

## THE CASE STUDY: THE METROPOLITAN REGION OF MADRID

### Introduction

This chapter of the essays presents a case study and discusses the recent socioeconomic trends in the Madrid metro-region. The Madrid metropolitan area has reached a high level of international competitiveness during the last decade. Once a regional capital with a central role in Spain but relatively isolated from the rest of Europe, Madrid is becoming a powerful hub within the global economy. Over the last eight years, the economic growth of the metro region has more than doubled the average of the euro zone. Madrid has become a large metropolitan region, home to 3 million workers and more than 450 000 firms, several of which are headquarters of some of the most competitive companies in the world. Broadly speaking, there are three factors underpinning this good performance: (i) a large supply of labour provided both by immigrants (among which a large number of Spanish speaking natives coming from South American countries) and young educated fixed-term workers; (ii) the presence of first-class transportation facilities, such as Barajas airport, that enable Madrid to mitigate the challenge of being a peripheral European region; and (iii) the growth dynamic itself, in response to the stability of the economy due to the introduction of the euro, which has generated positive expectations among population promoting the local demand. Of course, behind the regional good performance there is a “country effect” that proves difficult to isolate from the local comparative advantage. Although this phenomenon can be observed in many OECD metro-regions, in Madrid it has a larger importance. The historical concentration of the national investment within the Madrid metro-region, in fact, has played a key role in promoting Madrid’s international accessibility as well as the localisation of some knowledge intensive industries such as aerospace.

Despite this good performance, a first analysis has highlighted some challenging issues, which should be address to sustain Madrid’ positive path and strengthen its competitiveness in order to stand as one of the most competitive metro-regions in Europe. A first challenge is the relatively low level of labour productivity which is a common trend in Spain. Among the reasons are the impermanence of jobs with an over use of short term contracts that are likely to generate educational-skills mismatches. Second, linked with this first challenge, the low innovation capacity in Madrid as compared to other leading OECD metropolitan regions does not allow further specialisation in high value added activities, especially in the manufacturing sector. Public R&D is high in Madrid as compared to Spain, but low by international standards whilst private R&D is also limited. Finally, rapid in-migration to Madrid as long as fast

urbanisation and urban sprawl have generated traffic congestion typical to large metro-regions whilst rigidities on the housing market is causing strain especially on the more vulnerable segment of the population. Immigration is not an issue but is raising new demands that would require appropriate measures to avoid tensions when the economic cycle will be in the downturn.

The first section of the chapter presents an all-round assessment of the regional socioeconomic trends and a descriptive analysis the place-based competitive advantage. A last section assesses a series of possible policies that local authorities could implement in order to face the emerging problems linked to the decline of labour productivity and the large influx of migrants.

### **Defining the FUR of the Madrid metropolitan region**

Considering the aforementioned problems that researchers meet in defining FURs, the Madrid metro-region has been defined according two main principles. First of all, matching as much as possible the real dimension of the local labour market. Second, avoiding going down TL3 (NUTS3) given the availability of reliable statistics at that territorial level.<sup>35</sup>

The functional economic area of Madrid, as defined by the commuting flows within a labour market area or inter-firm linkages, goes well beyond the geographic border of the municipal district of Madrid. A few depth analyses have been conducted to define the commuting zone, though there is a widespread agreement that it coincides more or less with the geographical borders of the Community of Madrid. In this section, dedicated to analysis of socio-economic trends and challenges, the essays will use *two units of analysis*<sup>36</sup>:

- **City of Madrid** (represented by the municipal district of Madrid)
- **Madrid Metro-region** (represented by the Community of Madrid)

The City of Madrid, 3.13 million inhabitants as of 2006, has become the central area of a larger territory, which is the Functional Urban Region (FUR) of Madrid (Figure 7). During the last 50 years the development of the Madrid metropolitan region has been built upon the interdependence between the central city and the outskirts, generating a series of *metropolitan rings*. The administrative boundaries of the municipality of Madrid are thus too small to cover its area of influence and while the Community of

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35 . It is worth noting that Madrid is also a region and that TL3 and TL2 are actually the same definition of the area, since the provincial level is missing.

36 . The unit of analysis used depends on the availability of data and the objective of the analysis. For instance, for international comparison, and most of the socio-economic trends, the unit of analysis will be systematically the Madrid metro-region whilst particular focus will be put on Madrid City for its role as an advanced services centre within the metro-region and towards Spain.

Madrid's boundaries encompass most of Madrid's commuting and socioeconomic-activity, the influence of Madrid in some places even spills beyond regional boundaries. Accordingly, data must be found to reflect the FUR of Madrid. Broadly speaking, the FUR is a self-contained metropolitan area that should reflect the spatial organisation of social and economic relations within an urban territory. The methodology to define the FUR is based on three criteria: (i) large size (in terms of either employment or population); (ii) high population density; and (iii) higher commuting within the region than between it and other surrounding areas (the local labour market has to be "self-contained"). By using definitions of industrial development (e.g. clusters development and the inter-firm relationships within the area) or transport infrastructure this report could in fact expand the metro-region definition of Madrid. For instance, the "Consortio Transporte de Madrid" (the consortium that coordinates all local transportation facilities) includes part of the Castilla-La Mancha region, specifically the cities of Toledo and Guadalajara, in its daily transport and commuting services (Figure 8). This transportation consortium is one of the key elements in the functional integration and territorial cohesion of different areas into an FUR, as it facilitates mobility within the metropolitan area. This creates the infrastructure network for further development of greater agglomeration economies. Unfortunately, in the case of Madrid this assessment is constrained by the lack of data below Territorial Level 3 (TL3).<sup>37</sup>

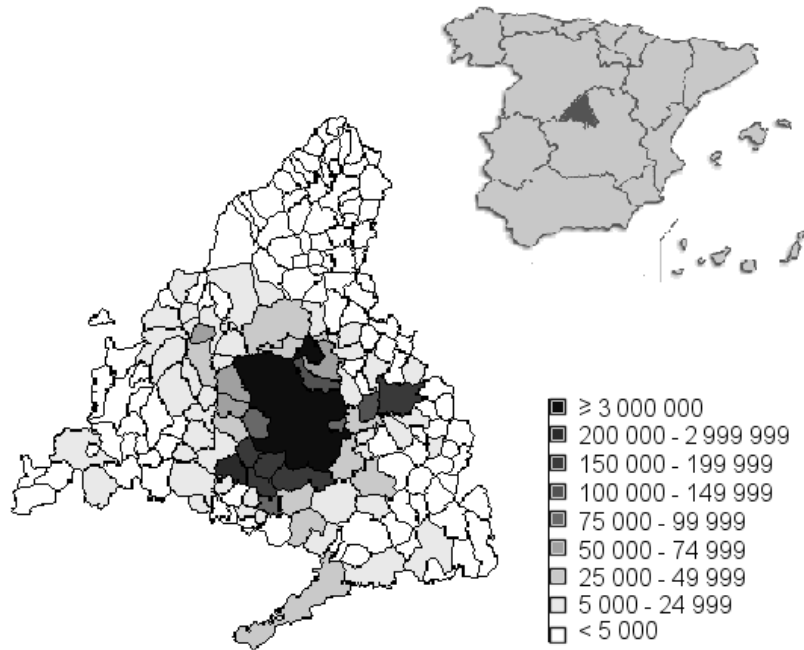
This report, like other studies regarding the Spanish capital, considers the Community of Madrid as a proxy for the Madrid FUR (M. Tomás, 2002). With around 6 million inhabitants in 2006, Madrid is the most populated urban region in Spain and ranks as a medium-sized metropolitan area in the Competitive Cities in the Global Economy, OECD, Paris, 2006 (which includes 78 other OECD metro-regions with at least 1.5 million inhabitants). The Community of Madrid is composed of 179 municipalities. The City of Madrid represents the core of the functional metropolitan region. Although the City of Madrid covers only 8% of the Region's territory, it contains more than 52% of the regional population, as compared for instance to 19% for Paris within the region Île-de-France and 48% for Rome in the Latium region (Table 1).<sup>38</sup> Thus, the metropolitan area is strongly concentrated at the centre, but through its evolution it has encompassed surrounding territories which have gradually been incorporated into this core, such as satellite towns, economic activity areas, and logistical nodes. This has contributed to the relocation of the population, the restructuring of economic activities in the metropolitan area and the increase in core-periphery and periphery-periphery relationships.

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37 . For Spain, the Territorial Level 3 is consistent with the provinces or, as for Madrid, with the Community of Madrid.

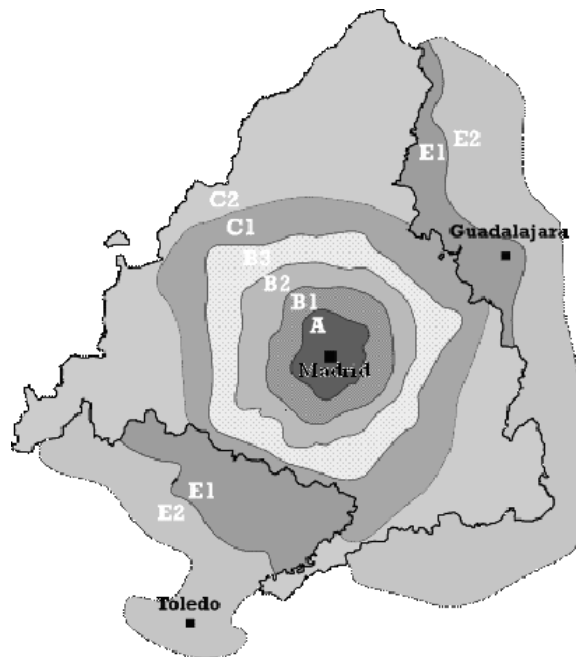
38 . Data are for 2002.

**Figure 7 – Population in municipalities within the Madrid metro-region (2004)**



Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

**Figure 8 – Areas where transportation infrastructure is managed by the “Consortio Transporte de Madrid”**



**Table 1 – Basic indicators of the Madrid metro-region**

	Population in 2006	% of total	Surface area (Km <sup>2</sup> )	%of total	Density in 2006	Evolution of population from 2001 to 2006 (%)
City of Madrid	3 128 600	52.07	607	7.56	5 154.20	8.52
Community of Madrid	6 008 183	100	2 704	100	2 221.96	11.83

Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

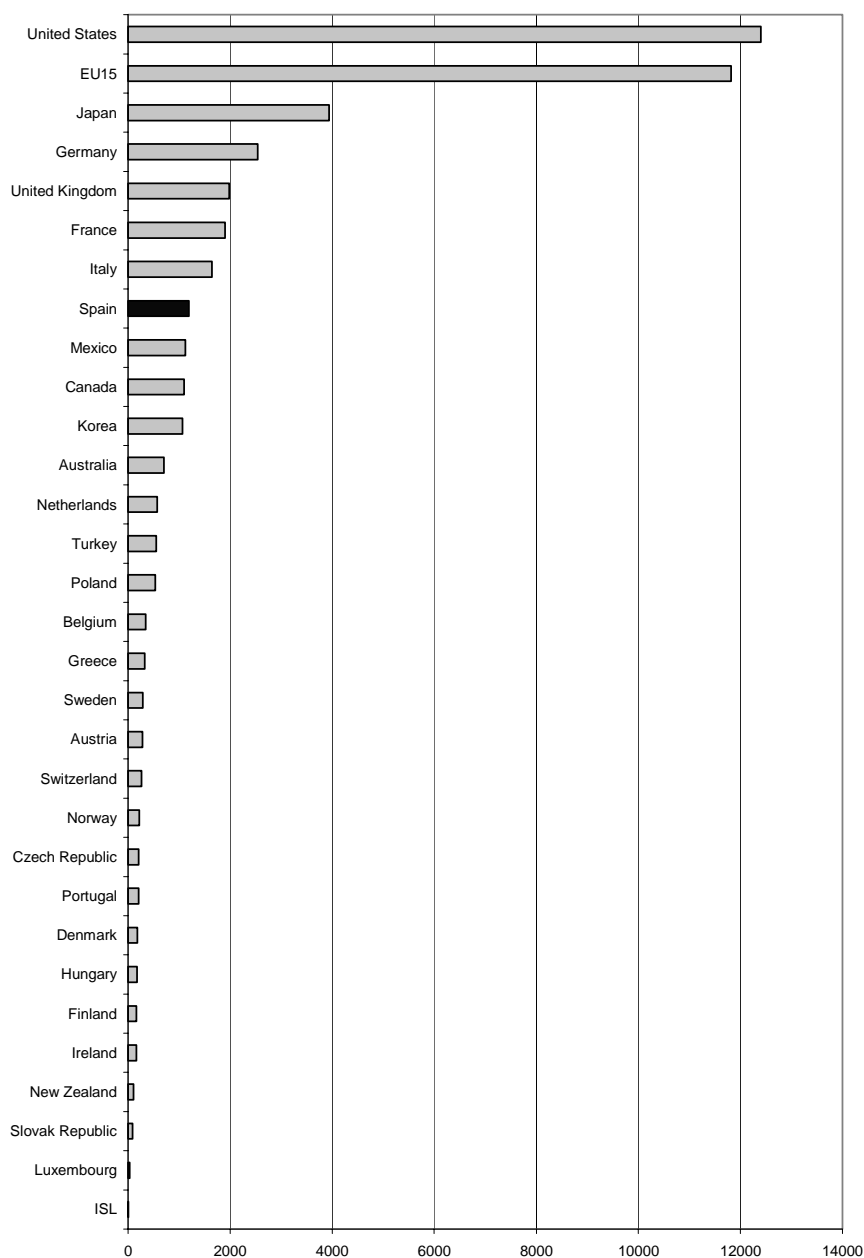
### ***Main socioeconomic trends within the Madrid region***

#### *The influence of the national trend on regional dynamics*

Before entering into the core of the analysis it is important to open a “macroeconomic window” and assess the importance of national trends on regional development. Sustainable regional development can be achieved only if and only if local strategies are placed within a stable framework of orthodox macroeconomic policies (stability of macroeconomic conditions, fair competition, and sound environmental policies). The remarkable development of Spain over the last decade, and the historical concentration of a large share of the national investment have positively affected the growth of the Madrid metro-region. Spain is one of the fastest-growing countries in Europe and the national effect has stimulated local growth. Some others factors have a local origin and depend on local comparative advantages. Spain’s economic success over the past 20 years has transformed the country, making it the OECD’s seventh largest economy (Figure 9) in 2005. Over the last ten years Spain has grown at twice the average of the European Union (3.4% in 2005 compared to 1.6% in the EU-25), and per-capita GDP has converged towards the average in the Euro and OECD areas (Spain’s GDP per head was USD 24 500 in 2003, compared with an OECD average of USD 26 000). This remarkable economic performance has been the consequence of different factors: international openness, European Union membership and structural reforms pursued since the 1990s. Since 1999, strong revenue growth and public expenditure control have contributed to reducing the budget deficit. Moreover, in 2006 a surplus (1.8% of GDP) was achieved for the second straight year, proof of the compromise for fiscal stability. In this environment Spain has benefited from a virtuous circle of sustained growth, job creation and convergence with the more advanced economies of the world (OECD Economic Survey – Spain 2006).

**Figure 9 – GDP in the OECD (2005)**

Billion US dollars, current prices and PPPs



Source: OECD Factbook 2007

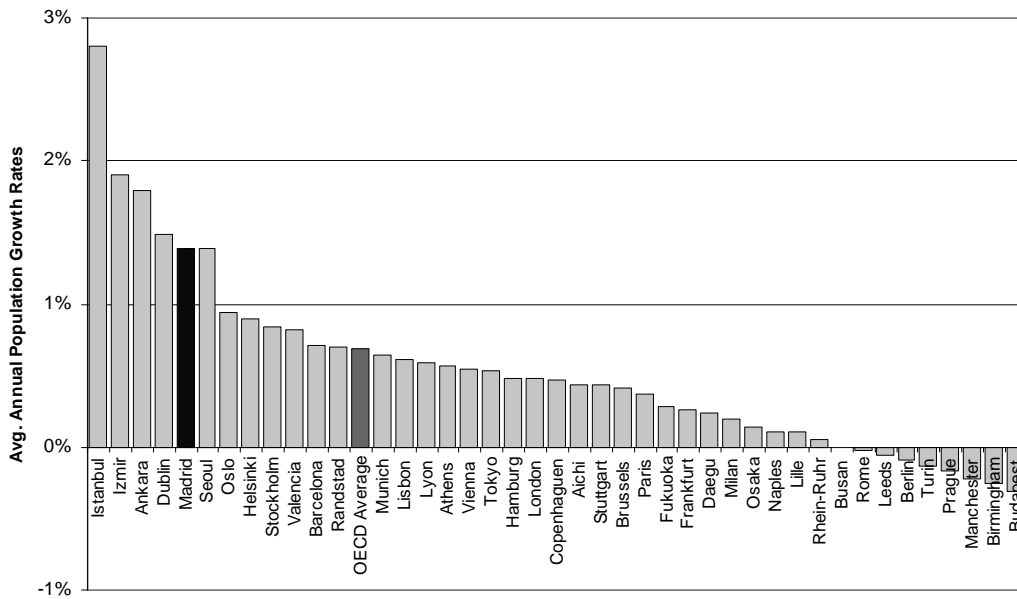
However, an important challenge for the Spanish economy is to improve its specialisation in knowledge-intensive industries. Since the birth of the euro in 1999, the loss of competitiveness has reached 7.5 % points in relation to OECD member countries. As pointed out by the OECD Economic Survey of Spain (OECD, 2006), this loss of

competitiveness is reflected in, among other indicators, a growing current account deficit, which reached 8.7% of GDP in 2006. This is not only the result of inflation rates that have remained consistently above the Euro-area average, but also because many Spanish exports are in sectors and markets characterized by poor performance and growth, mainly in medium- and low-technology sectors. This, in turn, reflects the low level of innovation of Spanish companies. Expenditure in R&D in 2005 was 1.13% of GDP, well below the EU average of 2%. There is therefore a need for Spanish institutions and firms to adopt policies that promote greater innovation and specialisation in higher-end sectors if Spain is to avoid becoming locked into medium and low technology sectors, where competition from new EU member states and from other countries (*e.g.* the Asian Dragons) is likely to prove challenging for the Spanish economy.

*Madrid has positive demographic trends due to immigration*

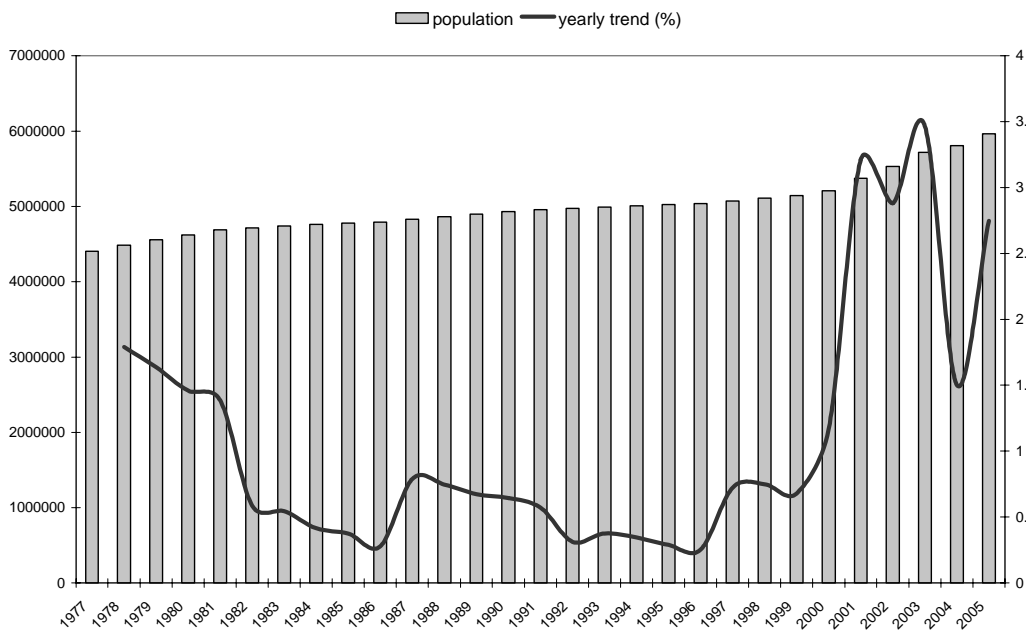
Demography is among the most important indicators to understanding the regional performances. People, in fact, are attracted by places that can offer them a large and articulated basket of public goods and amenities. Madrid has been among the fastest growing OECD metro-regions in terms of population from 1995-2002 (Figure 10). Population increased in the Madrid metro-region by 1.5 million inhabitants from 1977 and 2005 (Figure 11). Looking at yearly trends, the demographic growth is almost entirely concentrated in the last nine years of the series (1996 – 2005). Although the positive demographic trend impacts both the core of the metropolitan area (the City of Madrid) and the “Ring Belt” (the Madrid metropolitan region excluding the City of Madrid), it is the latter that concentrates the bulk of the increase (more than 4.5 % increase in population reached in 2003) (Figure 12). This confirms the existence of an urban decentralisation pattern, a constant in almost all major metro-regions in the developed world. This dynamic is probably due to several factors: the greater availability of land in the ring belt than in the core; the deconcentration of industrial economic activities; external diseconomies; the tertiarization of the economic structure; cheaper housing in the periphery; and the availability of a modern and extensive network of infrastructure within the metro-region that facilitates commuting. Thanks to the availability of greenfields in the city surroundings (Madrid is not surrounded by other major urban areas or other physical constraints), Madrid has avoided a “leap frog” pattern in its urban growth, maintaining strong urban unity with the large urban continuum that stretches around the core area.

**Figure 10 – Average annual population growth rates among OECD member countries (1995 – 2002)**



Source: Competitive Cities in the Global Economy, OECD, Paris, 2006

**Figure 11 – Long term demographic trend in the Madrid metro-region**

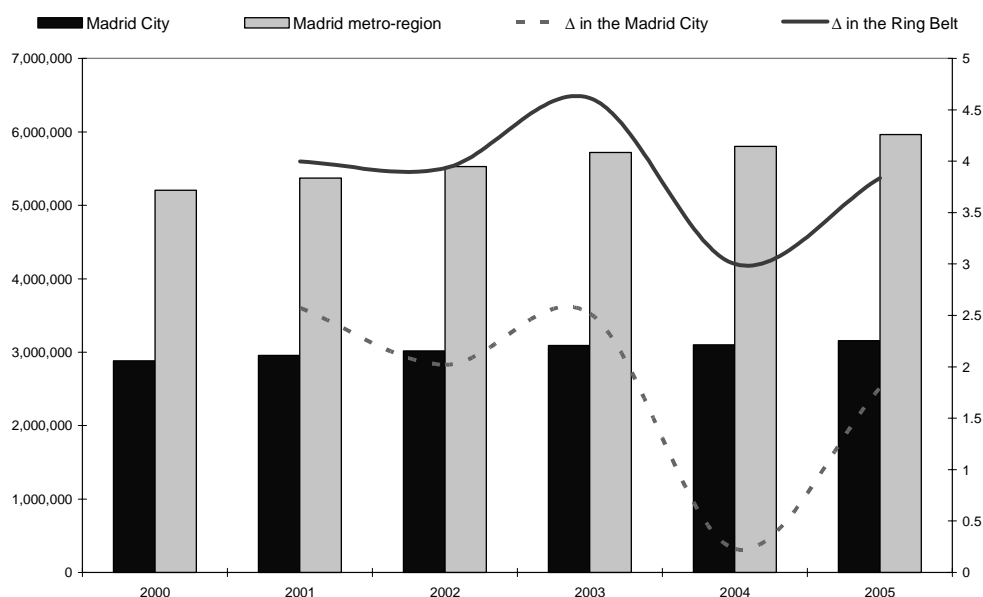


- The yearly trend refers to the population growth rate trend (measured by the scale on the right)

Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)



**Figure 12 – Demographic trend in the City of Madrid and in the Ring Belt (2000 – 2005)**



Note: the “ring belt” is the population of the Madrid metro-region minus the population of the City of Madrid

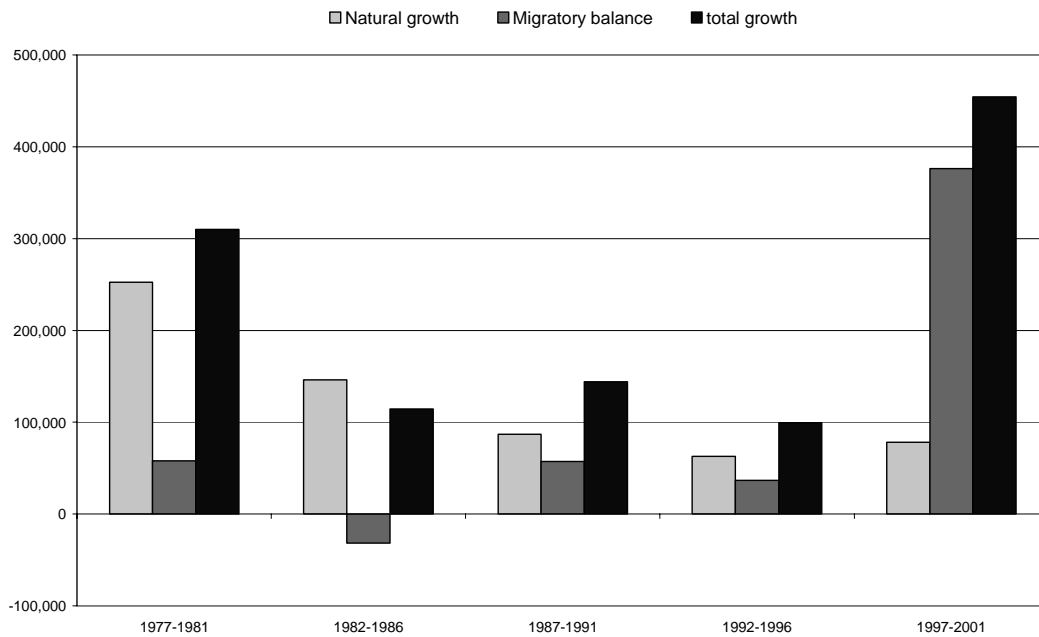
Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

Given the low natural growth rate - comparable to that of other European metropolitan regions - local population growth is fundamentally due to migrant inflows (Figure 13). The influx of immigrants has also had a positive impact on the age structure of the region. For instance, taking into account only the City of Madrid, the working age population is larger than in the past (Figure 14). Immigration into the Madrid metro-region is not a new phenomenon, but recent migration is new with respect to the past. Until the early 1970s Madrid, as one of the main economic poles in Spain, was a major magnet for national migration. In recent years it has continued to attract nationals, mainly young students and workers, motivated by the educational<sup>39</sup> and labour market opportunities the city offers. However, the bulk of new migration to Madrid – as is the case for the rest of Spain – is made up of foreigners, transforming what was a relatively homogenous city until the mid-1990s into an increasingly multiethnic metropolis (Figure 15). Madrid is the largest recipient of foreign migrants in Spain, accounting for 19.3% of total foreigners in 2006. The growth of foreign migrants has been accompanied by an increase in diversity of origin. The largest group of foreigners is from Latin America, followed, at some distance, by Central and Eastern Europeans, Africans, citizens of other countries of the EU15, and Asians. The largest contingent is Ecuadorian, which on July 2006 made up 26% of the total foreign population. The second and third largest groups were Colombians, 8.9%, and Romanians, with 7.2%. These were followed by Peruvians, Bolivians, Moroccans, Chinese, and Dominicans, each representing between 6.5 and 3%

39 . The Community of Madrid is the number one destination for Spanish students studying outside their city of residence (8.37 % of the national total).

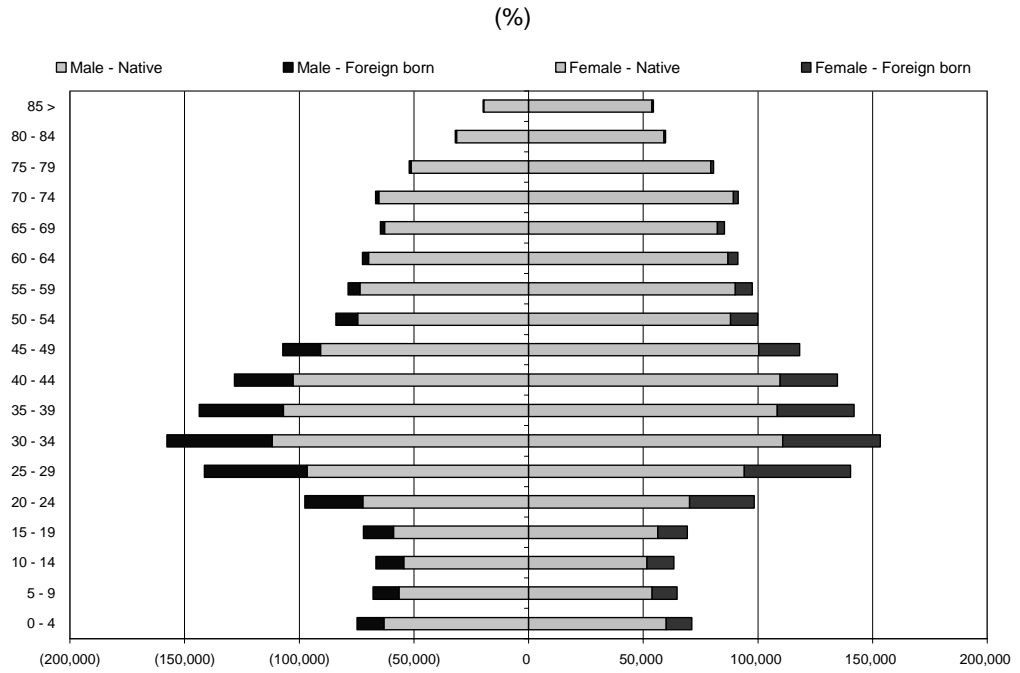
of the total. Foreign migrants originally clustered in the City of Madrid (67% of the total immigration of the region in 2006), but have in recent years the immigration has spread out to the metropolitan rings of the metro-region. Between 2000 and 2002 the largest growth was registered in municipalities located in the south and to the east of the Madrid metro-region.

**Figure 13 – Natural and migratory growth trends in the Madrid metro-region (1977 – 2002)**



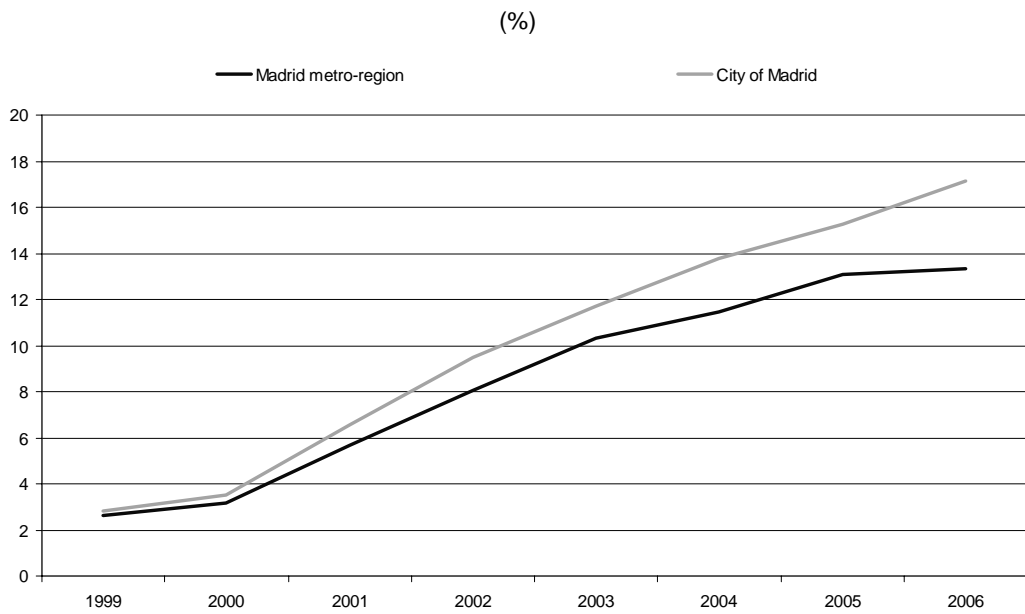
Source: Regional Institute of Statistics – Community of Madrid

**Figure 14 – Demographic pyramid of the City of Madrid (2006)**



Source: City of Madrid

**Figure 15 – Percentage of immigrants on total population (2006)**

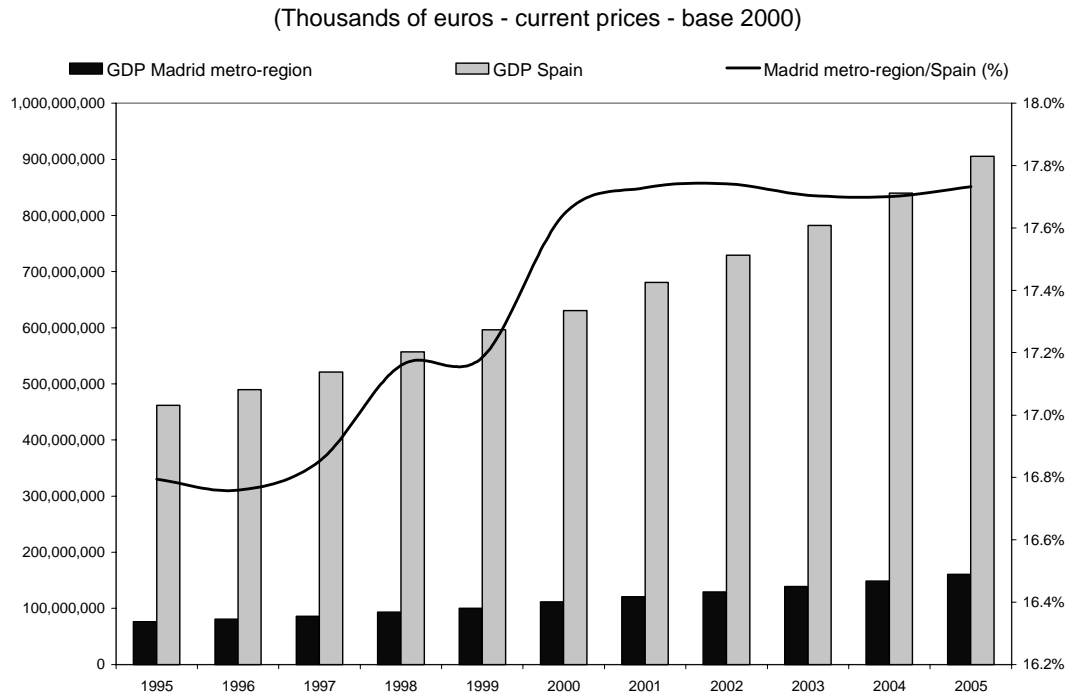


Source: City of Madrid

*The richest metro-region in Spain*

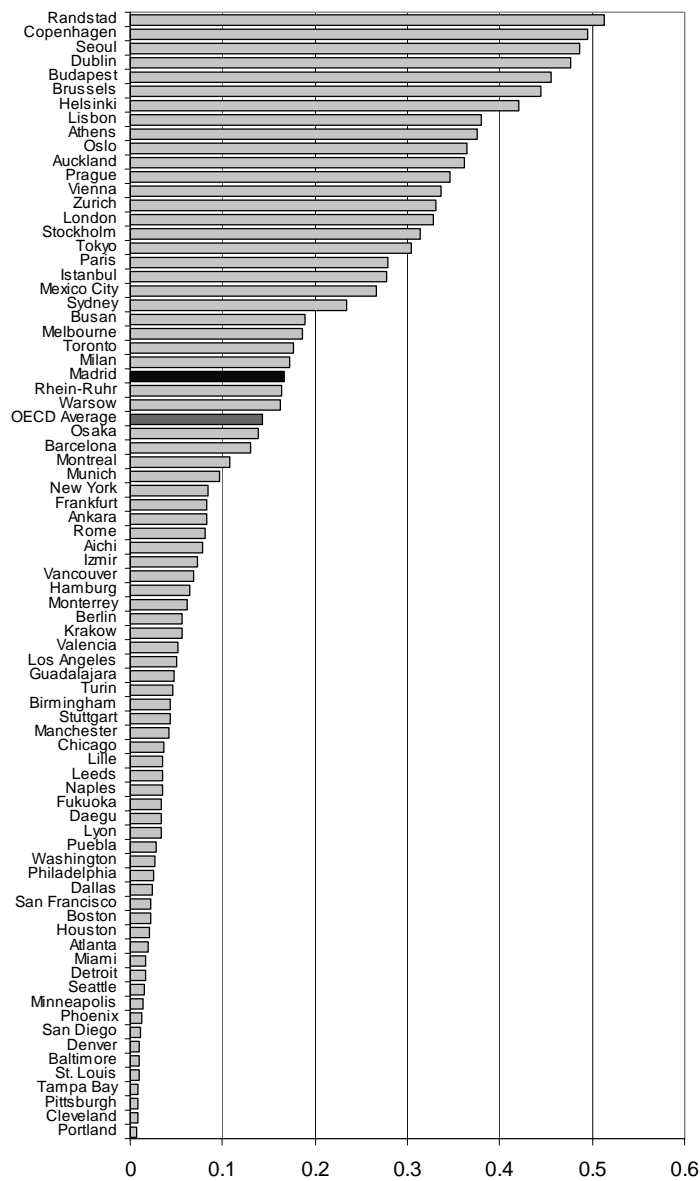
The Madrid metro-region has a significant share of the national GDP with almost EUR 160 billion in 2005 (at current prices – base 2000). The metropolitan area alone, which is home to 13.52% of national population (2005), accounts for more than the 17% of Spanish gross domestic product (Figure 16). The concentration of national GDP is a typical feature of metro-regions and, within the OECD, metro-regions account for a large share of national GDP. However, Madrid’s dominance over the national economy is lower than in some other OECD member countries. The presence of other urban economic poles, such as the metropolitan region of Barcelona and, to a lesser extent, those of Valencia, Bilbao and Seville, acts as a counterbalance to Madrid’s economic weight in Spain (Figure 17).

**Figure 16 – GDP trend in Madrid metro-region and in Spain (1995-2005)**



Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

Figure 17 – Share of national GDP in OECD metro-regions (as of 2002)

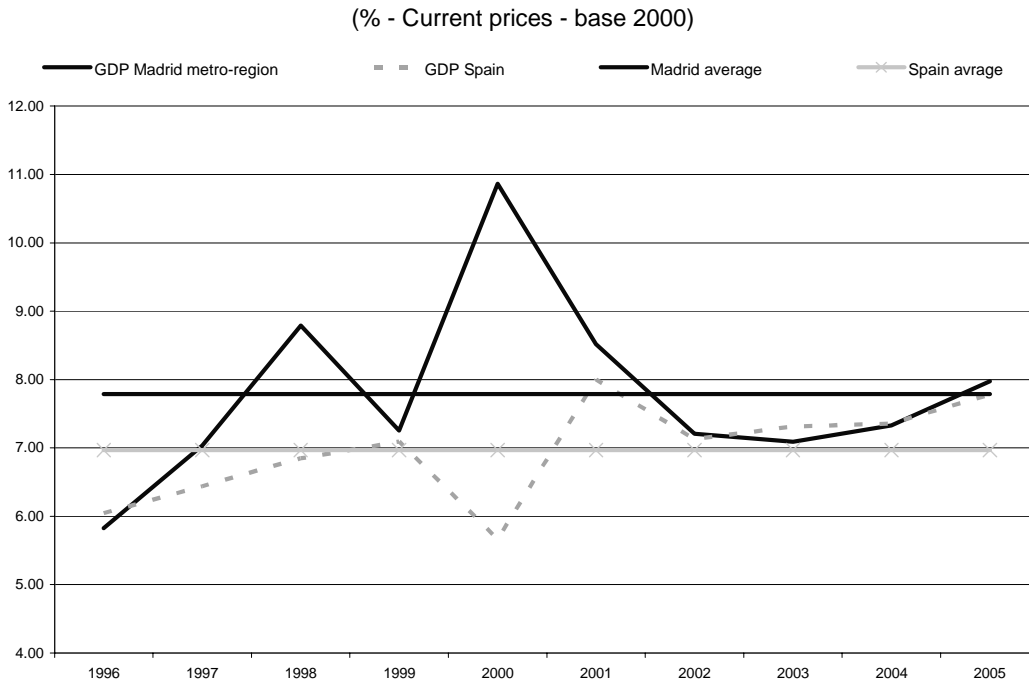


Source: Competitive Cities in the Global Economy, OECD, Paris, 2006

The Madrid metro-region has been growing faster than the country in terms of average GDP from 1996-2005. In fact, the Madrid metro-region has registered an average annual growth rate (in GDP nominal terms) of 7.8 % compared to a 6.97 % national average during this period, while in real terms Madrid has been growing by 3.7% and Spain by 3.3% between 1996 and 2004 (Figure 18). The Madrid metro-region is certainly taking advantage of its position as the capital city of Spain. Capital cities are essentially political products that governments have worked to develop into the communications centres and main showplaces of the country, in many cases for several

centuries. Rail and road networks and major airports tend to be concentrated in them. Major cultural and sporting facilities tend to be built within them. Employment in public administration is by definition centred there, encouraging the location of corporate national headquarters. As a result they have disproportionate shares of educated workforces, good transport links and a high level of public infrastructure (OECD Competitive Cities in the Global Economy, 2006).

**Figure 18 – GDP trend in Madrid metro-region and in Spain (1996-2005)**



Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

The Madrid metro-region also has the highest GDP per capita in Spain. In term of stocks, with € 27 300 per capita in 2003 (base prices 2000), Madrid is the richest region in Spain and has a GDP per capita above the European average (the GDP per capita in Madrid was 128.5% of the EU-25 average in 2003). This leadership is also confirmed by the evolution of the principal regional magnitudes of the Madrid metro-region compared to the rest of Spanish regions (Table 2). This situation reflects a general trend for large OECD metro-regions which have a GDP per capita greater than the national average (OECD Competitive Cities in the Global Economy, 2006). Madrid ranks 28<sup>th</sup> out of 78 OECD metro-regions for this indicator, scoring a value well above the OECD average (Figure 19). As far as trends in GDP per capita are concerned, the Madrid metro-region shows positive trend with the exception of the period 2001-2001 (Figure 20). The negative trend during this biennium was more evident in Madrid than in Spain. Such a phenomenon is likely to be related with the high influx of immigrants which is higher in Madrid than in the rest of the country, and the regularisation process that followed. Within the Spanish context, there has been little modification in the relative positions of

each Spanish region during the last two decades. Rich and poor regions maintain their levels and positions when analyzing income per capita which confirms the stagnation process in regional disparities. A similar pattern is observed when analysing regional disparities in unemployment rates (Table 3). The persistence in times of disparities in unemployment within Spain can be explained by a low internal spatial mobility, regional differences in the education and qualification levels of the labour force, and the regional sectoral composition of unemployment (Table 4).

**Table 2 – Evolution of basic economic indicators at the regional level in Spain**

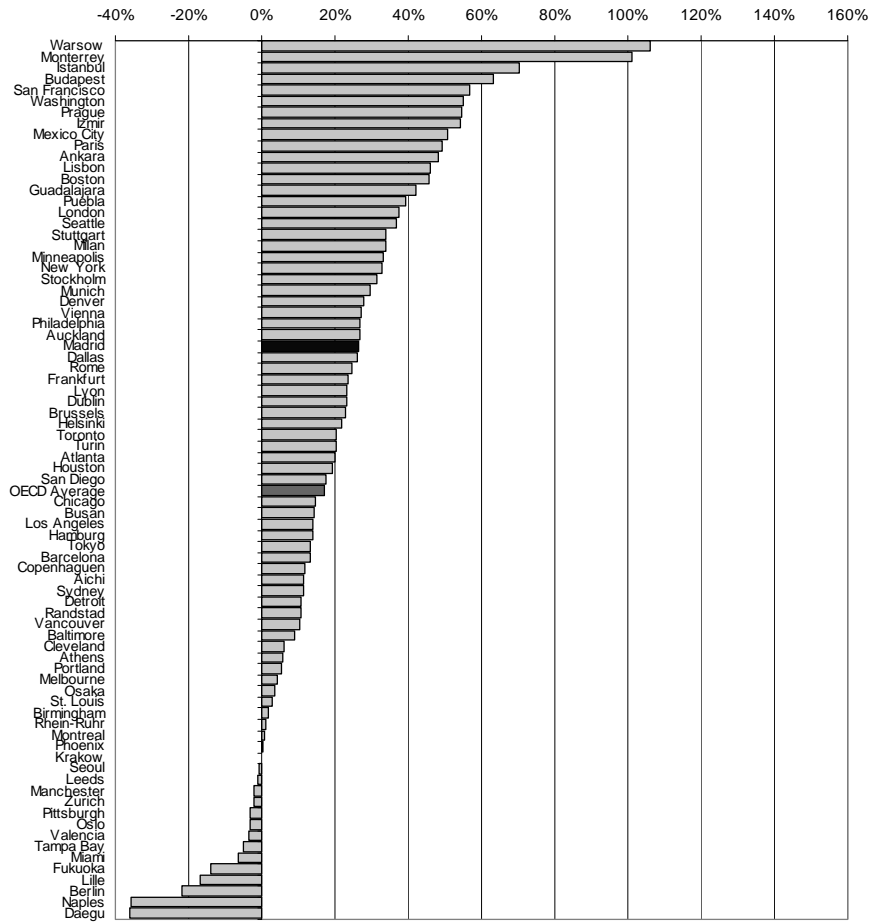
(Annual cumulative rates)

<b>Region</b>	<b>GVA per capita<sup>*</sup></b>	<b>Employment</b>	<b>Productivity</b>
Andalusia	2.78	1.656	1.15
Aragon	2.76	0.75	2.03
Asturias	1.36	-0.28	1.69
Balearic Islands	2.87	2.09	0.82
Canaries	3.86	2.35	1.54
Cantabria	2.69	0.48	2.23
Castilla-Leon	1.85	0.18	1.7
Castilla-La Mancha	2.51	0.96	1.54
Catalonia	2.74	1.36	1.38
Com. of Valencia	3	1.87	1.15
Extremadura	3.24	0.84	2.46
Galicia	1.64	-0.04	1.69
<b>Madrid</b>	<b>3.32</b>	<b>1.99</b>	<b>1.31</b>
Murcia	2.89	2.05	0.87
Navarra	2.91	1.23	1.68
Basque Country	2.44	0.73	1.72
Rioja	2.99	0.82	2.25
Ceuta and Melilla	3.96	3.4	0.78
<b>Spain</b>	<b>2.73</b>	<b>1.26</b>	<b>1.46</b>

- Gross Value Added is Gross Domestic Product excluding taxes (fewer subsidies) on products.

Source: Spanish Ministry of Economy

**Figure 19 – Differences in per capita GDP of metro-regions and their national level**

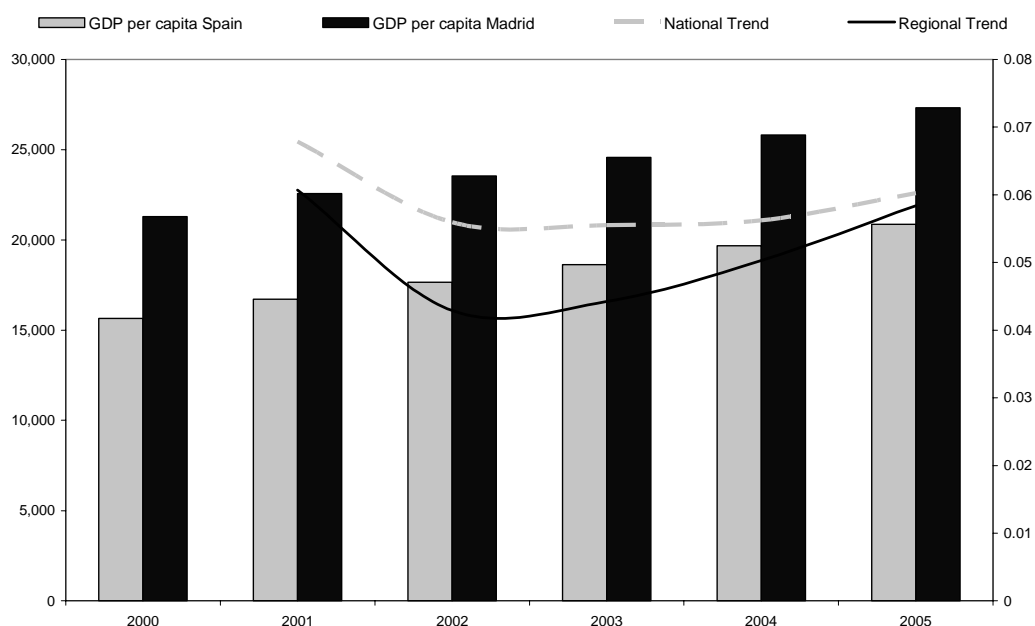


Source: Competitive Cities in the Global Economy, OECD, Paris, 2006



**Figure 20 – GDP per capita in Spain and in the Madrid metro-region (2000-2005)**

(Base prices – 2000)



Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

**Table 3 – Regional disparities in GDP per capita in Spain**

(1986-04)

Region	1986	1990	1995	2000	2004
Andalusia	75.26	76.05	74.25	74.19	77.75
Aragon	111.54	115.33	109.75	105.84	107.62
Asturias	98.61	91.63	87.62	84.89	88.19
Balearic Islands	131.98	123.81	118.14	119.67	114.14
Canaries	93.74	88.33	94.28	94.85	97.49
Cantabria	96.57	101.05	93.31	96.51	99.67
Castilla-Leon	94.70	93.26	95.63	93.05	97.19
Castilla-La Mancha	80.43	89.02	82.51	80.83	80.56
Catalonia	117.41	122.26	122.95	120.04	117.59
Com. of Valencia	101.93	101.18	95.01	95.22	95.17
Extremadura	65.23	67.86	63.31	65.73	69.92
Galicia	78.02	74.75	80.45	80.05	84.22
<b>Madrid</b>	<b>124.05</b>	<b>120.16</b>	<b>131.27</b>	<b>134.45</b>	<b>131.79</b>
Murcia	95.09	95.13	83.59	84.62	84.62
Navarre	121.86	128.60	128.62	126.50	126.52
Basque Country	124.39	119.71	120.04	123.93	129.63
Rioja	117.63	129.85	115.33	116.80	111.71
Ceuta and Melilla	86.91	88.50	82.27	85.18	90.85
<b>Spain</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

**Table 4 Regional disparities in unemployment rates in Spain**

(1986-04)

<b>Region</b>	<b>1986</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2004</b>
Andalusia	148.4	160.8	149.6	169.9	141.2
Aragon	72.1	56.6	70.3	53.2	69.0
Asturias	93.1	105.3	81.9	122.8	118.9
Balearic Islands	80.0	73.0	64.5	53.9	67.9
Basque Country	109.0	117.2	97.7	89.1	69.8
Canaries	122.6	142.4	102.9	88.6	83.5
Cantabria	87.9	102.5	103.3	104.0	98.8
Castilla-Leon	84.8	93.6	89.9	97.8	106.9
Castilla-La Mancha	74.2	78.9	88.0	94.1	91.0
Catalonia	100.0	78.0	87.3	64.2	85.8
Ceuta and Melilla	147.0	196.0	133.2	160.8	102.4
Com. of Valencia	91.1	86.9	94.3	83.9	71.0
Extremadura	129.5	147.2	136.6	174.0	154.9
Galicia	64.1	76.6	80.9	107.1	143.4
<b>Madrid</b>	<b>86.4</b>	<b>70.9</b>	<b>91.2</b>	<b>83.9</b>	<b>43.1</b>
Murcia	98.5	94.3	96.5	93.1	121.8
Navarre	85.6	72.8	58.1	42.0	60.1
Rioja	73.7	57.8	65.0	55.2	74.7
<b>Spain</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

Why such a relatively high portion of national GDP is concentrated in the Madrid metro-region? The answer to such question is multifaceted; concentration may depend on: (i) the concentration of financial resources (i.e. percentage of national savings in Madrid); (ii) the portion of national R&D expenditure in the Madrid metro-region; (iii) outward and inward FDI; and (iv) the region's proportion of national employment.

- First of all, Madrid plays the role of the Spanish “treasure chest” holding the highest percentage of national financial resources. Deposits in financial entities (a proxy for Madrid's savings capacity) have been increasing rapidly in recent years, doubling its overall terms between 1999 and 2006. The proportion of national savings concentrated in Madrid ranges between 23 % and 25 %, which is much higher than the proportion of regional population (13.3 %), demonstrating Madrid's capacity to attract national financial resources. Madrid is 31.1 % ahead of the region ranked second, Catalonia (data as at March 2005). In addition, the region of Madrid constitutes the main financial centre in Spain. It accounts for approximately 26% of the Gross Value Added (GAV) of the Spanish financial institutions.
- Second, Madrid is the Spanish region with the highest R&D expenditures, and with the highest concentration of researchers especially in the public sector. Approximately 28% of national R&D expenditure was concentrated in the Madrid metro-region in 2005 (Table 5). In the year 2000, the region invested over € 1.5 billion in R&D, which represented approximately 2% of regional GDP, i.e. above the Spanish average (0.9%) (INE – Spanish Institute of Statistics, 2003).

- Third, Madrid plays the role of international gateway by concentrating the bulk of both inward and outward FDI in Spain. Approximately two thirds of Spanish investments abroad originated from the Madrid metro-region in 2004. Madrid has also attracted a similar proportion of FDI into Spain since the turn of the century.
- Finally, the Madrid metro-region generates 15 % of all employment in Spain (second only to Catalonia at the regional level). The City of Madrid alone concentrates more than half of all employment in the region (Table 6).

**Table 5 – Indicators of R&D activities in 2005: regional differences in Spain**

	<b>Regional investment (million of EUR)</b>	<b>National share (Spain =100)</b>	<b>Workers in R&amp;D (in equivalent hours)</b>	<b>Researchers (in equivalent hours)</b>
<b>R&amp;D expenditure (Total)</b>				
Spain	10 196.8	100	174 772.9	10 9720.3
Madrid				
(Community of)	2 913.1	28.6	44 480.2	26 553.1
Catalonia	2 302.3	22.6	37 862.3	22 240.1
<b>R&amp;D expenditure (Universities)</b>				
Spain	2 959.9	100	66 995.5	54 028.3
Madrid				
(Community of)	494.3	16.7	10 743.5	84 02.3
Catalonia	578.5	19.5	12 519.2	9 841.8
<b>R&amp;D expenditure (Public sector)</b>				
Spain	1 738.05	100	3 2076.7	20 445.6
Madrid				
(Community of)	740.7	42.6	1 3479.9	7 690
Catalonia	263.2	15.1	5 148.8	3 709
<b>R&amp;D expenditure (Private sector)</b>				
Spain	5 498.8	100	75 700.7	3 5246.4
Madrid				
(Community of)	1 678.1	30.5	20 256.8	10 460.8
Catalonia	1 460.5	26.6	20 194.3	8 689.3

Note: R&D data are not available at the provincial level. This may penalise Madrid (a single province) when compared against Catalonia (4 provinces)

Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

**Table 6 – Employment in Spain, in the Madrid metro-region, and in the City of Madrid**

(1st quarter 2005)

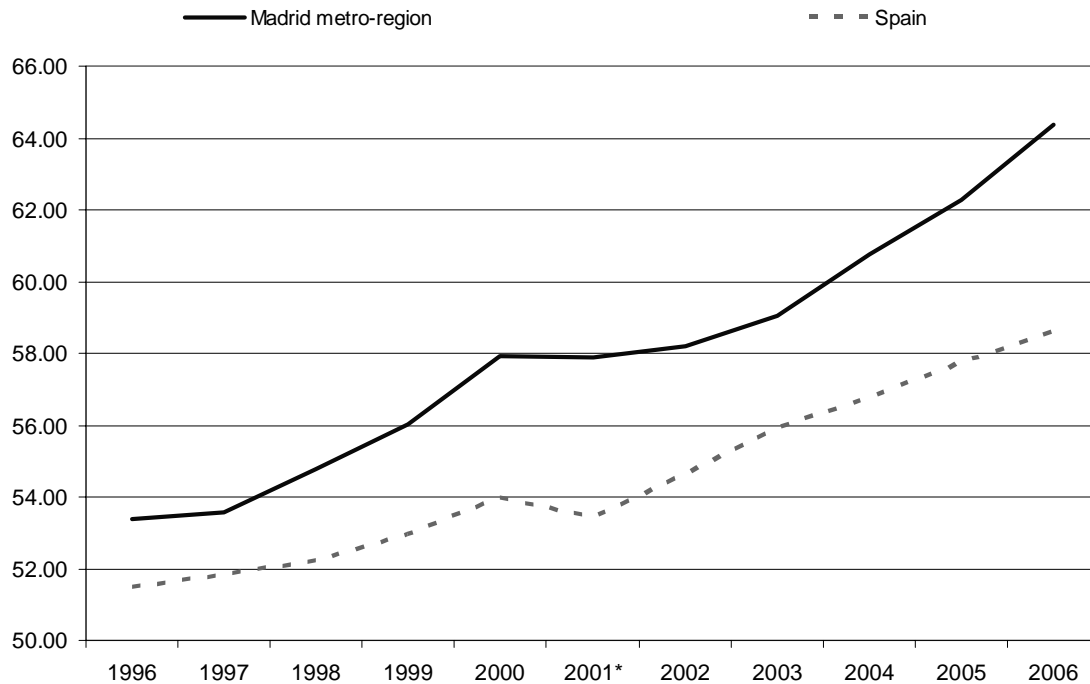
	<b>Employed (thousand)</b>	<b>Percentage of national total</b>
City of Madrid	1 412.2	7.64
Madrid metro-region	2 783.6	15.05
Spain	18 492.7	100

Source: INE - Instituto Nacional de Estadística (Spanish National Institute of Statistics)

*Main trends in the regional labour market: Madrid's capacity to generate employment*

Strong economic performance in Madrid has impacted its labour market, evidenced by soaring job creation. More than 760 000 new jobs were created between 2000 and 2006, a great part of them in the construction sector, triggered by the booming housing market in the City of Madrid created by the increasing demand of dwellings and office space by homeowners and service providers (financial, retail, and communications). New jobs were created as well with the enlargement of the airport in 2004, now the largest employer in the region of Madrid with more than 40 000 workers. Although still at a relatively low level (64.4% in 2006), the regional activity rate has improved between 1996 and 2006 (Figure 21). Overall unemployment declined from 11.6% in 2000 to 6.5% in 2006 (Figure 22). Such a good result is partially attributed to the female labour market. Both the increased female activity rate (3.2% between 2000 and 2004) and the decreased female unemployment rate (-8.52% between 2000 and 2004) demonstrate the improvement of the regional labour market (Figure 23). From an international perspective, Madrid ranks first among a sample of 38 metro-regions with the highest employment growth from 1999-2002. These positive labour market trends are in line with Spain's overall performance, as the OECD country where such a positive trend has been strongest (Figure 24).

**Figure 21 – Activity rate in Spain and in Madrid metro region (1996 – 2006)**

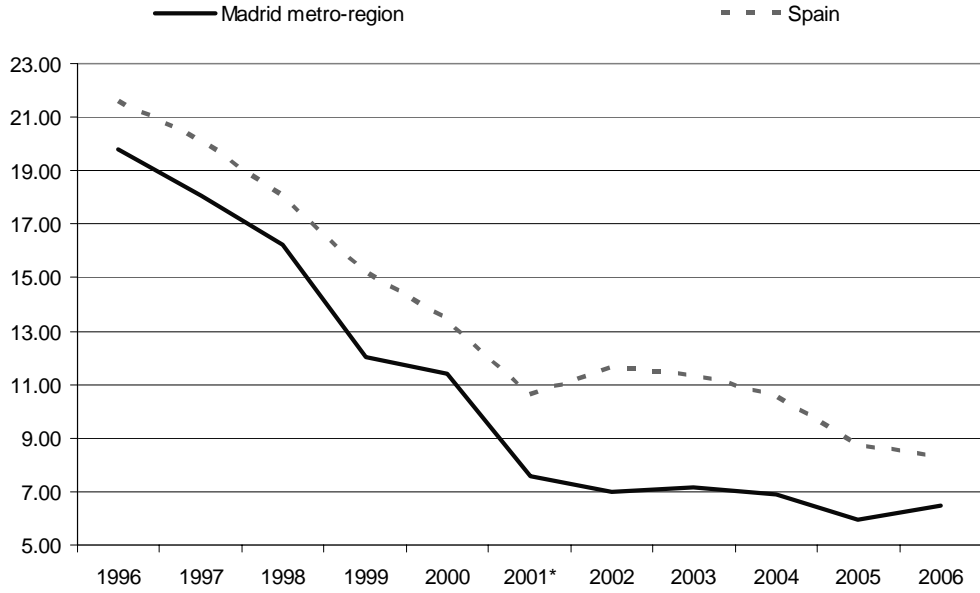


\* New definition of activity rate (EU reg. 1897/2000)

Source: Instituto Nacional de Estadística (National Institute of Statistics)

**Figure 22 – Trend of unemployment rate in Spain and in Madrid metro-region (1996 – 2006)**

(As of the first quarter of each year)

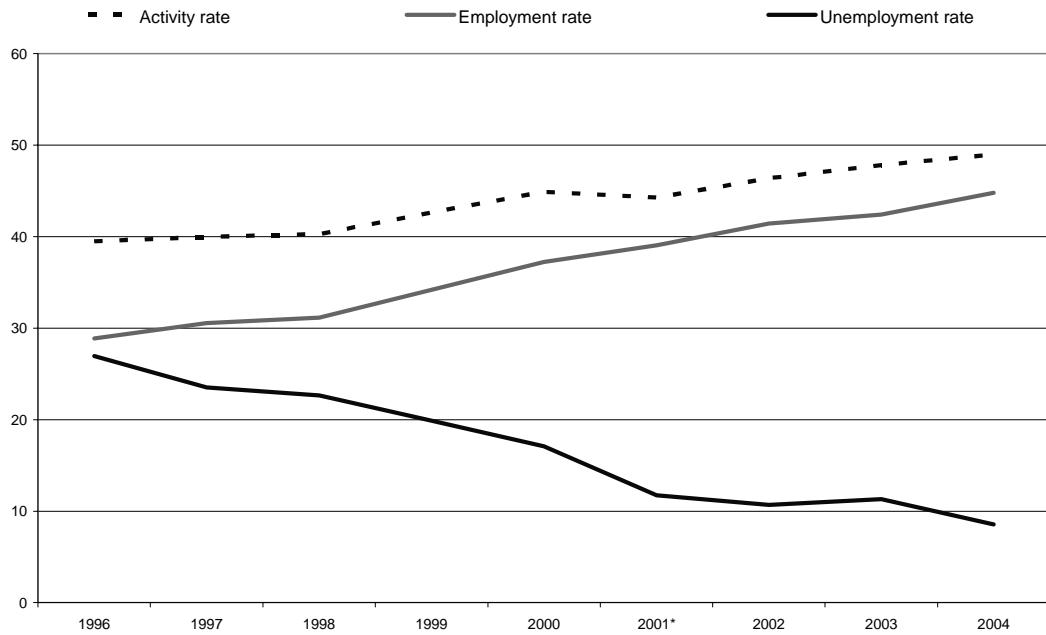


\* New definition of unemployment (EU reg. 1897/2000)

Source: Instituto Nacional de Estadística (National Institute of Statistics)

**Figure 23 – Female labour market in the Madrid metro-region (1996 – 2004)**

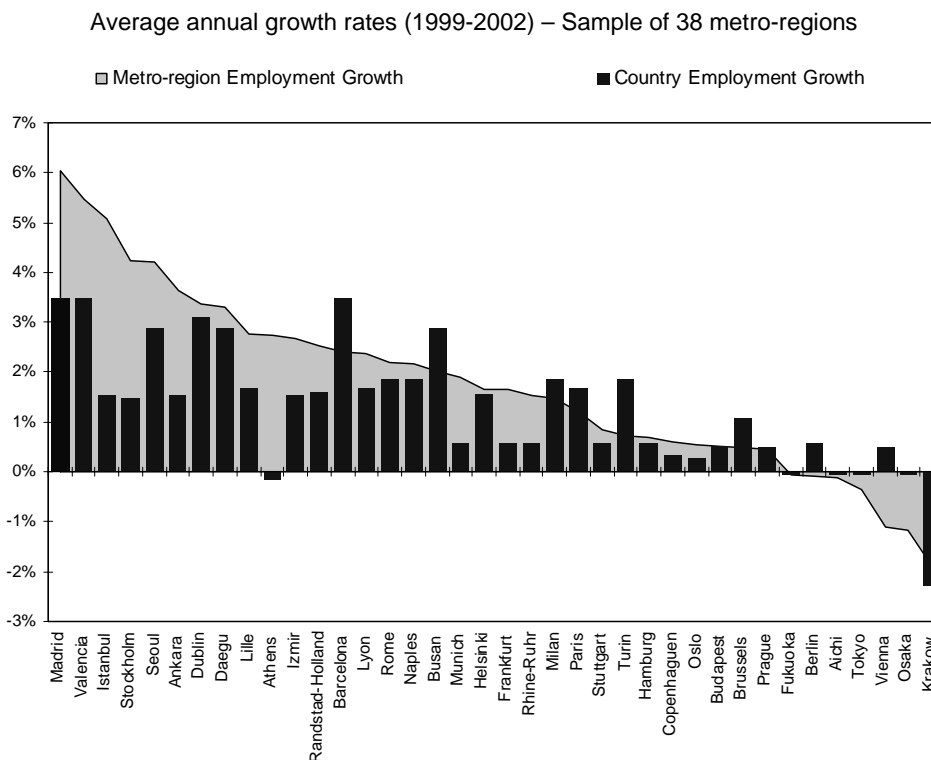
(As of the first quarter of each year)



\* New definition according to the EU reg. 1897/2000

Source: Instituto Nacional de Estadística (National Institute of Statistics)

**Figure 24 – Employment growth rates in metro-regions and their respective OECD countries**



Source: Competitive Cities in the Global Economy, OECD, Paris, 2006

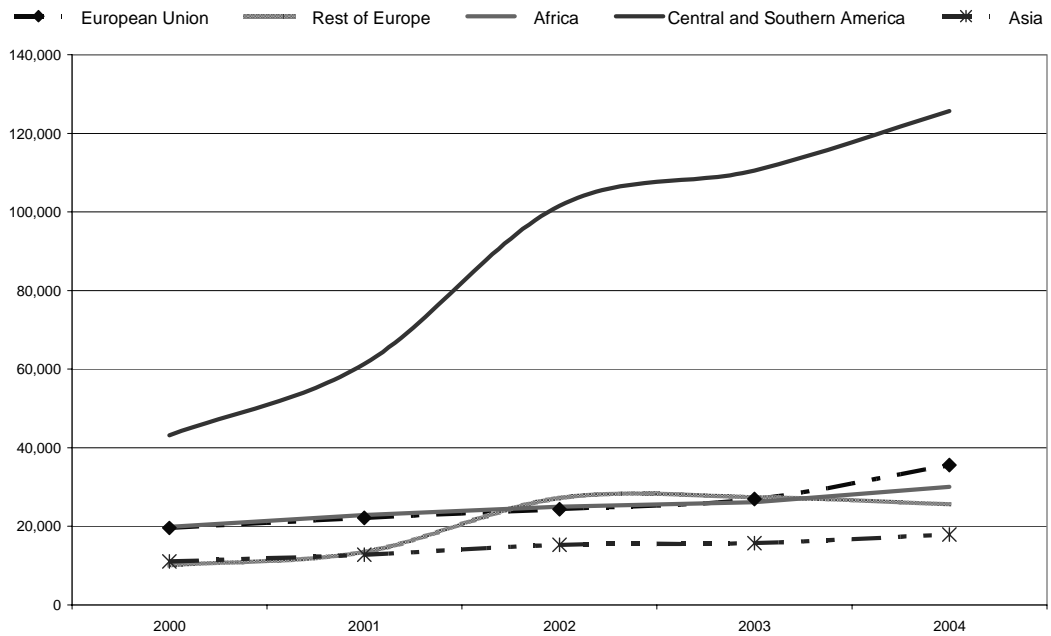
The positive trend of the local economy has made the metro-region a magnet for workers, both at the national and at the international level. At the national level, a 2003 comparison between the workers coming from other Spanish provinces (364 411) and the workers from the Madrid metro-region working in other Spanish provinces (117 615) resulted in a positive balance of 246 796. Madrid is thus an important net recipient of national labour force (Figure 25). At the international level, figures show a booming influx of workers coming from foreign countries, and mainly from South America (with a peak in 2001) (Figure 26). The reason for the influx of these workers into Spain rather than into other European countries can, at least partially, be attributed to the Spanish language and the increasing business flows between Spain and South American countries. The evolution of the labour market, and more precisely of the level of employment, can be analyzed more accurately by the number of Social Security contributors (which is not related to the place of residence of each worker) that has been increasing by 21.1 % from 1999-2004 (Table 7).

Figure 25 – Manpower streams between Spanish provinces



Source: INEM (Spanish National Institute for Employment) (2006), ¿Donde trabajamos? Contratación y movilidad. Geografía de los trabajadores en España. Ministry of Labour, Spain

Figure 26 – Influx of foreign workers\* in the Madrid metro-region by area of provenance



\* Workers enrolled in the Social Security System. The number of Social Security contributors is representative of Madrid's level of employment, irrespective of each worker's place of residence, therefore accurately reflecting the economic activity developed in the city.

Source: Community of Madrid – Regional Institute of Statistics

**Table 7 Social security contributors in the Madrid metro-region**

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>Δ 04/99 (%)</b>
City of Madrid	1 479 064	1 589 841	1 647 843	1 668 948	1 691 977	1 731 479	17.1
Madrid metro-region	2 200 991	2 352 189	2 442 146	2 510 466	2 568 226	2 66 966	21.1

Source: Community of Madrid - Regional Statistic Institute



## Assessing Madrid's international competitiveness

### *About international competitiveness of regions*

The rhetoric of competitiveness brought at the local level has produced a dramatic wave of interest in international benchmarking. Virtually every large city of the world, on the one hand, is trying to understand its potential in attracting FDI and best factors of production; and, on the other hand, tries to influence investment decisions by topping international rankings. In a globalising economy, territories, and not just firms, increasingly find themselves in competition with each other. But what does it mean competitiveness? As Roberto Camagni stated: “*unlike countries, cities and regions compete, in single currency areas, on the basis of an absolute advantage principle and not a comparative advantage principle*” (Camagni, 2002). That is a way to give theoretical background to the fact that, given the high mobility of factors of production and the global effect of agglomeration economies, best factors of production tend to be concentrated in best locations: The other face of the coin is that, according to such approach, some territories that are not able to maintain the efficiency of their productive framework get excluded by the international division of labour.<sup>40</sup>

The definition of regional competitiveness tends to converge with that of local attractiveness, i.e. the capacity of a given territory (or community) to attract foreign (or external) investment and highly educated workers. Well-known studies have emphasized that successful regions are often characterised by a high concentration of the so-called “creative class”. According to the work of Richard Florida (Florida, 2002), for instance, the “creative class” refers not only to highly educated workers (codified knowledge) but also workers who are able to design innovative solutions for complex problems (tacit knowledge). The creative class includes entrepreneurs, public and private managers, researchers, specialised professionals (lawyers, doctors, architects, engineers, etc.), artists, and specialised technicians. A “country effect” exists as the macroeconomic environment depends on national policies (such as immigration rules or R&D investment).

However, the problem of international rankings is about the lack of such specific data as, for instance, the number of workers belonging to the “creative class”. Therefore in this essay the main source of data to compare Madrid with the maximum number of other metro-regions in the OECD, which in its work on metropolitan regions has defined a metropolitan data-base measuring the performances of 78 metro-regions, which constitutes the basis of the Territorial Reviews, which the Paris-based Organisation has already realised in 15 different metro-regions.

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40. It is worth recalling that according Ricardo's theory of international specialisation of labour based on comparative advantages at the national level, all the countries will find a place within the global supply chain.

## *Sources of Madrid's competitiveness*

Madrid's ranking on the international scale in terms of GDP per capita among large metro-regions reflects Spain's position. In the *Competitive Cities in the Global Economy*, OECD, Paris, 2006, Madrid ranks 50<sup>th</sup> out of 78 metro-regions with approximately 1.5 million inhabitants, in terms of GDP per capita (Figure 27). If one excludes US cities, it ranks 20<sup>th</sup> out of 31, after such cities like London, Paris, Dublin, Vienna, Stockholm, Helsinki, Copenhagen, and Rome. This standing reflects Spain's income levels as compared to other OECD countries: Spain ranks 22<sup>nd</sup> out of 30, below the OECD average (Figure 28). Whilst GDP per capita is the most traditional indicators used to assess competitiveness, there are many other factors that need to be taken into account. For instance, a key dimension is the path of economic growth over time and in this respect Madrid has been performing relatively well in recent years (see below). Several city rankings have been developed using different and more complex indicators than GDP per capita.<sup>41</sup> One interesting example of a different way to measure cities' competitiveness comes from the "World Cities Hypothesis" (J. Friedmann 1986). The "World Cities Hypothesis" states that the world urban system is a spatial manifestation of the "new international division of labour". The competitiveness of a given city depends on the level (and the variety) of its productive specialisation within the global context, and on its international accessibility. Following such methodology, Madrid is a "secondary city" (such as, for instance, Milan, Amsterdam, and Vienna) in a "core country" (Europe).<sup>42</sup> Another example of a different way to assess European regions' competitiveness comes from the study carried out by Robert Huggins Associates. This study assesses regional competitiveness according to the capacity of attracting firms with stable or rising market shares in an activity and creating high quality jobs. In this case, Madrid ranks 18<sup>th</sup> out of 91 European regions.<sup>43</sup> Finally, a promising approach currently held at the national level for OECD countries is indicators that provide alternative measures to well-being (OECD Statistics Brief, 2006, N°11) looking as well to such factors as income distribution, health and social cohesion.

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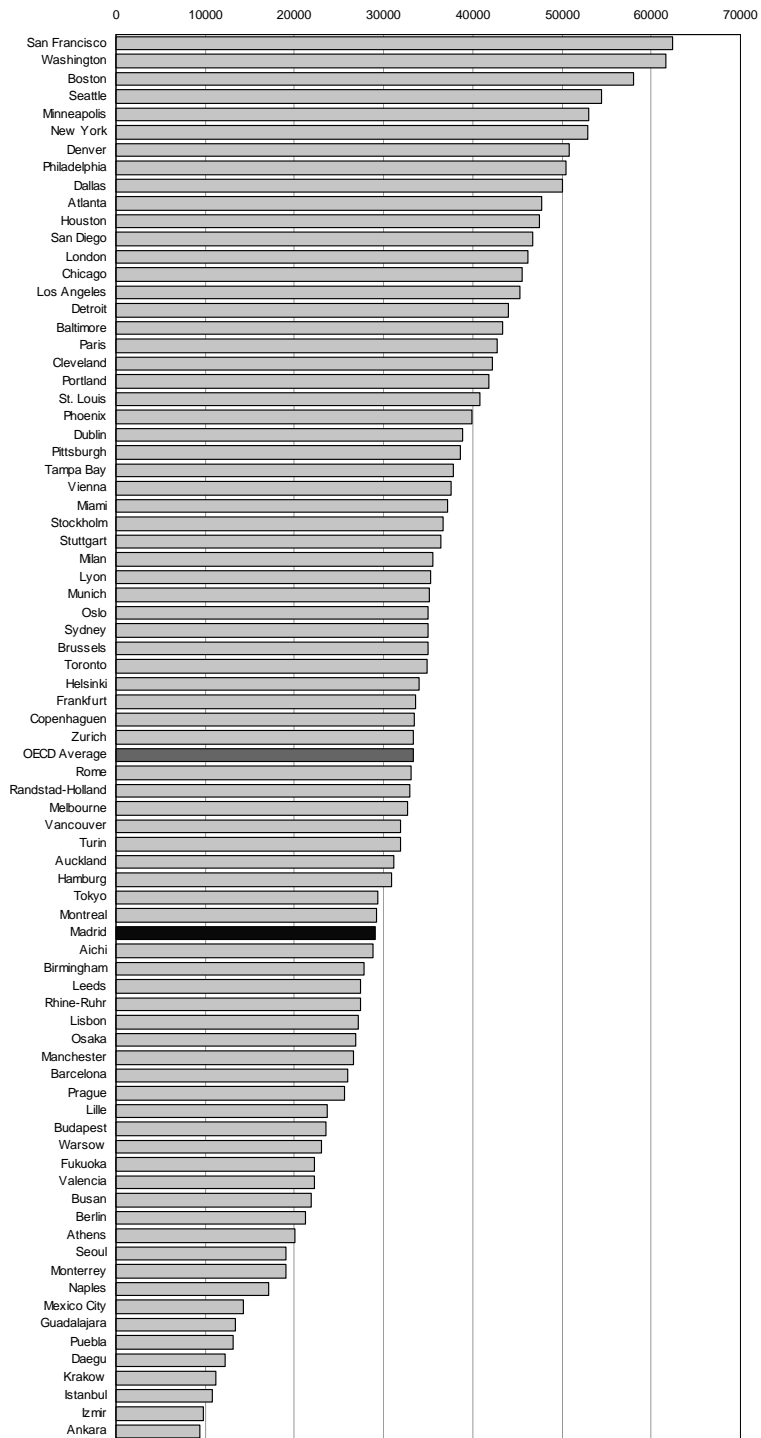
41 . It is worth noting that the more an indicator is complex the more it is exposed to subjectivity. Furthermore, another source of difference among rankings is the territorial scale at which comparison is carried out. Choosing the city boundaries or a larger territory closer to the urban functional area of the city deeply influences the findings.

42 . Friedmann divides the world into three parts: "core countries", "semi-periphery countries" and "periphery countries". World cities are only found in the core and semi-periphery countries. Thus a large portion of the globe is excluded in world city formation (and the world economy). In Friedmann's (1986) formulation, a two-tier system is proposed. All but two primary world cities are located in core countries. There exist three distinct subsystems: an Asian sub-system centred on the Tokyo-Singapore axis, an American subsystem based on the primary core cities of New York, Chicago and Los Angeles, and a West Europe sub-system focused on London, Paris and the Rhine Valley. Friedmann, J. (1986), *The World Cities Hypothesis*, *Development and Change*, Vol. 17, No. 1, pp. 69-84.

43 . <http://www.hugginsassociates.com>

**Figure 27 – Ranking by GDP per capita in PPPs**

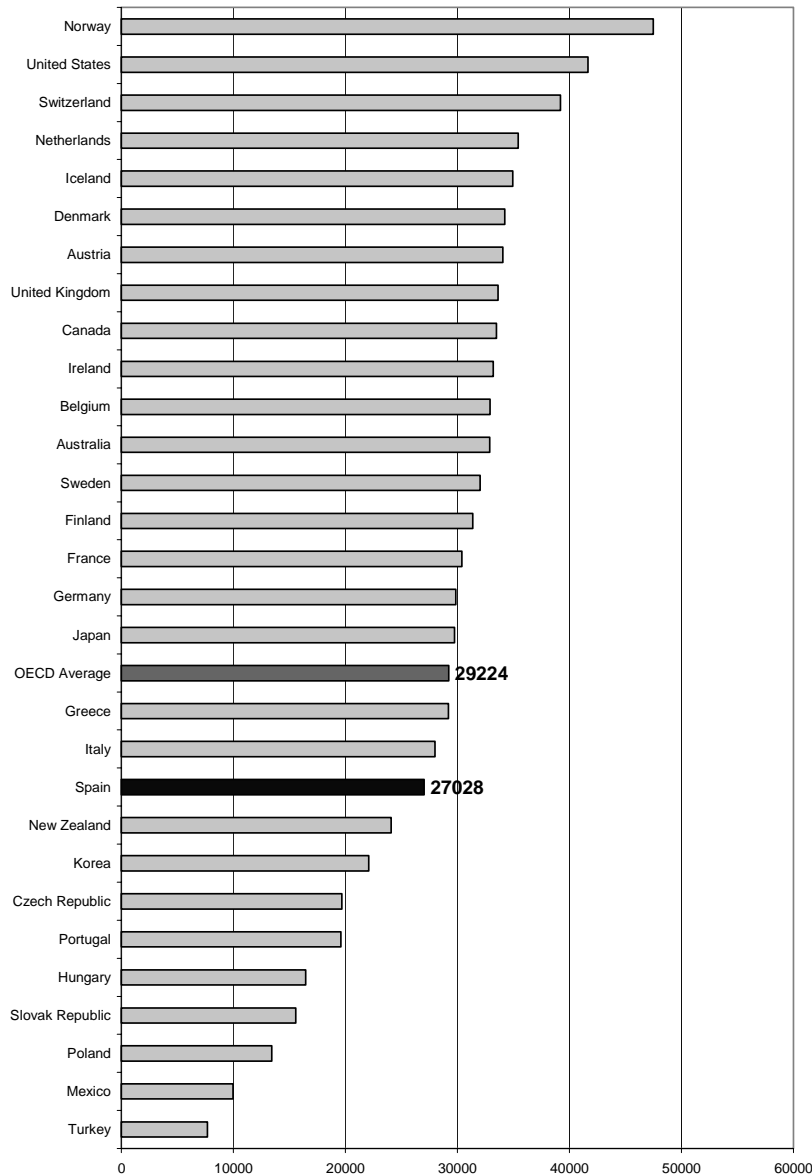
(Thousand USD)



Source: Competitive Cities in the Global Economy, OECD, Paris, 2006

**Figure 28 – GDP per capita in OECD member countries**

USD, current prices and PPPs, 2005 or latest available year



Source: OECD Factbook 2006

A main challenge for Madrid’s competitiveness is to increase its labour productivity level. The latter explains a large part of Madrid’s difference in GDP per capita versus the average of OECD metro-regions (Figure 29).<sup>44</sup> Labour productivity growth has been slightly positive on the last decade (on average, it grew by 1% from 1996-2005), and

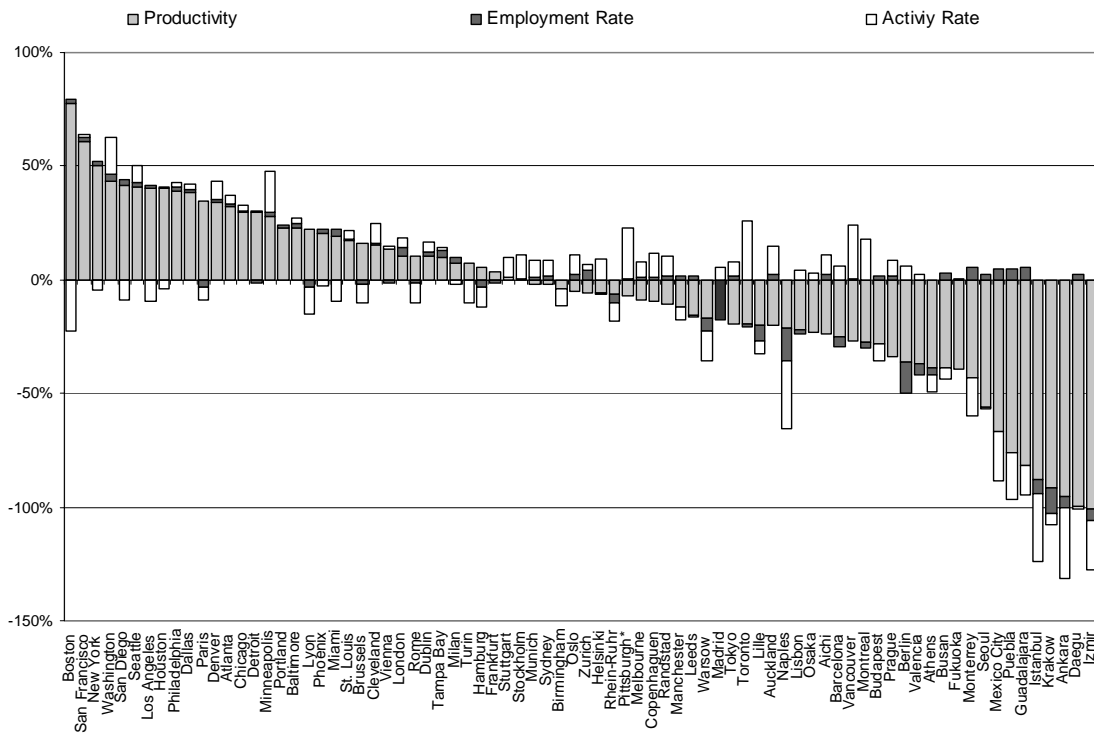
44 . The OECD uses GDP per capita as one of the indicator of regional competitiveness.

then turned negatively (-0.2%) between 2002 and 2005 (INE – Spanish National Institute of Statistics, Regional Accounts). A common phenomenon in the country, as confirmed by the recent OECD Economic Survey of Spain pointed out (OECD Economic Survey 2006) and the last economic report produced by the Spanish Prime Minister Cabinet (*Informe Económico del Presidente del Gobierno*, 2007). The interpretation of such level of the indicator needs however to be mitigated by a number of factors that are possibly beneficial to future development. For instance, measures to increase the flexibility of the labour market have facilitated the entrance of unskilled workers into the labour market.<sup>45</sup> Moreover, the incorporation to the labour market of large numbers of workers (fundamentally the young and immigrants, who might have lower-than-average productivity) has contributed to a reduction in the overall labour productivity. It is also worth noting that successive regularisations of immigrants have pushed down productivity figures. The official surfacing of illegal immigrants has led to blips in productivity measurements, such as those between 1999 and 2000 as a consequence of the first wave of regularisation in 2000, when local productivity hit record lows (Figures 30 – 31). This can be attributed to the fact that their economic impact was, to a large extent, already included in economic accounts at a time when they were not officially accounted as workers.

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45 . Another factor that is likely to explain Madrid labour productivity figures is that most new jobs have been created in the service sector, rather than in industry (industrial employment has contracted as a share of total employment). Productivity in the service sector tends to be lower than in industry, especially if services are not knowledge intensive, as is the case in Madrid, and measuring productivity in most non-market-oriented sectors is notoriously difficult.

**Figure 29 – Main explanations of GDP differentials between OECD metro-regions (2002)**



Source: Competitive Cities in the Global Economy, OECD, Paris, 2006

**Figure 30 – Annual growth rate of labour productivity in the Madrid metro-region**

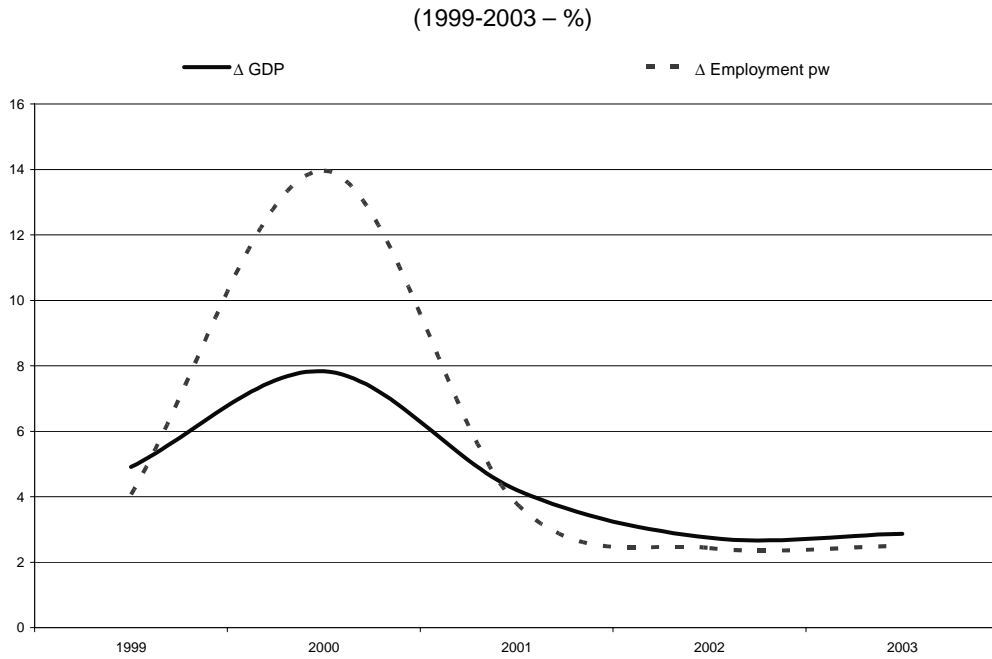
(1998 – 2003)



- The low average value is due to a fall in labour productivity between 1999 and 2000, when Spain implemented a large regularisation of illegal immigrants.

Source: OECD metropolitan database - Competitive Cities in the Global Economy, OECD, Paris, 2006

**Figure 31 – Annual growth rate of GDP and employment\* in the Madrid metro-region**

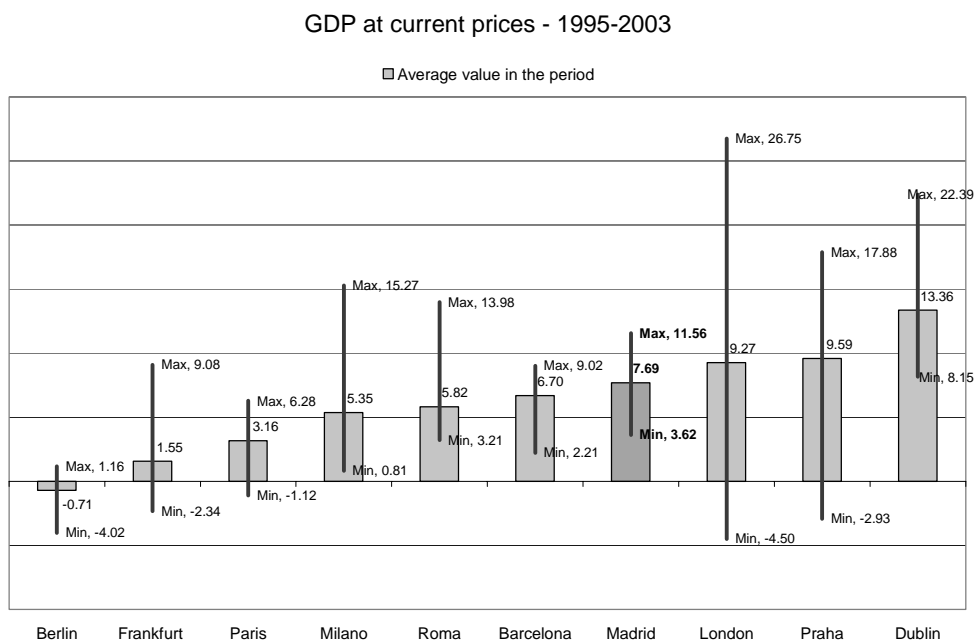


\* Employees at their place of work

Source: OECD metropolitan database - Competitive Cities in the Global Economy, OECD, Paris, 2006

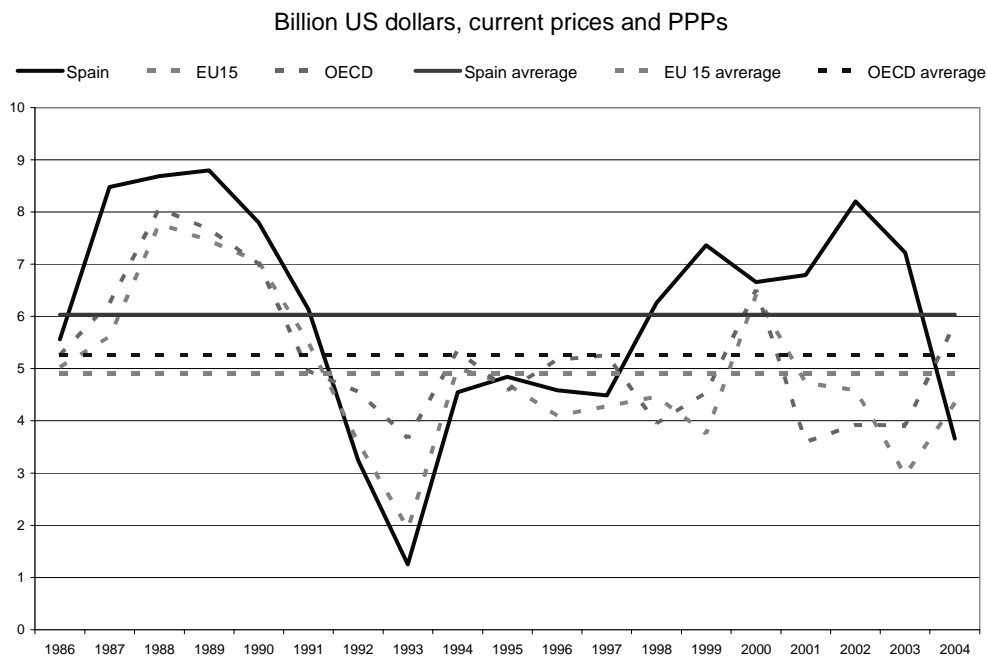
In terms of trends, Madrid has been one of the fastest growing metro-regions in Europe in terms of total GDP, with only Prague, Dublin, and London growing faster from 1995-2003 (Figure 32). Furthermore, when yearly trends are taken into account, Madrid shows consistent performances, demonstrating that the local development path is relatively stable. At the national level (which is an important reference since Madrid accounts for 17 % of Spain's economy) the performance is also positive. Spain has been growing faster than both the OECD and the European averages from 1986, when Spain joined the EU, through 2004. Specifically, since 1997, Spain's growth trend has ceased being correlated with that of the other countries, showing a completely different evolution (Figure 33). Actually, Madrid was one of the faster growing 78 OECD metro-regions in terms of GDP over 1995-2002 (it ranked 16<sup>th</sup> out of 45 metro-regions, well above the OECD average).

**Figure 32 – Average, maximum and minimum yearly growth rate in selected European metropolitan regions**



Source: Eurostat, Regional dataset (NUTS 3)

**Figure 33 – GDP trend in Spain, EU 15, and OECD (1986 – 2004)**



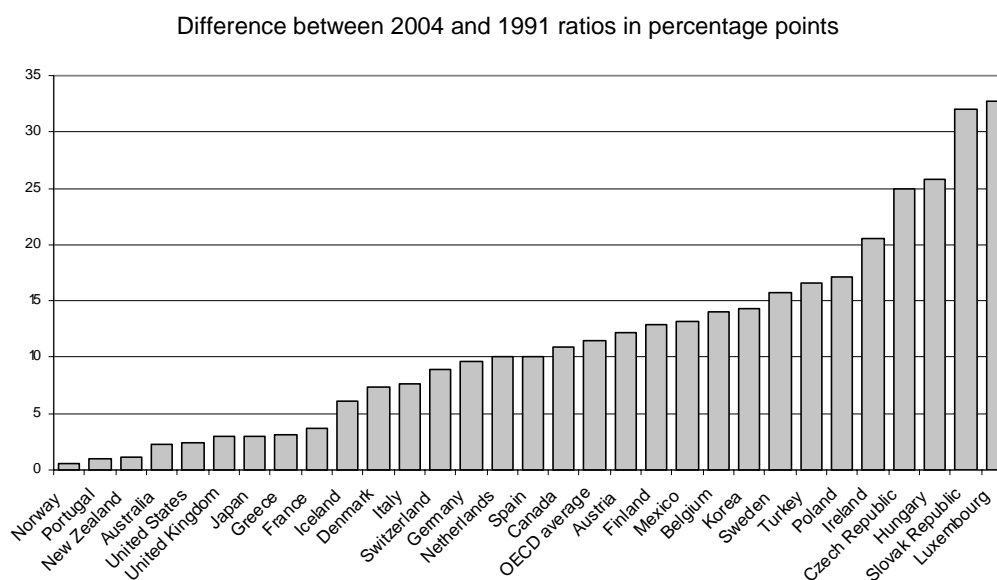
Source: OECD Factbook (2006), Eurostat



### *An important role in international trade*

The Madrid metro-region processes the lion's share of Spain's international trade, acting as the national gateway. After a period of relative isolation, Spain has transformed into an important country with regards to international trade. Past statistics show Spain with trade as a share of GDP below the OECD average. In 2005 Spain was the best performer among the large European countries (in terms both of population and GDP) and, reaching 58% of GDP in 2005, slightly above the average of 51% for all OECD member countries (Figure 34).<sup>46</sup> The Madrid metro-region generated EUR16 billion of exports and EUR 52 billion of imports in 2005, roughly 10% and 22% respectively of the national total. The metro-region's commercial balance is negative with a deficit of nearly EUR 17 800 million (2005), 49.0% of the national deficit, and 5.8 points less than in 2004. It should be noted that these are potentially biased data given Madrid's role as the main administrative centre for Spanish international trade.

**Figure 34 – Trade to GDP ratios**



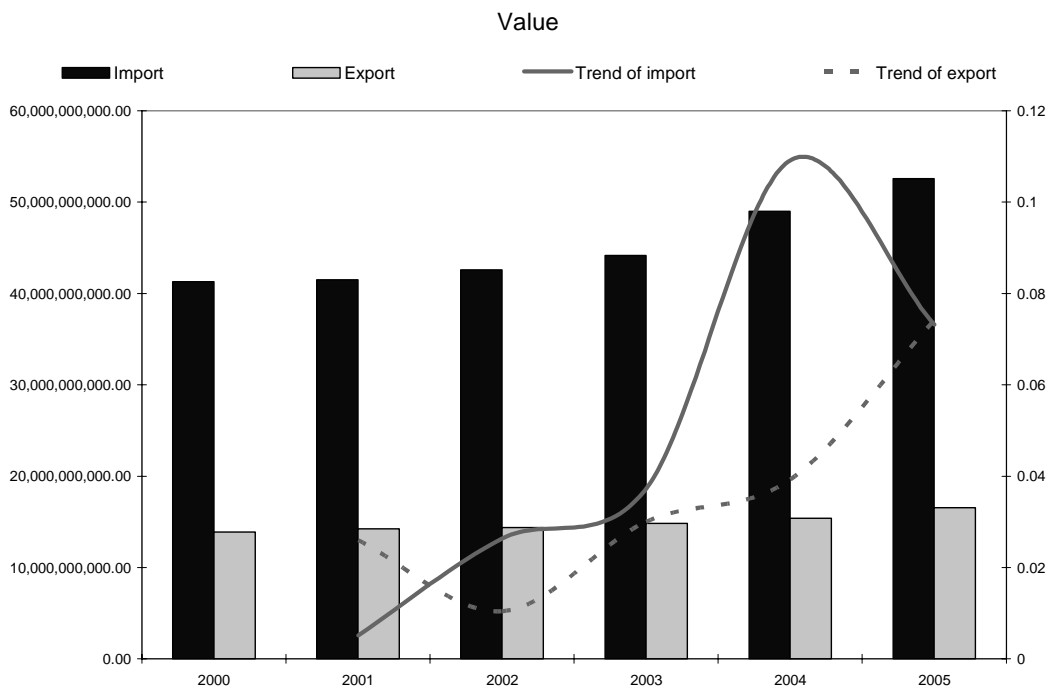
Source: OECD Factbook 2006

In term of trends, the evolution of trade over time is positive both in the case of imports and exports (fluctuating more in the case of imports due to the evolution of petrol prices and the Euro-Dollar exchange rate). Exports have increased by an average

46 . International trade tends to be more important for countries that are small (in terms of size or population) and surrounded by neighbouring countries with open trade regimes, than for large, relatively self-sufficient countries or those that are geographically isolated and thus penalised by high transport costs. Other factors also play a role and help explain differences in trade-to-GDP ratios across countries, such as history, culture, trade policy, the structure of the economy (especially the weight of non-tradable services in GDP), re-exports and the presence of multinational firms, which leads to more intra-firm trade.

of 3.6 % between 2000 and 2005 and imports by 5 % within the same period. The growth rate for exports from Madrid exceeds the rate for Spain as a whole, while imports fall short of this figure, increasing by only a third of the figure recorded for Spain (Figure 35). Although deficits in the commercial balance have been the norm in recent years, it is important to note that (i) international transactions have been continuously growing, making Madrid’s economy more open, with some predictions of increasing export growth rates and decreasing import growth rates, and (ii) if we consider the Madrid metro-region as a “territory” trading with the “rest of the world” (Spain without Madrid, and the other nations) the sectoral decomposition of exports and imports indicates a positive balance in the service sector, particularly in whole retail, communication, and finance (Figure 36). In other words, Madrid imports capital goods and exports advanced services. Finally, Madrid’s main commercial partners are EU countries (France, Portugal and Germany, in particular) and OECD member countries (USA and Mexico) (Figures 37 – 38).

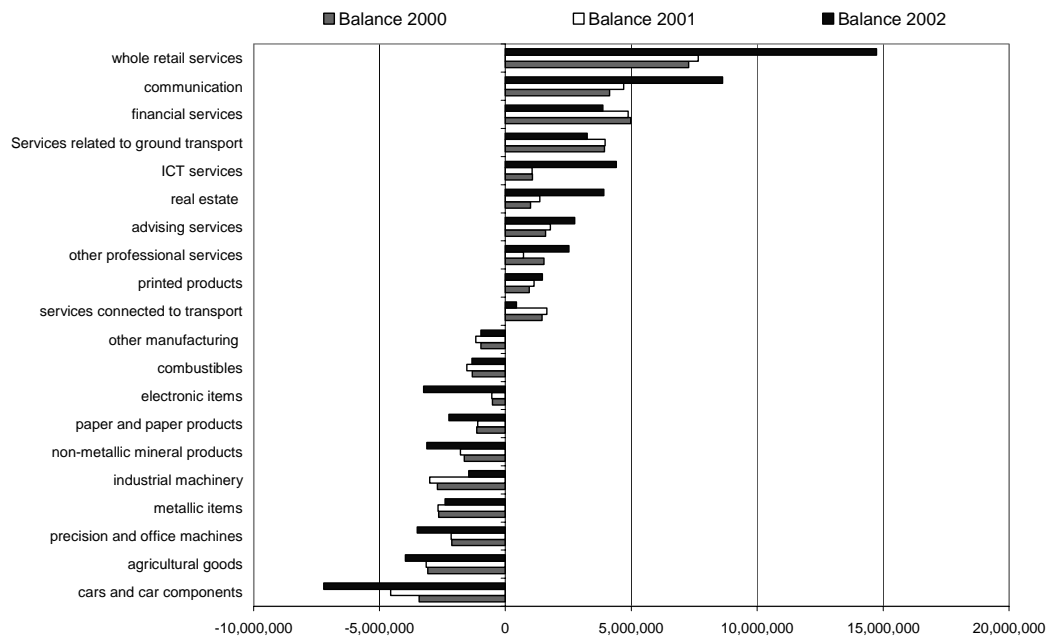
**Figure 35 – Commercial balance of the Madrid metro-region**



Source: Chamber of Commerce of Madrid

**Figure 36 – Recent trends in trade in selected sectors of the Madrid metro-region**

(2000 - 2003)

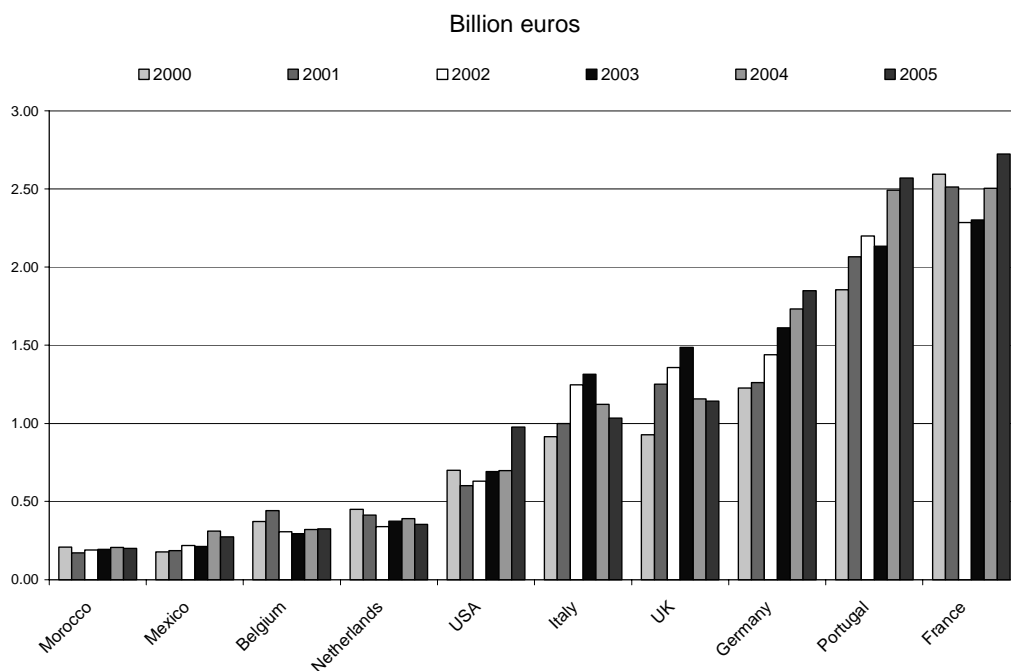


\* The first ten sectors in import and the first ten sectors in export

\*\* The Madrid metro-region here is considered as a nation

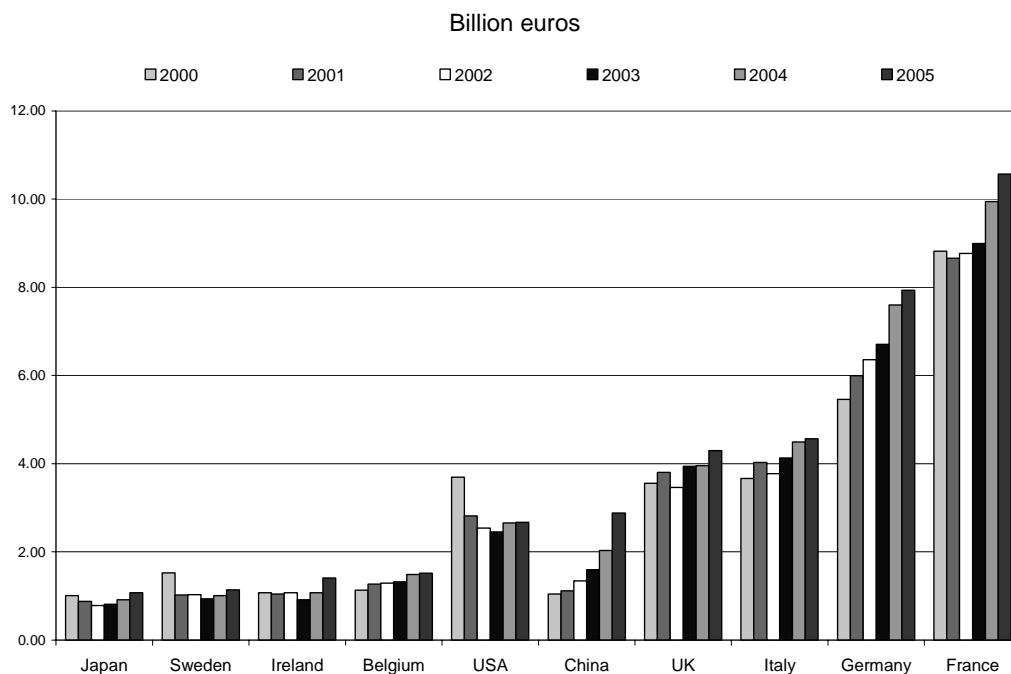
Source: Instituto de Estadística – Comunidad de Madrid (Statistics Office of the Community of Madrid – Elaboration of the Input-output matrix - 2002)

**Figure 37 – Madrid's top ten commercial partners - Export**



Source: Chamber of Commerce of Madrid

**Figure 38 – Madrid's top ten commercial partners - Import**



Source: Chamber of Commerce of Madrid

Madrid has an efficient endowment of transportation facilities within its trade hub offerings. The actual comparative advantage of Madrid in logistics is the consequence of: (i) major improvement over the last two decades in transportation infrastructure, which has translated into lower transport costs, and (ii) the relative availability of land, a scarce resource for many other competitors. Concerning the transportation infrastructure, all major Spanish railroad and road axes pass through Madrid. Furthermore the local Barajas airport is the main national hub and one of the most important airports in Europe. It ranked fifth in Europe in passenger traffic and with the new extension that opened in 2006 – which in effect doubled its size – will allow it to challenge Paris Charles de Gaulle and Frankfurt Main for second place in the foreseeable future (Table 8).<sup>47</sup> The airport, while clearly specialised in passenger traffic, has in recent years also started to focus greater attention on freight, making it the ninth largest airport for freight in 2004 in Europe. The overall competitiveness of Madrid in logistics will probably be further enhanced by the high capacity railroad axis connecting Madrid with Barcelona (under construction), contributing to connecting the Spanish capital to the Mediterranean more efficiently.<sup>48</sup> In addition, the Madrid metro-region also enjoys a privileged position at the international level. The enlargement of the European Union to Central and Eastern European countries opens new opportunities for international trade relationships from which Madrid may benefit, bearing in mind that these countries may also be potential competitors. Moreover, Spain and, in particular, Madrid, have been successful at exploiting the advantage of being considered as the gateway of Europe to emerging international markets in North Africa, Latin America and the Caribbean.

**Table 8 – Top 20 EU airports in terms of total passengers and total freight carried in 2004**

Passengers			Freight		
Airport	Thousand passengers	Growth rate 2003/2004	Airport	Thousand tons	Growth rate 2003/2004
London Heathrow	67 110	6.2	Frankfurt am Main	1 827.3	11.2
Paris Charles de Gaulle	50 951	6.1	Amsterdam Schipol	1 467.0	8.4
Frankfurt am Main	50 700	5.6	London Heathrow	1 412.0	8.6
Amsterdam Schipol	42 425	6.6	Paris Charles de Gaulle	1 275.8	6.9

47 . The operational launch of "Greater Barajas", in January 2006, has provided the airport with two new runways (18L/36R and 15L/33R) and two new terminals (T4 and a satellite building). With the opening of the expanded airport, it can handle a maximum of 70 million passengers per year. The number of passengers has doubled over the last fifteen years, rising to more than 40 million in 2005.

48 . This is the High Speed Line Madrid - Zaragoza - Lleida (to be extended to Barcelona and the French border). Although the line began operation in 2003 with a system allowing maximum speeds of 200 km/h, it will be able to reach 300 km/h with the introduction of the EMRTS Communications system. In any case, this new line, 55.4 km of which runs through the Community of Madrid, reduces journey times and increase travel options to Zaragoza and Lleida, providing 37 % more capacity than the "conventional line" to Zaragoza, and 238 % more to Lleida. GIF, the state rail infrastructure company, has budgeted EUR 32 million for this line for 2003 for signalling and communications work, and for the refurbishment of Atocha station.

<b>Madrid Barajas</b>	38 155	7.9	Brussels National	660.4	8.9
London Gatwick	31 392	5.0	Cologne-Bonn	621.9	17.3
Rome Fiumicino	27 160	6.6	Luxembourg	616.6	2.3
Munich	26 601	11.1	Milan Malpensa	360.6	13.3
Barcelona	24 354	8.3	<b>Madrid Barajas</b>	<b>352.8</b>	<b>19.1</b>
Paris Orly	24 049	7.1	East Midlands	277.2	16.8
Manchester	20 970	7.4	London Stanstead	239.0	17.9
London Stanstead	20 909	11.7	London Gatwick	226.9	-2.8
Palma de Majorca	20 363	6.5	Munich	192.4	17.8
Copenhagen	18 889	7.6	Vienna	158.1	24.5
Milan Malpensa	18 419	5.4	Manchester	153.3	21.9
Dublin	17 032	7.9	Rome Fiumicino	139.6	-14.8
Stockholm	16 467	7.7	Bergamo Orio la Serio	129.6	1.3
Brussels National	15 445	2.3	Helsinki Vantaa	118.0	33.9
Dusseldorf	15 092	6.8	Genoa Sestri	111.4	.
Vienna	14 711	15.7	Athens	104.1	-20.8

Source: Eurostat.

### *FDI activity and city attractiveness*

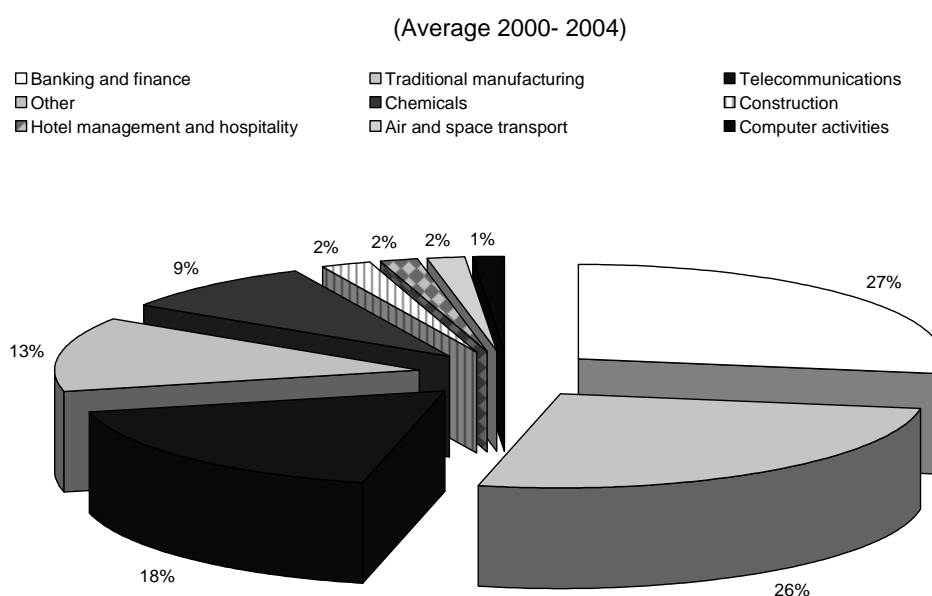
The largest part of Spanish outward investments comes from Madrid and reflects the sectoral specialization of the metro-region's economy. Between 2000 and 2004, services have been the principal sector of Madrid's foreign investments, with banking and telecommunications making up 27% and 18% respectively. During the same period Madrid's outward FDI in the manufacturing sector has been concentrated in traditional activities, and medium and high technology sectors (26% of the total) (Figure 38). From a geographical perspective, Latin America continues to be the main recipient of Spanish FDI, despite decreasing importance over the last year.<sup>49</sup> The bulk of investment in Latin America is carried out in the banking and telecommunications sectors. Concerning the former, the two largest Madrid-based Spanish banks (Banco Santander Central Hispano, BSCH and Banco Bilbao Vizcaya Argentaria, BBVA) gained a major position in the Latin American market (Table 9).<sup>50</sup> Regarding telecommunications, by 1994, Telefónica de España had become the dominant telecommunications provider in South America, with major holdings in Argentina, Chile, Venezuela, and Peru (The Economist, 1995). Moreover, the company paid USD 142 million for a 79 % share of TLD (*Telefónica Larga Distancia*), the Puerto Rican long-distance operator, to get into the Spanish-speaking market in the United States (Baklanoff, 1996). Of course outward investment from Madrid is influenced by the national trend, given its role as the capital city. Spain was the 4<sup>th</sup> largest outward investor in the world in 2004, only behind the US, the UK and Luxembourg, and the 2<sup>nd</sup> largest in Latin America, only behind the US. Approximately two thirds of Spanish investments abroad – reaching 80% in 2005 –

49 . In 1999 Spanish FDI to Latin America reached 4.9% of national GDP compared with the 1.8% to Europe. The wave of large Spanish investment in Latin America finished in 2001, mainly because of the Argentinean crisis.

50 . Banco Bilbao Vizcaya Argentaria's headquarter is still in Bilbao, while all the other functions have been moved to Madrid.

originated in the Madrid metropolitan region (Table 10).<sup>51</sup> Spanish outward foreign investment has soared since 1997, a development that reflects a variety of factors. First, with the deregulation of the Spanish economy in recent years, big companies, many of them previously state-owned companies, have adopted more market-oriented business strategies while seeking to benefit as much as possible from economies of scale. Second, the progress made in real convergence in recent years has narrowed the gap between the level of development in Spain and European standards, both regarding productivity and costs, so that in some ways the domestic market can be regarded as a mature market. Third, once a company is big enough, international expansion is a way of increasing the client base and diversifying risks (M. Sebastian and C. Hernansanz, 2000).

**Figure 39 – Sectoral distribution of Spain’s outward FDI**



Source: Minister of Trade, Spain

**Table 9 – Largest foreign banks in Latin America by consolidated assets - First half of 2003**

Millions of dollars

Rank in 2003	Rank in 1999	Bank	Country of origin	Assets	Main subsidiaries in*
1	1	<b>BSCH</b>	<b>Spain</b>	62 894	Brazil, Chile, Mexico, Argentina,

51 . It is worth noting that the percentage of national FDI in Madrid is positively influenced by the fact that the Spanish capital is home to the headquarters of many foreign companies with activities in Spain.

2	3	BBVA	Spain	61 019	Venezuela Mexico, Argentina, Chile, Peru, Venezuela, Colombia, Panama, Uruguay Mexico, Brazil, Argentina, Chile, Colombia, Peru, Venezuela, Uruguay, Paraguay Brazil, Chile, Argentina. Colombia, Paraguay Brazil
3	2	City Bank	USA	59 463	Argentina, Chile, Uruguay, Mexico, Panama, Peru Brazil, Argentina, Panama, Chile, Mexico, Chile, Panama, El Salvador, Dominican Republic Peru, Argentina, Panama, Colombia Brazil, Mexico, Chile
4	5	ABN Amro Bank	Netherlands	16 174	Brazil, Argentina, Chile, Uruguay, Mexico, Panama, Peru Brazil, Argentina, Panama, Chile, Mexico, Chile, Panama, El Salvador, Dominican Republic Peru, Argentina, Panama, Colombia Brazil, Mexico, Chile
5	4	FleetBoston Financial Corp.	USA	13 754	Brazil, Argentina, Panama, Chile, Mexico, Chile, Panama, El Salvador, Dominican Republic Peru, Argentina, Panama, Colombia Brazil, Mexico, Chile
6	6	HSBC	UK	12 203	Brazil, Argentina, Panama, Chile, Mexico, Chile, Panama, El Salvador, Dominican Republic Peru, Argentina, Panama, Colombia Brazil, Mexico, Chile
7	10	Scotiabank	Canada	11 455	Brazil, Argentina, Panama, Chile, Mexico, Chile, Panama, El Salvador, Dominican Republic Peru, Argentina, Panama, Colombia Brazil, Mexico, Chile
8	11	Sudameris	France	5 337	Brazil, Argentina, Panama, Chile, Mexico, Chile, Panama, El Salvador, Dominican Republic Peru, Argentina, Panama, Colombia Brazil, Mexico, Chile
9	**	J.P. Morgan Chase	USA	4 476	Brazil, Argentina, Panama, Chile, Mexico, Chile, Panama, El Salvador, Dominican Republic Peru, Argentina, Panama, Colombia Brazil, Mexico, Chile
10	7	Lloyds TSB Group	UK	3 761	Brazil, Argentina, Panama, Chile, Mexico, Chile, Panama, El Salvador, Dominican Republic Peru, Argentina, Panama, Colombia Brazil, Mexico, Chile
<b>Total</b>				<b>250 537</b>	

\* Figures include subsidiaries with assets in excess of US\$ 250 million. The countries are ordered according to the assets of their respective subsidiaries.

\*\* In 1999, JP Morgan and Chase Manhattan had not yet merged, so it is impossible to compare the position of the joint enterprise in 2003 with the ranking of the two banks when independent. In 1999, JP Morgan was ranked 21st, while Chase Manhattan was in ninth place.

Source: Foreign investment in Latin America and the Caribbean, ECLAC, United Nations 2004

**Table 10 – FDI in the Madrid metro-region and in Spain**

Millions of euros				
	2002	2003	2004	% 04/03
Madrid metro-region				
Outflow	15 586	10 795	23 708	120

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	Inflow	5 750	6 188	4 475	- 28
	Balance	- 9 836.00	- 4 475.00	- 19 233.00	317.50
<hr/>					
Spain	Outflow	25 202	18 344	35 406	93
	Inflow	11 428	9 915	11 129	12
	Balance	-13 744.00	- 8 429.00	- 24 277.00	188.00
<hr/>					
Madrid metro-region/Spain (%)	Outflow	61.8	58.8	67	
	Inflow	50.3	62.4	40.2	
	Balance	71.4	54.7	79.2	

Source: Ministry of Trade, Spain

Madrid concentrates the bulk of inward foreign investment in Spain as well. The metro-region attracted 54% of all foreign direct investment (FDI) coming into Spain in 2005, with percentages that have hovered between 50 and 62% of the total since the turn of the century, with the only exception being in 2004 when it fell to 40 %.<sup>52</sup> The size of this share becomes more relevant when seen in the context that Spain has been the 6<sup>th</sup> largest recipient of FDI among OECD countries and a selection of emerging countries and the 5<sup>th</sup> largest in Europe, between 2002 and 2004 (Figure 40). The main investors in Spain are France, the US, the UK and Germany which together account for 60% of the stock held. FDI is fundamentally concentrated in a few sectors: manufacturing, commerce, chemicals, finance and transport and communications which account for the 61% of investment stock (Figure 41). From a purely regional perspective, inward FDI in Spain is mainly concentrated in two regions: Madrid and Catalonia. Since the early 1990s, Madrid's increases have been eroding the share of other regions as it attempts to emerge as the major FDI pole for Spain (Table 11), attracting more than 50% of the total FDI coming into Spain since the turn of the century.

**Table 11 Distribution of inward FDI in Spanish regions (1985-2002)**

(% of the total)

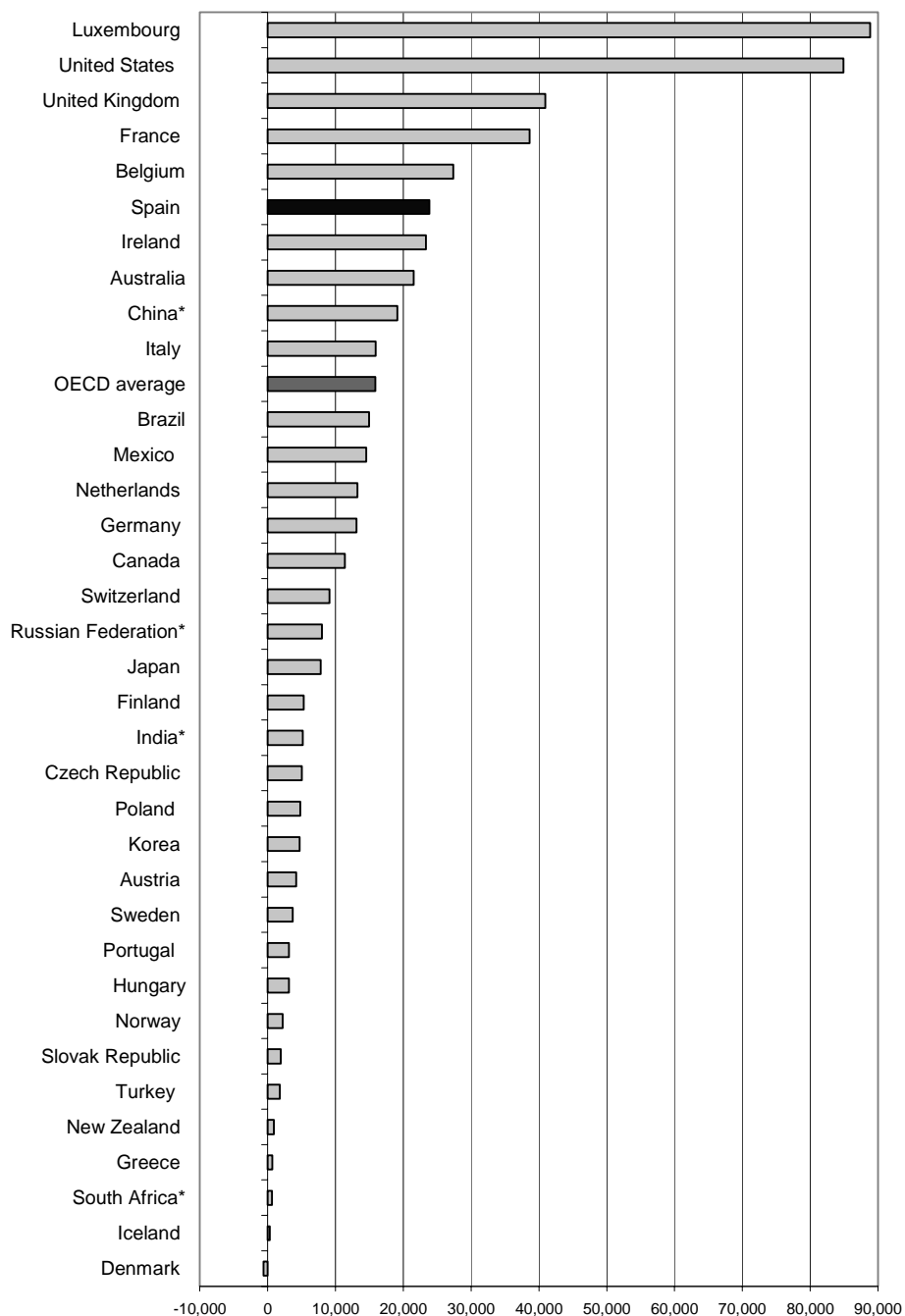
	1985-1992	1993-1999	2000-2002
Madrid	44	54	67
Catalonia	30	25	21
Andalusia	8	3	4
Basque Country	3	5	3
C. of Valencia	3	2	2
Rest	12	11	3

Source: Raquel Diaz Cazquez (2004), *Inversion extranjera directa y convergencia regional*, Working paper, University of Vigo.

52 . The low trend on 2004 is probably due to the terrorist attacks to commuter trains that left more than 190 people dead.

**Figure 40 – Inflows of foreign direct investment in OECD countries and a selection of non-OECD countries**

Millions of USD, average 2002-2004

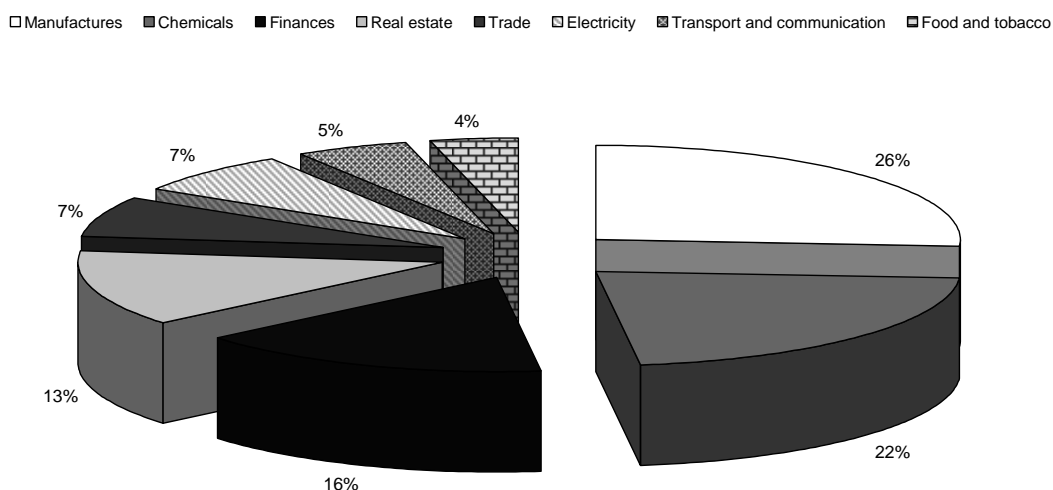


\* These countries are not members of the OECD

Source: OECD, Factbook (2006)

**Figure 41 – Sectoral distribution of inward FDI in Spain**

2004



Source: Foreign Investment Registry, Spain

The importance of inward FDI in the economic structure of Madrid is relevant. In 2002, FDI in Madrid accounted for the 22.14% of its GDP while the Spanish regional average was 5.15%. According to a survey conducted by Cushman & Wakefield in 2005, European firms consider Madrid the seventh best location to make investments in Europe (Table 12). This represents an improvement of ten positions in fifteen years, making it the first investment location outside the thick urban network of Central Europe. This positive trend is also confirmed by the increasing attraction of foreign greenfield investment<sup>53</sup> – according to the *European Investment Monitor*, Madrid gained two positions – rising from 10<sup>th</sup> to 8<sup>th</sup> – in the ranking of European regions based on the number of greenfield FDIs between 2001 and 2002 (Table 13). There are several factors behind Madrid’s ability to attract inward investments.

- First, with more than 6 million inhabitants (2006) Madrid is the larger consumer market in Spain.
- Second, Madrid offers a modern and extensive network of transport and communication infrastructure (Madrid obtained the highest mark in this category when competing with London, Paris, New York and Moscow to organize the Olympic Games in 2012). The radial shape of the national transport

53 . Greenfield investments include real creation of new investments, co-locations and expansions of existing foreign investments and therefore exclude other forms of FDI such as mergers and acquisitions, joint ventures and/or license agreements.

infrastructure (roads and railroads) makes Madrid a primary logistic platform in Spain. Telecommunications infrastructure improvements (5 000 km of fiberoptic cable and 76% of enterprises have broadband access compared to 65% of the European average) place Madrid 11<sup>th</sup> in the ranking of telecommunications quality of the *European Cities Monitor 2005* (20<sup>th</sup> position in 2002).<sup>54</sup>

- Third, Madrid has a well-qualified and relatively inexpensive labour force. The Madrid metro-region ranks 8<sup>th</sup> among the 78 OECD metro-regions for the share of the population of 15 years and more with a tertiary education (Figure 42). This makes Madrid 2<sup>nd</sup> in Europe only after London, and preceding cities such as New York, Paris, Berlin, and Rome. Moreover, labour costs in Spain are lower than the European average (Figure 43). In contrast to the overall Spanish trend, in 2006 Madrid witnessed a reduction in the increase of labour costs, contributing to price stability. Moreover, the expected reduction in the corporate income tax from 35% to 25% will position Spain among the European countries with lowest corporate taxes. Finally, the cost of living in Madrid is relatively low compared than other metropolitan regions (Table 14).
- Last, Madrid has an abundant supply of office and commercial space. The large supply of commercial space is helping to keep office and commercial space prices low. For instance office rent prices are lower than in other metropolitan regions (Table 15). Moreover, Madrid provides economic operators with congress spaces and exhibition centres which place the Spanish capital city among the top 10 worldwide places for international conference destinations according to ICCA (International Congress and Convention Association) during the last ten years.<sup>55</sup>

**Table 12 – Location preferences of investors, 1990-2005**

Cities	Rank			Weighted score 2005
	1990	2004	2005	
London	1	1	1	0.87
Paris	2	2	2	0.60
Frankfurt	3	3	3	0.33
Brussels	4	4	4	0.30
Barcelona	11	6	5	0.28
Amsterdam	5	5	6	0.24
<b>Madrid</b>	<b>17</b>	<b>7</b>	<b>7</b>	<b>0.24</b>
Berlin	15	9	8	0.19
Munich	12	8	9	0.18
Zurich	7	10	10	0.18
Milan	9	11	11	0.15
Dublin	-	12	12	0.14
Prague	23	13	13	0.14
Lisbon	16	16	14	0.12
Manchester	13	14	15	0.12
Düsseldorf	6	18	16	0.10

54 . [http://www.fco.gov.uk/Files/kfile/European\\_Cities\\_Monitor\\_2005\\_FINAL.pdf](http://www.fco.gov.uk/Files/kfile/European_Cities_Monitor_2005_FINAL.pdf)

55 . <http://www.iccaworld.com>.

Stockholm	19	15	17	0.10
Geneva	8	17	18	0.10
Hamburg	14	19	19	0.09
Warsaw	25	20	20	0.09
Budapest	21	23	21	0.09
Glasgow	10	24	22	0.08
Vienna	20	22	23	0.07
Lyon	18	21	24	0.07
Copenhagen	-	26	25	0.06
Rome	-	25	26	0.05
Helsinki	-	28	27	0.04
Moscow	24	27	28	0.03
Oslo	-	30	29	0.03
Athens	22	29	30	0.03

\* Base: 501.

\*\* In 1990, only 25 cities were included in the survey.

Source: Cushman & Wakefield (2005).

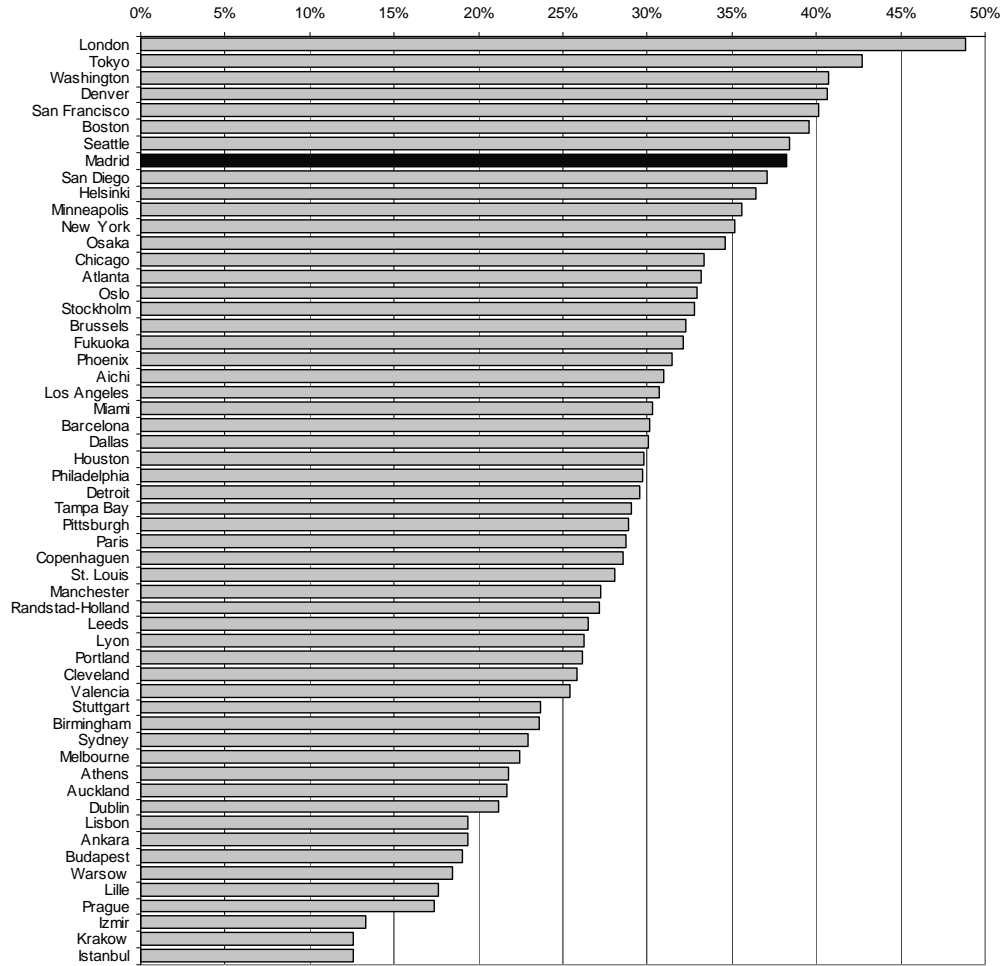
**Table 13 European regional ranking based on the number of greenfield foreign investment projects**

	Projects 2002	Rank 2002	Projects 2001	Rank 2001	Rank change
Greater London	125	1	94	1	=
Paris	64	2	61	3	+1
Catalonia	61	3	86	2	-1
Rhone-Alpes	41	4	19	21	+17
Stockholm	36	5	56	4	-1
Moscow	36	6	32	5	-1
Provence-Alpes cote d'Azur	31	7	26	11	+4
Madrid	29	8	29	10	+2
Budapest	27	9	23	15	+6
North Holland	26	10	24	13	+3
Severocesky	26	11	13	32	+22
Bavaria	2	12	30	7	-5
Antwerpen	22	13	20	18	+5
Hessen	22	14	32	5	-8
Alsace	20	15	30	7	-8
Istanbul	20	16	6	78	+63
Lithuania	20	17	17	24	+9
Berlin	19	18	15	29	+11
Vienna	19	19	24	13	-5
Bucharest	18	20	12	37	+17

Source: European Investment Monitor

**Figure 43. Share of population of 15 years and more with tertiary education**

Sample of 56 metro-regions (2004)

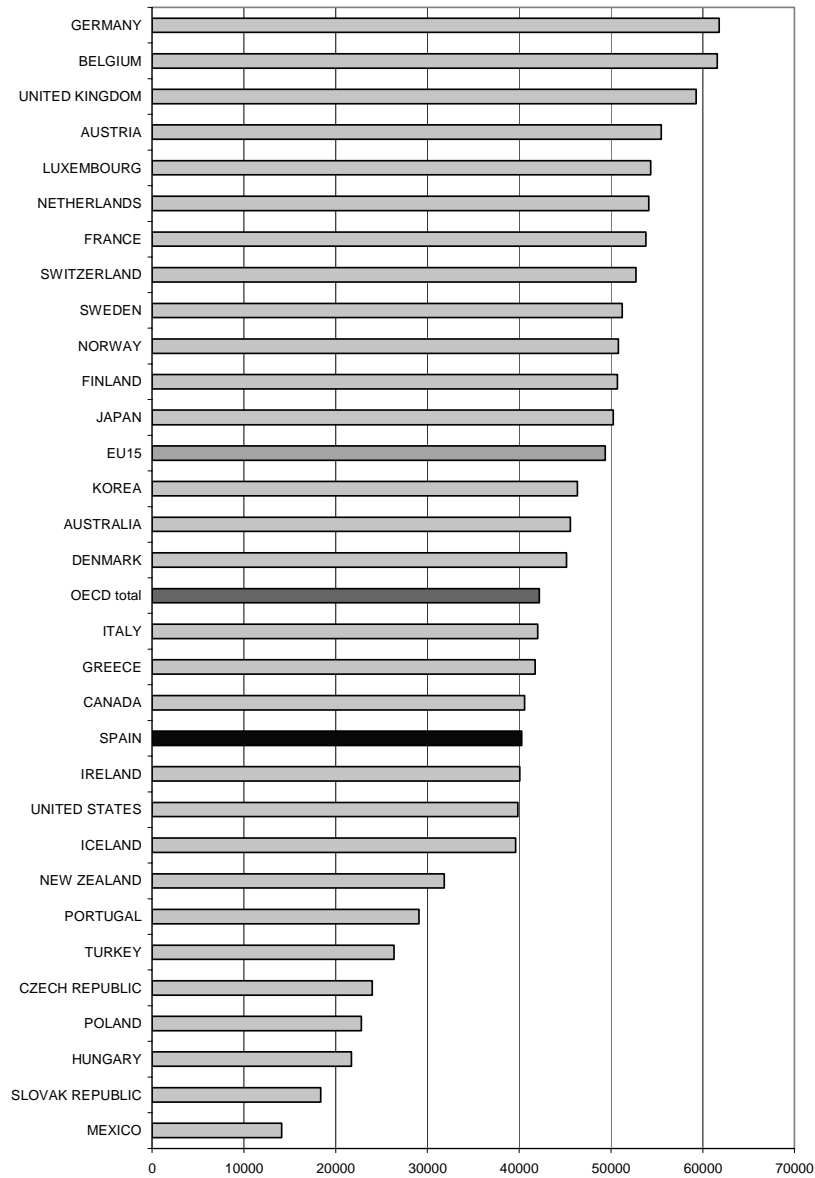


\* OECD average refers to the average of OECD metro-regions

Source: Competitive Cities in the Global Economy, OECD, Paris, 2006

**Figure 44 – Annual gross labour costs before taxes, in 2005**

(US dollars using PPP exchange rates)



Source: OECD Taxing wages database

**Table 14. Cost of living in selected European capitals**

New York = 100

City	Index, 2004
London	119
Dublin	96.9
Oslo	96.2

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Paris	94.8
Rome	90.5
Amsterdam	88.1
Berlin	85.7
Madrid	79.6

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Source: Mercer Human Resource Consulting

**Table 15. Office rent prices, 2005**

Euro/square meter

Place	Price
London (West End)	1 593
London (City)	1 062
Paris	799
Dublin	724
Milan	544
Frankfurt	567
Madrid	472

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Source: Global Markets Rents

### *Madrid's industrial mix*

#### *Sectoral composition of the local economy*

The Madrid metro-region has become a large service hub while reducing its specialisation in manufacturing. The service sector, which includes a fair share of knowledge intensive activities, alone generated 77% of the regional gross value added (GVA) and employed 78% of the total workforce in 2005. In the same year, the percentage of GVA contributed by manufacturing and construction was 11% and 10% respectively.<sup>56</sup> This specialisation has been increasing slightly over time. Between 2000 and 2004, the service sector and especially the construction sector have been increasing their importance both in terms of employment and contribution to the regional GVA, while manufacturing experienced a loss of more than 16 000 jobs (INE, Spanish National Institute of Statistics).

Although deindustrialisation is a common issue among many OECD metro-regions, in Madrid the decline of manufacturing is concentrated in high-tech activities, while medium-high and medium-low tech activities show a certain degree of dynamism. Between 2000 and 2005, high-technology manufacturing's contribution to the regional GVA has been falling from EUR 2 208 to 1 927 millions, reducing its total contribution from 2.2% to 1.3% (the negative trend is due particularly to the decline of electronics).<sup>57</sup>

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56 . Gross value added is the difference between output and intermediate consumption for any given sector/industry. That is the difference between the value of goods and services produced and the cost of raw materials and other inputs which are used up in production.

57 . The most stunning example of the decline of high-tech manufacturing within the Madrid metro-region is that of the electronics sector, which used to be important in Madrid. The sector was characterized by the presence of several small and medium sized spinoff firms that had relatively intense interactions with larger enterprises, specifically the case in Madrid with the



Over the same period, medium-high technology manufacturing has been increasing its contribution to regional GVA from EUR 4 404 to 5 363 millions, yet it has reduced its share from 4.4% to 3.7%. Conversely, knowledge intensive services have been increasing their contribution to the regional GVA from EUR 36 000 to 52 608 millions, thus increasing their percentage from 35.8% to 36.6% of the total (Tables 16-17)

**Table 16 – Contribution to the regional GAV - Sectoral decomposition according to the level of technology**

Thousand of euros - Current prices base 2000

Technology/Industry	2000	2001	2002	2003	2004	2005
<b>KNOWLEDGE INTENSIVE</b>	<b>42.615.092</b>	<b>47.083.766</b>	<b>50.325.222</b>	<b>53.036.837</b>	<b>56.204.526</b>	<b>59.900.028</b>
<b>Manufactures High Technology</b>	<b>2.208.731</b>	<b>2.219.868</b>	<b>1.841.844</b>	<b>1.818.054</b>	<b>1.867.309</b>	<b>1.927.131</b>
DL Office, accounting and computing machinery	2.208.731	2.219.868	1.841.844	1.818.054	1.867.309	1.927.131
<b>Manufactures Medium-High Technology</b>	<b>4.404.749</b>	<b>4.697.612</b>	<b>4.810.909</b>	<b>5.060.304</b>	<b>5.197.399</b>	<b>5.363.905</b>
DG Chemicals	1.853.350	2.091.597	1.953.297	2.073.309	2.129.480	2.197.700
DK Machinery and equipment	790.311	872.104	1.034.846	1.041.926	1.070.154	1.104.438
DM Motor vehicles	1.761.088	1.733.911	1.822.766	1.945.069	1.997.765	2.061.766
<b>Knowledge intensive Services</b>	<b>36.001.612</b>	<b>40.166.286</b>	<b>43.672.469</b>	<b>46.158.479</b>	<b>49.139.818</b>	<b>52.608.992</b>
II Transport and communications	10.963.804	11.811.541	12.799.683	13.606.556	14.485.392	15.508.033
JJ Finance and insurance	6.788.740	8.092.114	8.642.761	8.756.149	9.321.702	9.979.795
KK Business services	10.282.209	11.575.331	12.943.297	13.540.236	14.414.789	15.432.444
MM Education	3.859.373	4.295.583	4.586.163	4.927.241	5.245.488	5.615.809
NN Health	4.107.486	4.391.717	4.700.565	5.328.297	5.672.447	6.072.911
<b>NON-KNOWLEDGE INTENSIVE</b>	<b>58.055.342</b>	<b>62.591.085</b>	<b>67.237.807</b>	<b>72.046.916</b>	<b>77.195.977</b>	<b>83.709.067</b>
<b>Manufactures Medium-Low Technology</b>	<b>2.718.981</b>	<b>2.823.198</b>	<b>3.116.794</b>	<b>3.157.597</b>	<b>3.242.226</b>	<b>3.353.686</b>
CA+CB+DF Extractives	157.723	171.088	206.509	213.403	218.267	232.851
DH Rubber and plastics products	432.217	463.365	509.138	481.148	494.183	510.015
DI Other non-metallic mineral products	643.157	677.199	679.018	722.490	742.064	765.837
DJ Basic metals and fabricated metal products	1.485.884	1.511.546	1.722.129	1.740.556	1.787.712	1.844.983
<b>Manufactures Low Technology</b>	<b>5.025.314</b>	<b>5.260.899</b>	<b>5.398.428</b>	<b>5.509.421</b>	<b>5.658.684</b>	<b>5.839.967</b>
DA Food products, beverages and tobacco	1.046.775	1.114.971	1.234.416	1.232.733	1.266.131	1.306.693
DB+DC Textiles, textile products, leather and footwear	531.645	550.535	511.211	500.785	514.352	530.830
DD Wood	147.468	160.307	150.991	160.789	165.145	170.436
DE Pulp, paper, paper products, printing and publishing	2.720.960	2.793.498	2.919.809	2.981.090	3.061.855	3.159.945
DN Manufacturing, n.e.c.; Recycling	578.466	641.588	582.001	634.024	651.201	672.063
<b>Non-Knowledge intensive Services</b>	<b>40.829.425</b>	<b>43.818.676</b>	<b>46.782.516</b>	<b>49.759.320</b>	<b>52.973.234</b>	<b>56.713.041</b>
GG Retail and repair	11.607.694	12.572.017	13.025.036	13.669.015	14.551.886	15.579.220

telecommunication sector. At some point in time during the 1980s, this dense network of subcontracting and outsourcing relations even seemed to have stimulated a modest Research and Development effort in the sector that was concentrated within the central territorial economy of Madrid (See Suarez Villa and Ruth Rama, 1996). However, its limited competitiveness, and lack of tradition in international markets, combined with the increasing exposure to foreign rival firms, all lead to a dramatic downsizing and reduction of employment.

HH Hotels and restaurants	6.765.918	7.177.369	7.611.547	8.107.753	8.631.426	9.240.788
KK Real state	9.621.561	10.440.931	11.665.294	12.817.918	13.645.817	14.609.185
LL Administration, defence and s.sec.	7.085.147	7.513.897	7.832.273	8.128.783	8.653.815	9.264.757
OO Other services	4.229.086	4.541.285	4.984.296	5.271.280	5.611.748	6.007.926
PP Private households with employment persons	1.520.019	1.573.177	1.664.070	1.764.571	1.878.543	2.011.165
<b>Other activities</b>	<b>9.481.622</b>	<b>10.688.312</b>	<b>11.940.069</b>	<b>13.620.578</b>	<b>15.321.832</b>	<b>17.802.373</b>
AA+BB Agriculture, hunting and Forestry. Fishing	285.702	258.670	288.839	294.151	288.422	305.891
EE Electricity, gas and water supply	1.815.640	1.960.421	1.972.650	2.258.191	2.309.664	2.463.991
FF Construction	7.380.280	8.469.221	9.678.580	11.068.236	12.723.746	15.032.491
	<b>100.670.43</b>					
<b>TOTAL</b>	<b>4</b>	<b>109.674.851</b>	<b>117.563.029</b>	<b>125.083.753</b>	<b>133.400.503</b>	<b>143.609.095</b>

Note: Data for 2004 and 2005 has been partially estimated due to the absence of information in some sub-sectors

Source: INE (Spanish National Institute of Statistics). Data arranged according to the methodology proposed by OECD/STI in 2003 (OECD Science, Technology and Industry Scoreboard 2003)

**Table 17 Contribution to regional employment - Sectoral decomposition according to the level of technology**

Percentage on the total employment

Technology/Industry	2000	2001	2002	2003	2004	2005
<b>KNOWLEDGE INTENSIVE</b>	<b>42,3%</b>	<b>42,9%</b>	<b>42,8%</b>	<b>42,4%</b>	<b>42,1%</b>	<b>41,7%</b>
<b>Manufactures High Technology</b>	<b>2,2%</b>	<b>2,0%</b>	<b>1,6%</b>	<b>1,5%</b>	<b>1,4%</b>	<b>1,3%</b>
DL Office, accounting and computing machinery	2,2%	2,0%	1,6%	1,5%	1,4%	1,3%
<b>Manufactures Medium-High Technology</b>	<b>4,4%</b>	<b>4,3%</b>	<b>4,1%</b>	<b>4,0%</b>	<b>3,9%</b>	<b>3,7%</b>
DG Chemicals	1,8%	1,9%	1,7%	1,7%	1,6%	1,5%
DK Machinery and equipment	0,8%	0,8%	0,9%	0,8%	0,8%	0,8%
DM Motor vehicles	1,7%	1,6%	1,6%	1,6%	1,5%	1,4%
<b>Knowledge intensive Services</b>	<b>35,8%</b>	<b>36,6%</b>	<b>37,1%</b>	<b>36,9%</b>	<b>36,8%</b>	<b>36,6%</b>
II Transport and communications	10,9%	10,8%	10,9%	10,9%	10,9%	10,8%
JJ Finance and insurance	6,7%	7,4%	7,4%	7,0%	7,0%	6,9%
KK Business services	10,2%	10,6%	11,0%	10,8%	10,8%	10,7%
MM Education	3,8%	3,9%	3,9%	3,9%	3,9%	3,9%
NN Health	4,1%	4,0%	4,0%	4,3%	4,3%	4,2%
<b>NON-KNOWLEDGE INTENSIVE</b>	<b>57,7%</b>	<b>57,1%</b>	<b>57,2%</b>	<b>57,6%</b>	<b>57,9%</b>	<b>58,3%</b>
<b>Manufactures Medium-Low Technology</b>	<b>2,7%</b>	<b>2,6%</b>	<b>2,7%</b>	<b>2,5%</b>	<b>2,4%</b>	<b>2,3%</b>
CA+CB+DF Extractives	0,2%	0,2%	0,2%	0,2%	0,2%	0,2%
DH Rubber and plastics products	0,4%	0,4%	0,4%	0,4%	0,4%	0,4%
DI Other non-metallic mineral products	0,6%	0,6%	0,6%	0,6%	0,6%	0,5%
DJ Basic metals and fabricated metal Products	1,5%	1,4%	1,5%	1,4%	1,3%	1,3%
<b>Manufactures Low Technology</b>	<b>5,0%</b>	<b>4,8%</b>	<b>4,6%</b>	<b>4,4%</b>	<b>4,2%</b>	<b>4,1%</b>
DA Food products, beverages and tobacco	1,0%	1,0%	1,1%	1,0%	0,9%	0,9%
DB+DC Textiles, textile products, leather and footwear	0,5%	0,5%	0,4%	0,4%	0,4%	0,4%
DD Wood	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
DE Pulp, paper, paper products, printing and publishing	2,7%	2,5%	2,5%	2,4%	2,3%	2,2%
DN Manufacturing, n.e.c.; Recycling	0,6%	0,6%	0,5%	0,5%	0,5%	0,5%

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<b>Non-Knowledge intensive Services</b>	<b>40,6%</b>	<b>40,0%</b>	<b>39,8%</b>	<b>39,8%</b>	<b>39,7%</b>	<b>39,5%</b>
GG Retail and repair	11,5%	11,5%	11,1%	10,9%	10,9%	10,8%
HH Hotels and restaurants	6,7%	6,5%	6,5%	6,5%	6,5%	6,4%
KK Real state	9,6%	9,5%	9,9%	10,2%	10,2%	10,2%
LL Administration, defence and social sec.	7,0%	6,9%	6,7%	6,5%	6,5%	6,5%
OO Other services	4,2%	4,1%	4,2%	4,2%	4,2%	4,2%
PP Private households with employment Persons	1,5%	1,4%	1,4%	1,4%	1,4%	1,4%
<b>Other activities</b>	<b>9,4%</b>	<b>9,7%</b>	<b>10,2%</b>	<b>10,9%</b>	<b>11,5%</b>	<b>12,4%</b>
AA+BB Agriculture, hunting and Forestry. Fishing	0,3%	0,2%	0,2%	0,2%	0,2%	0,2%
EE Electricity, gas and water supply	1,8%	1,8%	1,7%	1,8%	1,7%	1,7%
FF Construction	7,3%	7,7%	8,2%	8,8%	9,5%	10,5%
<b>TOTAL</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

Note: Data for 2004 and 2005 has been partially estimated due to the absence of information in some sub-sectors

Source: INE (Spanish National Institute of Statistics). Data arranged according to the methodology proposed by OECD/STI in 2003 (OECD Science, Technology and Industry Scoreboard 2003)

### *Main regional productive specialisations*

As most metropolitan areas, Madrid has some specialisation in productive activities that tend to have a spatial pattern of concentration. A particular feature in Madrid is that the regional clusters are not characterised by local interactions among a series of small and medium sized enterprises as is common in many other OECD metro-regions. Madrid, like, for instance, Seattle, is characterized by the important presence of a series of medium-large enterprises (with more than 250 workers), with interfaces far beyond the local territory, absorbing 37% of regional employment.<sup>58</sup> In this respect, Madrid can be considered like a *hub and spoke economy* (A. Markusen, 1999) (Figure 45).<sup>59</sup> Although the *hub and spoke* model can only be looked upon as a stylized representation of a particular regional economy, some observations should be made regarding its applicability to the economy of Madrid. First, the Madrid economy has an important concentration of organisations with an international focus (for instance, UNWTO), headquarters or regional offices.<sup>60</sup> A second characteristic of the Madrid economy that

58 . Community of Madrid, Regional Institute of Statistics.

59 . The rise of hub and spoke economies is due to the global process of fragmentation and subcontracting that is taking place in specific production chains. The local territory of a particular city may be considered an important hub/platform for some entrepreneurial functions of larger enterprises, and in that way might be linked to territories of other cities. Moreover, the vertically integrated model is increasingly being replaced by a segmented and more fragmented production chain, whereby specific activities and managerial functions, such as manufacturing, distribution, research and development, marketing and finance, are located.

60 . The World Tourism Organization and the Latin American Capital Cities Organisation are based in Madrid. On top of concentrating the headquarters and main offices of a large proportion of Spain's leading firms, more than 3,500 foreign companies have established their Spanish, Iberian, European or Mediterranean offices in Madrid. Some of the companies that have set up regional decision centres in Madrid are Altran, BP, BT, IBM, Pemex, Software AG and Thyssen Krupp. Moreover, some of the enterprises that have installed an R&D centre in Madrid metro-region are: Boeing, BT Ignite, BP Solar, Janssen-Cilag, Lucent and Motorola. Finally, there are

resembles the hub and spoke model is the relative absence of strong intra-urban and territorial links between the small and medium sized firms, on the one hand, and the larger enterprises. They do not seem to be connected through market relations of contracting and subcontracting, or by means of tacit norms and conventions aimed at establishing cooperation among these firms. Thirdly, as pointed out by a study of the Madrid Institute of Development (IMADE, 2004), in addition to the presence of a dense concentration of larger enterprise headquarters, and the relative weak territorial articulation between SME and these larger firms, with a few exceptions, the socioeconomic fabric of SME in Madrid is relatively weak and disarticulated from the broader tendencies of managerial and productive restructuring that are taking place in the main hubs of the Madrid economy. Based on a recent 2005/06 survey undertaken on SME,<sup>61</sup> the same study reveals that SMEs in Madrid will face enormous challenges once the Spanish economy will be further exposed to the international standards of competitiveness and of the speed of technological upgrading, and therefore should broaden and intensify their strategies towards internationalization and managerial modernization (IMADE, 2004).<sup>62</sup>

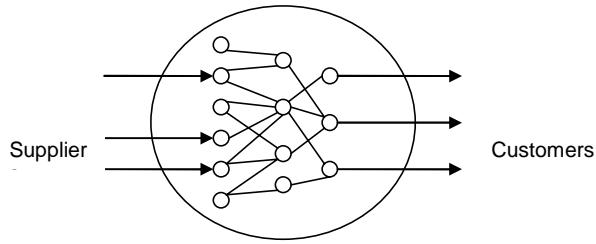
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more than 25 centres which are responsible of the areas of finance (60%), human resources (36%) and ICT (24%). This concentration of finance activities comes from Madrid's attempt to develop itself as an international finance centre. Some examples of enterprises with RSS in Madrid are: Cigna, Deloitte & Touche, DaimlerChrysler, Ericsson and IBM.

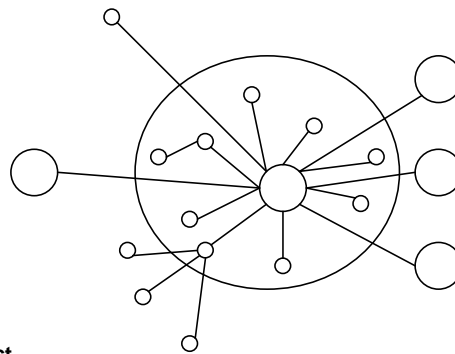
- 61 . Using a sample of 764 establishments from a universe of over 427 000 enterprises.
- 62 . Instituto Madrileño de Desarrollo (2006), PNDP - Plano de Detección de las Necesidades da la PYME Informe Final 2005/06 Madrid

**Figure 45 – Types of districts**

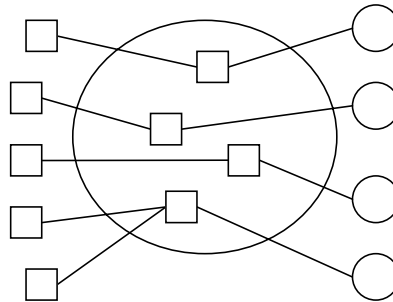
**The Marshallian Industrial District**



**Hub-and Spoke District**



**Satellite Platform District**



- Branch office, plant
- Large locally headquartered firm
- Small, local office

Source: Markusen A., Lee Y. S., and Di Giovanna S. (eds) (1999), *Second Tier Cities. Rapid Growth Beyond the Metropolis*, University of Minnesota Press, Minneapolis, London

**The financial cluster**

Madrid is the financial capital of Spain and its financial services sector has recently undergone a rapid process of internationalization. Madrid is home to an important financial marketplace and stock exchange (Bolsa de Madrid), which now ranks fourth in Europe, just after London, Paris and Frankfurt (Figure 46). This is also in a relevant position at the global scale, in which, according to the network connectivity indexes built by the Globalization and World Cities Network (GaWC), Madrid appears in eighth

position in the international banking connectivity ranking (Table 18).<sup>63</sup> When the long-term evolution of European financial centres is considered, Madrid has only recently acquired such a relevant international position, as, prior to 2000, the city did not appear in any of the top positions in the rankings of world financial centres elaborated by the GaWC for the entire 20<sup>th</sup> century (Table 19).

Competition in the finance sector is fierce which means for Madrid to find its market niches. The considerable distance within the leader metropolitan regions (especially London) and the others, could be a hint of the existence of strong centripetal forces (or a lock-in dynamic) concentrating the whole sector in a few given regions across the globe. In Madrid there are some 91 000 financial intermediary jobs which compose 3% of the overall local workforce. Comparatively, in Paris-Île-de-France there are 274 000 finance jobs (6% of the local workforce); in London 326 000 workers are related to finance (8% of local workforce); and in Frankfurt 73 000 (16% of local workforce).<sup>64</sup> Madrid wholesale finance alone may be worth EUR 2.6 billion, which makes up 27% of the total finance sector in the city.<sup>65</sup> Over a quarter (26%) of Spain's wholesale finance activity is located in Madrid, yet this share appears low when compared to the other three locations used as benchmarks, particularly given Madrid's population and economic size. London concentrates 77% of national wholesale finance, Frankfurt 25%, while 90% of France's output related to wholesale finance is produced by Paris-Île-de-France (CEBR 2006). London is by far Europe's largest cluster of wholesale finance jobs, while Frankfurt is the most specialized city (Figure 47). The equity market, international banking, and the bond market are the largest employers within Madrid wholesale finance. Such specialisation of the labour market appears also in London (at a greater scale though): nearly half of wholesale jobs are in international banking and equities. In Paris-Île-de-France and Frankfurt, the largest employer is the bond market (in relative terms, the domestic bond market in both clusters is larger than London's). Fund management is relatively more important for Frankfurt than for the other clusters, while Paris-Île-de-France has roughly as many employees in investment banking as in London. The vast majority of derivatives and foreign exchange jobs in these four clusters are in London (Figure 48).

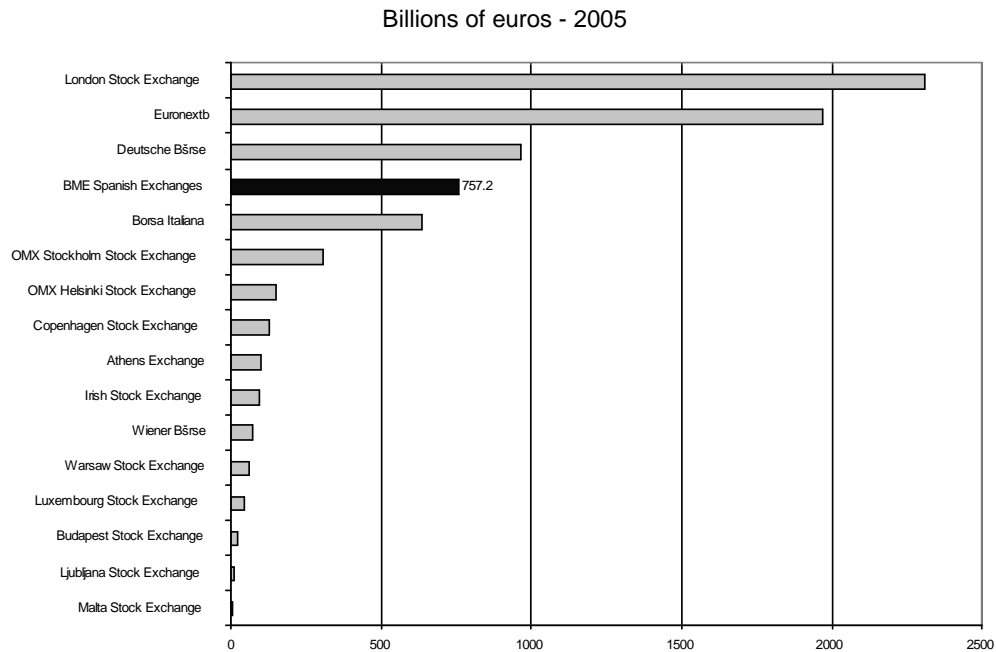
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63 . The international banking connectivity ranking is based on the international banking connectivity index which measures the importance of agents (firms) located in a given city in the banking sector on the global scale. This index is computed for a universe of 315 cities across the world and 100 global service firms. For a more detailed explanation of the index see also: Globalization and World Cities - Study Group & Network (<http://www.lboro.ac.uk/gawc/index.html>).

64 . CEBR (2006), The Importance of Wholesale Financial Services to the EU Economy 2006, City of London.

65 . Wholesale banking activities are: establishments primarily engaged in accepting time deposits, making loans (mortgage, real estate, commercial, industrial, and consumer), and investing in high-grade securities. Savings and loan associations, savings banks, and commercial banks are also included in this industry.

**Figure 46 – Domestic stock market capitalisations (equities)**



Source: CEBR (2006), City of London, The Importance of Wholesale Financial Services to the EU Economy 2006

**Table 18 – Global and Banking Network Connectivity**

2002

<b>Banking network connectivity</b>		
<b>City</b>	<b>Rank</b>	<b>Score</b>
London	1	1
New York	2	0.984
Tokyo	3	0.943
Hong Kong	4	0.854
Singapore	5	0.804
Paris	6	0.789
Frankfurt	7	0.698
<b>Madrid</b>	<b>8</b>	<b>0.686</b>

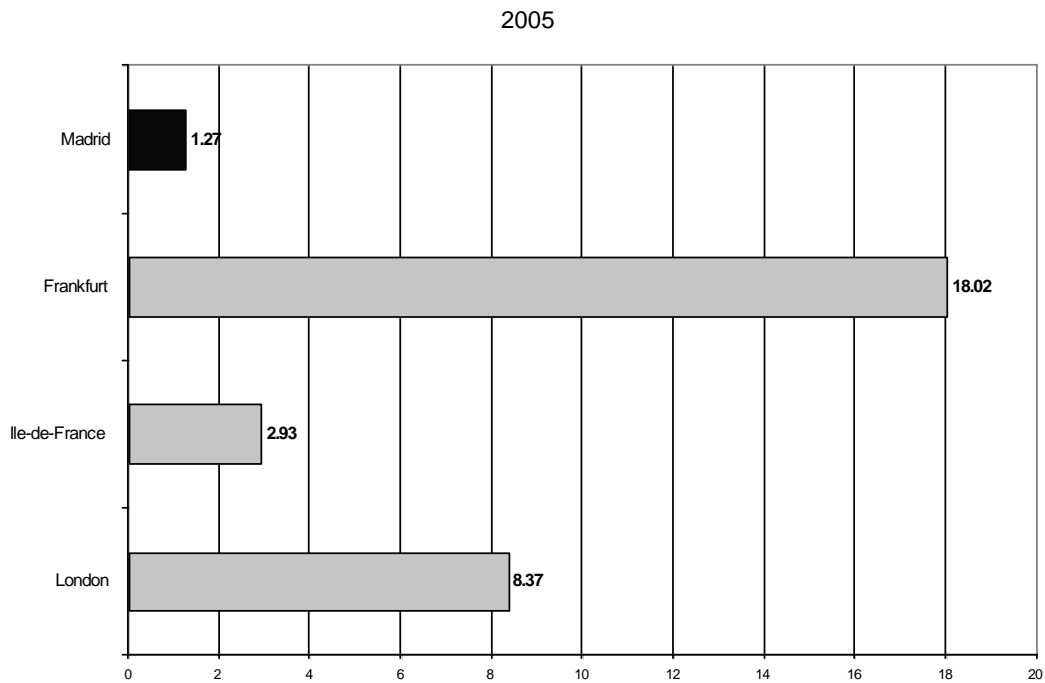
Source: Taylor, Peter J. (2004), World City Network: A Global Urban Analysis, London: Routledge, p99

**Table 19 – Time evolution of the European financial centres ranking**

(In brackets is the city international position)

<b>1900</b>	<b>1920</b>	<b>1940</b>	<b>1960</b>	<b>1980</b>	<b>2000</b>
London (1)	London (1)	London (1)	London (1)	London (1)	London (1)
Paris (3)	Paris (3)	Paris (3)	Paris (3)	Paris (3)	Paris (5)
Berlin (5)	Berlin (4)	Berlin (4)		Frankfurt (4)	Frankfurt (6)
Frankfurt (9)	Amsterdam (9)	Amsterdam (5)		Hamburg (6)	Madrid (7)
Amsterdam (10)	Moscow (10)	Milan (6)		Zurich (9)	
		Hamburg (8)			

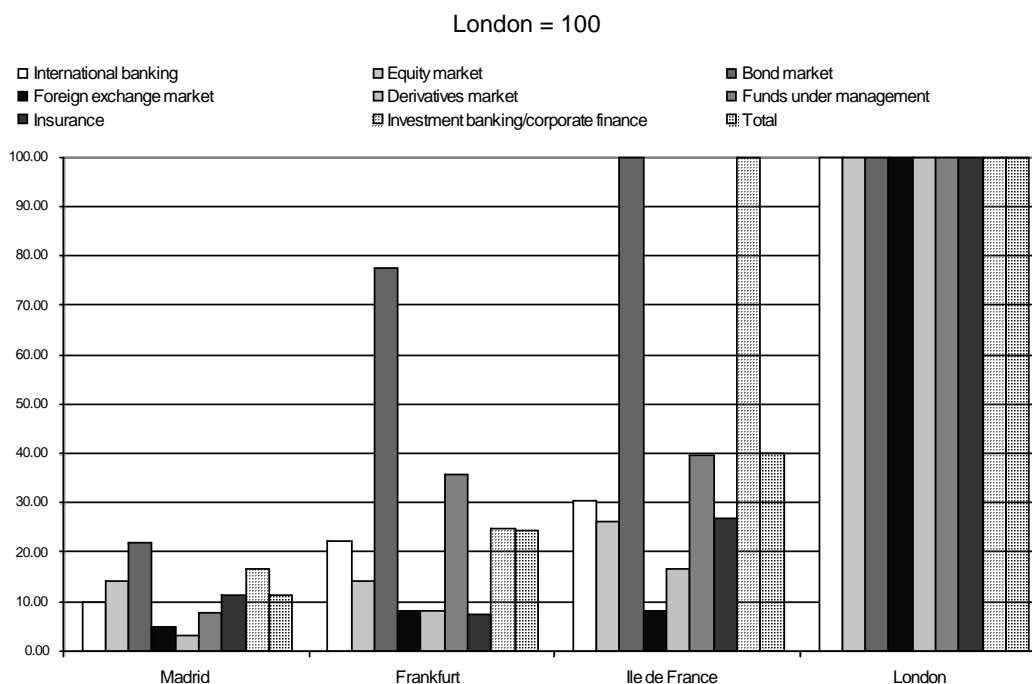
**Figure 47 – Location quotients of the financial clusters compared to the EU average**



Source: Elaboration on CEBR (2006), City of London, The Importance of Wholesale Financial Services to the EU Economy 2006.



**Figure 48 – Estimates of job numbers in each financial market\* (2005)**



\* Excluding Central banking

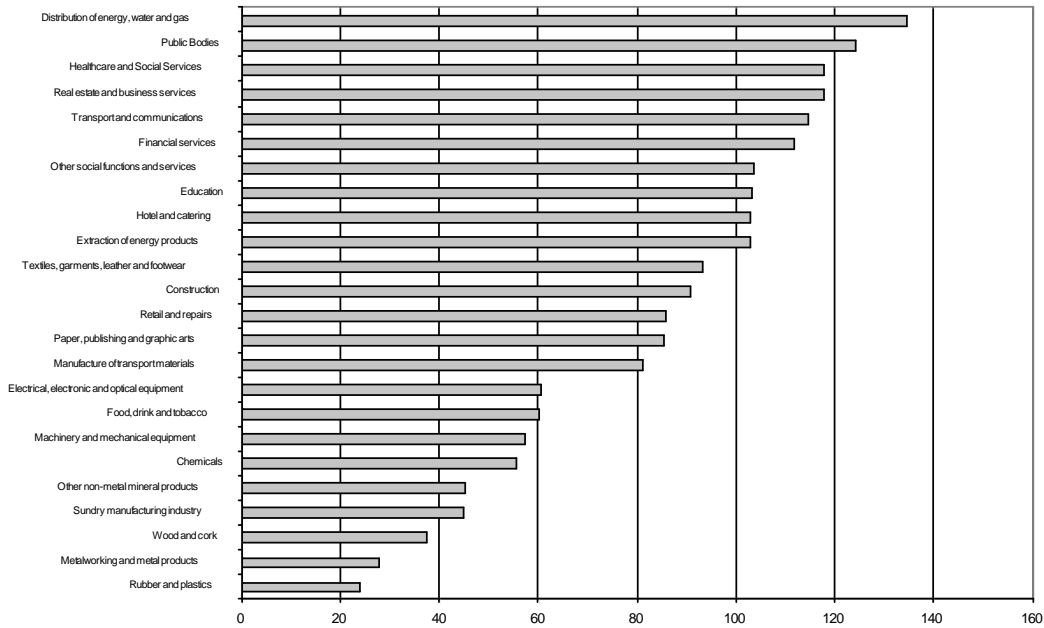
Source: Elaboration on CEBR (2006), City of London, The Importance of Wholesale Financial Services to the EU Economy 2006.

The City of Madrid concentrates the bulk of banking and financial activities within the metropolitan region. The financial sector is ranked 6<sup>th</sup> in terms of share of local employees within the City of Madrid (Figure 49). The localisation of the financial cluster in the inner city is a common pattern among OECD metropolitan regions. Moreover, to support the process of spatial concentration of the financial firms, Madrid has undergone a project aimed at realising a financial district (CTBA – Cuatro Torres Business Area) within a large area in the northern neighbourhood of the City of Madrid — formerly owned by the worldwide known Real Madrid local football team. It is undeniable that successful flagship developments linked to the attempt of concentrate knowledge intense activities, such as the financial sector, have produced remarkable achievements within metro-regions. For example, Canary Wharf in the London Docklands, together with other deregulatory changes in the financial and stock market, contributed considerably to the strengthening of London's status as a world class financial centre.<sup>66</sup> However, it has been noted that private developers, especially international developers, are not particularly

66 . At a smaller scale than London, also in Madrid private agents are promoting the specialisation of some areas in finance. For instance, the Santander Bank has built a big financial city in Boadilla del Monte, where they have located all their functional services for their world wide activity This Financial City –Ciudad Financiera- is located less than 20 km from Madrid centre, in a large real state project.

interested in developments in cities at the lower end of the scale of the urban hierarchy, such as regional and provincial centres (Ward, 2002). This shows that projects are very much dependant on the economic potential of the project location or of the city where they are located, a potential that Madrid has started to exploit.

**Figure 49 – Specialisation of the City of Madrid in terms of employment \***



\* City of Madrid/Madrid metro-region \* 100

Source: Directory of Local Units of Economic Activity, 2004

### The logistics cluster

Thanks to the large endowment of transportation infrastructure, the Madrid metropolitan region has become an important logistics hub. The sector has witnessed an annual growth rate of 5% in the last decade, and on average represents 10% of the regional GDP. Madrid receives 60% of the international goods arriving in Spain, and 33% of the national flow. Of the total goods, 49.1% go to other parts of the Iberian Peninsula (including Portugal). In terms of employment, 5.7% of the labour force in Madrid is in the transport sector while the national average is 4.6%. Madrid is the central node of the radial structure of the road and rail networks (standard and high speed train), thus it is well connected with the three principal distribution areas of Spain: the Cantabric area (Basque Country) with connections to the north of Europe; the Mediterranean area (Catalonia and Valencia), which connects it with Asia through maritime routes; and the southern ports (Algeciras and Cadiz) which connect with the African continent and the naval routes passing through the strait of Gibraltar. Moreover, Madrid hosts the main

airport in Spain (Madrid-Barajas airport). The combination of these factors makes Madrid an important international distribution hub for South-western Europe and Northern Africa.

Besides the endowment of transportation infrastructure, another comparative advantage underpinning Madrid's logistics is the availability of land within the metro-region. Overall Madrid has 7.2 million square meters for warehousing, transport and logistics businesses, all of which are distributed among nine specialized logistics platforms. Four logistics infrastructures stand above the rest. These are:

- Madrid-Barajas Airport Freight Centre Barajas: 40 hectares with a capacity of 750 000 tons per year and an expansion project of 12 hectares. After the expansion it will become the first integrated logistic park inside an airport.
- Puerto Seco (The Dry Dock). It is an infrastructure that offers the same services as a maritime port, with an overall extension of 120 000 square meters it connects the four principal maritime ports of Spain (Valencia, Bilbao, Barcelona and Algeciras) through the railway network.
- International Transport Centre of Madrid. With 110 firms in transport and logistics established in this infrastructure.
- Mercamadrid. The largest physical wholesale market for food in Spain, the second largest in Europe and the largest fish market in the world after Tokyo. It has more than 600 businesses and has a daily flux of over 15 000 vehicles and the enlargement of Mercamadrid facilities will provide an additional 450 000 new square metres.

Concerning the localisation of the logistics centres within the metro-region, they are generally placed in the outskirts of the urban core. These centres include:

- The east area: The main logistics zone within the region accounting for 65% of the total sector. It contains the largest number of logistics infrastructure (Coslada Transport Centre, Madrid Dry Dock, Barajas Logistic Zone and the International Logistic Centre, among others). Businesses located in this area belong to the distribution and transport sectors, including international mail companies, and logistics centres of companies, such as Aitena, DHL, TNT, UPS, Salvesen, Logista, Leroy Merlin and SGEL.
- The south and south-eastern zone is the second area of importance. Its logistic infrastructures include the Transport Centre of Madrid and Mercamadrid. Some of the businesses established in this area are: Mercadona, Seur, Transcamer, UMD and Gefco.
- The north area is the least developed area because of its physical development constraints (the presence of the Montes del Pardo Natural Park and its proximity

to the Guadarrama mountain range). The main enterprises located in this area are Bridgestone, Fiege, Ivestronica and Johnson & Johnson.

### The aerospace cluster

The Madrid aerospace cluster is home to many different activities related to the aerospace supply chain. Madrid concentrates more than the 60% of the national turnover and employment of the Spanish aerospace industry (EUR 2 400 millions and 15 000 jobs in 2003), and the 3.3% of the overall European aerospace business (EUR 2.5 billion out of a total of EUR 75 billion in 2003). The aerospace cluster of Madrid is vertically integrated and organised into “tiers”. The first tier is comprised of two tractor firms, EADS-CASA and Airbus-España, which assemble and sell the final product. The second tier is made up of specialised suppliers: contractors that are specialised in engineering and R&D activities.<sup>67</sup> The third tier is mainly comprised of manufacturing SMEs. The City of Madrid and its outskirts concentrates the bulk of aerospace industry’s firms (final and phase), most specifically in: (1) Tres Cantos; (2) Getafe, Parla, and Mostoles, which have the most important concentration of firms; (3) and close by the Barajas airport, in the so-called Henares Corridor (Figure 50) (IDR, 2005).

Despite the availability of a large pool of skilled workers and the presence of a world-class airport (all factors underpinning the competitiveness of the regional cluster), Madrid has to face fierce international competition. Particularly, Madrid’s main competitors are Toulouse and Seattle, where the headquarters of the two leader aerospace companies are located. Given the influence of national investment on the localisation choice of aerospace firms, it is not easy to assess the comparative advantage of this Madrid based cluster. The industry success relies more on the government support for corporate R&D (to generate rapid technological progress), than on the local industrial tradition. The Madrilian aerospace cluster, in fact, largely relies on the public sector.<sup>68</sup> According to a recent survey carried out within the region (IDR, 2005), the aerospace industry identifies the central government (50%) and the business associations (43 %) as key actors.<sup>69</sup> Moreover, 25% of the local firms consider the role of the regional government as being very important.<sup>70</sup> This is a shared characteristic of the overall aerospace industry. Knowledge is codified and face-to-face interactions play a limited role in sharing and spreading knowledge (Storper, Venables, 2003). Accordingly, the supply chain can be widely dispersed in terms of location. Also, transportation cost of components is not relevant in overall aircraft costs and the demand (the market) is not

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67 . The main contractors specialised in engineering and R&D activities are Hexcel Composite, CESA, Gamesa Aeronáutica, SENER/Bóreas, CRISA, AICSA y ICESA

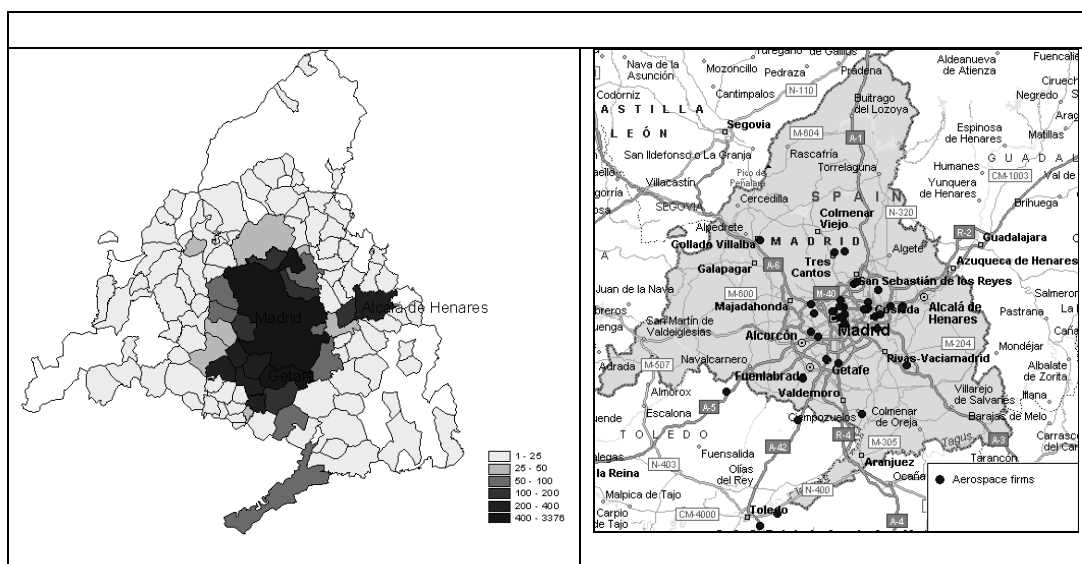
68 . Public R&D expenditure in aerospace within the Madrid metro-region was 5% of the overall Spanish R&D public expenditure in 2003.

69 . The business associations are ATECMA (Spanish Society of Aeronautic Engineers), and the Chamber of Commerce of Madrid.

70 . The same research explains that in Andalucía, around 72% of the aerospace cluster identifies the regional government as the most important agent for its development.

geographically bounded. The persistent increase of R&D costs has been the major centrifugal force for the aircraft global decentralization. Part of the production has been delocalised in low labour cost countries in order to reduce R&D costs. The result of this combination of centripetal and centrifugal forces applied at the same time is the actual shape of the global production framework of the aerospace sector, which is scattered throughout Western Europe and North America, suggesting that intellectual spillovers are not as important at the local base, as is the case in other industry clusters (Niosi, Zhegu, 2005). In other words, it is not clear whether clustering has some positive influence in industry performance or not (C. Beaudry, 2001 – A.E. Lublinski, 2003). For Madrid to exploit its existing potential in aeronautics would require a fine tuning strategy aimed at promoting local specialisation in a market niche where global lock-in dynamics are still weak, for instance material engineering.

**Figure50 – Localisation of the aerospace industry**



Source: INE (Spanish National Institute of Statistics)

### The creative cluster

With almost 200 000 workers (15.4% of Spain in the same sector), creative activities form another important industrial cluster in the Madrid metro-region.<sup>71</sup> Dividing these creative industries in traditional and non-traditional (Lazzeretti, Capone, 2006), the former employs 128 000 workers, while the rest of the jobs of the cluster are in the latter.<sup>72</sup> Creative industries account for 8.5% of total employment in the Madrid metro-

71 . The creative cluster has been defined following the definition of P. Hall. Hall, P. (2000), Creative Industry and Economic Development, Urban Studies 37(4), pp. 739-649.

72 . According to Lazzeretti and Capone (2006), the creative industries can be divided into traditional and non-traditional. The former includes: music, film and video; architecture and

region: 5.3% in traditional creative industries and 3.2% in non-traditional creative industries. This puts the Madrid metro-region in the lead as the most specialized region in creative industries, traditional and non-traditional, in Spain (Table 20). The editing and publishing industry has the lion's share of the regional creative industries. The Madrid metro-region is home to some 2 500 firms (22 % of the Spanish editing and publishing sector), involving 24 000 workers within the region (27 % of the national employment figure for the sector). The bulk of the local firms (more than 1 400) are publishing houses (32.6% of the national total) and their turnover amounts to EUR 4.23 billion (59.7 % of the national total). Many large publishing houses belong to foreign groups, demonstrating a good level of attractiveness for Madrid in this field. The creative cluster is localised in the very centre of the metro-region (Figure 51). The City of Madrid alone concentrates close to 60% of the regional employment in the industry (122 000 jobs). A high concentration of workers in the creative industry can be observed also in some other neighbourhood municipalities, localised in the urban outskirts, as Alcorcón (5 800 jobs and 2.8%), Móstoles (5 800 jobs and 2.8%), Leganés (4 700 jobs and 2.3%), Getafe (4 200 jobs and 2.1%). Nevertheless, the actual shape of the interaction between creative industries and territories is not well-known.

The presence of specialised schools training local workers and the fact that Spanish-language products have a potential market of more than 500 million people, are the main comparative advantages of the Madrid-based creative industries. Regarding the schools, various levels and types of “creative” training can be detected in Madrid. A distinction can be made between formal training and refreshment courses. In terms of formal training, besides the Madrid Institute of Fine Art (*Escuela de Bellas Artes*) and the Architecture School, there exist state-funded schools (Islas Filipinas and La Paloma), those funded by the regional government (Puerta Bonita), and private institutions (Salesianos, Lasalle and Tajamar). Professional courses are organised in schools such as Salesianos and Tajamar. The potential of the Spanish-language products is wide. Spanish language is spread around the world and is present, to a greater or lesser degree in the Americas, Europe, Asia and Africa. It is the official language of more than 20 countries and frequently used in other countries in a non-official way (e.g. in the United States, 25% of the population will speak Spanish by 2050 according to UNESCO). This economic, social, and political potential represents an opportunity that Madrid is starting to exploit.

**Table 20 Distribution of the creative industry in the Spanish regions**

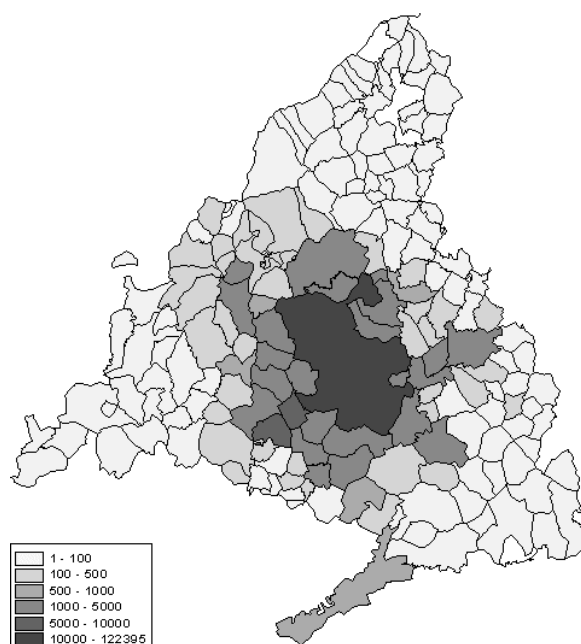
	Employment					
	Total jobs			Percentage of the regional employment		
	Traditional	Non-traditional	Total creative	Traditional	Non-traditional	Total creative
<b>Madrid</b>	<b>128.429</b>	<b>78.299</b>	<b>206.728</b>	<b>5,3%</b>	<b>3,2%</b>	<b>8,5%</b>
Cataluña	112.446	48.212	160.658	4,0%	1,7%	5,7%
País Vasco	28.590	12.741	41.331	3,3%	1,5%	4,8%

engineering studios; and film, video and performing arts. The latter refers to: R&D in architecture, graphic design and fashion; software and computer services; and advertising.

<b>Spain</b>	<b>457.864</b>	<b>215.499</b>	<b>673.363</b>	<b>2,8%</b>	<b>1,3%</b>	<b>4,1%</b>
Navarra	7.396	1.907	9.303	3,1%	0,8%	3,8%
Aragón	10.108	4.789	14.897	2,0%	1,0%	3,0%
Valencia	36.896	14.303	51.199	2,2%	0,8%	3,0%
Balearic Islands	7.814	3.223	11.037	2,1%	0,9%	3,0%
La Rioja	2.590	891	3.481	2,2%	0,8%	3,0%
Asturias	7.694	3.250	10.944	2,0%	0,8%	2,9%
Castilla y León	16.846	7.043	23.889	1,8%	0,8%	2,6%
Cantabria	3.699	1.668	5.367	1,8%	0,8%	2,6%
Galicia	20.010	6.646	26.656	1,9%	0,6%	2,6%
Canarias	12.506	5.168	17.674	1,8%	0,7%	2,6%
Andalucía	41.428	18.338	59.766	1,7%	0,7%	2,4%
Castilla-La Mancha	9.475	4.283	13.758	1,5%	0,7%	2,1%
Murcia	7.263	2.888	10.151	1,5%	0,6%	2,1%
Extremadura	4.196	1.709	5.905	1,2%	0,5%	1,7%
Melilla	228	77	305	1,1%	0,4%	1,5%
Ceuta	250	64	314	1,1%	0,3%	1,4%

Source: Elaboration on INE (Spanish National Institute of Statistics) – Census 2001

**Figure 51 – Location of jobs in creative industries within the Madrid metro-region**



Source: Elaboration on INE (Spanish National Institute of Statistics) – Census 2001

### The life science cluster

Madrid has the largest concentration of life-science industry in Spain: 32% of firms, 61% of national turnover, 50% of national employment, and 31% of biomedical and health science publications. The R&D expenditure in this field in regional academia adds up to EUR 400 millions, equivalent to the 79% of the Spanish private investment in biotechnology companies. Life-science is a multifaceted industry that includes a number

of private and public organizations (Table 21). The most important segment of the life science cluster is pharmaceuticals. Madrid is home to 26.3% of the pharmaceutical companies in Spain, 35% of the total employees and 45.54% of all laboratories. Spanish subsidiaries of multinational (the so-called *Big Pharma*), alone generate 70% of the turnover, 60% of exports, and 50% of the private R&D expenditures in pharmaceuticals (despite their main research centres are located elsewhere). Therefore, despite the concentration of firms, Madrid is more a large final consumer market than a region specialised in pharmaceuticals.

The Madrid life science cluster is not as competitive at the international level as at the national level though it is gaining importance. However, the sector has grown, albeit from a reduced base, by 350% in the last four years and is starting to become a relevant international player in R&D, spin-offs, and research and collaboration. Spain ranked fourth in Europe in biotechnology-related activities from 2000 to 2003 according to Genoma España (Ministry of Health, Science and Technology, Spain). At the national level, the high competition among regions in the biotechnology field makes it harder and harder to achieve a high regional specialisation in such an advanced sector. Spain has not promoted the concentration of this sector in a given region, and biotechnology policies are left up to the regional initiative instead of being organised and led by the central government, as is often the case in the development of this sector in others countries. Furthermore, the Madrid metro-region lacks a structure for agents, institutions and knowledge base which are all critical to achieving results in a highly technical and scientific innovative sector (Cendejas, Encinar, Munoz, 2006).

Although life science entities are located in many different areas within the Madrid metro-region, the most important concentrations are in the City of Madrid and in the north-eastern area of the region. The City of Madrid brings together the bulk of research centres and the largest company headquarters. Private research centres and the productive plants are located in the north-eastern area of the metro-region (i.e. the municipalities of Tres Cantos, Colmenar Viejo, Alcobendas, Alcalá, and the so-called Henares corridor, close to Barajas airport and a number of logistics centres). Minor concentrations are to the south (the municipality of Leganés) where mainly low value added activities are located.

**Table 21 – Main organizations within the Madrid life science cluster**

<b>Universities</b>	Autonomous University of Madrid (biotechnology, molecular biology and biomedicine) Universidad Complutense de Madrid (genomics and proteomics) University of Alcalá Polytechnic University of Madrid;
<b>Research Centres</b>	Severo Ochoa Molecular Biology Centre Alberto Sols Biomedical Research Institute Ramón y Cajal Institute of Neurobiology Institute of Pharmacology and Toxicology Institute of Industrial Fermentations National Cardiovascular Research Centre IMIDRA (the Spanish National Cancer Research Centre) INIA (the Astrobiology Centre).
<b>Hospitals</b>	“12 de Octubre” University Hospital



	San Carlos Clinical Hospital "Gregorio Marañón" General University Hospital La Paz University Hospital La Princesa University Hospital Ramón y Cajal University Hospital
<b>Largest bio-tech and pharmaceuticals companies</b>	Agrenvec – Bioalma – Biotecnologías Aplicadas – Bionostra – Biotherapix – Biotools – B&M Labs – Cellerix – CircaGen – Coretherapix – Genómica – GlaxoSmithKline – Genetrix – Ingenasa – Integromics – Neuropharma – Pharmamar – Plant Bioproducts – Zeltia Group - ZF Biolabs. The multinational <i>big pharma</i> s: MSD, Lilly, Roche, Serono.
<b>Corporate associations</b>	The Spanish Biocompanies Association (ASEBIO) The Association of Biotechnology Companies of the Region of Madrid (BIOMADRID).

Source: Elaboration on Genoma Spain

### *Other non-clustered productive specialisations*

#### Tourism

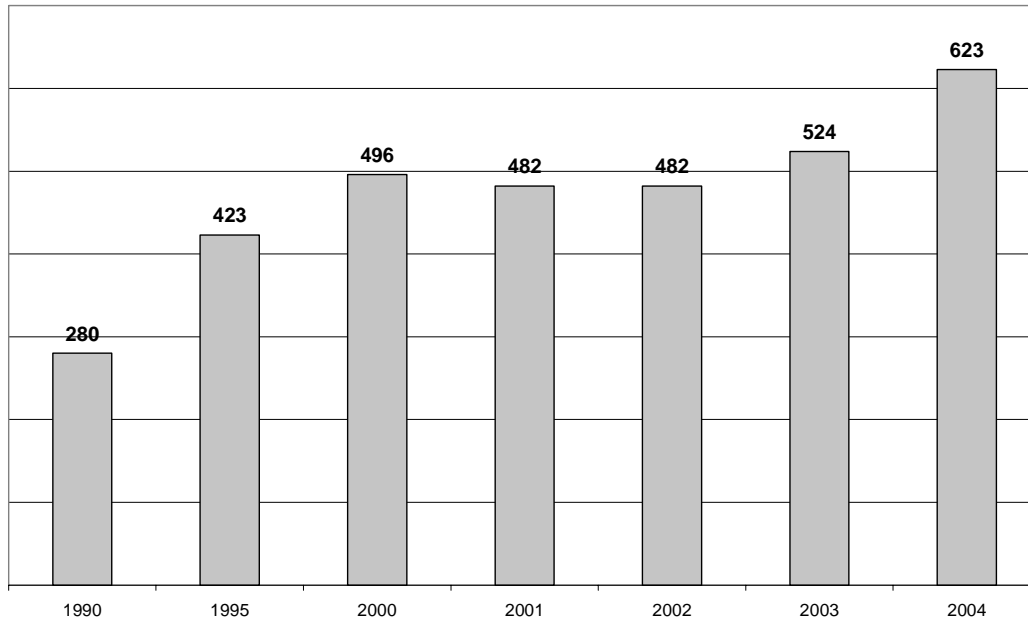
With a capacity to host 65 000 visitors per night, Madrid is one of the most attractive destinations in Spain, only after the Mediterranean regions of Catalonia and Andalusia. Such a competitive advantage comes from the local endowment of cultural and natural amenities as well as from the economic role of Madrid, which also attracts business visitors. From a European perspective, Madrid is also one of the most popular tourism destinations, ranking fourth in 2004 only behind London, Paris and Rome, and ahead of cities, such as Barcelona, Berlin and Amsterdam (UNWTO, 2005). Tourism is becoming one of the leading industries in the world economy. Since the end of the 1990s, international tourism receipts have more than doubled reaching USD 623 billion in worldwide totals (Figure 52). The general trend seems to have recovered from the slowdown of the first years of the millennium (probably due to the "9/11" attack). Spain has a lion's share in this global market.<sup>73</sup> The nation ranks second both in terms of arrivals and revenues, only after, respectively, France and USA (with an average revenue of roughly USD 750 per tourist) (Table 22). Because of the large commercial deficit, the tourism industry is vital to the national economy, accounting for about 11 % of gross domestic product (2004).<sup>74</sup>

73 . It is worth noting that Spain, in spite of the strong euro and of the tragic events of 11th March in Madrid, saw tourist arrivals grow by more than 3% also in 2005.

74 . INE (Spanish National Institute of Statistics), Tourism Satellite Accounts.

**Figure 52 – Overall tourism receipts in world economy**

Billions of US dollars



Source: UNWTO (2005)

**Table 22 – Tourism arrivals and receipts in the world**

		International Tourist Arrivals (million)					International Tourism Receipts (US\$ billion)						
		Change (%)				Share	Change (%)				Share		
		2003	2004	2003/2002	2004/2003	2004	2003	2004	2003/2002	2004/2003	2004		
1	France	75	75.1	-2.6	0.1	9.8	1	USA	64.3	74.5	-3.4	15.7	12
2	<b>Spain</b>	<b>51.8</b>	<b>53.6</b>	<b>-0.9</b>	<b>3.4</b>	<b>7</b>	2	<b>Spain</b>	<b>39.6</b>	<b>45.2</b>	<b>4.4</b>	<b>3.8</b>	<b>7.3</b>
3	USA	41.2	46.1	-5.4	11.8	6	3	France	36.6	40.8	-5.4	1.5	6.6
4	China	33	41.8	-10.4	26.7	5.5	4	Italy	31.2	35.7	-2.1	3.8	5.7
5	Italy	39.6	37.1	-0.5	-6.4	4.9	5	Germany	23.1	27.7	0.4	8.9	4.4
6	UK	24.7	27.8	2.2	12.3	3.6	6	UK	22.7	27.3	2.1	7.5	4.4
7	Hong King (China)	15.5	21.8	-6.2	40.4	2.9	7	China	17.4	25.7	-14.6	47.9	4.1
8	Mexico	18.7	20.6	-5.1	10.5	2.7	8	Turkey	13.2	15.9	10.5	14.3	2.6
9	Germany	18.4	20.1	2.4	9.5	2.6	9	Austria	14	15.4	3.8	0.4	2.5
10	Austria	19.1	19.4	2.5	1.5	2.5	10	Australia	10.3	13	0.8	10.7	2.1

Source: UNWTO (2005)

## Building and construction

The building and construction sector has contributed to the recent boom both of the Spanish and Madrid economies. In 2005, the sector represented 8.8% of the gross value added of the region's economy, with more than 300 000 registered construction workers in the region and 150 000 just in the City of Madrid. These numbers denoted a growth

rate of 8.7% in the region and 7.1% in the City of Madrid with respect to 2004. Part of this recent boost was due to the 2005 process of regularisation of migrants, many of whom were already working prior to 2005 in the sector.<sup>75</sup> In the first nine months of 2005, more than 73% of the 42,000 new jobs in the sector were taken by foreign migrants, raising the participation of foreigners to 24% of the total workforce.

Madrid is home to a number of large and deeply specialised construction companies competing on the international market. Once a non-tradable sector, construction has become a globalised market in which a number of large companies compete in selling their products and their services. The development of the construction sector in Madrid has been related fundamentally to two factors. First is the significant expansion of building and construction activities not just in Madrid, but also in the rest of Spain. The expansion of the new building stock and of rehabilitation of buildings experienced in Madrid and elsewhere in Spain in the recent building boom has been accompanied by huge public investment (by local, regional and the national administrations and the EU) in transport and other forms of infrastructure. The sustained rise in property prices experienced by Spain since the late 1990s has also contributed to attracting investment into the sector. The second factor is that, despite the fact that the sector is dominated by SMEs, Madrid is home to a number of large construction firms that have a large share in the Spanish market and are able to compete internationally. Large firms originated through processes of internal restructuring, and mergers and acquisitions of foreign firms.<sup>76</sup> According to the 2006 McGraw-Hill Engineering News Record (ENR) ranking of top global contractors, Spain had six construction firms among the top 50 global contractors. All six firms had their headquarters in Madrid. No other city in the world, with the exception of Tokyo-Yokohama, with eight, had such a high concentration of construction firms among the top 50.

### ***Main regional weaknesses***

#### *Low labour productivity*

Madrid has a relatively low level of labour productivity in comparison to the leading OECD metropolitan areas: 18 % less than the average of the 78 OECD metropolitan regions (Competitive Cities in the Global Economy, OECD, 2006). While, the

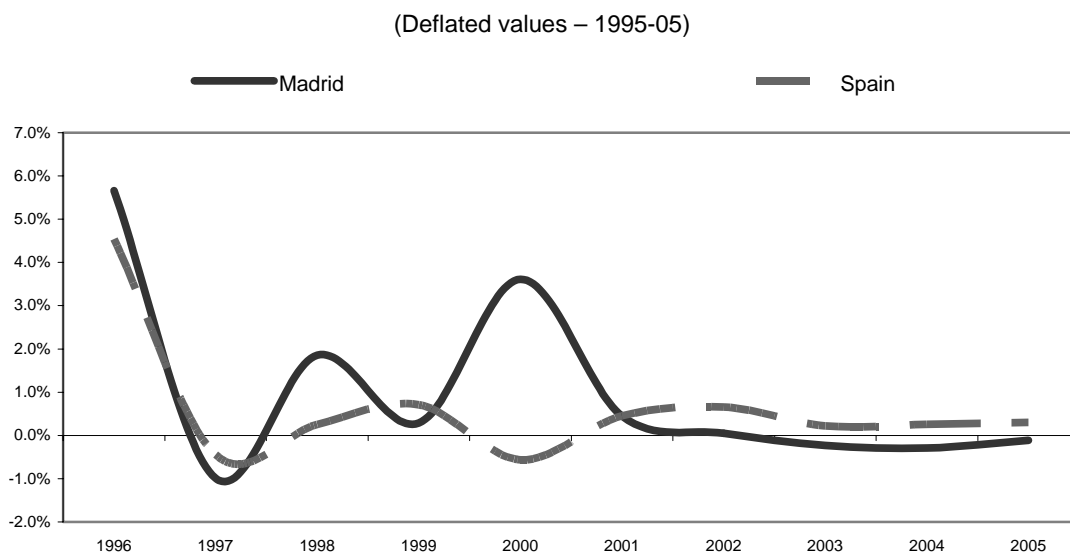
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75. In the Madrid metro-region, non-EU workers are employed mainly in construction and proximity services

76. The restructuring of the sector that allowed the emergence of such a regional specialisation of truly global firms in Madrid started in the early 1990s and was founded on a favourable regulatory framework and on the emergence of a competitive financial sector. The fact that most large construction firms in Madrid were already relatively specialised since their foundation also contributed to the growth of firms that were not necessarily competing for the same national contracts. Finally, the need to diversify in what is traditionally a very volatile sector also acted to spur the rounds of mergers and acquisitions. Today, Madrid's large building and construction firms are competitive on a global scale, bidding for and winning numerous projects around the world and with an increasing diversification of activities, which may help them to fend off any potential downturn in their core business in the Spanish market.

interpretation of such data should be evaluated carefully due to the reasons mentioned previously (including the regularisation of a large number of immigrants in 2001), Madrid still has been under-performing in terms of labour productivity growth as compared to the national average since 2001 (Figure 53). As mentioned before, relatively low productivity level is a national issue: over 1998-2002, the average increase of labour productivity within the OECD was at 2.12 % against only 0.8 % in Spain (OECD Factbook, 2007). Factors such as the relative decline of the high-tech manufacturing and a high creation of jobs characterised by impermanence, low earnings, and the low returns to education or experience should be addressed to increase the productivity level in Spain, and in Madrid (OECD, Economic Surveys, Spain, 2006).

**Figure 53 – Annual productivity growth (per worker)**



Source: INE (Spanish National Institute of Statistics)

The reducing weight of high-tech manufacturing has partly contributed to Madrid's relatively low productivity. As assessed above, between 2000 and 2005, high-technology manufacturing contribution to the regional GVA has been falling from 2 208 to EUR 1 927 million, reducing its total contribution from 2.2% to 1.3% (INE – Spanish National Institute of Statistics). A main reason for this trend is linked with the low level of R&D. As will be demonstrated below, the level of R&D expenditures is higher in the Madrid region than the national average; yet it remains relatively low as compared to other metro-regions. Actually, low R&D investment seems to be a national problem. Despite improvements in recent years and the most generous R&D tax break system in the OECD,<sup>77</sup> Spain is still close to the bottom of R&D rankings with a spending-to-GDP

77 . In Spain R&D tax breaks includes: (i) a full write off for R&D-related investment in fixed assets, (ii) deductions for R&D-related spending (30 per cent ), (iii) deductions on incremental spending (50 per cent of spending above the average of the previous two years), and (iv) an additional 20 per cent on researchers' wages. However, these incentives are not used much.

ratio of just 1.1 %, against an EU average of 2 % and 2.8 % in the United States (2004). New EU member states, which have much lower per capita GDP than Spain, are close to Spain at 0.84 %. Almost half of spending (48%) is carried out by the public sector (universities and government institutions), meaning that 52 % of spending comes from the private sector. This is low considering that many EU countries' private spending accounts for 65 % of total spending while this is 70 % in the United States. Moreover, despite the aforementioned increased importance of knowledge intensive services (which has increased productivity over the last decades, primarily because of the uptake of ICT<sup>78</sup>) within the regional economy, a large part of the new jobs has been created in community, social and personal services, all activities in which labour productivity was low.

The dual labour market of the Madrid metro-region may also have affected labour productivity. The Madrid metro-region, like the rest of Spain, has a dual labour market shared between highly protected permanent workers and people engaged in fixed-short term contracts (Figure 54). Fixed-short term contracts have been introduced in Spain in 1984 to reduce the negative impact of the high protection of workers with open-end contracts, which in Spain is one of the highest in the OECD (Figure 55). Although the reforms have promoted the creation of many new jobs, the excessive use of fixed term contracts (currently accounting for about a third of all employees in Spain, and some 28% in Madrid,<sup>79</sup> compared to an OECD average of 13 %. Legislation which came into force in mid 2006 introduced, among other things, some restrictions to the successive use of temporary contracts as well as temporary incentives for the conversion of temporary contracts to permanent ones. This legislation has led to a modest decline in the proportion of workers on temporary contracts.), may have caused an unbalance in the labour market reinforcing the traditional *insider-outsider mechanism* and promoting the creation of *low-skilled employment*.

- The introduction of fixed-term contracts has reinforced the traditional insider-outsider mechanism associated with strict *employment protection legislation* (EPL) by adding a sort of “third group” of workers (temporary workers), which raises the effective protection of permanent workers. Accordingly, the latter enjoy job stability beyond the protection given by firing costs, since temporary workers are the subject of employment adjustments at the margin in case of a

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Only 15 per cent of companies which innovate benefit from the tax breaks (COTEC, 2004). Note that a reform to the corporate tax went into effect in 2007 and some of these deductions may have been modified.

78. Most service innovations are not technical and involve small and incremental changes in processes and procedures which do not require significant amounts of R&D. Traditional measurements of R&D such as patents do not capture these non-technical innovations very effectively. Regulatory reform, increased exposure of service activities to international competition, the growing tradability of services and higher levels of investment and application of ICT are contributing to an increase of productivity in some service sectors such as financial services, communication and public administration services

79. INE, Spanish National Institute of Statistics

negative business cycle.<sup>80</sup> In such a situation permanent workers could have low incentives to redline their job performance. In addition, workers with fixed-term contracts might lower their work efforts if they know that their contract will not be renewed. The final effect is probably a reduction of the overall productivity of labour (Dolado *et al.*, 2002). Although temporary contracts should only be used for a limited duration (they can be renewed at most three times to a maximum of two years), they are widely used beyond the legal limit (OECD, Economic Surveys, Spain, 2005).

- The over-use of short term contracts has encouraged the creation of low skilled employment, especially in the service sector and in construction, which has been absorbing the bulk of non-EU workers in Spain, as well as in Madrid: a phenomenon that is likely to have affected labour productivity.<sup>81</sup> Moreover, many of these jobs are on the frontier between the informal and the formal economy. Therefore, the lower growth rate of GDP compared to that of the employment rate between 1998 and 2002 may be partially explained by the regularisation of these workers, who had contributed to the local economy but were not taken into account when labour productivity was calculated because they participated in the informal sector. Finally, although the high responsiveness of the labour market to the business cycle is positive from many viewpoints, in case of a long negative business-cycle, many of the workers with low productivity could lose their employment, causing a growth of the informal economy (especially in the case of foreign workers), or a general decrease in regional wealth due to a reduction of the local activity rate.

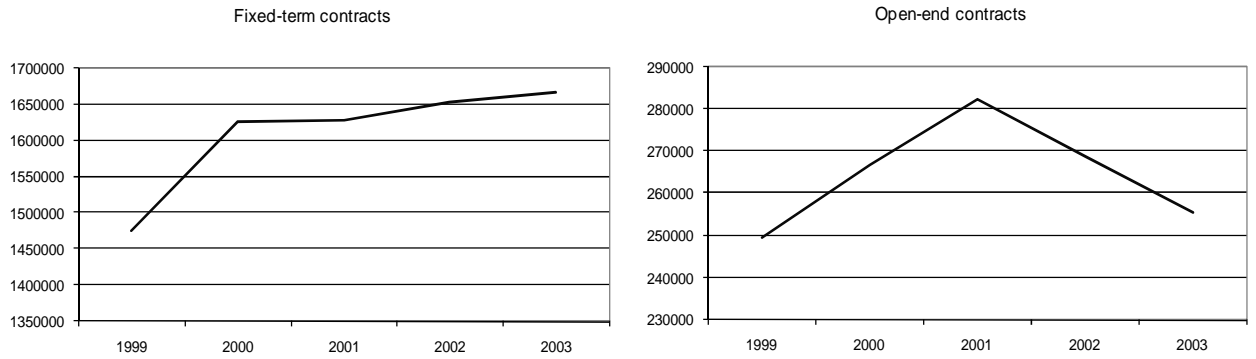
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80 . This could justify the insurgence of high wage inflation, despite high unemployment (Bentolila and Dolado, 1994).

81 . The sectors which saw a larger number of fixed-term contracts in 2003 in the Madrid metro-region were “other business activities” (36.23%), “recreational, cultural and sporting activities” (14.16%), and “construction” (13.21%) and hotels and restaurants (8%). Regarding occupational contracts, elementary plant workers in manufacturing (9.75%), administrative occupations (9.68%), elementary storage workers (7.37%) and sales occupations in retail (6.07%) were the most hired occupations in 2003

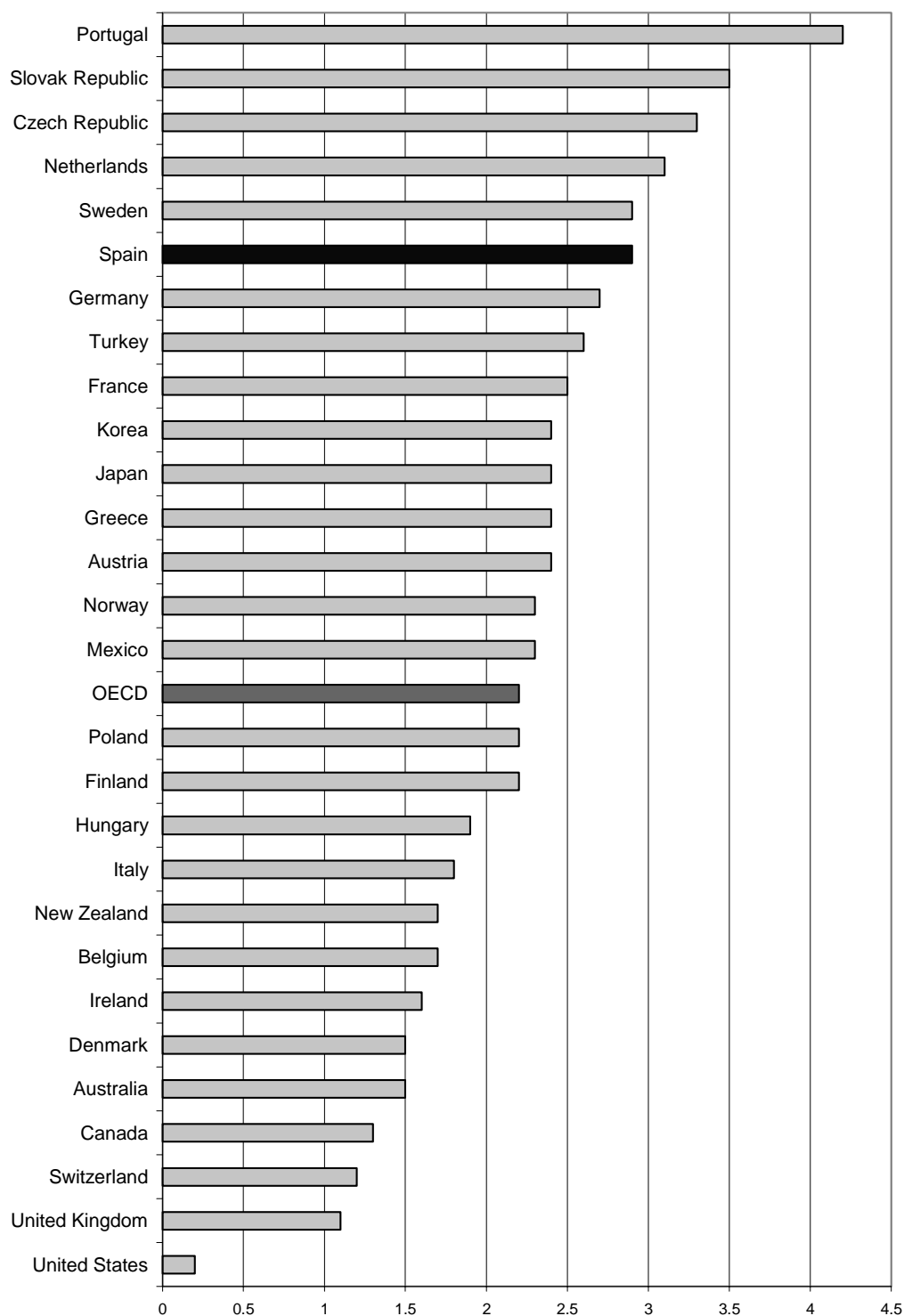
**Figure 54 – Evolution of the contracts by type in Madrid**

1999- 2003



Source: INEM (Spanish National Institute for Employment)

**Figure 55 – Index of overall strictness of protection in the national labour market \***





\* The overall indicator takes into account other variables, like procedural barriers, notice periods for dismissal and difficulty of dismissals. Scores can range from 0 to 6 with higher values representing stricter legislation.

Source: OECD Economic surveys Spain (2005)

### *Decreasing innovation capacity*

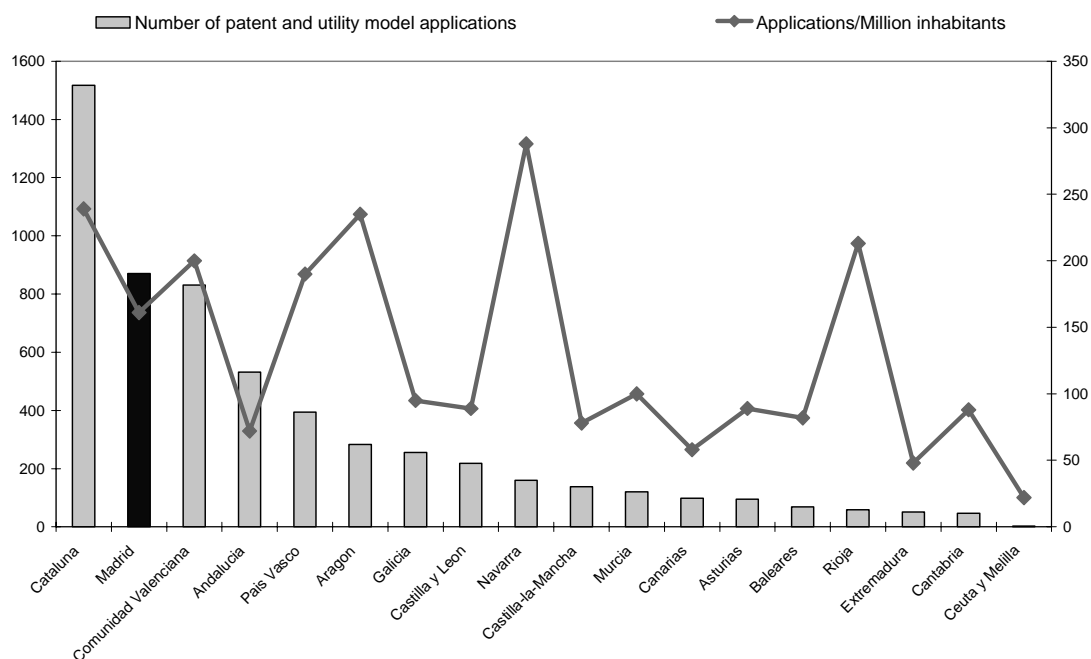
The Community of Madrid produces less innovation than others leading European metropolitan areas. At the national scale, approximately 30.5% of private R&D expenditure and 26.8% of the total public R&D expenditure were concentrated in the Madrid metro-region in 2005. In the same year, 1.82% of the regional GDP was invested in R&D activities, *i.e.* above the Spanish average of 1.13%.<sup>82</sup> Moreover, Madrid is home to 30% of all researchers in Spain belonging to public bodies (46 centres operated by the Higher Counsel for Scientific Research). Moreover, looking at output data on innovation activity the panorama is somewhat different, with Madrid punching below its economic weight and significance in measures such as patents, utility model applications, and research output.<sup>83</sup> In 2005 Madrid was ranked second – behind Catalonia – at the national level in terms of patent and utility model applications (Figure 56). Yet, when these data are normalised to population size, the Madrid metro-regions produces a number of patent applications only slightly above the national average, ranking behind other regions such as Aragon, the Community of Valencia, Navarre, Basque Country, Rioja, and Catalonia. At the European level, taking into account ICT and biotechnology, two sectors in which innovation capacity is a competitive advantage itself, the performance of the Spanish metro-regions in terms of patent applications are among the lowest within a selected sample of seven leading European metro-regions (Figure 57-58). Finally, at the international level, looking at the World Knowledge Competitiveness Index in 2004, Madrid appears neither in the ranking of the 50 most knowledge competitive regions, nor in the 50 most knowledge intensive regions of the world. Improving the local capacity to innovate is likely to have a broader impact at the national level, since these sectors have a “cross-sectoral” effect and can fertilise the average labour productivity.

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82 . Elaborations on the basis of INE (Spanish National Institute of Statistics)

83 . A utility model is a registered right which gives its owner exclusive protection for an invention, similar to a patent. In general, an invention must be new, involve an inventive step, and lend itself to industrial application to be protected by a utility model. The level of inventiveness required is generally lower than that for a patent. Also, utility models may be granted without examination to establish that these conditions have been met. This means that protection could be obtained more quickly and at less cost than with a patent, but on the other hand it would have less legal certainty and the term of protection is usually shorter than a patent.

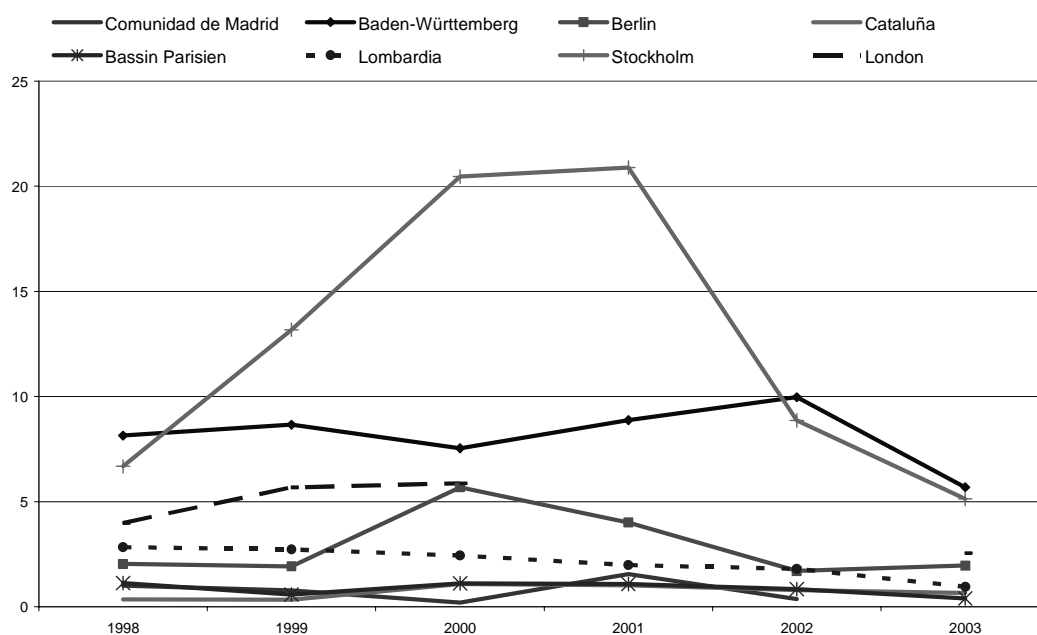
**Figure 56 – Number of patent and utility model applications in a selection of Spanish regions (2005)**



Source: Avance de estadísticas de propiedad industrial, Ministerio de Industria, Turismo y Comercio (2006) (Summary of Industrial property statistics - Ministry of Industry, Tourism and Trade)

**Figure 57 – Patents applications in ICT Consumer electronics**

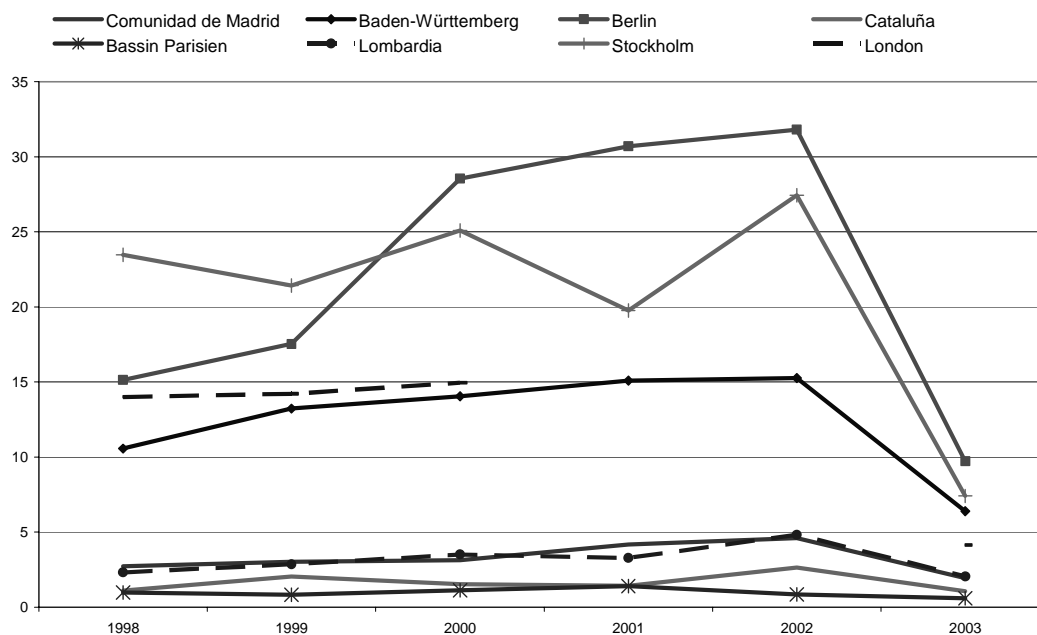
(Applications per million inhabitants)



Source: Eurostat

**Figure 58 – Patents applications in Biotechnology**

(Applications per million inhabitants)



Such a limited effectiveness of regional R&D expenditures in generating innovation may be explained by a number of different factors that makes the environment less conducive to innovation, including the following:

- Although being of a high quality, there are some weaknesses in the overall education framework. The Madrid metro-region enjoys a dense system of universities and hosts three of the 20 best internationally recognized business schools (Financial Times, 2006). However, although there are no international comparisons in the form of test results, Madrid's universities, on the whole, provide education to a large number of students in large classrooms, with a high student/staff ratio in most disciplines.<sup>84</sup> Survey information shows that the teaching of Spanish graduates does not correspond well to labour market needs, with a low weight on practical skills such as the use of computers, oral communication and planning skills, ability to solve practical problems and ability to work under pressure (COTEC, 2004). As the last *OECD Economic Survey on Spain* highlights, student mobility across universities in Spain is low, in part because of the low level of specialisation across them and the lack of discrimination in quality by the system and by employers, all of which discourage mobility. In addition, the external control of the selection system for professors has left a lot to be desired, resulting in problems of endogamy, whereby jobs primarily went to internal candidates. The recent modification of the selection system towards the implementation of a habilitation system before vacancies are filled by university departments has, in some cases, resulted in a decline in the number of vacancies, as university departments fear that they may not be able to place their own candidates (OECD, Economic Surveys, Spain, 2005). More recently (2007), another national reform of the university framework took place (Ley Organica de la Universidad). The reform deals with three issues. First of all, it gives universities greater autonomy in defining teaching programmes and to recruit professors. Of course, this increased autonomy will be coupled with a strengthening of the monitoring and assessment of the quality of the university system. Second, to enhance linkages with the private sector, professors will be allowed to take a voluntary leave of absence for a five-year maximum period to develop more applied projects in firms. Universities and public research centres will also be able to create joint research institutes with businesses in order to forge closer links and facilitate personnel exchanges. Third, and last, the reform creates sectoral commission including both representatives of the Ministry of Education and of the autonomous communities to better co-ordinate university management. Students will also participate more formally in the university organisation.

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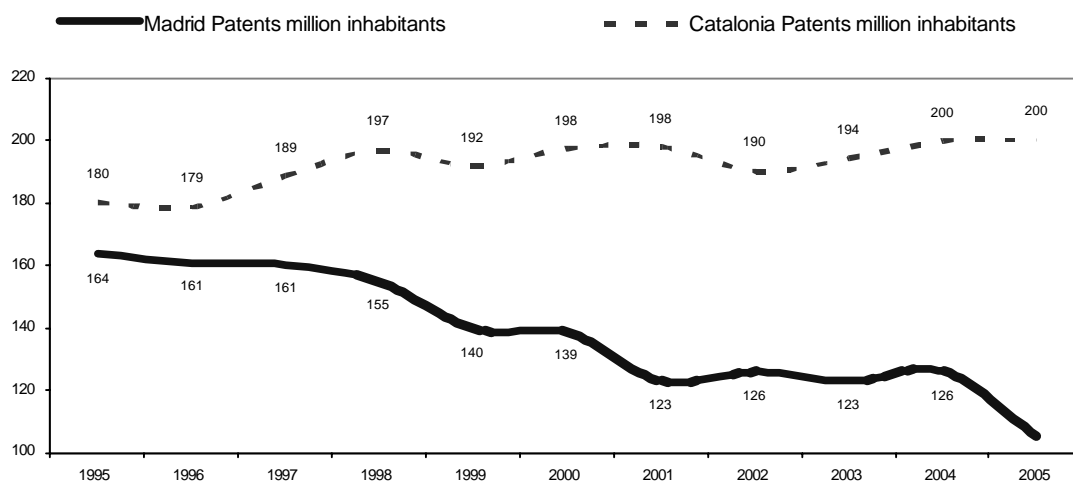
84 . Only two out of 14 Madrid-based universities (242 756 students in attendance representing 16 % of the national total<sup>84</sup>) are included among the 100 First European of the Academy Ranking of World Universities elaborated by Shanghai Jiao Tong University.

- Researchers in the public sector have traditionally had low incentives to increase their production, or to keep on working in the region or in the country. Most researchers, in science related sectors are concentrated in the Spanish public sector. Researchers in private firms earn between 20-30 % more than researchers in University and public sector labs (ASEBIO 05, 2006). This is particularly relevant because there are legal restraints on the transfer of researchers and knowledge from the public to private sector, severe restrictions which impede the appropriate management of the innovation system. Technology-based firms generally operate in Spain within a very rigid legal framework. Legislation regarding intellectual property and the jurisdiction on biotechnology-based elements also adversely affects the appropriability of researchers' results. Legal restrictions condition the labour framework and discourage or even prevent the collaboration of highly qualified researchers working in different research centres, universities and companies, thus limiting the development of cooperation networks (it is worth noting that the aforementioned reform to the framework law on universities does include some measures to better integrate research activities to the private market. For example, it will be easier for faculty to take a leave and work in a firm). Another limitation is the fact that scientists that become entrepreneurs can only hold 10% of the stock capital if they wish to continue collaborating with their original department or centre (Ullastres, 2004). The situation is even worse for young scientists. Work conditions for young researchers during and after their post-graduate studies are far from optimal, as salaries are low and sometimes they have no access to some social security benefits. Researchers trained abroad often have difficulties in finding a job in Spain as the selection process of personnel in some universities suffers from endogamy, although a number of special programmes to facilitate their return have been recently implemented (OECD, Economic Surveys, Spain, 2005).
- Last, in Spain, like in many OECD countries, linkages between public research institutions and private business, which are another sign of a dynamic business R&D environment, are not well exploited, in part because of a managerial culture of firms that are reluctant to embark on R&D projects. In this respect, programmes that foster the participation of public researchers in private firms are useful to increase the absorption of R&D and new technologies by firms, but their budget allocation is small. Business-funded research in universities and public R&D centres is rare, and only 36% of Spanish companies consider cooperation as part of their innovative strategy, against 48% in the European Union (OECD Economic Survey, Spain, 2005).

The result is a overall decreasing innovation capacity as can be assessed by looking at patents and utility models per million inhabitants, which figure is actually converging with the national average (in controtendency in respect to the trend in the Catalunya region) (Figure 59). Of course, a key indicator is represented by the regional investment in R&D, which is higher than the national average but still far from the Lisbon objective (Figure 60).

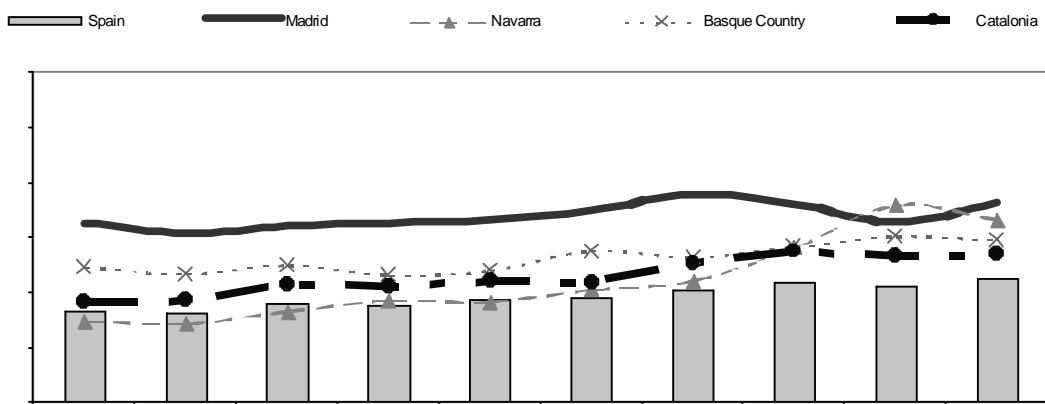
**Figure 59 - Patents and utility models per million inhabitants in the Madrid metro-region and in Catalonia**

(1995-2005 – Spain = 100)



Source: OEPM, EPO, Sp@cenet, UPSTO and WIPO

**Figure 60 – Percentage of GDP invested in R&D in the most innovative Spanish regions**



*Increasing spatial disparities due to the concentration of immigrants*

Promoting regional accessibility and housing

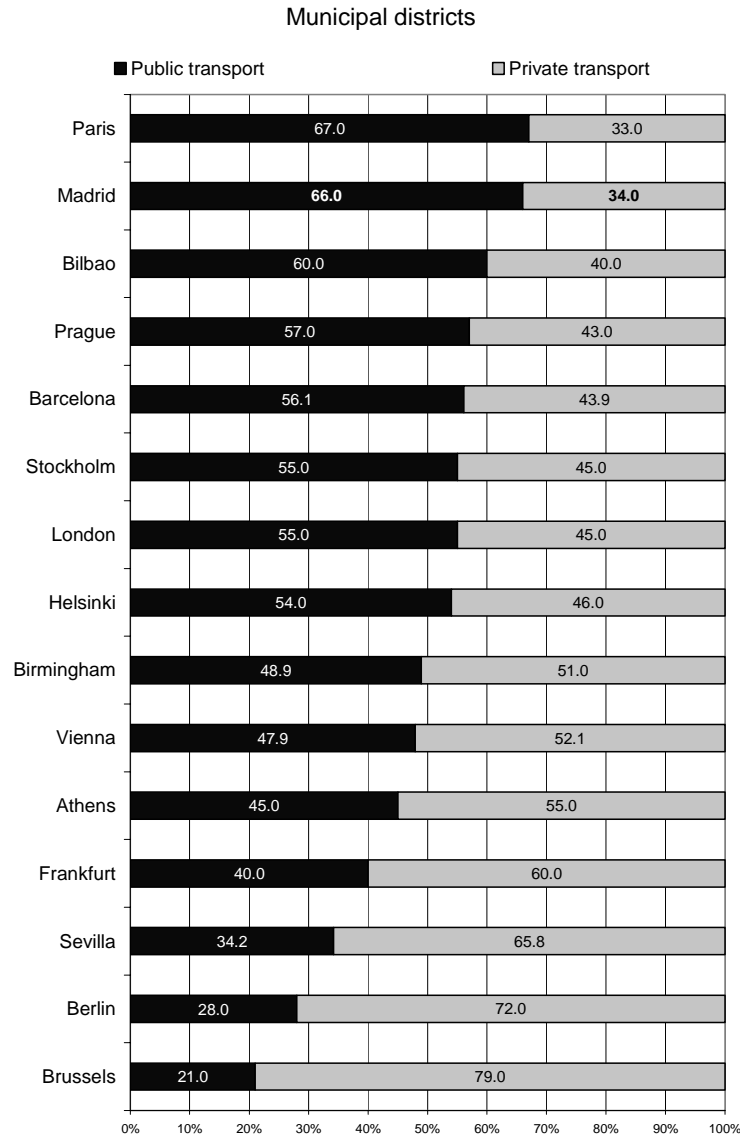
Madrid’s regional accessibility has been decreasing in the last decade because of the traffic congestion due to fast urbanisation and rapid urban sprawl. In spite of significant efforts to improve transport accessibility in the region, the Madrid metro-region has still a *mononuclear* and *radial shape*. The bulk of the administrative functions and a large part of the economic activities remain localised in the very centre of the region (City of

Madrid) which is home to the largest labour market of the metro-region. On average, the overall regional population made 8.4 million trips per day in 2004; this was 38% more than the average value in 1996. Because of the urban sprawl, the largest improvement is concentrated in the use of private cars in which the total number in the metro region has been increasing by 5.3% between 1996 and 2004. Traffic congestion has been soaring in the last decade and this is in spite of the good endowment of public transportation facilities characterising the City of Madrid and its outskirts. According to the European Metropolitan Transport Authorities (EMTA) the City of Madrid has the second highest percentage of users of public transport just after Paris and behind other metropolitan areas like Barcelona, London, and Frankfurt (Figure 61). The fact is that many commuters come from the ring belt of the metropolitan region. The demand for public transportation is dispersed and placed in locations distant from the core of the metro-region. Therefore, private transportation is a rational choice for commuters.<sup>85</sup> Moreover, because of its centrality within the radial national transportation framework, Madrid also attracts the “in transit” traffic originating in other Spanish regions. Addressing this issue will be a key challenge for Madrid in the future to maintain its level of attractiveness and its potential to position as a leading logistics platform.

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85 . The subway is the most effective public transportation facility, yet its competitiveness with private transportation means decrease sharply if the time that the trip takes is longer than 1 hour.

**Figure 61 – Percentage of public transport and private motor vehicle trips**



Source: European Metropolitan Transport Authorities (EMTA, 2005)

Madrid is increasingly facing pressures on its housing market, which has led to significant and consistent price increases, in spite of a large production of dwellings.<sup>86</sup> The net result of this trend of rising prices is worrying for Madrid, particularly from the point of view of access to affordable housing for the most vulnerable segments of the city, but also for its capacity to attract foreign students and skills. For instance, about

86 . The large production of new dwellings is a national characteristic. More than 490 000 new properties were produced in Spain in the 2004, a higher number than in Germany, France and Italy combined, and an increase of 17 % when compared to 2003 (La Caixa, 2005).



22% of Madrid's 20-34 years olds still live with their parents (Strasser, 2005), and housing represent almost 40% of annual household expenditures in Madrid (Table 24). In addition, the increasing flow of immigrants is also likely to face growing pressure in terms of housing affordability. From the systemic point of view, in addition to the detrimental effects of housing escalation on the general level of prices and the competitive position of the overall Spanish economy, in the worst case scenario it might mean that a gradually overheating economy of Madrid might be facing bottlenecks in attracting the labour supply in light of the pressing constraints in its land and housing markets. This is all the more worrying in light of the fact that many young people and immigrants will also enter the labour market through temporary contracts, implying a vulnerable position to negotiate long term mortgages. There are two main reasons behind this escalation of real estate prices:

- First of all, the Spanish housing system has traditionally been excessively dependent on owner occupied housing, while the rental sector covers only a marginal part of demand (Table 25). The low level of supply of private rentals in Spain is mainly due to (i) low rent levels that are insufficient to offset the apparent associated costs (damage, unpaid rent, etc) and (ii) obstructive or outdated regulatory obstacles.<sup>87</sup> Such conditions encourage owners to keep their property unoccupied. Therefore, the paradox is that, despite general increases in housing prices in Spain, and more particularly in Madrid, this is accompanied by large numbers of empty units. Spain's capital is one of the cities with the highest rates of vacant dwellings in Europe. The City of Madrid had 24.4% empty conventional dwellings per total number of dwellings during the period 1999-2003 while figures for Milan and London were 5% and 2.5% respectively (Eurostat, Urban audit)<sup>88</sup>
- Second, escalation in housing prices has been induced by the (regressive) tax deductions which are a part of the prevailing mortgage system that has introduced additional pressure on the market from the demand side and relatively low interest rates (Figure 62).

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87 . In order to protect the sitting tenants against rent increases, the Spanish government decided to freeze all rents between 1946 and 1964. This stimulated many landlords to sell their dwellings. As far as this is concerned, the strong rental protection also played an important role. In case of non-payment, eviction procedures generally took many years. Consequently, homeowners became more and more reluctant to rent their vacant dwellings, and landlords cut back on their investments in maintenance and renovation. Even though the Spanish rent regulation was considerably liberalised after 1964, the Spanish government has not yet been able to reverse this trend. This is probably due to the fact to the rental protection of tenants is still rather high; also today the eviction of non-paying tenants requires long juridical procedures (Circulo de Empresarios, 2005). And since non-paying tenants might occur more frequently in Spain than in many other countries (Periodico El Mundo, 2004), there has emerged a culture in which letting a dwelling is equated with asking for problems. Consequently, many Spanish homeowners are very reluctant to let their vacant dwellings. J. Hoekstra, C.Vakili Zad (2006), High vacancy rates and high prices of housing: A Mediterranean paradox, working paper.

88 . <http://www.urbanaudit.org/DataAccessed.aspx>

**Table 24 – Yearly householders' expenditure**

	1999	2000	2001	2002	2003
Average yearly individual expenditure (€)	6 812.29	7 889.00	8 159.9	8 429.35	8 929.32
Average yearly household expenditure (€)	21 631.69	24 449.15	24 713.57	25 094.14	26 534.95
Index of individual expenditure	113.3	123.1	118.8	117.7	119.0
<b>Structure of the expenditure (%)</b>					
Housing and heating	38.1	35.0	36.3	37.5	39.2
Food drink, and tobacco	15.2	16.6	16.8	17.4	16.9
Transport	10.7	11.1	10.2	8.9	8.4
Hotel and restaurants	8.8	9.7	9	7.9	8.6
Clothing and shoes	6.8	6.8	6.4	6.2	5.6
Entertainment and culture	5.8	6.2	5.8	6.4	5.7
Furniture and furnishings	3.9	4.2	4.6	4.3	4.3
Communication	2.1	1.8	2	2.3	2.4
Health care	2.2	1.7	1.8	1.9	1.9
Education	1.7	1.5	1.5	1.7	1.6
Others	5.0	5.2	5.5	5.6	5.4

Source: Community of Madrid - Regional Institute of Statistics

**Table 25 – Households by Spanish regions and tenancy regime of the main dwelling**

Unit: total number of households (thousands) and horizontal percentages

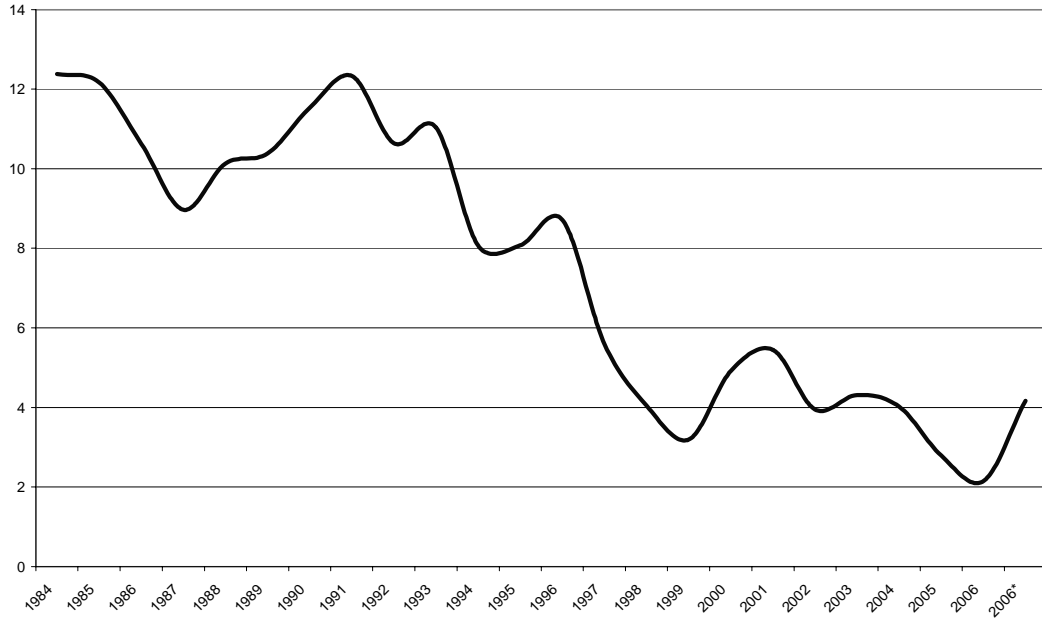
	Property	Rent at market prices	Rent below the market price	Free of charge
<b>Spain</b>	<b>82.0</b>	<b>7.7</b>	<b>3.8</b>	<b>6.5</b>
Andalusia	80.6	4.5	5.1	9.8
Aragon	83.4	6.8	2.4	7.3
Asturias	82.6	7.1	4.0	6.3
Balearic Islands	73.9	17.9	4.9	3.3
Canaries	70.3	11.4	5.7	12.6
Cantabria	84.5	5.0	1.9	8.6
Castilla y León	87.4	4.8	2.4	5.5
Castilla-La Mancha	86.7	5.0	1.0	7.4
Catalonia	79.3	11.8	4.6	4.3
Com. of Valencia	84.8	6.4	2.1	6.7
Extremadura	80.3	6.3	3.6	9.9
Galicia	84.1	5.8	2.0	8.1
<b>Madrid</b>	<b>82.4</b>	<b>9.6</b>	<b>5.3</b>	<b>2.8</b>
Murcia	78.8	8.9	2.2	10.1
Navarre	88.0	7.2	2.0	2.8
Basque country	88.5	4.5	3.2	3.9
Rioja	82.3	8.0	2.5	7.3
Ceuta and Melilla	58.7	12.9	16.3	12.1

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Source: INE (Spanish National Institute of Statistics) 2004 Living Conditions Survey

**Figure 60 – Mortgage market reference rates – Rates at issue (Mortgage certificate)**

(% -- as of January of each year)



\* As of December 2006

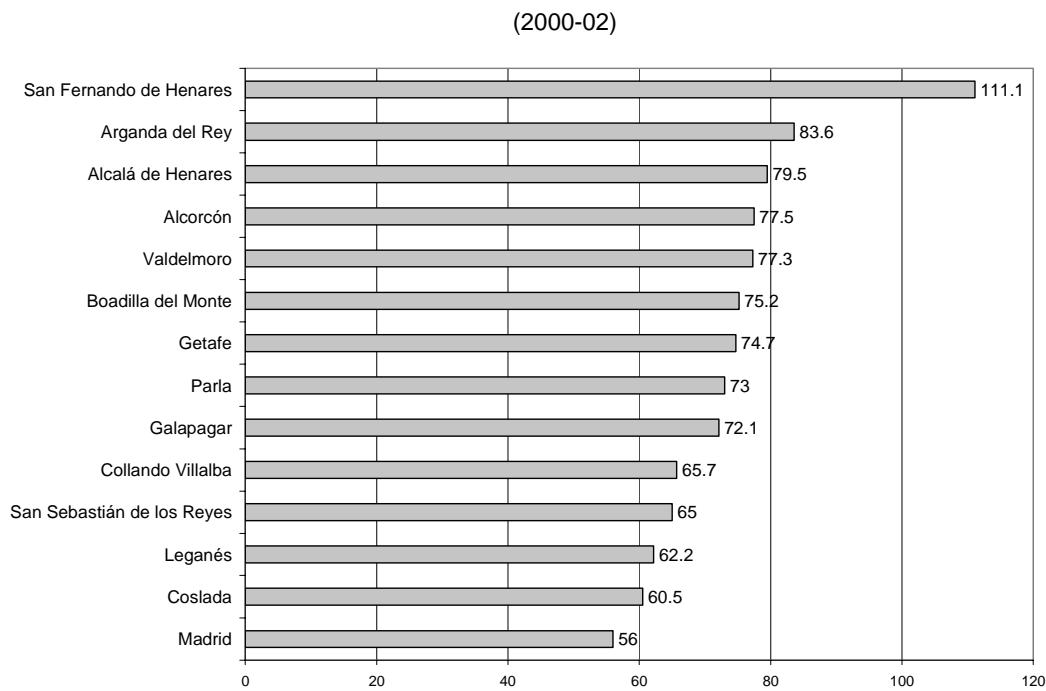
Source: Banco de España (Bank of Spain)

### Integrating immigrants

Immigration has been one of the regional driving forces, yet like many others OECD metropolitan regions, Madrid might face some problems related to the large influx of migrants. Therefore measures should be taken to avoid what has been the common trend in large OECD metro-regions, *i.e.* the strong spatial concentration of migrants in the poorest areas. Over 16% of the local population is foreign born, mostly non-EU workers. The number of foreign population in the Madrid region has increased from 282 870 people in 2000 to 446 893 in 2002 (162 023 a difference of foreign inhabitants in just 2 years). According to a recent survey (A. García-Balleseros, B. Sanz-Berzal, 2004) the majority of immigrants (56.4% of the sample) considers Madrid their final destination. Although recent quantitative data are not available, the dramatic influx of immigrants might have increased disparities within the Madrid metro-region in last years. For instance, the municipalities with the highest increase in foreign inhabitants are all concentrated in the southeast and in the south and of the region, the poorest and most densely populated of Madrid (Figure 63), Conversely, the higher concentration of income per capita is located in the north-western area of the Madrid metro-region, in the sector of considerable recent urban growth. The north-western area of the metro-region is largely

typified by its high social level, youthfulness, recent demographic dynamism and low-density residential nature. Therefore, whilst Madrid is often quoted as having so far managed to avoid wide spatial disparities and a limited trend of ethnic concentrations in some neighbourhoods, there is a natural gentrification tendency in the region in which affluent people are leaving the centre and the south of the region to go to live in the most attractive suburbs of the Madrid metro-region. The increasing spatial/income disparities due to the influx of migrants has inverted a positive trend started at the end of the 1970s in which the income distribution was becoming more egalitarian.<sup>89</sup>

**Figure 61 – Municipalities of the Madrid metro-region with the highest increase of foreign population**



Source: A. García-Ballesteros, B. Sanz-Berzal, *Immigración y Sistema Productivo en la Comunidad de Madrid* (Immigration and the Productive framework of the Community of Madrid), Comunidad de Madrid, 2004.

89. Some riots involving immigrants from Latin America in the southern area of the metro-region (the Municipality of Alcorcón) could be the signal that a level of attention has just been surpassed and that the metro-region need to re-equilibrate its spatial development in order to avoid ghettoization and the insurgency of large deprived areas within the Madrid metro-region.