables were used to ascertain whether the most important influence on giving in period *t* would be the announcement of funding or actual appropriations and NEA spending to determine whether it is actual grant allocations or widely advertised appropriations that make a difference. Very similar results are obtained when per capita and rates of growth figures are used.

In order to test for the salience phenomenon dummy variables are introduced for the period of NEA creation/rapid budget growth (1965-1982) and for the period of declining real budgets (1983-1999). The comparison is the period of no NEA operation (1955-1964). The coefficients in the two dummy variables can be interpreted as the influence of the NEA per se, independent from monetary allocations. Finally model (6.5) was estimated using four periods, with the third period (1983-1992) signalling an era of current increases but declining real terms allocations, and a fourth period describing a period of decline of allocations both in current and real terms (1993-1999). The estimates of this modified version were not different from those described in the three periods model.

Top income tax rates are included as independent variables as wealthy individuals donate the most to the arts and their giving could be greatly affected by variations in marginal income tax rates. As nearly all these contributions are tax deductible, changes in the marginal federal income tax rate affect giving (Clotfelter, 1985; Feld et al, 1983) and tax rates have been volatile in the last 40 years. Including this

variation allows to control for the price elasticity of giving[4]. Finally the variable total non-art private giving was introduced. A positive relationship between this and private giving to the arts might suggest complementarity among charitable donations, while a negative coefficient might suggest substitution.

The following table shows the Prais-Winstein estimates using the specifications described above.

Table 6.10 Prais-Winstein estimates: The effect of NEA appropriations on private donations to the arts (1955-1999)

Dependent Variable = ART						
	(1) NEA		*(2) NEALAG*		(3) NEAGRANTS	
Independent Variables	Coefficients	SE	Coefficients	SE	Coefficients	SE
Constant	4.900* (2.67)	1.838	5.037* (2.65)	1.900	4.874* (2.66)	1.830
GDP	0.000 (1.40)	.000	.000 (1.43)	0.000	.000 (1.44)	.000
INCTAX	-4.776** (-2.78)	1.717	-4.834** (-2.84)	1.700	-4.710** (-2.75)	1.712
TOT_ART	-.039* (-2.03)	.019	-.041* (-2.02)	.020	-.040* (-2.15)	.019
TIME	.191* (2.34)	.081	.193* (2.35)	.082	.194* (2.39)	.081
NEA	-.879 (-0.49)	1.807	---	---	---	---
NEAGRANTS	---	---	---	---	-1.223 (-0.65)	1.883
NEALAGG1	---	---	-1.026 (-0.59)	1.738	---	---
PERIOD2	-1.812** (-3.82)	.474	-1.774** (-3.56)	.498	-1.781** (-3.76)	.474
PERIOD3	-2.306* (-2.67)	.865	-2.281* (-2.59)	.881	-2.290* (-2.66)	.862
	D(8,45) original=1.581 D(8,45) transformed=1.918 ρ=0.22 R^2 = 0.96 Adj. R^2=0.95 n=45		D(8,44) original=1.625 D(8,44) transformed=1.914 ρ=0.20 R^2 = 0.96 Adj. R^2=95 n=44		D(8,45) original=1.588 D(8,45) transformed=1.918 ρ=0.22 R^2 = 0.96 Adj. R^2=95 n=45	

*t statistics in parenthesis * Significance greater than 0.05 ** Significance greater than 0.01*

[4] This effect is mitigated by an increase in disposable income resulting from lower tax rates (income effect). Although in principle we do not know which one of these two contrasting effects will prevail, studies show that the price effect tends to dominate.

The model estimates ρ= 0.22 for NEA appropriations, ρ= 0.22 for NEA commitments and ρ=0.20 for lagged NEA appropriations. The transformed Durbin-Watson statistics for the Prais-Winstein estimates indicate that the correlation in the error terms has been taken care of.

The results of the three specifications are remarkably similar and they are all affected by multicollinearity among GDP, total non-art giving, the time trend and income tax variables. Running the regressions without GDP results in a loss of overall fit and an increase in the autocorrelation in the error terms. Apart from the case of GDP, all the other variables are highly significant and their 95% confidence intervals never include zero. This suggests that we can be fairly confident on the direction of the relationship even in the presence of collinearity. The coefficients of the variables correlated with GDP maintain the direction and order of magnitude in both estimates with and without GDP, while the associated t statistics are much higher in the "without GDP" models due to the collinearity problem. The very high R^2 results indicate that the model well explains the variance in private giving to the arts. Most of the variables are significant, and the most striking result is that, apart from GDP, the only variable that remains insignificant in all specifications is NEA support. Given this result we cannot reject the hypothesis that NEA support does not affect private giving and that the two are independent.

The dummy variables representing the stages of NEA development (NEA with rapid growth and NEA with decreasing budgets) indicate that there is no evidence of a positive salience effect. The negative coefficients of the two dummy variables seem to indicate that *ceteris paribus* the creation of the NEA and its development are associated with a decrease, rather than an increase, in art giving. The results of the different estimations based on NEA appropriations, lagged appropriations and NEA commitments are very similar and this is again an indication of no specific salience effect. The analysis indicates that art giving seems to be independent from NEA support (financial side) and negatively related to the existence of the agency (negative salience model). This is inconsistent with the views of most people in the arts sector (Borgonovi and O'Hare, 2002) and deserves further investigation.

The negative coefficients for the variable indicating non-art giving might suggest a substitution effect: increases in total giving to other nonprofit sectors result in

decreases in donations to the arts. This might be interpreted as evidence that the arts are competing with other worthy causes for pieces of a relatively fixed pie. The negative impact of increases in marginal federal income tax on art donations that our study suggests is perplexing as we would expect the contrary to be true. The time trend variable indicates that from year to year, controlling for other factors, private giving to the arts increases.

6.5. Total unearned revenues and attendance

The analyses of the institutional and sectoral crowding effect indicate that public subsidies do not negatively affect private donations. The lack of a negative relationship between public subsidies and private donations means that displacement effects are not at the basis of the inconsistent results of chapters Four and Five on the influence of prices and public subsidies on attendance. As a confirmation of these findings I estimate logistic and ordered logistic regression models similar to those presented in table 5.5 and 5.6 for theatre, opera, classical music, ballet and dance performances. While the original theatre models included as an independent variable the share of total income covered by public subsidies (variable *GVNMT*) the "modified" version presented in this section includes as a control variable the share of total income of performing arts organisations that is covered by total unearned revenues. The 2001 Core Files are used to generate the *SUPPORT* variable which represents the average share of total revenues of performing arts organisations present in the county where the respondent lives that are covered by either private donations or government subsidies. Contributions include support from private sources (individuals, foundations and corporations) as well as from government agencies and bodies (support from government agencies at the federal level such as the National Endowment for the Arts grants; state level, such as State Art Councils and city and county level). Table 6.11 includes a description of the dependent variables used in the logistic and ordered logistic regression models. A description of control variables can be found in table 5.3 with the only exception being the variable *SUPPORT* that is used instead of the variable *GVNMT*.

Table 6.12 contains results for the basic logistic regression model fitted using participation rates in theatre, classical music, opera, ballet, dance and attendance at any performing arts activity. Table 6.13 and 6.14 use the ordered variables that have been constructed to reflect differences in participating behaviour among non-attenders, occasional and frequent attenders. The observations used in the analysis are weighted by age, gender and ethnic background to be representative of the general U.S. population. Test results that support the use of an adjacent-category logistic regression rather than a proportional odds model are presented at the bottom of table 6.13.

Table 6.11 List of dependent variables

Variables	Description
DRAMA	Respondent attended a theatre performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
CLASSICAL	Respondent attended a classical music performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
OPERA	Respondent attended an opera performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
BALLET	Respondent attended a ballet performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
DANCE	Respondent attended a dance performance in the last 12 months. Dichotomous variable 0=No ; 1=Yes.
FQDRAMA	Frequency of participation in theatre performances 1=Never took part in last 12 months ; 2=Occasional participant (took part once or twice) ; 3=Frequent participant (took part three times or more)
FQCLASSICAL	Frequency of participation in classical music performances 1=Never took part in last 12 months ; 2=Occasional participant (took part once or twice) ; 3=Frequent participant (took part three times or more)
FQOPERA	Frequency of participation in opera performances 1=Never took part in last 12 months ; 2=Occasional participant (took part once or twice) ; 3=Frequent participant (took part three times or more)
FQBALLET	Frequency of participation in ballet performances 1=Never took part in last 12 months ; 2=Occasional participant (took part once or twice) ; 3=Frequent participant (took part three times or more)
FQDANCE	Frequency of participation in dance performances 1=Never took part in last 12 months ; 2=Occasional participant (took part once or twice) ; 3=Frequent participant (took part three times or more)

Table 6.12 Logistic regression results – attendance at the performing arts in the last 12 months

	DRAMA		*CLASSICAL*		*OPERA*		*BALLET*		*DANCE*	
	OR	(t stat)	OR	(t stat)	OR	(t stat)	OR	(t stat)	OR	(t stat)
SEX	0.863	-1.17	0.954	-0.32	0.855	-0.75	0.574***	-2.72	0.743*	-1.83
AGE2	0.694*	-1.72	1.202	0.64	0.842	-0.46	1.181	0.44	0.737	-1.16
AGE3	0.610**	-2.25	1.514	1.46	0.498*	-1.74	2.397**	2.49	0.633	-1.63
AGE4	0.756	-1.27	2.092***	2.63	0.583	-1.38	1.082	0.21	0.809	-0.77
AGE5	0.657	-1.61	3.004***	3.79	0.857	-0.41	1.157	0.36	0.939	-0.22
AGE6	0.967	-0.11	2.435***	2.65	0.539	-1.23	2.095	1.6	0.679	-1.02
AGE7	0.366***	-2.72	4.604***	4.41	0.426*	-1.73	1.760	1.11	0.842	-0.4
AFRICAN-AM	0.744	-1.25	0.691	-1.41	0.452	-1.45	0.440*	-1.8	1.557	1.49
HISP	0.793	-0.92	0.872	-0.51	0.636	-0.89	0.475	-1.59	3.097***	4.66
OTHER	0.697	-1.49	0.777	-0.93	0.711	-0.85	0.573	-1.53	0.795	-0.76
INCOME	1.072***	3.2	0.962*	-1.83	0.979	-0.67	1.019	0.63	1.047*	1.87
EDU	1.159***	3.15	1.234***	4.33	1.372***	3.89	1.059	0.7	1.097	1.63
MOMEDU	1.027	0.57	1.030	0.61	0.953	-0.71	1.225***	2.84	0.915	-1.54
DADEDU	1.022	0.56	1.069	1.7	1.055	0.9	0.938	-1.09	1.007	0.15
WATCHTV	0.928**	-1.99	0.897***	-2.76	1.021	0.3	1.028	0.48	1.031	0.61
OCCUPATION2	1.075	0.39	1.236	1.01	0.931	-0.26	1.799**	2.05	0.989	-0.05
OCCUPATION3	1.030	0.17	1.003	0.01	0.835	-0.6	0.924	-0.27	1.400	1.47
OCCUPATION4	0.542**	-2.05	1.218	0.7	1.269	0.5	0.713	-0.69	0.724	-0.82
OCCUPATION5	0.703	-1.36	0.634	-1.58	1.390	0.85	1.452	0.86	1.419	1.05
NUMBER	1.001**	2.22	0.999	-0.41	1.003***	4.42	1.001	0.82	0.999	-0.36
SUPPORT	1.000	0.04	1.010*	1.81	0.990	-0.85	0.991	-1.1	0.995	-0.82
WORK	0.939	-1.26	0.936	-1.17	1.007	0.08	1.010	0.12	1.094	1.43
MUSEUM	3.008***	8.48	3.183***	8.11	3.258***	4.5	2.707***	4.15	2.784***	5.61
DRAMACL	1.461**	2.22	0.980	-0.1	0.866	-0.54	1.232	0.89	0.927	-0.34
MUSICCL	1.142	0.99	1.294*	1.84	1.310	1.25	1.062	0.28	1.075	0.44
MUAPCL	1.194	1.2	1.507**	2.42	0.910	-0.41	1.625**	2.23	0.896	-0.55
BALLETCL	1.054	0.27	1.089	0.41	0.846	-0.59	1.661*	1.93	0.859	-0.67
DANCECL	1.038	0.25	0.931	-0.43	1.173	0.64	0.789	-1.06	2.294***	4.25
VISUALCL	1.050	0.34	0.920	-0.53	0.798	-0.99	1.304	1.31	1.598***	2.81
ARTCL	1.209	1.23	0.932	-0.4	1.137	0.53	0.884	-0.53	0.865	-0.73
DRAMA	----	----	2.625***	6.74	1.507**	2	1.006	0.03	1.891***	3.84
CLASSICAL	2.555***	6.55	----	----	5.557***	8.45	2.636***	4.59	2.767***	5.74
OPERA	1.459*	1.76	5.690***	8.46	----	----	2.704***	4.04	0.754	-1.1
BALLET	0.972	-0.13	2.561***	4.35	2.546***	3.91	----	----	3.387***	5.38
DANCE	1.932***	3.98	2.773***	5.53	0.851	-0.68	3.514***	5.5	----	----
	N=4062		N=4062		N=4062		N=4062		N=4062	
	F(34, 4028)= 17.38		F(34, 4028)= 17.59		F(34, 4028)= 10.78		F(34, 4028)= 11.07		F(34, 4028)= 10.92	

*Significance level *10% ** 5% *** 1%*

Table 6.13 Ordered logistic regression results – occasional vs. non participants.

	DRAMA		*CLASSICAL*		*OPERA*		*BALLET*		*DANCE*	
	OR	(t stat)	OR	(t stat)	OR	(t stat)	OR	(t stat)	OR	(t stat)
SEX	0.738**	-2.29	0.955	-0.3	0.789	-1.11	0.506***	-3.12	0.631***	-2.71
AGE2	0.848	-0.7	1.157	0.46	0.809	-0.54	1.366	0.75	0.695	-1.24
AGE3	0.745	-1.2	1.313	0.89	0.483*	-1.78	2.838***	2.62	0.591*	-1.74
AGE4	0.939	-0.26	1.907**	2.09	0.644	-1.11	1.318	0.65	0.794	-0.78
AGE5	0.681	-1.34	2.464***	2.76	0.680	-0.94	1.271	0.52	0.899	-0.35
AGE6	1.207	0.58	2.033*	1.9	0.588	-1.03	2.690**	2.01	0.544	-1.46
AGE7	0.225**	-2.52	2.610**	2.21	0.379	-1.61	1.615	0.81	0.862	-0.33
AFRICAN-AM	0.681	-1.51	0.597*	-1.81	0.544	-1.09	0.552	-1.32	1.528	1.38
HISP	0.688	-1.33	0.836	-0.61	0.682	-0.72	0.534	-1.36	2.731***	3.98
OTHER	0.674	-1.52	0.724	-1.13	0.644	-0.95	0.620	-1.21	0.787	-0.76
INCOME	1.055**	2.22	0.970	-1.26	1.003	0.1	1.020	0.59	1.053**	1.99
EDU	1.169***	2.96	1.229***	3.91	1.239**	2.49	1.002	0.02	1.085	1.3
MOMEDU	1.042	0.84	0.977	-0.43	0.944	-0.78	1.180**	2.22	0.912	-1.51
DADEDU	1.029	0.68	1.054	1.22	1.044	0.69	0.978	-0.35	1.020	0.41
WATCHTV	0.944	-1.38	0.883***	-2.86	0.977	-0.28	1.005	0.08	1.020	0.36
OCCUPATION2	1.239	1.04	1.349	1.33	0.708	-1.12	1.603	1.62	0.938	-0.25
OCCUPATION3	1.237	1.1	1.096	0.43	0.816	-0.64	0.878	-0.44	1.423	1.44
OCCUPATION4	0.736	-0.97	1.174	0.52	0.874	-0.25	0.588	-1.05	0.828	-0.45
OCCUPATION5	0.840	-0.59	0.684	-1.19	1.431	0.87	1.337	0.65	1.587	1.29
NUMBER	1.001*	1.76	0.998	-0.36	1.003***	3.26	1.000	0.23	0.999	-0.14
SUPPORT	0.991	-1.23	1.008	1.37	0.990	-0.81	0.987	-1.44	0.995	-0.72
WORK	0.964	-0.65	0.941	-1	1.052	0.6	1.037	0.43	1.121*	1.7
MUSEUM	3.178***	8.09	3.030***	7.01	3.576***	4.42	2.780***	4.12	3.252***	5.99
DRAMACL	1.507**	2.25	----	----	0.922	-0.3	----	----	----	----
MUSICCL	----	----	1.311*	1.77	1.288	1.07	----	----	----	----
MUAPCL	----	----	1.263	1.46	0.867	-0.62	1.551**	2.23	----	----
BALLETCL	----	----	----	----	----	----	1.488	1.58	----	----
DANCECL	----	----	----	----	----	----	----	----	2.185***	4.27
DRAMA	----	----	2.397***	5.41	1.473*	1.72	1.139	0.6	1.714***	3.03
CLASSICAL	2.402***	5.49	----	----	4.854***	7.21	2.587***	4.29	2.818***	5.65
OPERA	1.131	0.49	3.618***	5.44	----	----	2.212***	2.96	0.651	-1.53
BALLET	0.888	-0.49	2.734***	4.32	2.567***	3.63	----	----	3.014***	4.49
DANCE	1.879***	3.4	2.524***	4.63	0.872	-0.54	3.010***	4.63	----	----
	$\chi^2(28)$=65.70***		$\chi^2(29)$=38.00		$\chi^2(30)$=52.95***		$\chi^2(27)$=101.63***		$\chi^2(28)$=20.28	
	Wald $\chi^2(28)$=86.32***		Wald $\chi^2(29)$=17.34**		Wald $\chi^2(30)$=54.99***		Wald $\chi^2(27)$=2208.42***		Wald $\chi^2(28)$=30.48	
	N=4073		N=4064		N=4065		N=4065		N=4074	
	F(56, 4017)= 11.23		F(58, 4006)= 12.21		F(60, 4005)= 7.46		F(58, 4007)= 423.20		F(56, 4018)= 7.65	

Significance level *10% ** 5% *** 1%

Table 6.14 Ordered logistic regression results – frequent vs. occasional attenders.

	DRAMA		*CLASSICAL*		*OPERA*		*BALLET*		*DANCE*	
	OR	(t stat)	OR	(t stat)	OR	(t stat)	OR	(t stat)	OR	(t stat)
sex	1.452*	1.73	1.008	0.03	1.386	0.73	3.257*	1.9	2.340**	2.19
AGE2	0.448*	-1.95	1.225	0.39	1.459	0.31	0.242*	-1.84	1.322	0.51
AGE3	0.425**	-2.16	1.898	1.27	1.350	0.24	0.144**	-2.35	1.468	0.63
AGE4	0.416**	-2.18	1.501	0.84	0.519	-0.52	0.083**	-2.5	1.081	0.13
AGE5	0.889	-0.26	2.275	1.62	3.194	1.01	0.205*	-1.72	1.301	0.41
AGE6	0.423	-1.59	2.050	1.23	1.107	0.07	0.028***	-2.64	2.655	1.33
AGE7	2.549	1.37	6.618***	3.11	1.961	0.51	0.386	-0.91	0.894	-0.12
AFRICAN-AM	1.404	0.73	1.823	1.18	0.224	-1.24	1.03E-17***	-54.55	0.799	-0.28
HISP	1.413	0.72	1.184	0.34	0.831	-0.16	3.55E-17***	-52.58	1.568	0.77
OTHER	0.844	-0.34	1.395	0.7	1.456	0.51	0.624	-0.38	1.375	0.43
INCOME	1.081*	1.94	0.968	-0.94	0.897	-1.44	0.973	-0.39	0.951	-0.89
EDU	1.067	0.78	1.011	0.13	1.917***	3.2	1.741***	3.33	1.004	0.04
MOMEDU	0.991	-0.11	1.209***	2.58	1.019	0.14	1.393	1.77	1.019	0.14
DADEDU	0.991	-0.14	1.048	0.77	1.047	0.34	0.723**	-2.22	0.984	-0.14
WATCHTV	0.919	-1.09	1.061	0.79	1.204	1.28	1.238	1.52	1.054	0.47
OCCUPATION2	0.616	-1.58	0.709	-1.1	4.827**	2.49	1.731	0.71	1.221	0.4
OCCUPATION3	0.503**	-2.31	0.699	-1.07	0.794	-0.27	0.843	-0.18	0.870	-0.29
OCCUPATION4	0.187*	-1.89	1.185	0.31	10.440**	2.33	4.308	0.85	0.347	-1.12
OCCUPATION5	0.567	-1.31	0.785	-0.52	1.169	0.17	1.727	0.49	0.476	-1.09
NUMBER	1.000	0.44	0.999	-0.07	1.001	0.84	1.002	1.11	0.999	-0.46
SUPPORT	1.035***	3.25	1.007	0.77	1.012	0.54	1.036	1.58	1.001	0.11
WORK	0.926	-0.95	0.979	-0.24	0.849	-0.78	0.871	-0.65	0.883	-0.88
MUSEUM	1.046	0.17	1.141	0.48	0.670	-0.66	1.397	0.45	0.506	-1.59
DRAMACL	1.385	1.23	----	----	0.553	-0.79	----	----	----	----
MUSICCL	----	----	0.853	-0.69	0.996	-0.01	----	----	----	----
MUAPCL	----	----	1.655**	2.24	1.976	1.55	1.630	0.92	----	----
BALLETCL	----	----	----	----	----	----	2.133	1.08	----	----
DANCECL	----	----	----	----	----	----	----	----	1.334	0.79
DRAMA	----	----	1.403	1.6	1.217	0.45	0.390*	-1.9	1.805*	1.69
CLASSICAL	1.468	1.61	----	----	2.450*	1.7	1.517	0.7	0.845	-0.39
OPERA	1.717*	1.83	3.598***	5.46	----	----	1.773	1.08	1.944	1.52
BALLET	1.406	1.12	0.764	-1	0.767	-0.62	----	----	1.839	1.5
DANCE	1.189	0.7	1.315	1.17	0.872	-0.29	3.400**	2.16	----	----
	N=4073		N=4064		N=4065		N=4065		N=4074	
	F(56, 4017)= 11.23		F(58, 4006)= 12.21		F(60, 4005)= 7.46		F(58, 4007)= 301.70		F(56, 4018)= 7.65	

*Significance level *10% ** 5% *** 1%*

Results indicate that total unearned revenues do not influence attendance and frequency of attendance in theatre, opera, classical music, ballet and dance performances. After controlling for individual socio-economic characteristics, people who live in areas where performing arts organisations receive considerable support from the government and private donors are just as likely as people living in areas where organisations do not receive much support to attend performances. This result confirms the findings of the crowding effect analyses suggesting that factors other than unwanted impacts of public subsidies on private donations "wash down" the effect of public subsidies on prices and ultimately attendance.

6.6. The relationship between public subsidies and ticket prices.

Results reported in this chapter so far indicate that the crowding effect is unlikely to determine the ineffectiveness of public subsidies in stimulating attendance in live performances. While a crowding out occurs in some organisations (where the level of public support they receive is very high) other organisations benefit from a crowding in effect. Also at the sectoral level it appears that federal grants and private support are independent and therefore total unearned income increases in the presence of public subsidies. The analysis presented in section 6.5 also highlights how attendance rates are not correlated with the share of total income covered by public *and* private sources that organisations in a given area receive. In this section I present a final test of the crowding effect hypothesis: I develop a model to assess the correlation existing between ticket prices and public subsidies while keeping private donations constant. If findings indicate that public subsidies are not correlated with ticket prices when private donations are kept constant, the hypothesis that crowding out effects are at the basis of the ineffectiveness of public subsidies in promoting attendance should be disregarded.

In this last section I study the association between ticket prices, public subsidies controlling for factors such as private contributions, fundraising expenditures and the amount an organisation spends on artistic personnel per performance (the index of quality used in the institutional crowding effect). The hypothesis is that it is positively correlated with prices: the higher the quality index is, the higher prices will be and vice versa. The analysis of the relationship between public subsidies

and ticket prices is based on the same dataset used to study the institutional crowding effect: the TCG panel of 82 non-profit theatre companies followed for the 1997-2001 period. While a general description of the TCG dataset can be found in section 6.3.1, table 6.15 describes the variables used in the analysis of the effect of public subsidies on ticket prices and reports summary statistics. The correlation matrix in table 6.16 highlights how the variables used in the analysis are not affected by multicollinearity bias.

Table 6.15 Description of variables and summary statistics

Variable	Description	Mean (SD)	Min	Max
PRICE	Average ticket price	16.907 (7.294)	1.983	53.484
PUBLIC	Share of total income covered by public subsidies	0.060 (0.065)	0	0.663
PRIVATE	Share of total income covered by private donations	0.251 (0.124)	0.004	0.694
DVLP	Fundraising expenditures as a share of total income	0.035 (0.027)	0	0.187
QUALITY	Ratio of expenditures on artistic personnel and number of performances in the year	3038.448 (2113.879)	351.5233	20631.62

Table 6.16 Correlation matrix

	QUALITY	*PUBLIC*	*PRIVATE*	*DVLP*
QUALITY	1			
PUBLIC	-0.016	1.000		
PRIVATE	-0.025	-0.033	1.000	
DVLP	-0.013	-0.097	0.268	1.000

Estimates in table 6.17 report OLS and GLS results for the model:

$$PRICE_{it} = \alpha + \beta_1 PUBLIC_{it} + \beta_2 PRIVATE_{it} + \\ + \beta_3 DVLP_{it} + \beta_4 QUALITY_{it} + \varepsilon \qquad (6.6)$$

The hypothesis is to find a lack of a significant relationship between public subsidies and ticket prices. Other controls include the quality index, private support and fundraising expenditures. The aim of including the share of total income spent on fundraising together with the "products" of fundraising activities (public and private support) is to identify whether there are basic differences in the production function and effectiveness of organisations (by looking at the effect that changes in

expenditures on fundraising have on price changes while keeping contributed income constant).

The first column of table 6.17 reports estimates for an OLS model on the pooled theatre sample. OLS results indicate that there is a strong negative relationship between public subsidies and ticket prices: the higher the public subsidies, the lower the ticket prices; and the lower the public subsidies, the higher the ticket prices. They also indicate a positive association between private donations, fundraising expenditures and expenditures on artistic personnel and ticket prices. The Breusch and Pagan Lagrangian multiplier test for random effects at the bottom of table 6.17 however indicates that a GLS random effects specification is more appropriate than an OLS on the pooled sample. OLS assumes that the error terms are homoscedastic and uncorrelated within organisations and across time. The Breusch and Pagan Lagrangian multiplier test identifies whether the homoscedasticity assumption is violated comparing estimates obtained using OLS regression on the pooled model and GLS random effects estimates. Since results indicate that OLS estimates suffer of heteroskedasticity bias, a GLS random effects model was developed. The second column of table 6.17 reports GLS findings and indicates that public subsidies and ticket prices are not correlated. The results also indicate that private support and fundraising expenditures are not correlated with ticket prices, while increases in the expenditures on artistic personnel per performance are generally accompanied by increases in price levels.

Table 6.17 How correlated are prices to public subsidies?

	OLS		GLS	
	Coef (t stat)	**SE**	**Coef (z stat)**	**SE**
Constant	8.739* (10.43)	0.837	11.633* (12.66)	0.918
PUBLIC	-13.445* (-3.12)	4.303	-4.031 (-1.31)	3.079
PRIVATE	6.347* (2.74)	2.316	-2.191 (-1.12)	1.962
DEVELOP	26.081** (2.44)	10.680	-3.034 (-0.36)	8.375
ARTISTIC	0.002* (16.21)	0.0001	0.002* (14.48)	0.0001
	N=402		N=402	
	F(4, 397)= 73.02*		Wald χ^2 (4)=212.11*	
	R^2=42.39		Breush Pagan Lagrangian multiplier χ^2 (1)=453.34 *	

* *significance greater than 0.01* ***significance greater than 0.05*

As the crowding effect model proves inadequate in explaining the absence of an effect of public subsidies on attendance, two alternative hypotheses remain to be explored. The first looks at the production function of organisations receiving large shares of their income from public subsidies and organisations that do not (Hausmann, 1981). The second considers the effect of differences in the Family Expenditure Survey and the Survey of Public Participation in the Arts, methodological differences in the analyses of the two surveys and context differences due to the use of English vs. American data and all performing arts forms vs. theatre performances.

Chapter 7.

If not public subsidies, then what? The policy implications of the lack of impact of public subsidies on attendance

'I must study politics and war that my sons may have liberty to study mathematics and philosophy. My sons ought to study mathematics and philosophy, geography, natural history, naval architecture, navigation, commerce and agriculture in order to give their children a right to study painting, poetry, music, architecture, statuary, tapestry, and porcelain'.
John Adams – U.S. President

7.1. Introduction

Table 5.5, 5.6, 6.12, 6.13 and 6.14 indicate that while public subsidies and total unearned income are not significantly correlated with attendance in live performances, art education is. The findings from the logistic and ordered logistic regression models also suggest that that while art education determines whether a person decides to attend or not, it does not influence the number of performances she attends and that different courses affect attendance at different types of performances. For example while music classes affect the likelihood that someone will attend classical music performances, they are not correlated with theatre attendance. Since the evidence suggests that public subsidies are ineffective in increasing attendance, this chapter briefly examines an alternative policy that governments can use to achieve greater and broader attendance: providing good quality art education in different artistic disciplines in public elementary and secondary school.

There is a large body of evidence documenting inequalities in attendance rates in live performances among different socio-economic groups (see section 3.1). Because art education influences attendance so greatly it is possible that such

disparities are the result of unequal access to art education opportunities. The aim of this chapter is to reflect on the findings of the main body of the thesis and explore what alternatives policy makers have to the use of public subsidies while trying to broaden attendance in the performing arts. While lack of art education prevents attendance in the performing arts, it is not necessarily true that public policies will find it easier to guarantee that people from all backgrounds have equal access to art education. This chapter is structured as follows: section 7.3.1 identifies whether there are socio-economic differences in people who experienced art education and what factors might have contributed to disparities in access to art education courses. Section 7.3.2 examines art education provision in public elementary and secondary schools in the United States after new legislation (*Goals 2000: Educate America Act* and the creation of *National Standards for Art Education*) has attempted to reduce school differences in the amount and quality of art education that is provided. Overall it appears that policy attempts directed at guaranteeing more equal access to art education can be successful, however questions remain on the effectiveness of policies in reducing differences in the quality of the courses that are provided in different schools.

7.2. Data and methods

The chapter uses evidence from two main sources: the Survey of Public Participation in the Arts and the Arts Education in Public Elementary and Secondary Schools (AEPESS). While the first contains self-reported art education participation data, the second contains data on the provision of art education in public schools in academic year 1999-2000. Additional data comes from the National Centre for Education Statistics and the National Conference of State Legislature.

The SPPA survey is used to answer the question: do people from different socio-economic groups have different participation rates in art education? The SPPA survey collects information on whether individuals attended art classes, what classes they attended, at what age they did and whether this was at school or outside a school setting but does not distinguish between art education provided by public and private elementary and secondary schools. The AEPESS contains information on art education provision in American public elementary and

secondary schools in the 1999-2000 academic year and can be used to suggest what effect new federal legislation and policy initiatives[1] had on the provision of art education in American public schools. Because of the small sample size of the survey the chapter mainly reports descriptive statistics. The results should thus be considered useful in making an initial assessment as to whether different types of public schools provide the same amount of art classes and whether schools with large fractions of their student bodies from disadvantaged backgrounds offer art classes of the same quality as other schools.

7.2.1. The Survey of Public Participation in the Arts[2]

The 2002 SPPA survey contains data on whether respondents ever took part in art education classes. Different forms of art education are considered in the survey: theatre, music[3], music appreciation, ballet, dance and visual arts. As the SPPA simply asks whether somebody has ever taken part in classes, respondents might have received art education at public and private elementary and secondary schools, privately and as part of after school activities, at college or in courses as adults.

The survey also contains information on the age at which respondents took part in art related courses. Age groups considered in the analysis are: *a)* less than 12 years of age, *b)* 12-17 years, *c)* 18-24 years and *d)* 25 years or more. These roughly correspond to elementary school, secondary school, college and adulthood (although a number of people do not attend college). Although it is possible that people reporting attendance below the age of 17 received their art education at school, it is also possible that they attended art classes as an out of school activity.

Finally the SPPA survey contains data on the institutional setting where people attended art classes. People can in fact attend art education as part of their primary and secondary school curriculum or outside a school setting (through private courses as a child or adult and participation in after school activities).

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[1] *Goals 2000: Educate America Act* was signed into law by President Clinton in 1994 and in 1992 the Consortium of National Arts Education Association agreed the National Standards for Arts Education.

[2] A detailed description of the SPPA 2002 survey can be found in section 5.2.1 in chapter Five.

[3] Voice training and laying an instrument are defined as music classes.

7.2.2. The Arts Education in Public Elementary and Secondary Schools Survey

The AEPESS survey contains data on 640 elementary and 686 secondary schools collected during the 1999–2000 school year. It was commissioned by the National Center for Education Statistics and its purpose is to provide a profile of the status of arts education in public schools in America. The survey contains data on the availability of instruction, staffing, funding, supplemental programs and activities, and administrative support for arts education. School-level data are weighted to produce national estimates that represent public elementary and secondary schools in the United States. The elementary and secondary school samples were selected using the 1999–2000 Schools and Staffing Survey universe file, which was created from the 1997–98 NCES Common Core of Data Public School Universe File. The sampling frame included 81,405 public schools, consisting of 52,925 elementary schools; 27,055 secondary schools and 1,425 combined schools.

Elementary schools are defined as schools where the lowest grade is less than or equal to grade 6 and the highest grade is less than or equal to grade 8. A secondary school is defined as having a lowest grade greater than or equal to grade 7. Combined schools are defined as those having grades higher than grade 8 and lower than grade 7. In the survey, arts instruction is defined as *"the study of visual arts, music, dance, and theatre. In addition, arts instruction includes not only teaching students about the tools and processes used to produce works of art but also educating them about how the arts relate to history and cultures, and connections among arts subjects and other academic disciplines"* (Carey et al, 2002).

The sampling frame is stratified by instructional level (elementary, secondary, and combined) and school size. Within the primary strata, schools were sorted by geographic region (Northeast, Southeast, Central, and West), locale (city, urban fringe, town, and rural), and percent minority enrolment to produce additional implicit stratification. The survey contains data on school characteristics such as school enrolment size, locale (central city, urban fringe, town, rural), region, percent minority enrolment, and percent of students eligible for free or reduced-

price school lunch (which indicates the concentration of poverty in the school). In the chapter poor schools are defined as those with a high intake of students who are eligible for free school meals. Ethnically diverse schools are those schools with a high proportion of their student body from racial and ethnic minority groups.

Table 7.1 describes the school characteristics variables used in the chapter and the number of schools present in the sample with those characteristics.

Table 7.1 Public elementary and secondary school characteristics

Size	Total number of students enrolled on October 1, 1999	**ELEMENTARY**	**N**
		Less than 300 students	105
		300-599 students	323
		600 students or more	207
		SECONDARY	
		Less than 400 students	115
		400-999 students	301
		1000 students or more	260
% Minority	The percent of students enrolled in the school whose race or ethnicity is classified as one of the following: American Indian or Alaskan Native, Asian or Pacific Islander, Black non-Hispanic, or Hispanic, based on data in the 1997–98 CCD.	**ELEMENTARY**	
		5 percent or less	162
		6 to 20 percent	156
		21 to 50 percent	136
		More than 50 percent	183
		SECONDARY	
		5 percent or less	187
		6 to 20 percent	171
		21 to 50 percent	160
		More than 50 percent	162
% Free school meals	Percent of students at the school eligible for free or reduced-price lunch. If this data was missing from the questionnaire, it was obtained from the 1997–98 CCD frame. Indication of the concentration of poverty at the school	**ELEMENTARY**	
		Less than 35 percent	251
		35 to 49 percent	94
		50 to 74 percent	132
		75 percent or more	137
		SECONDARY	
		Less than 35 percent	372
		35 to 49 percent	99
		50 to 74 percent	114
		75 percent or more	49

SOURCE: AEPESS 1999-2000 academic year.

As school characteristics such as enrollment size, percentage of students from ethnic and racial minorities and eligible for free school meals might be correlated, the following table shows correlation coefficients for the three variables. Size is only moderately correlated with minority intake and percentage of students eligible for free school meals: children from minority backgrounds tend to attend larger schools, while white non-Hispanics tend to attend smaller schools, both at the elementary and the secondary level. Not surprisingly schools with large numbers of children from households with limited financial resources are also the schools that

attract students from minority groups, both at the elementary and at the secondary level.

In the chapter poor schools are defined as those with a high intake of students who are eligible for free school meals. Ethnically diverse schools are those schools with a high proportion of their student body from racial and ethnic minority groups.

Table 7.2 Correlation matrix, school characteristics

	ELEMENTARY			SECONDARY		
	Size	Free school meals	Minority	Size	Free school meals	Minority
Size	1			1		
Free school meals	0.074	1.000		-0.078	1.000	
Minority	0.281	0.620	1.000	0.241	0.498	1

7.3. Results

7.3.1. Are overall participation rates in art education equal across socio-economic groups?

Data on participation rates in theatre, music, music appreciation, ballet and dance classes from the SPPA 2002 survey indicate that personal income, educational attainment, mother's educational attainment and race/ethnicity are correlated with people reporting having had art education in the past. Table 7.3 reports participation rates in theatre, music, music appreciation, ballet and dance classes by socio-economic background. Personal income appears to be highly correlated with participation in music, music appreciation, ballet and dance courses[4]. Differences in reported participation in art courses are particularly striking looking at participation rates by educational attainment. Fourteen percent of people with graduate degrees reported having took part in theatre and ballet courses, while less than 2% of people with no diploma or qualifications had theatre courses and less than 1% had ballet classes.

[4] SPPA 2002 questions "Have you ever taken lessons or classes in [ACTIVITY]?"

Table 7.3 Percentage of people who took part in art education classes, by socio-economic background. United States 2002

	THEATRE	MUSIC	MUSIC APPREC	BALLET	DANCE
Income categories					
<$15,000	5.41	22.75	9.27	3.71	7.15
$15,000-$30,000	4.99	26.8	10.1	3.9	8.38
$30,000-$50,000	7.67	34.02	15.15	6.32	11.69
$50,000-$75,000	6.99	40.24	20.59	6.74	13.23
>$75,000	9.11	45.91	24.79	10.49	16.58
Total	**7.09**	**34.95**	**16.6**	**6.53**	**11.83**
Education categories					
No diploma	1.56	9.54	1.73	0.09	2.4
High school graduate	3.67	23.45	5.69	3.1	7.34
Some college	8.97	42.5	18.5	8.61	14.48
Associate degree	7.71	43.29	16.99	7.7	13.87
Bsc. degree	11.21	49.85	34.17	10.17	18.18
Msc., Professional degree & PhD.	13.89	55.39	36.71	14.1	21.75
Total	**6.86**	**33.82**	**15.97**	**6.34**	**11.57**
Mother education categ.					
No diploma	3.86	23.65	9.8	2.66	8.48
High school graduate	6.44	36.13	16.53	5.59	11.02
Some college	11.01	52.19	27.7	13.62	22.83
Associate degree	13.41	59.03	27.14	13.81	20.76
Bsc. degree	15.88	56.99	31.74	15.01	20.78
Msc., Professional degree & PhD.	19.97	69.46	36.59	23.22	26.17
Total	**7.85**	**38.15**	**18.22**	**7.39**	**13.25**
Minority group					
White non hisp	7.50	38.37	18.03	7.28	13.2
Black non hisp	7.31	23.39	13.8	3.26	6.38
Hispanics	3.21	15.25	6.24	3.38	6.65
Other	4.08	28.38	10.41	5.27	8.56
Total	**6.86**	**33.82**	**15.97**	**6.34**	**11.57**

SOURCE: SPPA 2002.

Variations in participation rates among different socio-economic groups can be due to a number of factors: *1)* people from upper class families have more opportunity to attend art courses in private schools, *2)* after schools programmes, *3)* while at college and *4)* public elementary and secondary schools serving deprived areas tend to offer fewer art education opportunities than other schools.

1) Art education in private schools

Children from high-income, high educational attainment families have the opportunity to attend private schools where arts education features more prominently in the curriculum. Data from the National centre of Educational Statistics indicate that the percentage of students attending private secondary schools in the United States has remained fairly stable (between eight and ten

percent) in the past half century (data from the National Center for Education Statistics Common Core of Data, U.S. Department of Education). As only a minority of such students come from disadvantaged backgrounds, private school enrolment is likely to account for some of the participation rates differences highlighted in table 7.3.

2) Out of school activities

A second source of group variation in attendance to performing arts education is access to art courses outside school. Table 7.4 presents results on participation rates in theatre, music, music appreciation, ballet and dance classes in different institutional settings: at school (public and private elementary and secondary school), outside school and both in and outside the school environment by individual socio-economic characteristics. Outside school includes art education individuals receive in school buildings but as part of after school programmes and activities.

Table 7.4 Participation in art education programmes: school vs. out of school instruction. United States, 2002

	Theatre classes			Music classes			Music appreciation classes			Ballet classes			Dance classes		
	In	Out	In & out	In	Out	In & out	In	Out	In & out	In	Out	In & out	In	Out	In & out
MINORITY															
All	73.31	11.73	14.96	45.15	34.67	20.18	78.84	6.79	14.37	10.49	83.19	6.32	22.99	68.04	8.97
White non hisp	71.59	12.24	16.17	43.09	35.86	21.05	79.08	6.67	14.25	9.39	84.59	6.02	20.33	71.03	8.64
Black non hisp	76.95	13.13	9.92	59.33	26.54	14.13	77.68	6.59	15.72	16.37	68.48	15.15	47.36	45.74	6.90
Hisp	84.20	4.87	10.93	59.30	24.92	15.79	84.40	2.15	13.45	21.20	77.83	0.97	30.44	55.52	14.04
Other	92.39	3.00	4.61	48.22	35.06	16.71	65.26	20.49	14.26	11.73	75.38	12.89	28.48	59.05	12.48
INCOME															
All	73.87	11.95	14.18	45.56	34.33	20.12	80.07	6.47	13.47	9.78	84.42	5.80	22.25	68.94	8.81
<$20,000	81.30	6.27	12.43	49.96	33.34	16.70	77.16	6.34	16.50	11.33	77.35	11.32	21.57	67.48	10.95
$20,000-$50,000	72.05	14.49	13.46	47.11	33.71	19.18	82.30	3.66	14.04	12.19	83.17	4.64	24.45	66.45	9.09
$50,000+	72.72	11.99	15.30	43.46	34.96	21.58	79.42	8.25	12.33	8.01	86.88	5.11	21.09	70.84	8.08
EDUCATION															
All	73.31	11.73	14.96	45.15	34.67	20.18	78.84	6.79	14.37	10.49	83.19	6.32	22.99	68.04	8.97
High school or less	85.95	9.90	4.15	53.40	34.05	12.55	88.83	2.32	8.85	18.52	80.42	1.07	29.75	64.21	6.04
Some college	69.89	12.24	17.87	47.91	32.43	19.66	76.15	9.06	14.79	9.61	85.96	4.43	25.69	67.38	6.93
College graduate+	68.36	12.44	19.20	39.35	36.11	24.54	74.65	8.01	17.34	7.96	82.83	9.22	18.23	70.27	11.50

SOURCE: 2002 SPPA.

Table 7.4 indicates that personal income, racial/ethnic group and educational attainment are correlated with place of instruction. People from minority groups,

with low incomes, and whose ultimate educational attainment is low are more likely than the general population to have received art instruction only at elementary and secondary school and are less likely to have taken part in theatre, music, ballet and dance classes outside the school setting.

3) Further education and art classes

A third source of possible differences in overall participation rates in art education is that as people from disadvantaged households tend to terminate their studies at secondary school, they have fewer opportunities to attend art courses while at college. Table 7.5 displays participation rates in art education at different age groups. Age groups broadly reflect school grouping into elementary, secondary, college. The last age group corresponds to adulthood. The table contains information only on those who received some form of art education. Results can be used to assess to what extent different socio-economic groups receive art education at the same age/in the same context.

Table 7.5 Age at which people receive art education classes, by socio-economic background

	Theatre classes				Music classes				Music appreciation classes				Ballet classes				Dance classes			
	<12	12-17	18-24	25+	<12	12-17	18-24	25+	<12	12-17	18-24	25+	<12	12-17	18-24	25+	<12	12-17	18-24	25+
MINORITY																				
All	11.29	63.07	38.33	13.64	53.31	64.12	18.75	12.89	9.23	37.61	59.87	11.11	73.60	31.75	14.47	8.73	42.20	35.50	21.58	27.71
White non hisp	10.71	64.54	39.53	13.94	54.94	64.41	18.70	12.76	8.43	36.41	61.52	10.57	75.15	31.47	13.79	8.61	43.53	33.79	20.96	28.67
Black non hisp	14.10	56.00	36.18	12.82	42.51	62.83	20.21	15.33	14.25	45.32	50.04	15.74	55.72	31.48	27.42	7.05	39.53	47.56	25.11	11.42
Hisp	11.48	64.63	29.48	7.72	42.26	63.71	17.12	10.11	12.96	46.21	49.09	11.14	67.55	41.87	13.83	14.58	35.37	46.91	25.32	25.50
Other	17.28	43.69	27.06	16.66	52.43	60.54	19.30	14.78	11.10	35.22	59.08	14.06	73.69	22.10	11.99	5.09	24.71	36.33	24.16	33.81
INCOME																				
All	11.09	63.45	37.80	13.07	53.31	64.06	18.63	12.73	9.15	37.62	59.85	10.75	74.42	31.01	14.21	8.58	42.31	34.76	21.64	27.4
<$20,000	14.52	65.17	31.53	11.30	49.18	63.09	17.67	12.69	13.11	42.93	47.52	19.10	78.34	32.50	10.30	4.66	48.7	39.23	17.29	23.09
$20,000-$50,000	11.58	64.59	40.37	14.30	49.54	65.40	18.79	11.87	8.64	42.86	54.77	10.98	75.15	30.21	12.44	8.48	41.05	36.72	20.48	29.07
$50,000+	9.70	62.12	37.90	12.65	56.72	63.48	18.79	13.26	8.66	33.93	64.80	9.40	73.29	31.16	15.89	9.19	41.61	32.56	23.33	27.24
EDUCATION																				
All	11.29	63.07	38.33	13.64	53.31	64.12	18.75	12.89	9.23	37.61	59.87	11.11	73.60	31.75	14.47	8.73	42.2	35.5	21.58	27.71
High school or less	13.99	79.10	15.04	12.08	44.30	66.75	11.15	8.47	17.08	76.56	15.99	7.01	70.38	38.29	6.54	5.12	40.13	8.33	13.46	27.03
Some college	12.05	65.70	36.15	13.91	52.98	65.23	19.31	12.16	11.55	47.50	53.28	10.49	77.45	32.74	13.32	6.02	47.12	38.92	18.26	25.94
College graduate+	9.94	55.89	47.99	13.95	58.19	62.21	22.47	15.20	6.88	26.50	70.83	11.95	72.81	29.27	17.45	10.49	40.87	32.71	26.64	28.64

Results seem to confirm the hypothesis that people from disadvantaged groups tend to attend arts classes predominantly while at primary or secondary school. Hispanics are less likely than the general population to attend theatre classes after they finish high school (age 18 or more), and together with African-Americans are less likely to attend music and ballet classes while they are elementary school students, music appreciation classes while high school students and dance classes as adults. As income increases, people are more likely to have received music classes at elementary school and music appreciation classes as young adults. People with low levels of educational attainment are more likely to have received their music appreciation instruction only as youngsters, while those who graduated at college are most likely to have attended music appreciation and theatre classes while at college.

4) Public school financing and school differences

Finally differences in art education provision among public schools could affect the opportunity students from disadvantaged backgrounds have to enjoy theatre, music and dance classes. The US public education system is particularly prone to large disparities in the type of education offered by different schools because of two factors: the *lack of a federal curriculum* for elementary and secondary schools and a heavy *reliance of public education finances on local and state sources.* While most countries adopt national curricula that schools are expected to follow with margins for school autonomy, the United States has no national curriculum (although this is changing because of the No Child Left Behind Act). The amount of money spent on schools is a factor determining the type of education that students receive. Because of lack of approved curricula, schools can cut programmes to reduce expenditures and as most schools are reluctant to cut instruction in mathematics, science and English, art courses are usually the first to suffer.

The Constitution of the United States does not make federal provisions for public education, however every state constitution guarantees some level of free public elementary and secondary education. Funding systems differ across states but historically local property taxes have been the most used source of funding for public schools. Table 7.6 indicates the share of total public education budget in the United States covered by federal, state and local funding for selected years.

Table 7.6 Revenue sources of public elementary and secondary schools

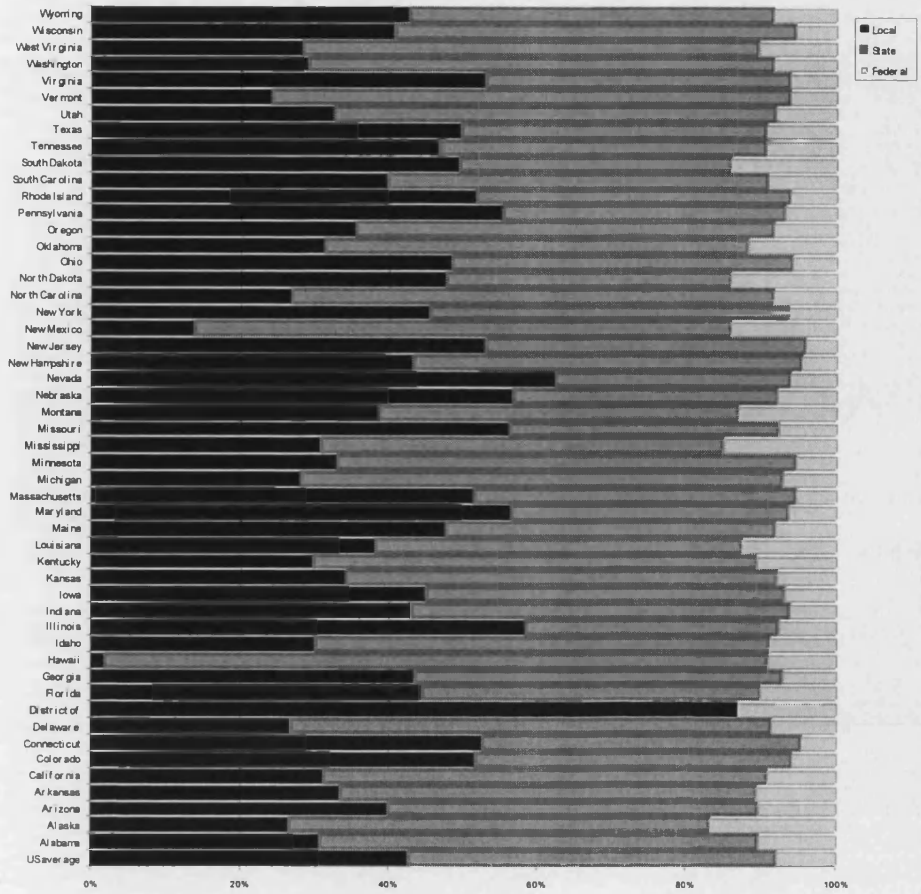
Year	Federal	State	Local	TOTAL
1955	4.6	39.5	55.9	100
1965	7.9	39.1	53	100
1975	8.9	44.4	46.7	100
1985	6.7	49.4	43.9	100
1995	6.6	47.5	45.9	100
1999	7.3	49.5	43.2	100

SOURCE: Hungerford and Wassmer, 2004.

While data presented in table 7.6 indicates that local support has decreased in relative terms over the period, it still constitutes a very important source of funding for public schools. While the general trend has been to move toward a larger portion of state funding and control, proportions of funding from federal, state and local level vary across states[5]. Public schools in most states still rely heavily on local property tax. Figure 7.1 shows the share of total state public education revenues coming from federal, state and local sources.

[5] For example Hawaii has one statewide school district and almost all public school finances come from state sources while California and Michigan have state-controlled school finance systems, although a large proportion of revenues come from local funding.

Figure 7.1 Revenues of public elementary and secondary schools, by source and state: school year 2001-02



SOURCE: National Centre for Education Statistics, data from table 156.

Financing public education at the local level through property taxes can lead to highly unequal funding of schools. Local property taxes are usually approved by local school board, other local officials, or directly by citizens and represent a percentage of the market value of properties in a school district. As income and wealth of residents increase, so does the desire to spend more on education. Consequently school districts with a higher proportion of the population with high incomes and wealth are more likely to pass legislation requiring a higher rate of local property taxation to be devoted to public education. Moreover as income and wealth increase, so does the value of properties. Other things being equal, the lower the value of properties is, the higher tax rates must be (in order to compensate for the low value of properties). The rate of property taxation translates into actual spending per student in the district based on per student property value in the district. As a consequence school districts with high proportions of residents with high incomes and high property values are more

likely to have greater revenues than less well-off school districts (Hungerford and Wassmer, 2004).

7.3.2. Can public policies be effective in guaranteeing the quantity and quality of art education provided in public schools?

The previous section discusses four factors contributing to disparities in participation in art classes among different socio-economic groups. The fourth factor, differences in the provision of art education in public schools, has been subject to intense scrutiny in the last decades. During the 1970s and 1980s courts in many states[6] ruled that wealth-related differences in school finances needed to be eradicated because of the negative impact they had on equality of opportunities. They called on state governments to come up with equalisation mechanisms to fund public schools more equitably (Fisher, 1996). However Evans et al (1999) show how per student spending in school districts across the United States in 1992 was 2.4 times higher in rich areas than in poorer areas. Since art education is often viewed as less important than other school subjects such as mathematics, science and English, schools with fewer funding are likely to use available resources to support education in those areas rather than the arts.

A large number of research and policy initiatives were conducted in the late 1980s and early 1990's aimed at determining how to guarantee art education provision of a given quality in all public schools (Hutchens, 1990; Smith, 1992; Hope, 1992 for a review). Important policy initiatives include the establishment of the '*Arts, Education and Americans Panel*' in 1974, a large empirical study '*Beyond creating: the place for art in America's schools*' commissioned by the Getty Center for Education in the Arts (1985) and research commissioned by the National Endowment for the Arts (NEA, 1988). In 1967 Nelson Goodman founded the '*Harvard Project Zero*' at the Harvard Graduate Schools of Education to study and improve education in the arts. The research centre has been investigating the development of learning processes in the arts in children and adults ever since. All available evidence indicates that large *between-states* and *within-state* variations in

[6] For example California adopted state-based financing through the *Serrano v. Priest* decisions of 1969 and 1976 and Michigan through a 1993 legislative action. In California and Michigan state revenues now account for 64 percent and 69 percent of total elementary and secondary public education revenues.

art education provision explain some of the differences in participation rates in art classes reported in the SPPA 2002 survey.

Recent federal government legislation passed in 1994, the *Goals 2000: Educate America Act*, named the arts as a core academic subject and required the development of nationwide standards for arts education in order to reduce disparities in art education provision in public schools. Such legislation is the result of a large number of policy initiatives and research conducted in the late 1980s aimed at determining best practices in art education. With the passage of the *Act*, national goals including the availability of the arts as core subjects became federal law. The *Act* names the arts as a core academic subject together with English, mathematics, history, civics and government, geography, science, and foreign language. It also established the National Educational Standards Improvement Council to determine criteria upon which students' performance could be evaluated. In 1992, anticipating that education standards would emerge as a focal point of the reform legislation, the Consortium of National Arts Education Associations begun to develop the National Standards in Arts Education by reviewing state and local level practice and arts education framework from other countries.

The National Standards for Arts Education attempt to provide a nationwide definition of what students completing elementary and secondary school in the United States are expected to know and be able to do in four disciplines: dance, music, theatre, and the visual arts. The National Standards for Arts Education provide educational goals rather than a curriculum: while they set levels of skill or knowledge that students should reach by the end of their elementary and secondary education, they let states, localities and classroom teachers draw their curricula. Whether students do meet standards and art education is offered in public schools depends however on funding, changes in perceptions on the importance of the arts as fundamental to education and the availability of teachers with credentials in the arts.

Despite the introduction of the National Standards large state variations remain in whether attendance in arts courses is a requirement for high school graduation and in the adoption of state assessment measures in the arts. The following tables highlight state variations in: *i)* the adoption of the National Standards for Arts Education, *ii)* the presence of state assessment measures in the arts and *iii)* state

requirements in the arts for high school graduation. Data on state legislation comes from the National Conference of State Legislatures are refer to 1998.

Table 7.7 State standards for the arts

None
Nevada

Adopted or in the process of adopting standards based on the National Standards for Arts Education
Arkansas, Colorado, Connecticut, Delaware, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Montana, New Hampshire, New Jersey, New York, North Carolina, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin, Wyoming

Other form of state standard
Alabama, Alaska, Arizona, California, District of Columbia, Georgia, Kentucky, Louisiana, Minnesota, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, Virginia

Table 7.8 State assessment measures in the arts by state

None present
Alabama, Alaska, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Georgia, Indiana, Kansas, Louisiana, Maryland, Massachusetts, Mississippi, Montana, Michigan, Nevada, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, Wyoming

Some form of state arts assessment measure is present or is about to be introduced
Arizona, Florida, Hawaii, Idaho, Illinois, Iowa, Kentucky, Maine, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New Mexico, New York, Oklahoma, Oregon, Texas, Utah, Washington.

Table 7.9 Arts requirement for high school graduation, by state.

Not required at state level (possible local district graduation guidelines)
Alaska*, Colorado*, Georgia, Hawaii, Idaho, Indiana, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Nebraska, New Mexico, Ohio, North Carolina*, North Dakota, South Carolina, Tennessee, Texas, Washington, Wisconsin, Wyoming*.

One half unit
Alabama, Arkansas, New Hampshire, Rhode Island, South Dakota,

One unit
Arizona, California, Connecticut, Delaware, District of Columbia**, Florida**, Illinois, Kentucky, Louisiana, Maine, Maryland**, Missouri, Mississippi, Montana, Nevada, New York, Oregon, New Jersey, Pennsylvania, Vermont, Virginia, West Virginia.

More than one unit
Oklahoma = 2 units
Utah = 1 ½ units

*Local graduation requirements in the arts in some districts
** One half credit in performing arts AND one half credit in visual arts or one credit in performing arts OR one credit in visual arts

Table 7.10 reports results on the provision of different forms of art education in American public elementary and secondary schools in the 1999-2000 academic year by school characteristic. They indicate to what degree changes in art education practices at the beginning and in the mid 1990's have led to more equal access to art education opportunities for minorities and disadvantaged socio-economic groups. Results suggest that while music and visual arts education are almost universally available in public elementary and secondary schools, dance is less commonly taught. Theatre classes are not very common at the elementary level but they are more frequently taught in secondary schools.

Overall it appears that there are no major differences in the amount of art education provided in public schools with student intakes from different socio-economic backgrounds. While there is a correlation between art provision and school size, the socio-economic status of students enrolled in a school does not appear to be highly correlated with art education provision.

Table 7.10 Percentage of public elementary and secondary schools providing art education, by school characteristic

	ELEMENTARY					SECONDARY			
School characteristic	**Music**	**Visual arts**	**Dance**	**Theatre**		**Music**	**Visual arts**	**Dance**	**Theatre**
All	94	87	20	19	**All**	90	93	14	48
Size					**Size**				
<300	95	88	21	18	<400	84	84	4	30
300 to 599	94	86	17	15	400-999	92	95	11	46
600>	94	86	25	29	>1000	95	98	32	75
% minority					**% minority**				
<5%	95	92	17	15	<5%	90	94	9	39
6-20%	97	89	18	18	6-20%	93	92	13	57
21-50%	94	86	17	18	21-50%	92	97	17	56
>50%	91	81	27	27	>50%	87	88	21	46
% Free school meals					**% Free school meals**				
<35%	97	94	20	20	<35%	92	96	16	53
35-49%	98	74	17	16	35-49%	92	93	11	48
50-74%	94	89	25	21	50-74%	89	85	12	38
>75%	88	79	20	20	>75%	89	85	13	36

Table 7.11 indicates that there are also no major differences in the frequency of music and theatre classes. The elementary level dataset contains information on the number of times students receive music and theatre classes and the average minutes of each session. No major trend emerges on disparities in the number of classes typical students receive in schools with high concentrations of students from minority backgrounds and from low-income families.

Table 7.11 Percentage of public schools offering music and theatre classes by frequency of instruction, number of courses offered and school characteristic

	ELEMENTARY – MUSIC						SECONDARY						
							MUSIC				THEATRE		
School characteristic	**Every day**	**3-4 [A]**	**1-2 [B]**	**1 [C]**	**Minutes [D]**		**1-2 [E]**	**3-4 [F]**	**5-6 [G]**	**6+ [H]**	**1**	**2-3**	**4+**
All	6	14	73	7	38	**All**	31	26	18	26			
Size						**Size**							
<300	10	15	68	7	35	<400	54	29	8	9	75	19	6
300 to 599	5	14	76	5	37	400-999	26	29	20	24	48	40	12
600>	4	10	75	12	41	>1000	11	18	23	48	28	40	33
% Minority						**% Minority**							
<5%	6	14	74	5	37	<5%	34	30	18	18	71	24	6
6-20%	5	16	73	6	37	6-20%	29	17	18	36	36	41	23
21-50%	9	12	72	8	38	21-50%	29	23	15	32	36	39	25
>50%	4	12	74	10	39	>50%	29	33	20	19	39	38	24
% Free school meals						**% Free school meals**							
<35%	3	17	73	6	38	<35%	25	28	17	31	43	36	20
35-49%	9	12	75	5	35	35-49%	41	26	13	20	52	34	14
50-74%	7	16	69	8	37	50-74%	43	23	20	14	59	26	14
>75%	8	8	73	11	39	>75%	30	30	23	18	45	38	16

[A] Typical student has music instruction 3-4 times a week; [B] Typical student has music instruction 1-2 times a week; [C] Typical student has music instruction less than once a week [D] Average minutes per music class; [E] School offers 1-2 courses; [F] School offers 3-4 courses [G] School offers 5-6 courses [H] School offers more than 6 courses

Overall data from the AEPESS suggest that following[7] policy initiatives designed to guarantee a more equal distribution of art education opportunities, there are no major differences in performing arts availability in public elementary and secondary schools with large student numbers from low-income and minority groups and other schools. Changes in legislation and practices mean that public schools now offer comparable amounts of art education whether they are located in areas of concentrated poverty or not. However it is possible that despite the achievement of basic standards in the *quantity* of art education public schools provide in different parts of the country, there are still important differences in the *quality* of the instruction different socio-economic groups receive in public schools. Do all public schools offer art courses of similar quality or do poor kids get worse art courses?

The AEPESS contains information on a number of factors that can be considered as proxies for the quality of instruction in the arts. Such indices include: the

[7] I use the word following in the text because it is not possible to determine whether legislation and public policies determined the change or simply were part of a general trend of general resognition of the importance of the arts in public schools.

qualifications of art teaching staff, the type of rooms and equipment used for art instruction, whether schools receive special funding for their arts programmes and whether they receive administrative support. Because the proxies used in the analysis are very general and probably fail to fully capture differences in the quality of art courses offered by different schools, the aim is to stimulate further research rather than provide definite answers.

Table 7.12 reports the percentage of elementary schools employing full-time certified, part-time certified, classroom teachers, artists-in-residence and volunteers to teach music classes and the percentage of secondary schools with more than 2 full-time music specialist teachers. Only 48 schools employed 2 or more FT teachers for theatre classes and 15 schools employed 2 or more FT teachers for dance classes at the secondary level. Comparisons of the type of theatre and dance instruction offered in different schools are not possible because sample sizes are too small.

While the traditional approach to arts education is based on the use of specialists trained to teach music, theatre, ballet, dance and the visual arts, some schools provide arts instruction as a co-operative effort between classroom teachers and arts specialists or classroom teachers and professional artists in order to reduce payroll expenses. Because of lack of funding for art programmes other schools have no arts specialists on staff, either to teach students directly or to act as resources to classroom teachers who mainly provide the arts instruction that is offered.

Results presented in table 7.12 suggest that at the elementary school level the availability of qualified music teachers is highly correlated with the size of the school and is moderately correlated with the socio-economic characteristics of the student body. This can be expected as, other things being equal, larger schools need more people to cover teaching needs and are more likely to be able to employ specialised teachers on a full time basis for art subjects. A positive correlation between school size and whether schools employ full time music teachers is therefore not an indication of a higher quality music instruction in larger schools.

At the elementary level full time specialised teachers are more common in schools with low minority intakes, while ethnically diverse schools tend to rely more heavily on classroom teachers and volunteers to cover their teaching needs. While

only 66% of poor schools employ full-time specialists, 76% of wealthy schools do. At the secondary level, 60% of wealthy schools employ two or more full time music specialists, while only 40% of poor schools do.

Table 7.12 Music instruction: qualifications of teachers, by school characteristic

	ELEMENTARY						SECONDARY
School characteristic	**FT certified**	**PT certified**	**Classroom**	**AIR[A]**	**Other teacher or volunteer**		**2+ FT music teachers**
All	72	20	11	3	4		53
Size						**Size**	
<300	57	28	13	1	6	<400	25
300 to 599	76	19	8	3	3	400-999	59
600>	80	13	13	4	6	>1000	73
% Minority						**% Minority**	
<5%	71	21	8	3	4	<5%	46
6-20%	80	19	11	4	2	6-20%	60
21-50%	74	19	11	2	1	21-50%	62
>50%	63	22	13	3	8	>50%	49
% Free school meals						**% Free school meals**	
<35%	76	21	9	5	3	<35%	60
35-49%	76	15	11	3	6	35-49%	46
50-74%	63	19	15	1	6	50-74%	40
>75%	66	23	11	2	5	>75%	40

[A] *Artist in residence*

Access to appropriate instruments and equipment is important to the delivery of many aspects of music curriculum. A dedicated space consistently open for instruction and in which instruments and necessary material are available facilitates a school's music program. Large disparities exist in the use of dedicated rooms with special equipment for music instruction: while their use is normal practice in 71% of elementary schools with low minority intakes, only 53% of ethnically diverse schools use them. The difference is smaller at the secondary level. Poor elementary schools are less likely than wealthier ones to use dedicated rooms with special equipment (51% versus 70%). Similarly only 76% of poor secondary schools have dedicated rooms with special equipment, while 95% of wealthy schools do. Differences between schools in areas of concentrated poverty and other schools in the use of dedicated rooms for theatre instruction are equally marked.

Table 7.13 Percentage of public elementary and secondary schools using different types of rooms for music and theatre classes, by school characteristic

ELEMENTARY					SECONDARY						
School characteristic	Dedicated with special equipment	Dedicated no special equipment	gymn/ auditorium/ cafeteria	regular classroom		Dedicated with special equipment		Dedicated no special equipment		Other	
						Music	Theatre	Music	theatre	Music	Theatre
All	67	7	10	15	**All**	91		6		1	
Size					**Size**						
<300	55	9	13	22	<400	91	47	4	12	1	41
300 to 599	71	7	9	11	400-999	89	45	9	29	1	26
600>	71	5	8	16	>1000	96	64	3	23	1	12
% Minority					**% Minority**						
<5%	71	6	6	16	<5%	93	43	3	25	1	32
6-20%	70	6	8	16	6-20%	95	50	4	28	0	22
21-50%	72	4	14	9	21-50%	86	60	10	27	0	12
>50%	53	12	12	21	>50%	87	60	10	14	3	26
% Free school meals					**% Free school meals**						
<35%	70	6	7	15	<35%	95	53	3	24	0	23
35-49%	69	7	12	11	35-49%	88	50	8	28	1	22
50-74%	70	3	9	16	50-74%	85	43	11	25	0	22
>75%	51	15	14	19	>75%	76	36	17	24	7	40

The elementary school survey includes several questions that address whether art education receives administrative support. To what extent do school administrators and non-arts staff members view the arts as essential to a high-quality education? The survey asked principals their perceptions on the extent to which administrators and non-arts teachers at their schools considered the arts an essential part of a high-quality education. Response choices included "not at all", "to a small extent", "to a moderate extent", "to a great extent", and "cannot judge", According to principals administrators and non art teaching staff in poor schools and with high intakes of minority students are less likely to believe that the arts are very important than administrators and non art teaching staff in schools that are wealthy and with low minority intakes. Differences between low and high minority enrolment schools are most pronounced when perceptions of non-art teaching staff are considered.

Table 7.14 Perception of the arts as essential for high-quality education, by school characteristic

	ELEMENTARY			
	Administrators		Non art teaching staff	
School characteristic	**Very**	**Moderate**	**Very**	**Moderate**
All	67	25	47	44
Size				
<300	58	29	42	44
300 to 599	70	25	49	43
600>	73	22	49	44
% Minority				
<5%	70	23	51	42
6-20%	71	23	51	45
21-50%	66	28	50	41
>50%	64	28	39	47
% Free school meals				
<35%	73	19	54	41
35-49%	73	23	49	45
50-74%	59	35	38	50
>75%	60	28	40	44
	SECONDARY			
	Administrators		Non art teaching staff	
	Very	**Moderate**	**Very**	**Moderate**
	72	20	40	47
Size				
<400	73	19	38	46
400-999	73	19	39	50
>1000	71	22	44	45
% Minority				
<5%	73	15	41	44
6-20%	74	20	39	53
21-50%	70	23	37	45
>50%	70	24	39	49
% Free school meals				
<35%	71	19	43	44
35-49%	78	15	40	56
50-74%	72	23	42	45
>75%	64	32	29	54

Not only schools in poor neighbourhoods suffer from lack of funding because of the way public education budgets are financed, but they also receive considerably less support for art instruction from other sources, such as parent groups and local businesses and this is likely to negatively affect the quality of the art instruction. Table 7.15 reports the percentage of schools that received non-district funding for their theatre and music programmes. In both cases schools in areas of concentrated poverty received considerably less support from outside sources than schools in

better-off areas. This can be expected as poor households do not have the means to fill gaps in public school finances and businesses in poor neighbourhood are less likely than businesses in well-off areas to benefit from such investments to do the same.

Table 7.15 Percentage of public secondary schools that receive additional sources of support for theatre and music classes, by school characteristic

	Theatre	Music
Size		
<400	13	38
400-999	19	47
>1000	34	58
% minority		
<5%	18	56
6-20%	25	47
21-50%	31	48
>50%	22	33
% free school meals		
<35%	27	54
35-49%	24	47
50-74%	16	37
>75%	10	23

Overall findings from the AEPESS survey indicate that in terms of quantity schools serving student bodies from disadvantaged socio-economic backgrounds tend to perform at the same level as more well off schools. However results also suggest that significant quality differences might persist despite policy attempts aimed at limiting such differences. More research is needed as the AEPESS survey has a small sample size and cannot be used to answer the questions at the basis of this chapter in a multivariate framework. Also, the proxies for quality contained in the AEPESS should be considered as very generic indicators, rather than actual measurements. If confirmed the findings suggest that public policies can be relatively successful, even in the short term, in guaranteeing the number of hours pupils in different schools spend on art classes, the number of courses that are offered and the duration of each class. However they also indicate that even in the presence of a relative homogeneity in the quantity of art education that is offered, quality differences require more time, effort and resources to be eradicated. Such differences are the result not only of differences in the financial means that are available to different schools to conduct art classes, but also of perceptions and

beliefs held by teachers and school principals about the role that art education plays in people's lives.

8. Conclusions

Central and local governments in England and in the United States have often used public subsidies as a way to partially cover the production costs of performing arts organisations and curb price inflation. One of the stated goals of such practices has been to improve access and increase attendance, especially among disadvantaged groups, although there is no empirical evidence that public subsidies have such an effect. The research presented in this thesis is an attempt to assess whether public subsidies can effectively increase attendance at performing art events, both generally and among low-income groups. I analysed whether price changes affect the demand for live performances of individuals in different socio-economic conditions to different degrees and, if this is the case, whether public subsidies can promote attendance by securing sufficient revenues for arts organisations to cover their expenses while maintaining admission charges at a level affordable to most.

The single main finding presented here is that both prices and the amount of art education that people receive play an important role in determining attendance, but a number of factors are likely to prevent public subsidies from effectively influencing prices. On the contrary, the evidence suggests that public policies can be very effective in ensuring the provision of minimum levels of art education in public schools, although variations in the quality of art education provided by different schools may be more difficult to redress and may require long term interventions.

In the first part of the thesis, I examined standard economic arguments in support of government intervention in the arts as well as arguments developed outside the economics discipline. Participation in the arts and attendance at art events have

intrinsic benefits that are unique to the arts and cannot be produced by other human activities. But the arts can also be instrumental in the pursuit of broader individual and social benefits. Efficiency and equity arguments associated to both the intrinsic and the instrumental benefits of the arts have been developed, calling for various forms of government intervention. Whether one believes that ultimately government intervention is justified or not, it is undeniable that there is widespread public support for it, especially in the areas of art education and promotion of greater access to the arts by disadvantaged socio-economic groups.

Performing arts organisations rely more than others on labour to deliver their "goods", so their productivity tends to grow at a slower pace, leading to a constant increase in production costs relative to other industries. When cost increases translate into increases in prices, the demand for live performances is jeopardized. Because of the existence of positive externalities, government intervention is needed to ensure efficient levels of attendance at art events.

So far the majority of empirical studies of performing arts attendance are descriptive in the sense that they provide a detailed account of the relationships between standard socio-economic characteristics such as income, general educational attainment, occupational status and racial/ethnic background and participating behaviour. They are often of limited use for policy makers and art managers who would like to broaden attendance and promote access. Once a link between individual socio-economic characteristics, for instance educational attainment, and attendance is established, there is not much that policy makers can do in the short and medium term to improve attendance among those that currently do not engage with the arts. By introducing variables in econometric models that estimate the effect that ticket prices and art education have on attendance, policy makers have evidence that they can use to devise strategies to improve people's access to the performing arts.

The literature provides evidence on the extent to which the demand for live performances is influenced by changes in prices and income levels, but whether there is an income gradient in the responsiveness of the demand to price changes has not been investigated. I tried to bridge this gap by exploring the determinants of attendance at live performances in England and in the United States. I developed novel

methodological approaches to study the effect of household income on the price-attendance relationship. Econometric analyses indicate that a socio-economic gradient does not exist, and a 10% increase in prices generates a 9% drop in attendance among all income groups. Moreover, people who live in areas where public subsidies cover a substantial share of the revenues of performing arts organisations are not more likely to attend live performances than people who live in areas with less public support. Public support is not statistically correlated with either attendance rates or frequency of attendance, suggesting that not only public subsidies are not influential in determining attendance but also that they do not play a role in the decisions people make on how often they want to attend arts events. The assumption that many politicians and decision makers in government hold that public subsidies allow organisations to charge reduced admission fees and therefore have a positive impact on attendance appears to be unsubstantiated. I presented three hypotheses on what factors might determine the apparent inconsistency between the findings that prices affect attendance and public subsidies do not and I empirically tested one of those.

In the thesis I explore the hypothesis that the relationship between public subsidies and private support determines the apparent inconsistency in previous findings. A possible displacement of private donations by public subsidies might prevent the success of policy initiatives in support of attendance at performing art events. If increases in public subsidies are offset by similar reductions in private donations, the intended effect on prices will not materialise. Is there a "dark side" to government subsidies? Do public subsidies adversely affect charitable contributions in practice? Can they be an effective means to reduce ticket prices? The empirical analyses presented in chapter six suggest that the answer to these questions depends on a number of factors and that important differences exist between the effects that public subsidies have on individual organisations and on the whole sector.

At the institutional level, most previous theoretical and empirical research considered the relationship between government spending and private donations as constant. I examined the rationale and implications of allowing crowding effects to vary with *i)* the *level* of government support, *ii)* the *change* in government support and *iii)* the *type* of government agency awarding support. The findings suggest that public support and private donations can be both complements and substitutes depending on the size of

government support, whether funding levels represent an increase or a decrease over previous support levels and that private patrons react very differently to federal, state and local spending. The relationship between levels of government support and private donations takes an inverted U shape: at low levels government grants crowd in private support, while at higher levels crowding out prevails. Changes in government support levels have a positive, linear influence on private donations: increases in public support determine increases in private support, while decreases in public support inhibit private donations.

An analysis of the crowding effect of federal grants awarded by the National Endowment for the Arts on private donations to the entire arts sector suggest that there is independence between public subsidies and private donations at the sectoral level. Results from time series data for the period 1955 to 1999 indicate that NEA appropriations and spending do not affect the overall level of support that private donors secure to the arts. By combining the results from the two crowding effect models developed in the thesis, one can conclude that while the pie of private support is relatively stable, no matter what subsidies governments provide overall, the slice of private support that each organisation receives depends on government decisions about the allocation of grants. When government grants increase the amount of private donations that some organisations receive, they will do so at the expense of other organisations. The lack of a crowding effect at the sectoral level indicates that the missing link between public subsidies and attendance is not due to the displacement of private donations.

An alternative hypothesis to the crowding out effect of public subsidies on private donations is that public subsidies and ticket prices are not correlated because the production functions of performing arts organisations that receive public subsidies and those that do not differ. If the organisations that receive higher levels of support from either public or private sources spend larger amounts on factors not directly influencing attendance, then it is reasonable to expect that public subsidies will not have a significant effect on attendance. In the second part of chapter six I showed that the amount of public subsidies and that performing arts organisations receive and the prices they charge for their tickets are not correlated, while keeping private donations constant. This suggests that there might be subtle differences in the production

function of organisations that receive substantial amounts of unearned income and those that have to rely more heavily on ticket sales. These findings would appear to indicate that increases in public and private support are not spent on factors affecting attendance, such as reducing ticket prices.

The main policy implication of the thesis is that alternatives to public subsidies might be more effective in delivering the objective of higher and broader attendance, one such alternative is the provision of good quality art education. While public subsidies are not correlated with attendance, I have provided evidence that receipt of art education is and that the effect of art education on attendance is *art specific*: only exposure to relevant material is associated with increases in attendance rates. For example while drama classes are strongly correlated with theatre attendance, they are not associated with attendance at dance performances. This means that in order to promote attendance at different events, a whole range of art education opportunities should be provided ranging from playing an instrument to drama courses, from music appreciation to ballet classes.

In the last part of the thesis I analysed whether low participation rates in art education classes among disadvantaged groups can explain their traditional under-representation in the performing arts audience. Recent legislation in the United States has recognised the importance of providing art education in all public primary and secondary schools. Results from the analysis of a survey of American public elementary and secondary schools in the 1999-2000 academic year indicate that schools with high intakes of students from low income households and from minority groups are as likely as other schools to provide music, theatre, dance and visual arts instruction. While the survey reveals that there are essentially no differences in the *quantity* of art education students from disadvantaged socio-economic groups receive, it also indicates that there might be significant *quality* differences.

The hope is that this thesis will stimulate discussion among policy makers and art practitioners as well as academic researchers and ultimately make an impact on public policies aimed at increasing and broadening attendance at performing art events. However, this investigation also points to a broad agenda for further research. The highest priority in such agenda is to be given to further empirical applications of the

models I developed to assess the influence of ticket prices and public subsidies on attendance, to assess the crowding effect of public subsidies on private support and the relationship between public subsidies and ticket prices.

The best data I was able to access to conduct the different components of my research were from different countries. In particular, the assessment of the income gradient in the responsiveness of the demand for performing arts to price changes was based on English data, while the impact of public grants on private donations and other components of the thesis were based on data from the United States. Similarly, some of the American data were specifically from the non-profit theatre sector, while others (sectoral crowding effect analysis) covered the entire arts sector. It is very difficult to determine whether the link between the results of the various analyses is influenced by differences between the settings. Ideally, future research should attempt to replicate these analyses using more homogeneous data, should these become available.

I explored the policy implications of the lack of impact of public subsidies on attendance in the final chapter of the thesis. I argued that public policies can be effective in ensuring the provision of minimum levels of art education in public schools, but they are less able to influence the quality of the courses that are offered. My analysis highlights the importance of exploring the extent to which public policies can influence the provision of high quality art classes. However, assessing the quality of education on the basis of existing large scale datasets is extremely difficult, so I had to resort to rather broad indicators, which are very helpful when trying to outline the key questions but cannot provide all the answers we would wish to have. This is another area in which this thesis has identified scope for further in-depth research.

Quality considerations and the development of appropriate indices measuring high standards of artistic productions also pertain other parts of the research. The measures I used to control for performance quality in the institutional crowding effect analysis and in the analysis of the correlation between public subsidies and private donations are surely amenable to improvements, and this will remain a challenge for future research. The development of more detailed quality measures will allow researchers to investigate the effect that quality has on attendance and whether public subsidies have

a significant and positive influence on quality. As highlighted previously, public subsidies are mostly awarded with the aim of increasing quality, attendance or both.

Increases in the quality of live performances, however, often go unnoticed by the majority of consumers but can be very expensive. Recent examples include the use of special wood with exceptional properties in sound transmission and reflection for the orchestra pit in the renovated *La Scala* theatre. While probably only a handful of people (including conductor and former artistic director Riccardo Muti) are able to appreciate the difference, such wood costs twice as much as the best alternative (which in turn is three times more expensive than a very good wood to be used in performing arts venues).

If public subsidies are not correlated with either attendance or ticket prices, as this research suggests, it is possible that organisations tend to use subsidies primarily for quality improvements that do not influence attendance in substantial ways. Public subsidies could also be spent on repertoires that include the production and performance of works requiring large casts or extensive labour. Because of the cost disease a company's decisions on what plays, operas, ballets and dance performances to produce and perform may have a substantial effect on expenditures but not necessarily on attendance. For example the cast size of *Bluebeared's Castle* by Bartok (2 singers) is miniscule compared to that of *Die Zauberflöte* by Mozart, *Aida* by Verdi or *Der Rosenkavalier* by Strauss (all requiring an entire chorus and approximately 10 main singers)[1].

While quality improvements and a diverse repertoire increase the utility of those who attend live performances and of artists, whether society as a whole is significantly better off as a result remains an open question.

[1] Producing *Bluebeared's Castle* rather than the *Magic Flute* is likely to influence attendance, but the comparison represents the largest difference in production costs known to the author.

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