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ECONOMIC IMPACT OF A NEW MUSEUM ON THE LOCAL ECONOMY: "THE GAUDÍ CENTRE" *

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ECONOMIC IMPACT OF A NEW MUSEUM ON THE LOCAL ECONOMY: "THE GAUDÍ CENTRE"

Abstract

In this paper we analyse the economic impact of a new museum (the Gaudí Centre) on the local economy of Reus, a city in the province of Tarragona (southern Catalonia). We use a Keynesian income multiplier model to evaluate the effects of this new cultural venue on local income. In our calculation of the economic impact we distinguish between two phases: the construction phase and the exploitation phase. Our results show the important income impact of this cultural investment on the local economy.

Introduction

Recent academic research suggests that cultural activities play a key role in promoting local economies. This is an important shift in public perception since these activities have traditionally been considered to have little impact on local economies. Since the seminal contribution of Cwi and Lydall (1977), however, art and cultural institutions have been widely recognised as having a direct, positive impact on income, employment and production (Herrero et al., 2006) as well as on other activities that are (apparently) unrelated to cultural ones.

Several studies have highlighted the role played by new cultural infrastructures as: urban regenerators (Baniotopoulou, 2001) (the Guggenheim museum in Bilbao is one of the best-known examples of this phenomenon (Plaza, 2006 and 2000)[1]; key players in regional competitiveness strategies (Dziembowska-Kowalska and Funck, 2000); architects of a city's change of image (Richards and Wilson, 2004); agents of lifelong learning (Tlili et al., 2007); and means to attracting visitors (Johnson and Thomas, 1998). All these studies agree on the (potentially) positive impact of these infrastructures on local and regional economies.

Discussing cultural activities in general requires the consideration of several heterogeneous activities. In this paper, therefore, we focus on specific

cultural infrastructures such as museums and exhibitions. One of the main specificities of these infrastructures is that much of their demand is not local, i.e. many of their patrons are tourists visiting the area.

According to the benefits supposed to be attributed to non-local visitors of cultural amenities, some analysis departing from cultural economics rely also on tourism (Bonet, 2003). There is a close relationship between tourism and cultural activities (Richards, 1996) since museums act as tourist magnets. Culture has become both a specific kind of leisure activity and a way to "market the country, generate income, create a favourable image and attract investment" (Saayman and Saayman, 2006: 570).

In this paper we report the case of the Gaudí Centre, a new interactive museum centring on the Art Nouveau buildings designed in the early twentieth century by the most famous Catalan architect, Reus-born Antoni Gaudí. Gaudí worked mainly in Barcelona and none of his masterpieces is located in his home town. The Gaudí Centre aims to explain the fundamentals and architectural details of the works Gaudí created in his home town.[2] Reus claims to be Gaudí's birthplace and is home to the only museum devoted to this Art Nouveau architect. The Gaudí Centre should be analysed not only as a cultural centre but also as part of a new city marketing strategy based on product differentiation. The aim of the Gaudí Centre is not to generate profits directly as a museum (it is not expected to be profitable) but to achieve global urban benefits (even from activities not directly related to the Gaudí Centre) for the city and its surrounding area.

In this paper, therefore, we analyse -as most studies do- the economic impact of cultural infrastructures on closely related activities (shops, restaurants, hotels, etc.). However, we also consider activities that have nothing to do with the Gaudí Centre in order to paint a better portrait of its impact on the Reus economy. Obviously, our starting point is cultural expenditure, which is shaped by consumers' willingness to pay to visit a cultural centre such as the Gaudí Centre. This is important because cultural expenditure usually grows faster than incomes and it appears as though it will continue to do so.

We analyse the economic impact of the Gaudí Centre on the local economy of Reus using the Keynesian income multiplier model. This model assumes that an initial shock in demand, coming for instance from a new

productive investment, a new local infrastructure or a new cultural venue, multiplies its effects on the local, regional or national income. The initial injection therefore increases income in a much larger quantity than the initial shock.

This paper is organised as follows. In the next section we describe the main characteristics of the Gaudí Centre. In the third section we review the literature on the economic impact of cultural infrastructures and the relationship between art and economic activity. In the fourth section we develop the Keynesian income multiplier model and present our main empirical results. In the final section we present our conclusions.

The main characteristics of the Gaudí Centre:

The Gaudí Centre is located in the heart of Reus, in the oldest part of the city. This area has plenty of shops and restaurants, so it is an excellent location from both the tourism and cultural points of view. The site, about 1,200 m^2, includes several interactive exhibitions that enable visitors to discover Gaudí's creative mechanisms and surprising shapes. Visitors can also watch several audiovisual presentations and touch sensory and tactile displays. Complementary to the museum exhibitions, the Gaudí Centre has shopping facilities and a magnificent restaurant managed by a prominent chef who boasts a Michelin star for another of his restaurants.

The museum belongs to the city council and is managed in accordance with the strategic guidelines of the city's tourist office.[3] It is therefore mainly directed at non-local visitors. The museum's creation is one of the cultural policy axes of the city council, which has designed a wide range of arts festivals[4] that have been successfully performed since the early 1990s and attracted a large number of visitors to Reus. This cultural city marketing strategy has focused on a number of art festivals during the year. The disadvantage of this strategy, however, is that the seasonal nature of these events means that the flow of visitors is not regular throughout the year. The Gaudí Centre, which is open all year round, can help to offset this shortcoming by becoming a more stable cultural icon for Reus during the off season.

Another shortcoming of the Gaudí Centre is that, instead of hosting masterpieces by celebrity artists, the museum exhibits virtual objects (and reproductions) in which the artist, not the object, is the celebrity. However, this allows the museum to concentrate on explaining what is being exhibited. This is important because most museums are shifting toward "explaining" rather than just "showing". Visitors expect not only to contemplate (virtual) reproductions of Gaudí's masterpieces but also to understand how they were designed and how they worked.

Economic impact of cultural infrastructures: an overview

Cultural amenities such as exhibitions, art galleries, museums and music festivals have cultural externalities such as consumer satisfaction and greater social cohesion. However, like other economic activities, they also contribute to local economic growth. If we consider cultural activities to be like any other economic activity, the only differences are their size and, therefore, their contribution to production. Surprisingly, approaches to cultural activities have usually focused on intangible assets (social cohesion, the city's image, creativeness, etc.) rather than on more tangible ones such as jobs, output and income generation.

Since the early 1980s several cultural institutions have claimed to exert a positive economic impact on their communities and have begun to quantify this impact (Seaman, 2003; Baró and Bonet, 1997). The results of these analyses show that they are more than just leisure activities. This is demonstrated, for example, by the National Endowment for the Arts (1981) for several U.S. cities and by the Cultural Assistance Center (1983) for the New York and New Jersey metropolitan areas. Unfortunately, as some of these reports were requested by public institutions to show the economic importance of the arts, the results were sometimes misunderstood by general public opinion (Baró and Bonet, 1997).

Nevertheless, several recent contributions have highlighted the role played by museums in local economies. Cultural infrastructures sometimes have a great economic impact, as Frey (1998) points out when referring to

"superstar museums" that are key actors in local economies[5], helping both to create jobs and boost economic activity.[6] However, a museum does not need to be a "superstar" in order to drive economic growth at the local level or to attract a large number of people, as Johnson and Thomas (1992) demonstrate for the Open Air Museum at Beamish (UK).[7] Unfortunately, museums do not always succeed and some new museums (or expansions of existing museums) do not reach their expected number of visitors, so their economic impact is less (Plaza, 2006). Several scholars do not agree that using cultural infrastructures as part of a city's marketing strategies is a positive way to attract visitors (Kunzmann, 2004) since the effect on the growth of local economies is not always clear. In any case, this is an interesting debate that deserves further analysis.

If we agree that arts have an impact on the economy, important questions are: how can we demonstrate or, at least analyse, this impact? Gazel and Schwer (1997) reported several methods, from simply considering that visitors to a cultural centre have the same expenditure profile as tourists (which involves applying multiplier effects to expenditure by non-local visitors, which stimulates the output of the local economy)[8] to using complicated (and information-consuming) general equilibrium models that take into account linkages between industries and economic agents. There are also input–output models, which are easier to design than general equilibrium models, and Keynesian income multipliers models, which are the ones we have used in this paper.

Scholars attempting to identify the contribution by museums to the local economy usually base their calculations on data from surveys by visitors to those museums (Stanley et al., 2000; Bramwell, 1998; Jansenverbeke and Vanrekom, 1996; Page, 1995). This type of data enables the author to assess whether these cultural infrastructures can attract visitors and calculate how much expenditure is made by those visitors.

The method used to determine a museum's economic impact obviously depends on the type of data available. The Gaudí Centre partially opened in June 2007 but is not expected to be fully working until September 2008.[9] It is therefore early to determine the impact in terms of visitor expenditure, for example, but it is reasonable to analyse the impact of the Centre's construction and to estimate annual impact according to expected visitor numbers. These

numbers would need to be re-checked in a couple of years with more data on the Centre's performance that could include information from a visitor survey.

Modelling the economic impact

The analytical framework for evaluating the economic impact of this new museum is based on the Keynesian income multiplier. This is a common way to analyse the income effects and economic impacts of a wide range of investments comprising public or private projects as well as productive investments, cultural projects or public infrastructures.[10]

The Keynesian income multiplier is based on the idea that any monetary inflow into an economic system (national, regional or local) will cause an increase in the level of income in that system by a multiple of the initial injection. That is, the initial inflow multiplies its effects on the income of the economy.

To reflect the basic relations captured by the Keynesian multiplier, we can define the Gross Domestic Product or Income (Y) of an economy as follows:

$$Y = C + I + G + X - M ,$$

where C is private consumption, I is investment, G is public expenditure, X are exports to foreign markets and M are imports from abroad. We can further analyse the variables involved by assuming that investment, public expenditure and exports are constant, i.e. I, G, and X are independent of the levels of production. We also assume that imports (M) are directly related to the income levels of the economy:

$$M = mY ,$$

where m is the relation between the economy's imports and income. Once we have discounted two variables—direct taxation on income and the consumption

of goods produced abroad—we can also assume that private consumption (C) is related to income or production levels. Hence:

$$C = c(1-t)Y - m_C c(1-t)Y \,,$$

where c, t, and m_C are the proportions of consumption, taxation and consumption of imported goods with respect to the income of the economy. Using the definitions above, income is equal to:

$$Y = c(1-t)Y - m_C c(1-t)Y + I + G + X - mY \,;$$

$$Y\left[1 - c(1-t)(1-m_C) + m\right] = I + G + X \,;$$

$$Y = \frac{1}{1 - c(1-t)(1-m_C) + m}\left[I + G + X\right] \,.$$

From this expression we can show the effects of an inflow on the total income of the economy using the following calculation:[11]

$$\Delta Y = \frac{1}{1 - c(1-t)(1-m_C) + m}\Delta k(1-m_i) \,, \qquad (1)$$

where ΔY quantifies the change in the levels of income, and Δk is the initial injection of income, i.e. the *multiplicand*. Note that the multiplicand contains the amount of investment associated with the new activity or project analysed. We should bear in mind, however, that only some of the total inflow will have an effect on the local economy because services can be contracted outside[12] and workers can be employed from outside. In expression (1), $(1-m_i)$ captures the flight of income outside the economy, where m_i is the proportion of inflow provided by foreign agents and foreign firms.

To conclude with expression (1), the income *multiplier* (α) is defined as:[13]

$$\alpha = \frac{1}{1 - c(1-t)(1-m_C) + m} \,.$$

To evaluate the economic impact of the Gaudí Centre on the local economy, we can divide the multiplicand Δk into two components:

$$\Delta k = \Delta k_c + \Delta k_e ,$$

where Δk_c contains the income inflow during the museum's construction phase, and Δk_e is the inflow during the exploitation phase. The overall economic impact is then equal to the construction impact (ΔY_c) plus the exploitation impact (ΔY_e). This can be calculated from the following expression:

$$\Delta Y = \Delta Y_c + \Delta Y_e = \frac{1}{1 - c(1-t)(1-m_C) + m} \Delta k_c (1 - m_i) + \frac{1}{1 - c(1-t)(1-m_C) + m} \Delta k_e (1 - m_i) . \quad (2)$$

The Keynesian income multiplier is based on the idea that some of the initial injection will be spent in the local economy, which will generate an expansion in local income. Simultaneously, some of this new income will be spent inside, and so on. This process of income creation will continue and at the end the initial inflow will have multiplied. Specifically, the initial inflow is the direct effect caused by the investment project, while the additional income captures the indirect effect. The multiplier approach therefore captures both the direct and the indirect impacts of an initial inflow on an economy's global income.

The Keynesian income multiplier evaluates income creation by focusing on the components that compound the aggregate demand in the economy. This method is therefore useful for analysing the economic effects of such projects on the demand side of the economy, such as injections in private consumption or new investment projects.

Empirical results

This section contains an empirical application of the Keynesian multiplier model. The aim is to quantify the income generated by the new museum in the city of

Reus. In this empirical approach we apply the income multiplier model at the local level. Below we describe how we calculated each component of the model.

Keynesian income multiplier

The Keynesian approach is based on the idea that any inflow in an economy causes an expansion effect that turns the initial injection into a larger quantity. The expansive effect of one monetary unit can be approximated through the multiplier value, which was defined in expression (1).

To apply the model empirically, we need to know the value of all the components that define the income multiplier. Because of lack of data at the local level, we calibrate the parameters of the model using information for the province of Tarragona. We therefore assume that the economy of Reus reproduces the economic relationships of the provincial economy.

The value of t shows the relation between taxes on income and GDP. We assume that this parameter only contains taxation on personal income:

$$t = \frac{TaxesPersonalIncome_{02}}{GDP_{02}} = 0.0564.$$

Information about taxation on personal income and GDP is from the *Instituto Nacional de Estadística* (2005). Both of these variables are for the province of Tarragona in the year 2002.

Parameter m_C shows the proportion of private consumption of foreign goods with respect to GDP. The information is for the province of Tarragona for the year 2003. GDP comes from the *Instituto Nacional de Estadística* (2005), and imports of consumption goods come from the *Caixa de Catalunya* (2004):

$$m_C = \frac{ImportsConsumption_{03}}{GDP_{03}} = 0.1106.$$

Parameter m shows the relation between imports from abroad and GDP. We must bear in mind that m contains only imports for uses other than private consumption, since imports for private consumption are included in the value of

m_C above. GDP comes from the *Instituto Nacional de Estadística* (2005), and imports of consumption goods come from the *Caixa de Catalunya* (2004):

$$m = \frac{OtherImports_{03}}{GDP_{03}} = 0.2593.$$

Finally, parameter c measures the relation between the final consumption of private agents with respect to GDP:

$$c = \frac{Consumption_{01}}{GDP_{01}} = 0.5800.$$

In the data sources the last year available for consumption is 2001 (Alcaide, 2003).

Once all components have been estimated, we can obtain the Keynesian income multiplier from:

$$\alpha = \frac{1}{1 - 0.5800(1 - 0.0536)(1 - 0.1106) + 0.2593} = 1.2969.$$

This value shows that every monetary unit of initial inflow to the economy increases the total income by approximately 1.3 monetary units. The multiplicative effect of the new museum on the economy of Reus is therefore quantified as 29.69% of the direct injection. This multiplier value is in line with those of other regional studies that have applied the same model (1.19–1.70).[14]

Economic impact during construction phase

The economic impact on the local economy will be evaluated in two stages. First, we analyse the economic effects during the construction phase of the museum (ΔY_c). Second, we analyse the economic effects during the exploitation phase (ΔY_e). In this section we describe the evaluation of the economic impact during the construction of the Gaudí Centre.

Information about the total expenditure required to build the new museum comes from the budget included in the official project. This budget also contains

previsions about the characteristics of the firms and agents that have supplied the services needed to complete the investment. Therefore, this information enables us to differentiate not only the amount of investment involved, but also the quantities provided by local agents and the quantities provided by foreign agents. Table 1 contains the total expenditure (Δk_c) during the construction phase and which part of the expenditure will be supplied by local agents ($\Delta k_c(1-m_i)$).

[PLACE TABLE 1 HERE]

Table 1 shows that the construction of the museum has generated a total inflow of 4,304,966 euros, and a percentage of 63.7% (2,740,771 euros) has been spent within the local economy.

The total income created during the construction phase of the Gaudí Centre in the local area of Reus (ΔY_c) can be approximated using the following calculation:

$$\Delta Y_c = \frac{1}{1-c(1-t)(1-m_c)+m}\Delta k_c(1-m_i) = 1.2969 \times 2{,}740{,}771.90 = 3{,}554{,}507.$$

This value shows that the construction of the Gaudí Centre museum generated 3,554,507 euros of income in the local economy. In relative terms, the income injection of the construction phase accounts for approximately 82.5% of the global investment shown in table 1.

Economic impact during exploitation phase

In this section we analyse the economic impact during the exploitation phase. First we take into account the amount of income generated during one year of activity (ΔY_e) and then apply a more complete long-term analysis. We analyse two assumptions of the flow of tourists to the Gaudí Centre and the city of Reus: first we assume that the museum will have 50,000 visitors per year (the optimistic scenario), and then we assume that the museum will have 30,000 visitors per year (the pessimistic scenario).[15]

During the exploitation phase, the Gaudí Centre will generate greater economic activity in the local area in two ways. First, the museum will contract employees and consume goods and services. Second, it will attract new tourists and visitors to the city of Reus. This will increase local demand for services such as accommodation, restaurants and commerce. If we wish to capture the full economic impact, therefore, we must take into account not only the museum's current activity but also the effects of the new demand from visitors to the city of Reus attracted by the new cultural venue.

Table 2 shows the monetary inflow due to the existence of the Gaudí Centre in one year of exploitation. This table distinguishes between demand due to the museum's activity and demand due to new visitors to the city of Reus.

[PLACE TABLE 2 HERE]

Information about current expenditures of the Gaudí Centre is obtained from forecasts included in the official budget. As table 2 shows, the museum's exploitation expenditure is generally independent of the forecasted number of tourists, and most concepts in table 2 are fixed. Table 2 also shows that 85% of the expenditure due to the activity of the Gaudí Centre will be spent at a local level for both scenarios of visitor numbers.

Information about expenditure due to new visitors has been calculated indirectly using a survey of tourists visiting the Reus Modernism Route in 2002. We have assumed that the Gaudí Centre will have the same percentage of visitors from outside Catalonia as the Modernism Route had in 2002. This enables us to calculate the expenditure on accommodation by new tourists (assuming that only visitors from outside Catalonia will require hotel services). To estimate hotel expenditure, however, we must bear in mind that tourists can stay on the Costa Daurada but outside Reus.[16] We assume that hotel expenditure in the city will be made by a percentage of tourists from outside Catalonia equivalent to the percentage of hotel beds in Reus with respect to the total number of beds in the Costa Daurada area. We also assume that tourists from Catalonia will be visitors to the museum only for one day and will not generate any hotel expenditure.

The Modernism Route survey also showed the percentage of visitors who had lunch in the city and the percentage of visitors who made purchases in local shops. We have used this information to estimate the expenditure that will be made in shops and restaurants by visitors to the Gaudí Centre.

Logically, the amount of expenditure by tourists depends largely on the numbers of visitors to the museum. Table 2 shows a 60% difference in the two forecasts of tourists to the city of Reus. In the local economy, one year of activity will generate tourist expenditure of 582,620 euros (pessimistic scenario), or 971,034 euros (optimistic scenario).

The annual income of the exploitation phase is calculated by adding the direct expenditure of the cultural activity and the expenditure of the new visitors to the city. Direct impact during a year of exploitation is estimated at between 1,710,676 euros and 1,284,012 euros depending on the scenario. Note that the number of visitors is an important variable for calculating the real economic impact of the museum since the amount of expenditure can be very different in quantitative terms. The difference in annual income for the local economy between the two forecasts of tourist numbers is 75%.

We should point out that Table 2 does not contain tourist expenditure such as admission tickets or purchases from the museum shop. This is to avoid counting this expenditure twice (this direct expenditure is already included in cultural activity revenues). In other words, we do not take into account the visitors' expenditure made in the museum to avoid double accountings, because this income is also included in the current expenditure of the museum.

Once we have calculated the income created by the cultural activity during a year of operations, we can estimate total annual impact at a local level (ΔY_e) from the following calculation:

$$\Delta Y_e = \frac{1}{1-c(1-t)(1-m_c)+m}\Delta k_e(1-m_i) = 1.2969 \times 1{,}710{,}676 = 2{,}218{,}576 \text{ euros},$$

for the optimistic scenario, and

$$\Delta Y_e = \frac{1}{1-c(1-t)(1-m_c)+m}\Delta k_e(1-m_i) = 1.2969 \times 1{,}284{,}012 = 1{,}665{,}235 \text{ euros},$$

for the pessimistic scenario.

The annual income generated in the local economy as a result of the usual activity of the new cultural venue is quantified at between 2,218,576 euros and 1,665,235 euros, depending on the number of tourists who visit the city.

Total economic impact

We now calculate the total economic impact due to the construction and exploitation of the Gaudí Centre. To do so, we assume a useful life for the project of 20 years[17] and a capital cost of 4.5%. In this way we can estimate the total income generated by the museum in the Reus local economy during its entire period of activity.

The total economic impact of the Gaudí Centre is obtained from the following calculation:

$$\Delta Y = \Delta Y_c + \Delta Y_e + \frac{\Delta Y_e}{(1+i)} + \frac{\Delta Y_e}{(1+i)^2} + \cdots + \frac{\Delta Y_e}{(1+i)^{20}} =$$

$$= 3{,}554{,}507 + 2{,}218{,}576 + ... + 919{,}917 = \ 34{,}632{,}179 \text{ euros},$$

for the optimistic scenario, and

$$\Delta Y = \Delta Y_c + \Delta Y_e + \frac{\Delta Y_e}{(1+i)} + \frac{\Delta Y_e}{(1+i)^2} + \cdots + \frac{\Delta Y_e}{(1+i)^{20}} =$$

$$= 3{,}554{,}507 + 1{,}665{,}235 + ... + \ 690{,}478 = \ 26{,}881{,}013 \text{ euros},$$

for the pessimistic scenario.

Total income to the economy of Reus is quantified as 34,632,179 euros in the optimistic scenario and 26,881,013 euros in the pessimistic scenario.

Our results show that cultural and tourism activities are able to greatly increase the economic activity of local economies. In the last few decades, cultural investments have become valuable instruments for economic growth and development at the territorial level. Cultural projects are thus important tools for strengthening the economic and sociological development of an economy.

Conclusion

Studies show that cultural infrastructures have positive impacts on local and regional economies. This paper has added to this literature by analysing the income generated by the construction of a museum—the Gaudí Centre—on the local economy of the city of Reus (southern Catalonia). We based our methodology on the Keynesian income multiplier. Our results show that the construction and exploitation of the Gaudí Centre will have an important effect in terms of economic activity and income expansion in the local economy. This is a unique contribution because, while most research on the economic impact of cultural infrastructures focuses only on the impact of visitor expenditure, in this paper we provide a more complete analysis by taking into account what happens before the museum begins its activities (i.e. during the construction phase) as well as beyond.

For several reasons, however, we must take the values given in this paper with the usual caution for empirical applications. First, the Keynesian multiplier model assumes that the parameters that define the behaviour of economic agents are constant, which implies that it is not possible to capture changes in the relations between economic variables. Second, the (dubious) quality of the data and the possible assumptions suggest that the multiplier value should be taken only as a reference for the income effects on the local economy. Finally, as the variables involved in the model are not available at a local level, we used information available at the provincial level. In doing so, we added the assumption that the local economy reproduces the economic relationships of the provincial economy.

However, the income multiplier model also has several advantages. First, as it requires less information about the economy than other economic impact techniques, the model can be applied at territorial levels that would be difficult to analyse with other methods. Second, as the model is based on the economic effects caused by shocks in demand, it is useful for evaluating the effects of new investment projects that basically affect the demand side of the economy.

In recent years, economic research has paid special attention to the analysis of cultural and tourist investments as important sources of income

generation and economic growth in local economies. Scholars have also been interested in improving the technical instruments for evaluating the economic contribution of shocks in aggregated demand. In the field of territorial development, it is generally accepted that tourism and culture play an important role in the economic and social development of a territory. The empirical context in this paper can help to explain the economic effects of cultural activities. This information may also be useful for policy decision and implementation processes.

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Table 1. Expenditure during the construction of the Gaudí Centre (Euros)

	TOTAL (Δk_c)	**LOCAL ($\Delta k_c(1-m_i)$)**
Project direction	191,966.94	163,171.90
Building alterations	1,884,000.00	1,601,400.00
Museum project	2,041,000.00	816,400.00
Merchandise stock	30,000.00	25,500.00
Establishment expenditure	158,000.00	134,300.00
TOTAL	**4,304,966.94**	**2,740,771.90**

Table 2. Expenditure when the Gaudí Centre is open (Euros)

	TOTAL (Δk_e)		**LOCAL ($\Delta k_e (1 - m_i)$)**	
	Optimistic	**Pessimistic**	**Optimistic**	**Pessimistic**
Wages and salaries	120,000	100,000	102,000	85,000
Maintenance	66,000	66,000	56,100	56,100
Cleaning, advertising, insurance	140,800	140,800	119,680	119,680
Supplies	125,000	100,000	106,250	85,000
Other expenditure	418,367	418,367	355,612	355,612
Total Gaudí Centre	**870,167**	**825,167**	**739,642**	**701,392**
Accommodation expenditure	1,470,000	882,000	297,234	178,340
Purchases	307,500	184,500	307,500	184,500
Restaurants and other	450,000	270,000	366,300	219,780
Total visitors	**2,227,500**	**1,336,500**	**971,034**	**582,620**
TOTAL	**3,097,667**	**2,161,667**	**1,710,676**	**1,284,012**

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[1] Nevertheless, there is debate about the success of such urban strategies based on these cultural icons. About the Guggenheim Museum in Bilbao see also the (opposing) views of Gómez and González (2001), and Plaza (1999).

[2] Reus is a city of 110,000 inhabitants located roughly 100 km south of Barcelona, the capital of Catalonia. The city's economy is based on retail and manufacturing but since the early eighties the strategy of the city council has been to take advantage of the large number of tourists holidaying at nearby seaside resorts such as Salou and Cambrils and the more culturally oriented visitors to Tarragona.

[3] In fact, there is a City Council Tourist Office at the main hall of the Gaudí Centre, where visitors (whether they are visiting the Gaudí Centre or not) are given useful information about the tourist, cultural, shopping and leisure activities in and around Reus.

[4] These art festivals cover several artistic areas: music (*Festival Internacional de Jazz*); cinema (*Festival Europeu de Curtmetratges*, *Memorimage*); circus (*Trapezi*). Summer festivals cover cinema, music and ballet (*Festivals Estiu*) as well as mime and gestual theatre (*Cos*).

[5] Frey (1998) considers that "superstar museums" have five specific characteristics: they are very well known (usually they are the main reason for visiting the area); they attract many people and are included in what is called "mass tourism"; they host masterpieces of recognized artists; they are examples of signature architecture (so these are also masterpieces); and they have a great economic impact on activities located inside (museum shop and restaurant) and outside the museum (local shops, restaurants, transport services, etc.).

[6] There are other approaches to this impact, e.g. Clark and Kahn (1988), who focus on how improvements in cultural amenities benefit both individuals and cities as a whole.

[7] There also several interesting examples of small museums that contribute to local economies: Getzner and Oberlercher (2003), for example, report the case of the Volkskundemuseum Spittal/Drau in the little town of Spittal (Austria).

[8] The point is to take into account the amount of spending directly linked to the cultural event (without the event the visitors would not have visited the city and would not have spent anything there).

[9] This means that data on visitors for a "normal year" will be available by the beginning of 2010.

[10] For instance, McGuire (1983) used the Keynesian model to evaluate the economic impact of two nuclear power stations. This approach was also used by Amstrong (1993) to analyse the economic impact of Lancaster University, and Greig (1971) to evaluate the economic impact of a pulp mill and a paper mill.

[11] See, for example, Brownrigg (1971).

[12] The spatial area in which the economic impact analysis is conducted is a key issue since some expenses occur outside the local economy considered (Gelan, 2003). Obviously, this issue can be addressed depending on the quality of the data, but it is also clear that a proportion of the cultural investment and spending by visitors is made outside the local economy analysed.

[13] Note that m shows the proportion of imports that are not for final consumption since the imports for final consumption are included in m_C .

[14] See Brownrigg (1971) for a comparative analysis of multiplier values.

[15] As well as the impact in terms of economic activity caused by visitor expenditure, it is also possible to estimate new jobs generated by this expenditure. These can be (roughly) proxied using a method developed by Greffe (2004) in which there is a direct relationship between the number of visitors and new jobs. Specifically, Greffe (2004) estimated that 10,000 visitors create 1.15 direct jobs (e.g. staff employed at the museum), and that each direct job generates 0.62 indirect jobs (e.g. in activities such as interior architecture, conservation and restoration), 3.84 induced jobs (due to intermediate consumption) and 2.59 jobs in the tourism sector (hotels, restaurants, etc.). These estimates mean that the pessimistic scenario (30,000 visitors per year) creates 3.45 direct jobs, 2.18 indirect jobs, 13.24 induced jobs and 8.93 jobs in the tourist sector (i.e. a total of 27.8 new jobs), while the optimistic scenario (50,000 visitors per year) creates 5.75 direct jobs, 3.63 indirect jobs, 22.06 induced jobs and 14.88 jobs in the tourist sector (i.e. a total of 46.32 new jobs).

[16] The Costa Daurada comprises the tourist area around the city of Tarragona. It includes the cities of Tarragona, Salou, Cambrils, Reus and Torredembarra and other smaller towns.

[17] As well as the life expectancy of the physical infrastructure, we should consider “life cycle” issues: the product offered by the Gaudí Centre is assumed to have a product life cycle (Johnson and Thomas, 1991) since consumer tastes can change. However, these changes are difficult to predict.