2017 REPORT

OBSERVATORI BARCELONA

Presentation

We are pleased to present the *2017 Report* of the Barcelona Observatory, which highlights the positioning of Barcelona and its metropolitan area as a benchmark and innovative economic hub at the international level.

Our city has recently experienced moments of uncertainty and instability. It is precisely in this context that Barcelona City Council, in partnership with other stakeholders in Barcelona, want to send out a clear message: Barcelona is not resting on its laurels. This is what the macroeconomic figures tell us, like those showing GDP trends (with increases of more than 3% per year), the strong rate of growth in net employment or the dynamism of exports. But also the rich and diverse fabric of local production and also Barcelona's many economic, social and cultural assets which go to make it a global city with great potential.

Indeed, as reflected in the report that we hereby present to you, Barcelona enjoys a good reputation in the international context, which places it among the top fifteen cities in the world regarding this concept (City RepTrak 2017) and also it figures among the fifteen safest cities in the world (The Economist Intelligence Unit). Barcelona is also a hub that takes advantage of the talent of local people whilst attracting those from other places, as shown by the important critical mass of workers in sectors of high added value in the Catalan labour market. It has more than 780,000 workers in science and technology-, a leading position (5th city in Europe and 15th in the world) in terms of scientific production, a high percentage of workers with university studies and benchmark research centres and facilities which are amongst the best on the continent.

Given this tremendous potential, we have to recover the slogan: "Barcelona, more than ever". We must join forces with companies, citizens, research centres and other relevant stakeholders in the city to promote Barcelona in the world.

We also want to unite forces with other cities, with whom we work to meet today's important social, economic and environmental challenges. We believe in the great potential of direct horizontal collaboration dynamics between cities, such as the Barcelona-New York Challenge to facilitate mobility for sight-restricted citizens by way of single-platform streets, high-tech crosslanding projects with Amsterdam or an agreement to exchange start-ups by talented and young professionals that we will sign soon with Kyoto.

These virtuous collaboration dynamics with other stakeholders in the city and other places should help us to develop Barcelona with a diversified and plural, innovative and socially inclusive economy. It should be noted that some indicators included in this report show us that the city is becoming one of the most dynamic ecosystems in Europe in the technological field: Barcelona is ranked 13th top city in the world in terms of innovation, according to the 2016/17 Innovation Cities Index, it is the ninth most attractive European city for digital entrepreneurs (European Digital City Index 2016), and in 2017 it was the fourth largest city in Europe with the highest volume of investment in start-ups (according to a recent Atomic study). This strength in the technological field has helped us to meet important objectives in terms of social cohesion and environmental sustainability, as shown by the Networked Society for Sustainable Development 2016 report index, which places Barcelona among the fifteen top cities in the world with regard to levels of digital facilities, technological maturity, cohesion and institutions focused on the objective of sustainable development.

Presenting this fifteenth annual report of the Barcelona Observatory, I would like to convey my congratulations to the technical teams at the Chamber of Commerce and Barcelona City Council that have made this publication possible, and to thank the entities that support it for their involvement and also to renew the city's commitment to developing rigorous international comparisons of urban dynamics. It is a good example of the collaboration between institutions that has characterized our history, and we should remember that Barcelona is a collective project of institutions, companies and civil society.

Gerardo Pisarello
First Deputy Mayor

In 2017, the economy of Catalonia and the city of Barcelona continued to develop with the consolidation of the economic recovery, benefitting from the world context and driven by strong job creat President of the Chamber of Commerce of Barcelona ion, the dynamism of private consumption, and strong export and investment results. Regarding the labour market, the number of companies and people employed in the city has grown for the fourth consecutive year, and the number of unemployed dropped for the fifth consecutive year. However, during the last quarter the Catalan economy began to show signs of a slowdown due to the economy and a climate of political uncertainty. As a result, the Chamber of Barcelona has estimated that the Catalan economy has grown 3.1% throughout 2017, four tenths less than in 2016 (3.5%).

The results of the special report titled «Clima empresarial, a l'Àrea Metropolitana de Barcelona (AMB)», presented for the seventh consecutive year in this Report, confirm these strong economic results. According to the *Business Climate Survey*, carried out at the end of September, the performance of businesses in the AMB continued to be positive in the first three quarters of the year and improved slightly with regard growth rates compared to the previous year. Likewise, all sectors have seen positive results on average, achieving better results than those of 2016, except for the industrial sector. With regard to the business outlook for performance in the fourth quarter, executives expect positive results across all sectors and this is slightly up on those recorded a year ago, except in the hotel industry. Commerce stands out particularly, recording the most positive outlook for all sectors and achieving maximums not seen since 2010. Looking at 2018, the trend shows consolidation for the economy as confirmed by the results of the survey on business outlook for 2018 by Eurochambres, which is favourable for Catalonia and follows similar levels to those seen the previous year.

In this economic context, the city of Barcelona has consolidated its strong position at the world and European level for the majority of indicators included in the 2017 Report of the Barcelona Observatory. The city stays among the top 25 metropolises in terms of global competitiveness, according

to the Mori Memorial Foundation, jumping six positions in the ranking of cities with the best reputation, whilst being located in 8th place and staying among the top ten major urban areas of the world receiving most investment projects in the period 2013-2017, according to KPMG. Likewise, Barcelona jumped fourteen positions in the ranking of innovative cities in the world to stand at 13th, according to 2thinknow. On the other hand, Barcelona continued to be well positioned as a leading city for tourism in 2016, being placed among the top 25 cities in the world in terms of number of international visitors, with the port of Barcelona maintaining its leadership in terms of cruise passengers for the 17th consecutive year and the city's airport is now 7th in the ranking of European airports in terms of passenger volume.

I would like to point out that at this time it is important to keep the trust generated by the city in areas such as international investment and technological entrepreneurship, in order to boost our strengths, especially our tourist attraction and export dynamism, to strengthen the Barcelona brand in the world and attract new events, fairs and congresses. In addition, we must continue moving towards a productive model based on knowledge, creativity, innovation and sustainability.

Finally, I want to thank the technical team for their work and their efforts to develop this Barcelona Observatory project, and all those entities that once again collaborated providing information and enriching the content of the report that we hereby present to you.

Miquel Valls i Maseda

President of the Chamber of Commerce of Barcelona

Credits

BARCELONA CITY COUNCIL

Gerardo Pisarello Prados
First Deputy Mayor

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General Manager of Political Economy and Local Development and CEO of Barcelona Activa

Àngels Santigosa i Copete
Head of the Political Economy and Local Development Studies Department

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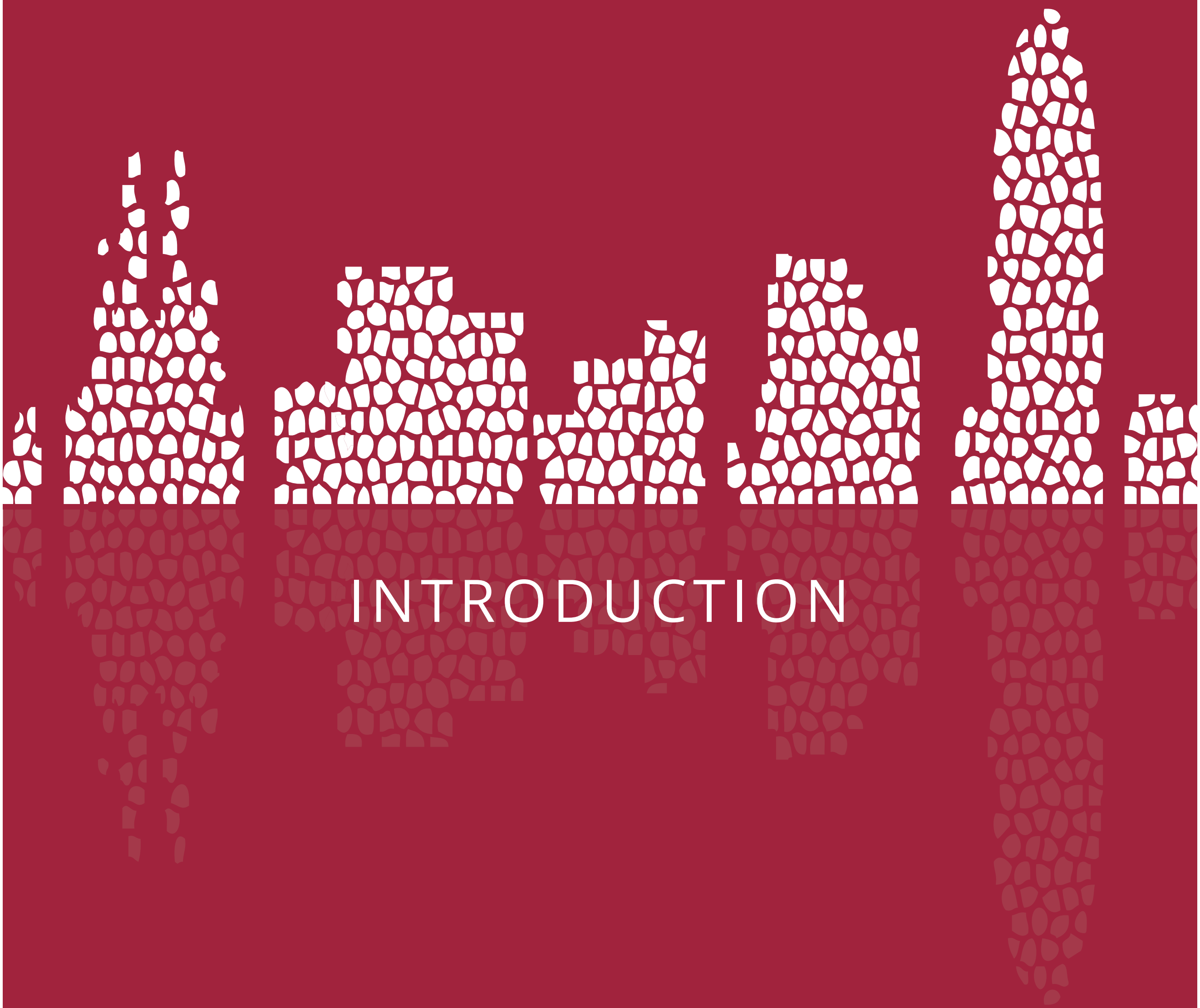


INTRODUCTION

Introduction

We hereby present the 2017 Barcelona Observatory report.

The Observatory is an initiative developed by Barcelona City Council and Barcelona's Chamber of Commerce with the support of other organizations in the city that year after year collaborate by providing information and making key contributions in terms of their sectors.

This fifteenth edition of the annual Barcelona Observatory report is designed to offer a variety of references and inputs that can be used as a basis for decision-making by business stakeholders interested in doing business here or setting up a business, or to attract talent and support candidature bids for events or for the opening of new branch offices in Barcelona. To this end, as every year, the report presents Barcelona's positioning regarding the world's main cities on a set of economic and social benchmark indicators.

The 2017 Report includes a series of characteristics summarized below:

- A selection of 32 significant indicators that provide readers a summarized and efficient overview regarding the positioning of the city and the challenges to be met regarding six subject areas: a hub for economic activity, quality of life, sustainability and social cohesion, labour market and training, the knowledge society, tourism, and prices and costs.

New features in this year's report include six new indicators: Cities that are connected and cohesive and Sustainable urban mobility in cities around the world, which forms part of the chapter on «Quality of life, sustainability and social cohesion»; Part-time work in the chapter «Labor market and training»; Index of innovation in cities in the chapter «Knowledge society», as well as a ranking of housing prices and an indicator of prices of land for logistics, which are incorporated in the chapter «Prices and costs». In the same chapter, the Corporate Tax and VAT indicator has been widened to include contributions to the Social Security system by workers and companies. On the other hand, a gender perspective has been incorporated for these indicators when possible.

- A summary table that presents all the indicators to visualize results and a graph showing the international positioning of Barcelona on different rankings.
- A special report by the Chamber of Commerce on the business climate in the Metropolitan Area of Barcelona in 2016 and the outlook for 2017, which includes a specific analysis of the main economic sectors. Based on the opinions of businesses, we offer a reading of the business environment in Catalonia and Barcelona, as well as the future outlook.

The Barcelona Observatory is characterized by the following features:

- It is built on a set of indicators, preferably defined at the city level, but that can also be extended to other regional areas.
- The information sources are renowned organizations and institutions.
- Most sources are international rankings except for nine indicators, whereby data was obtained from a sample containing the main urban areas.
- The indicators include, where possible, a graphical representation of trends to assess progress on each specific area.
- Data and information collected are up-to-date, based on current availability.

FACTS AND FIGURES
BARCELONA 2016

Facts and Figures Barcelona 2016

GEOGRAPHICAL ENVIRONMENT

Surface area (km²)	102.2
Population	1,608,746
Foreign population (% of total)	16.6%
Density (inhabitants/km²)	15,741.2
Climate (Can Bruixa Observatory)	
Average monthly temperature	18.4 °C
Annual rainfall (mm)	438.5
Hours of sun	2,853.5

ECONOMIC ENVIRONMENT

MACRO ECONOMIC DATA

GDP (var/ yr %) - Catalonia	3.5
GDP (var/ yr %) - Barcelona	3.4
Social Security membership	1,061,171
Unemployment rate 16-64 years old (%)	11.6
Employment rate 16-64 years old (%)	71.4
Activity rate 16-64 years old (%)	80.8
CPI (average var. %) - Barcelona province	0.2
Exports (million €) - Barcelona province	51,263.9
Imports (million €) - Barcelona province	64,420.1
Outbound foreign investment (million €) - Catalonia	3,391.3
Inbound foreign investment (millions €) - Catalonia	5,131.5
Companies - Barcelona province	460,778
Foreign companies in Catalonia	7,086

COMMERCE AND TOURISM

Retail premises - Barcelona province	67,937
Open-air shopping areas	21
Municipal markets (umber and surface area [m²])	43/ 260,941
Hotels	
Numbers	702
Beds	74,876
Tourists	7,484,276

INFRAESTRUCTURE

Airport	
Runways (number and length [m])	3/3,352;2,660;2,528
Passengers	44,154,693
International passengers (%) (%)	73.2
Port	
Land surface area (ha)	1,081.0
Docks and moorings (km)	22.0
Total traffic (thousands of tonnes)	47,513.0
Trade fair and congress activity	
Trade fairs	65
Visits to Fira de Barcelona	1,825,468
Hall surface area taken up by fairs (m²)	947,442
International meetings	1,974

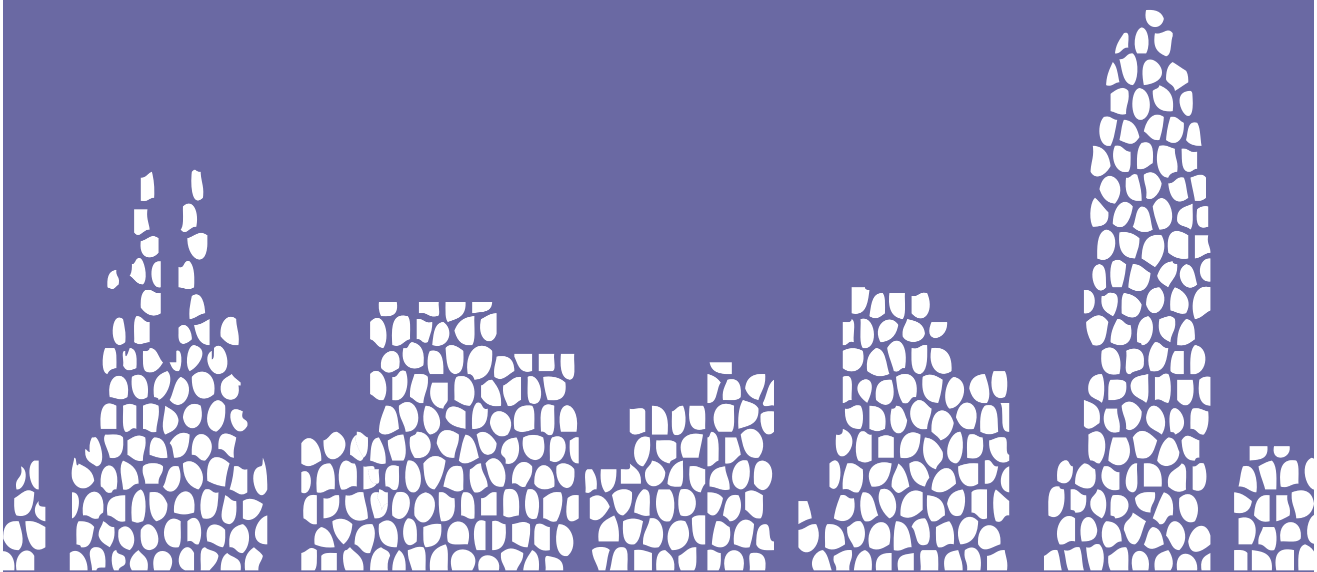
TRAINING AND CITY OF KNOWLEDGE

Catalan universities	12
University students in Catalonia (course 2015/2016)	258,679
Foreign schools (Barcelona province)	40
Innovative companies in Catalonia*	3,798

QUALITY OF LIFE

Beaches (number and metres)	10; 4,703
Bike lanes (km and bicing members)	126; 102,353
Public libraries (number and users)	40; 6,376,796
Museums, collections and exhibition spaces (number and users)	56; 26,128,228
Public sports facilities (number and users)	1,897; 187,721
Theatre, music and cinema spectators	9,803,285

Note: Data for 2016 except *2015
Source: AENA, Barcelona City Council, Fira de Barcelona, Generalitat of Catalonia, Idescat, INE, State Ports, Secretary of State for Trade, Turisme de Barcelona, Institute of Culture of Barcelona.



RESULTS

Hub for economic activity

OBSERVATORI BARCELONA

Introduction

Barcelona's economy saw a recovery in terms of business activity and labour market improvements in 2016, and the city's GDP experienced a real growth rate of 3.4% over the year thanks to a recovery in domestic demand –especially the consumption of families and an increase in private investment– and also strong results in terms of exports. For 2017, forecasts show continued growth for the economy, with an increase in private consumption and investment and dynamic export growth, although in the second part of the year there will be symptoms of deceleration given a backdrop of political uncertainty that can affect these forecasts.

This positive trend seen in the economy is confirmed by the results of a survey on business outlook for 2018 carried out by Eurochambres, which shows a favourable trend and remains in line with the previous year. Given this economic context, Barcelona has improved its positioning regarding the reputation of the city –up from 14th to 8th position in the City RepTrak2017 index and it remains amongst the 25 cities with best global competitiveness, according to the Global Power City Index, developed by the Mori Foundation, which places Barcelona in 24th spot in the world ranking and 11th in Europe.

Other indicators also reflect the attractiveness of Barcelona for doing business and the strong image of the city abroad. On the one hand, Barcelona generates confidence in terms of international investment, shown by the fact it occupies the 8th best position in the world in terms of attracting foreign investment projects to urban areas for the period 2013-2017, according to KPMG. On the other hand, it is located amongst the top five cities in the world in terms of number of delegates at international congresses organized during the 2012-2016 period, according to the International Congress and Convention Association (ICCA).

Regarding entrepreneurship, in 2016, the entrepreneurial activity rate (TEA) in the province of Barcelona stood at 7%, above those of countries such as Finland (6.7%), Germany (4.6%) or Italy (4.4%), while the rate of female entrepreneurship in the area (6.2%) –incorporated in this report for the first time- slightly exceeds the average of the European Union. Both the Chamber of Commerce of Barcelona and the City Council of Barcelona are trying to promote entrepreneurship in order to develop quality jobs in the city.

Barcelona among the top 10 cities in the world with best reputations

Global competitiveness of cities around the World in 2017

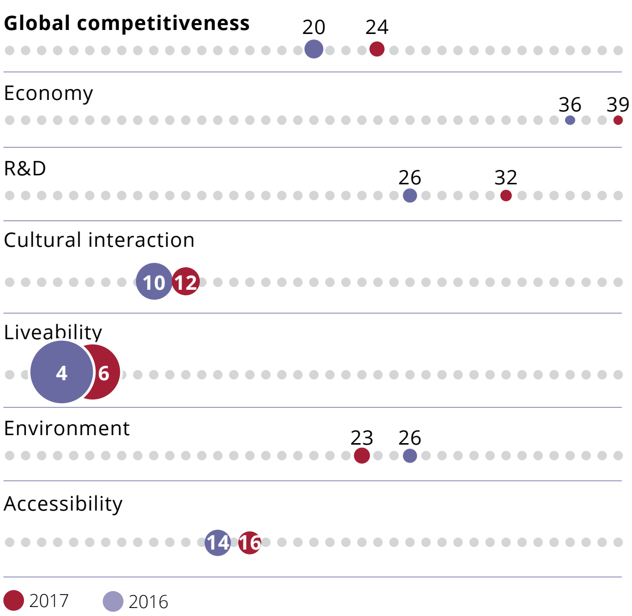
Barcelona, among the top 25 cities in global competitiveness

In 2017, the *Global Power City Index report* awarded Barcelona 24th place in the world ranking and 11th spot at the European level. The index, which compares 42 major cities from around the world, was headed by the metropolises of London, New York, Tokyo and Paris. Barcelona scored similar to Copenhagen and Chicago, but was placed higher in the ranking than Boston, Geneva or Milan, despite dropping four positions in the global ranking and one in the European classification compared to the previous year.

Japan's Mori Memorial Foundation has been developing the *Global Power City Index* since 2008, thanks to the participation of world-renowned universities and think tanks. The index is based on seventy indicators sorted in six categories of urban competitiveness. The 2017 ranking saw Barcelona in 6th position in the world in the category of liveability, 12th in cultural interaction whilst improving in the category on the environment (standing in 23rd position), while dropping positions in areas like the economy, R&D and accessibility (now in 39th, 32nd and 16th position, respectively). In the survey on stakeholders, visitors and artists placed Barcelona in 9th and 7th position, respectively. On the other hand, for residents, researchers, and executives, the city of Barcelona was placed in 21st, 29th and 36th place respectively.

Categories of urban competitiveness

(Positioning of Barcelona)



Source: *Global Power City Index 2017*. Institute for Urban Strategies. The Mori Memorial Foundation

Global competitiveness of cities around the World in 2017

Position	City	European Ranking
1	London	1
2	New York	
3	Tokyo	
4	Paris	2
5	Singapore	
6	Seoul	
7	Amsterdam	3
8	Berlin	4
9	Hong Kong	
10	Sydney	
11	Los Angeles	
12	Frankfurt	5
13	Beijing	
14	Vienna	6
15	Shanghai	
16	Stockholm	7
17	San Francisco	
18	Zurich	8
19	Toronto	
20	Copenhagen	9
21	Brussels	10
22	Chicago	
23	Dubai	
24	**Barcelona**	**11**
25	Boston	
26	Osaka	
27	Madrid	12
28	Vancouver	
29	Washington	
30	Istanbul	13

Source: *Global Power City Index 2017*. Institute for Urban Strategies. The Mori Memorial Foundation

Cities around the world with the best reputations in 2017

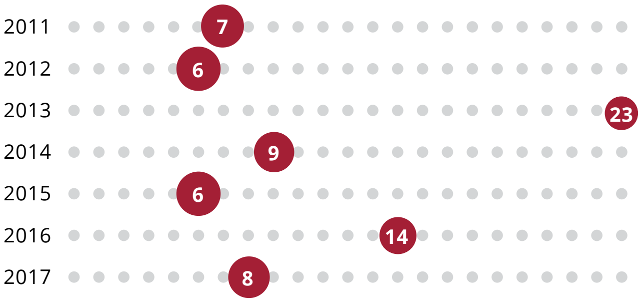
Barcelona among the top 10 cities in the world with best reputations

The *City RepTrak* report, developed by the Reputation Institute, puts Barcelona in 8th position in the world in a ranking of cities with the best reputations in 2017. The 56 cities that form part of the ranking were chosen because of their large populations, GDPs and people's familiarity with these places, based on an online survey of 23,000 people in the most influential countries in the world (G-8).

The ranking was headed by Sydney, Copenhagen, Vienna, Stockholm, Vancouver and London, with Barcelona placed above cities like Madrid, Frankfurt, Zurich, San Francisco and Tokyo. In addition, Barcelona jumped six positions, increasing its score by 1.8 points compared to the previous year to stand at 79 out of 100 points, which puts it very close to London's and Vancouver's scores.

In 2017, interviewees rated each city on the attractiveness of the environment, effective government and advanced economy as the basis of a good reputation, which is a characteristic that generates and facilitates tourism and foreign investment, knowledge and talent attraction.

Barcelona's position in *City RepTrak* (2011-2017)



Source: *2017 City RepTrak*. Reputation Institute

Cities in the world with best reputations. 2017

Position	City	Index
1	Sydney	82.3
2	Copenhagen	81.5
3	Vienna	79.8
4	Stockholm	79.6
5	Vancouver	79.2
6	London	79.2
7	Melbourne	79.0
8	**Barcelona**	**79.0**
9	Milan	78.7
10	Toronto	78.6
11	Amsterdam	78.3
12	Tokyo	78.3
13	Rome	78.1
14	Montreal	78.0
15	Edinburgh	77.8
16	Helsinki	77.7
17	Dublin	77.6
18	Venice	77.5
19	Zurich	77.4
20	Munich	77.2
21	Madrid	77.0
22	San Francisco	76.3
23	New York	76.1
24	Paris	75.7
25	Prague	75.6
26	Frankfurt	74.9
27	Seattle	74.6
28	Orlando	74.5
29	Berlin	74.2
30	Brussels	73.7

Note: The index takes a value between 0 and 100.

Source: *2017 City RepTrak*, Reputation Institute

Main urban areas in the world receiving foreign investment projects in 2017

Barcelona, eighth top urban area for foreign investment projects (2013-2017)

The *Global Cities Investment Monitor 2017* report by KPMG places Barcelona in eighth position among the top urban areas of the world for attracting *greenfield* foreign investment projects in the period 2013-2017, with 500 projects that allowed Barcelona to maintain its position with respect to the results of 2012-2016. In 2016, the city came in 9th position in the world ranking, up two spots with respect to the previous year (11th) to sit in the *top ten* in the world. The Barcelona area represents practically a third part (32%) of all foreign investment projects in Spain, the same weighting that Paris has in France and almost the same as London with respect to the United Kingdom.

On the other hand, productive foreign investment[1] in Catalonia was 5,051.5 million euros in 2016, which was a year-on-year increase of 2.3% and the highest in the data series. The growth of FDI in Catalonia is similar to that seen at the Spanish level, which increased 2% compared to 2015. As such, Catalonia accounts for more than a fifth of the productive foreign investment in Spain. In addition, in the first semester of 2017 the productive foreign investment in Catalonia grew at an annual rate of 20.6%. In the same year, the Barcelona area had 6,507 foreign companies with Germany, France and the United States as the main countries of origin.

Main urban areas in the world receiving foreign investment projects. 2013-2017

Position	Urban area	Projects 2013/2017
1	London	1,707
2	Shanghai	1,119
3	Hong Kong	880
4	New York	767
5	Paris	688
6	São Paulo	672
7	Sydney	632
8	**Barcelona**	**500**
9	Dublin	463
10	Beijing	457

Source: *Global Cities Investment Monitor 2017*. KPMG

[1]Productive foreign investment does not take into account holding companies, which are companies established in Spain, whose objective is to hold shares in foreign companies. The operations of these companies represent a transfer between the same corporate group. The existence of entities holding foreign securities is due to tax optimization strategies within the same group.

Entrepreneurial activity in countries across the world in 2016

Barcelona's rate is higher than those of Spain, Italy and Germany

According to data from the *Global Entrepreneurship Monitor* (GEM), for 2016, the rate of entrepreneurial activity (TEA) of the resident population in the Barcelona area and the whole of Catalonia stands at 7%, with both increasing by 0.9 and 0.6 per cent respectively compared to the previous year.

In 2016, TEA trends for Barcelona and Catalonia exceeded those of countries such as Finland (6.7%), Germany (4.6%) and Italy (4.4%). In addition, Catalonia has the highest entrepreneurial activity rate of any autonomous community, above the Balearic Islands, Madrid, Andalusia and the Spanish average (5.2%). TEA rates for Barcelona remain below the average of the European Union in terms of the rate of entrepreneurial activity. In Europe, there was a slight rise to stand at 8.1%.

Regarding the female TEA rate, Barcelona's (6.2%) was above those of Catalonia's and the EU's (both standing at 6%) and also Spain's (4.7%). Barcelona's rates are above those of such countries as the United Kingdom (5.6%), Switzerland (5.3%) or Germany (3.1%).

Regarding the quality of the entrepreneurial activity, data for 2016 confirms an increase in entrepreneurship due to the pursuit of an opportunity - which is the main motivation of more than three out of four people who start a business in the province of Barcelona (75.7%), whilst 24.3% do so out of need. There was also an improvement in terms of the education level of new entrepreneurs, with 54% having completed a degree or a postgraduate course.

Entrepreneurial activity in the world. 2016

(% population 18-64 years old)

Female TEA	Country	Total TEA
19.9	Brazil	19.6
13.3	Canada	16.7
11.7	Estonia	16.2
13.1	Argentina	14.5
10.5	United States	12.6
8.6	Netherlands	11.0
7.3	Ireland	10.9
8.1	Poland	10.7
8.6	China	10.3
7.6	Slovakia	9.5
5.6	United Kingdom	8.8
5.3	Portugal	8.2
6.1	Switzerland	8.2
5.2	Taiwan	8.2
6.0	**EU Average**	**8.1**
5.0	Hungary	7.9
6.3	Sweden	7.6
6.0	**Catalonia**	**7.0**
6.2	**Barcelona**	**7.0**
5.9	South Africa	6.9
5.6	Finland	6.7
4.8	Greece	5.7
4.5	Morocco	5.6
4.7	**Spain**	**5.2**
4.3	Bulgaria	4.8
3.1	Germany	4.6
3.3	Italy	4.4

Note: Entrepreneurship activity includes early-stage firms (less than three months trading) and new businesses (3 to 42 months trading).
The original database contains 63 countries, although the table only includes a small sample of selected benchmark countries.

Source: *Global Report and Informe Executiu Catalunya 2016.* Global Entrepreneurship Monitor (GEM)

Entrepreneurial activity in Europe. 2016
(% population 18-64 years old)

Source: *Global Report and Executive Report Catalonia 2016*. Global Entrepreneurship Monitor (GEM)

Business outlook for Europe in 2018

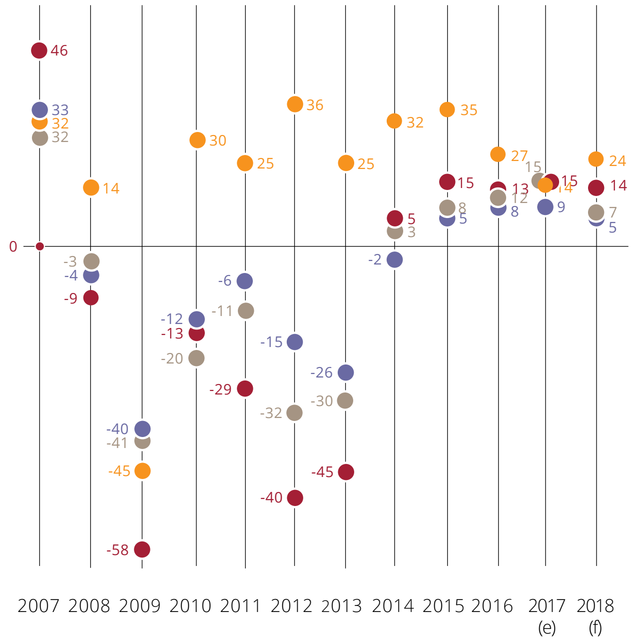
Positive business outlook, specially in the field of exports

The 2017 business outlook for Catalonia is positive for all the main indicators (domestic sales, exports, employment and investment) and similar to that of the previous year, according to Eurochambres.[2] These results confirm the strong performance of the economy last year, which has led to new and higher forecasts for Catalan GDP growth, rising to 3.1% in the case of Barcelona's Chamber of Commerce.

When comparing Catalan and European companies' results[3] for 2018 the outlook is less favourable for Catalonia, particularly in terms of investment and employment. In 2018 expected turnover growth will be driven by domestic sales and specially exports, which will improve the strong results achieved in 2017.

Business prospects in Catalonia

(Balances in percentages)



(e) estimation (f) forecast

Source: Idescat and Barcelona Chamber of Commerce, based on Eurochambres

[2]The survey was prepared in September 2017 based on the opinion of 50,000 European companies, of which 1.162 are located in Catalonia.

[3]The figures for Europe refer to the weighted average of the results of the 23 European countries participating in the survey: Austria, Bulgary, Croatia, Cyprys, Czech Republic, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Montenegro, Netherlands, Portugal, Romania, Serbia, Slovakia, Spain and Turkey.

Business outlook in Europe. 2018

Country	Domestic sales (Balance in p.p.)	Country	Exports (Balance in p.p.)	Country	Employment (Balance in p.p.)	Country	Investment (Balance in p.p.)
Portugal	71	Portugal	66	Finland	62	Portugal	57
Finland	56	Romania	56	Portugal	49	Finland	57
Romania	53	Austria	51	Montenegro	43	Cyprus	45
Ireland	52	**Spain**	**47**	Malta	41	Ireland	44
Turkey	49	Cyprus	45	Turkey	41	Malta	43
Cyprus	44	Malta	42	Ireland	39	Romania	42
Croatia	42	Bulgaria	42	Romania	36	Bulgaria	37
Bulgaria	41	Estonia	41	Bulgaria	33	**Spain**	**28**
Spain	**40**	Turkey	40	Latvia	32	Turkey	28
Estonia	39	Slovakia	39	Cyprus	31	Slovakia	28
Luxembourg	38	Croatia	39	Luxembourg	27	Hungary	25
Malta	37	Finland	39	Croatia	27	Luxembourg	24
Latvia	35	Luxembourg	32	Estonia	25	Estonia	23
Slovakia	33	Latvia	31	**Spain**	**22**	Latvia	23
Montenegro	30	Hungary	29	Austria	19	Croatia	19
Netherlands	29	Germany	25	Slovakia	19	Germany	19
Hungary	29	**Catalonia (BCN)**	**24**	Hungary	18	Czech Republic	11
Austria	28	Montenegro	23	Netherlands	16	Austria	11
Czech Republic	19	Italy	22	Germany	11	Italy	9
Catalonia (BCN)	**14**	Ireland	21	**Catalonia (BCN)**	**7**	Netherlands	7
Italy	11	Netherlands	15	Czech Republic	7	**Catalonia (BCN)**	**5**
		Czech Republic	7	Italy	0	Montenegro	5

Note: The balance is calculated as the difference between the percentage of responses indicating an *increase* and the percentage of responses indicating a *decrease*. This year there is no information at the regional level because regional participation has been very heterogeneous.

Source: Idescat and Barcelona Chamber of Commerce, based on Eurochambres data and Spanish Chamber of Commerce.

Main cities in the world in terms of delegates at international congresses in 2016

Barcelona remains third top city in the world in terms of number of congresses organized and delegates

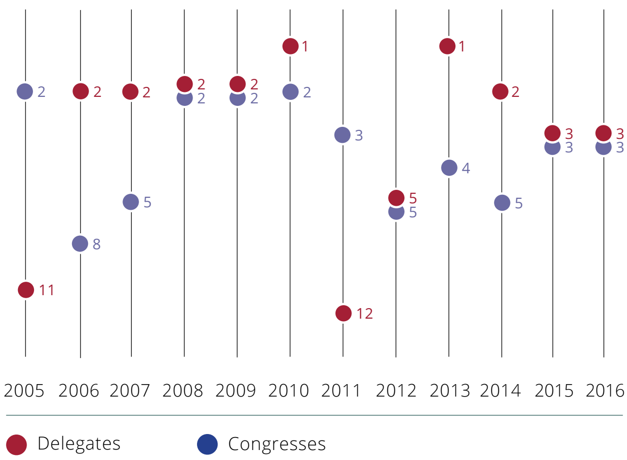
In 2016, Barcelona took 3rd place in the city ranking for most international congresses organized and most delegates, which was exactly the same result as the previous year, according to the International Congress and Convention Association (ICCA).

Barcelona organized a total of 181 international conferences in 2016, one more than the previous year, a number only beaten by Berlin and Paris. Compared to the previous year, there were no changes in the top 5 of the ranking, although Madrid dropped to 7th, while Singapore, Amsterdam and Seoul have climbed positions in the ranking.

The number of people participating at international congresses in Barcelona was 99,468 in 2016 according to the ICCA, only beaten by Vienna and Seoul. However, this figure is 8.7% lower than that of the previous year, when Barcelona reached over 100,000 people. The ICCA draws up its ranking from records of participants at congresses that have a minimum of fifty delegates and that rotate at least between three different countries, so they do not include important congresses like the Mobile World Congress, which is based in Barcelona and brings more than 100,000 participants to the city.

Not counting the Mobile World Congress, 2017 is expected to be a record year because the European Cardiology Congress and the European Congress of Gastroenterology are returning, along with the INTA congress (International Trademark Association), which will be held in Barcelona for the first time.

Barcelona's position



Source: International Congress and Convention Association (ICCA)

Top cities in the world in terms of number of delegates and international congresses held. 2016

Cities	Variation 2016/2015 (%)	Congresses 2016
Berlin	0.5	196
Paris	0.0	186
Barcelona	**0.6**	**181**
Vienna	-1.1	176
London	-10.5	153
Singapore	-3.2	151
Madrid	-15.8	144
Amsterdam	20.0	144
Lisbon	-4.8	138
Seoul	17.1	137

Cities	Variation 2016/2015 (%)	Delegates 2016
Vienna	-4.0	119,887
Seoul	n.a.	104,780
Barcelona	**-8.7**	**99,468**
Copenhagen	32.0	99,359
London	-21.8	91,756
Amsterdam	7.1	77,644
Paris	0.3	75,710
Rome	n.a.	68,612
Beijing	n.a.	65,947
Singapore	-20.5	61,294

Source: International Congress and Convention Association (ICCA)
n.a.: not available

Quality of life, sustainability and social cohesion

OBSERVATORI BARCELONA

Introduction

Barcelona wants to be a benchmark for the transition towards a new economic, social and environmental model that promotes measures to fight poverty and inequalities, as well as mitigating and adapting to climate change. The city is internationally renowned for its quality of life, yet faces challenges of ensure that the welfare and opportunities generated here can contribute to the socio-economic development of all citizens.

Regarding aspects related to quality of life, Barcelona is considered the 13th safest city in the world according to The Safe Cities Index 2017. The city also stands out as an international benchmark in the field of sport –4th position in the ranking of Sports Cities 2016–, which apart from contributing directly to the quality of life of Barcelonans, also generates an important economic and social impact.

The economic crisis that started in 2008 led to a remarkable increase of the levels of inequality, poverty and social exclusion in many European countries and regions. In Barcelona the weight of middle income levels has fallen and territorial inequalities have widened, meaning that by 2015 the difference between the highest and lowest coefficients of household disposable income in the neighbourhoods of Barcelona rose to 7.3, while the percentage of population with high, medium and low levels of income stood at 16.6%, 44.1% and 39.2% of the total, respectively. Regarding the whole of Catalonia, the rate of risk of poverty or social exclusion is lower than that of the European Union, and in 2016 it fell faster than the European average.

The fight against inequalities and poverty is a priority for Barcelona City Council. Within the framework of the Citizen Accord for an Inclusive Barcelona, we find a new social inclusion plan for the city, and a Strategy for inclusion and reduction of social inequalities in Barcelona, which aims to bring together the social inclusion programmes of all the stakeholders in the city and its Municipal areas, with a time horizon stretching out for the next 10 years. The most recent measures include those targeted at fighting poverty, increasing the supply of social housing, creating tenders that include social criteria, fighting against precarious work conditions and promoting a neighbourhood economy that is grounded in the local area, which is fairer and more cooperative.

In the field of sustainability, Barcelona has a relatively low volume of equivalent CO_2 emissions per inhabitant compared to other cities in the world. On the other hand, the *Networked Society for Sustainable Development 2016* index positions Barcelona amongst the top fifteen cities in terms of its digital facilities, technological maturity, cohesion and institutions focused on achieving sustainable development. In this sense, we should highlight the Commitment of Barcelona to the Climate Change accord, which came about after a broad citizen participation process and which is designed to promote action programmes in the areas of mobility, green space, energy, waste and consumption. On the other hand, by the end of 2017, Barcelona is one of the 25 pioneering cities of the world signed up to develop and start implementing some of the most ambitious climate action plans before the end of 2020 in order to become a resilient and emission neutral city before 2050, as part of the Paris Agreement framework.

Regarding those aspects associated with quality of life, Barcelona is considered the 13th safest city in the world

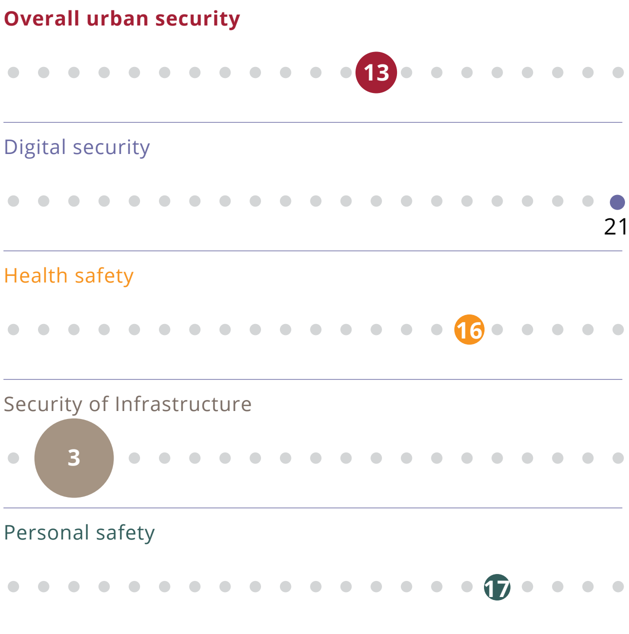
Safety in cities around the world in 2017

Barcelona among the safest cities in the world

According to *The Safe Cities Index 2017*, a report prepared by the British magazine The Economist, Barcelona has climbed two positions in the global ranking with respect to 2015's results to stand in 13th place in a group of 60 cities from around the world. The ranking is headed by Tokyo, Singapore and Osaka. Barcelona came in 6th spot amongst European cities, behind Amsterdam, Stockholm, Zurich, Frankfurt and Madrid, but ahead of Brussels, London or Paris.

The ranking is based on 49 indicators that cover different dimensions of safety in terms of digital security, health, infrastructures and citizen safety. Worth noting is Barcelona's 3rd position in infrastructure security, an area where the city has improved by eleven positions with respect to the 2015 ranking and which takes into account aspects such as investment and management of the city's infrastructure or its vulnerability to natural disasters. In terms of other aspects analyzed, the city stands in 17th position in terms of personal safety and 16th in the area of health and safety, while it came 21st in terms of digital security.

Positioning of Barcelona on urban security categories. 2017



Source: *The Safe Cities Index 2017*. The Economist Intelligence Unit

Safety in cities around the world. 2017

Position	City	Index o/100
1	Tokyo	89.80
2	Singapore	89.64
3	Osaka	88.87
4	Toronto	87.36
5	Melbourne	87.30
6	Amsterdam	87.26
7	Sydney	86.74
8	Stockholm	86.72
9	Hong Kong	86.22
10	Zurich	85.20
11	Frankfurt	84.86
12	Madrid	83.88
13	**Barcelona**	**83.71**
14	Seoul	83.61
15	San Francisco	83.55
16	Wellington	83.18
17	Brussels	83.01
18	Los Angeles	82.26
19	Chicago	82.21
20	London	82.10
21	New York	81.01
22	Taipei	80.70
23	Washington DC	80.37
24	Paris	79.71
25	Milan	79.30

Source: *The Safe Cities Index 2017*. The Economist Intelligence Unit

Sport in cities around the world in 2016

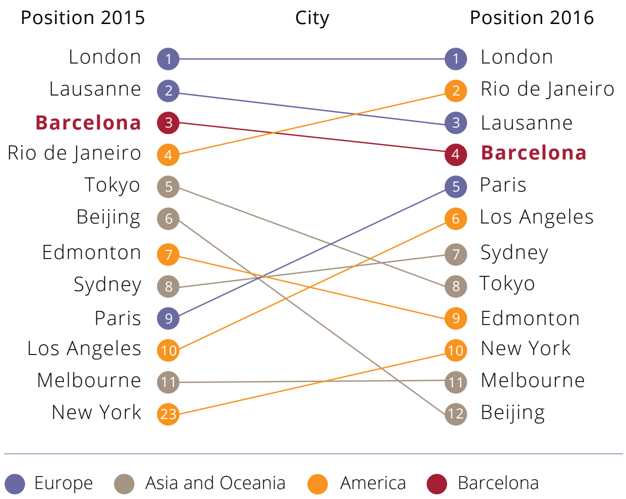
Barcelona, fourth city most associated with sport

Barcelona is in 4th position of 50 cities evaluated in the *Ranking of Sports Cities 2016*, prepared by Around the Rings and TSE Consulting. The ranking is based on polling of specialized opinion leaders and the general public to determine which cities are most associated with sports.

Barcelona has been in the top ten since its first edition (2012), a positioning that is only shared with other Olympic cities like London, Sydney and Tokyo. The city's international recognition as a sports city comes from the celebration of major regular sports events in the city, the celebration of top level sports competitions, the legacy of the 1992 Olympic and Paralympic Games and overall attraction that comes from the city's great clubs that make Barcelona a sports tourist destination.

Sport contributes to the direct improvement of the quality of life of citizens and it has a significant economic and social impact in the city. *The study of the impact of sport on the city of Barcelona: economic, labour and social indicators*, developed by the City Council of Barcelona, finds there were about 2,000 companies, more than 2,500 entities, generating more than 2,100 million euros of turnover, creating 27,600 jobs and 35,000 volunteers in 2013. In particular, it emphasizes the worldwide overall projection of Barcelona Football Club, which generates an economic impact of 906 million euros and 16,620 jobs, according to a Deloitte study conducted for the 2014/15 season.

Sport in cities worldwide. 2016



Source: *Ranking of Sports Cities 2016*. Around the Rings and TSE Consulting

Population at risk of poverty or social exclusion in Europe's regions in 2016

The 'at risk of poverty or social exclusion' rate in Catalonia is lower than in the EU

According to Eurostat data, the 'at risk of poverty or exclusion social rate' (AROPE) of Catalonia stood at 17.9% in 2016, which is lower than the Spanish rate (27.9%) and the EU-28's (23.4%). Above Catalonia we find regions such as Budapest, Rome or Dublin, while below but with similar levels values we would find those of Amsterdam or Oslo, among others. Regions like Prague or Helsinki have the lowest rates in the sample with values close to 10-13%. Interestingly, Catalonia's rate has decreased by 1.9 percentage points with respect to the previous year, due to a decline in the population in severe material deprivation or living in households with very low labour intensity. The European average meanwhile has fallen by only 0.3 points.

If we calculate the population at risk of poverty based on the specific threshold for Catalonia (60% of the median of available annual earnings equivalent, after social transfers for the Catalan population, instead of the Spanish median), the AROPE rate is 22.5%, which is closer to the average of the European Union but still inferior. The AROPE rate for Barcelona city in 2016, stands at 19.8% and 21.7% for the Metropolitan region.

The economic crisis that started in 2008 has brought about a notable increase in levels of poverty and social exclusion in many European countries. The reduction of the number of people at risk of poverty or social exclusion in the European Union is one of the key objectives of the Europe 2020 strategy, which is designed to promote a model of smart growth that is sustainable and inclusive.

Population at risk of poverty or social exclusion. 2016

Country	Region (main city)	AROPE rate (%)
Czech Republic	Prage (Praga)	10.1
Finland	Helsinki-Uusimaa (Helsinki)	12.5
Slovakia	Bratislavský kraj (Bratislava)	13.8
Sweden	Stockholm (Stockholm)	14.5
Norway	Oslo og Akershus (Oslo)	16.1
Slovenia	Slovenia-West (Ljubljana)	16.7
Netherlands	Netherlands-West (Amsterdam)	17.8
Spain	**Catalonia (Barcelona)**	**17.9**
Denmark	Hovedstaden (Copenhagen)	18.5
Poland	Centralny Region (Warsaw)	18.7
Italy	Lombardy (Milan)	19.7
Switzerland	Espace Mittelland (Berna)	20.6
Spain	Community of Madrid (Madrid)	21.7
Hungary	Central Hungary (Budapest)	22.8
Average EU28**		**23.4**
Ireland	Ireland-South and East (Dublin)	27.0*
Spain		**27.9**
Bulgaria	Bulgaria-Southwest (Sofia)	30.1
Italy	Lazio (Rome)	30.5
Greece	Attic (Athens)	31.8
Romania	Bucuresti-Ilfov (Bucharest)	32.9

*Data for 2015
**The EU-28 average is the weighted average of country results.
Note: The rate 'At Risk of Poverty or Social Exclusion' (AROPE) indicates the percentage of the population that is found, at least, in one of the following cases: in a situation of risk of poverty, in a situation of severe material deprivation or living in very low work intensity households.

Source: Eurostat

CO_2 equivalent emissions *per capita* in the world's cities in 2017

Barcelona is one of the cities with the lowest levels of CO_2e emissions per inhabitant

Barcelona is one of 15 cities with the lowest volume of greenhouse gas emissions per capita of 60 metropolises included in the framework of the *Global Protocol for Community-Scale Greenhouse Gas Emission Inventories* (GPC) reported via the CDP Open Data portal. The level of emissions of CO_2 equivalent per capita of Barcelona –2.07 tonnes per inhabitant– is similar to that of cities such as Moscow (2.08) or Stockholm (1.95), which means it falls in the lower band compared to international comparisons, clearly below the numbers of cities like Vancouver, Greater London or New York. Amongst cities with least emissions per inhabitant we find Recife, while Sydney (17.94) or Melbourne (39.01) show the highest levels.

The trend in CO_2 emissions equivalent for Barcelona with respect to the previous year has been positive (it decreased 6.7%), while the indicator for emissions per inhabitant also fell by 0.2%.

The Climate Commitment Accord for Barcelona –supported by 1,000 associations and entities– is proposing objectives like a fall of 40% in CO_2 emissions per capita equivalent with respect to 2005, an increase of 1 m^2 of urban green area per inhabitant and several strategic measures in terms of mobility, green areas, energy, waste and consumption for the year 2030. This commitment comes from the so-called Climate Plan, which marks a number of strategic lines with regard to mitigation, adaptation and resilience, climate justice and citizen activity, and these are co-production processes developed with citizens. On the other hand, as part of the framework of the Paris Agreement on the climate established in 2017, Barcelona is one of the 25 pioneering cities in the world committed to developing and starting to implement ambitious climate action plans before the end of 2020 in order to become a resilient and carbon neutral city on the 2050 horizon.

Emissions of CO_2e *per capita*. 2017

City	Country	CO_2 emissions Equivalent (Metric tonnes)	Tonnes of CO_2 Equivalent/inhabitant
Addis Ababa	Ethiopia	5,043,860	1.33
Recife	Brazil	2,329,792	1.43
Lima	Peru	15,789,438	1.80
Stockholm	Sweden	1,796,590	1.95
Moscow	Russia	25,680,678	2.08
Barcelona	**Spain**	**3,329,110**	**2.07**
Paris	France	5,489,249	2.42
Quito	Ecuador	5,759,189	2.57
Rio de Janeiro	Brazil	17,006,642	2.62
Madrid	Spain	9,236,196	2.92
Istanbul	Turkey	47,862,539	3.23
Mexico City	Mexico	30,870,170	3.48
Vancouver	Canada	2,499,107	3.96
Buenos Aires	Argentina	13,193,864	4.31
Taipei	Taiwan	12,114,538	4.49
London	United Kingdom	40,096,000	4.66
Johannesburg	South Africa	24,716,713	5.04
Tokyo	Japan	70,733,403	5.18
Auckland	New Zealand	8,388,416	5.20
Montreal	Canada	10,197,555	5.20
Cape Town	South Africa	21,233,880	5.29
New York	United States	52,042,186	6.10
Manchester	United Regns	16,892,757	6.12
Ljubljana	Slovenia	2,060,963	7.15
Los Angeles	United States	28,922,796	7.18
Athens	Greece	5,053,422	7.61
Boston	United States	6,462,495	9.65

Note: The original database contained 188 cities, and the table presents a sample of the 60 benchmark cities that use GPC to report their data. CDP is the only global disclosure system that enables businesses, cities, states and regions to manage their data on environmental impact. The access date of this data was October 2017.

Source: *Cities Community-wide Emissions 2017* and data from the Energy Agency of Barcelona.

Networked cities for sustainable development 2016

Barcelona among the top fifteen cities of the world most prepared for sustainable development

According to the *Networked Society City Index 2016* report, Barcelona is among the fifteen top cities in the world in terms of its digital facilities, technological maturity, and regarding the cohesion and institutions focused on sustainable development. This means the city climbs above cities like Berlin, Munich or Miami. Topping the ranking were Stockholm, London and Singapore. Compared to the previous edition of the report (2014), Barcelona and Istanbul have both progressed most, with the Catalan capital jumping 5 positions.

Sustainable development has become one of the main challenges in the world in the 21st Century, and to achieve the Objectives for Sustainable Development for 2030 established by the United Nations, cities need digital, technological, and institutional infrastructure and levels of social cohesion that depend to a good extent on local strategies. This index ranks cities according to their maturity in information and communication technologies and sustainable urban development programmes and it shows a strong correlation between both these variables, which suggests that the full deployment of ICT is a significant lever of change in the creation of sustainable, inclusive and resilient cities.

Networked cities. 2016

World ranking 2014	City	World ranking 2016
1	Stockholm	1
2	London	2
4	Singapore	3
3	Paris	4
5	Copenhagen	5
6	Helsinki	6
7	New York	7
8	Oslo	8
10	Tokyo	9
12	Seoul	10
13	Taipei	11
11	Los Angeles	12
18	**Barcelona**	**13**
9	Hong Kong	14
16	Berlin	15
14	Munich	16
15	Miami	17
20	Warsaw	18
21	Rome	19
19	Sidney	20
17	Moscow	21
27	Istanbul	22
23	Abu Dhabi	23
24	Athens	24
25	São Paulo	25

Source: *Networked Society City Index 2016*. Ericsson AB.

Sustainable urban mobility in cities in 2016

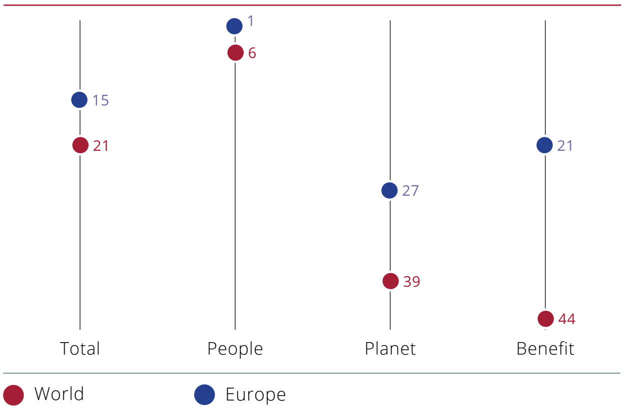
Barcelona among the world's top 25 cities with most sustainable urban mobility

According to the *Sustainable Cities Mobility Index 2017 report*, Barcelona is the 21st top city in the world and 15th in Europe in terms of sustainable urban mobility, above cities like Berlin, New York or Madrid in a classification headed by Hong Kong, Zurich and Paris.

The ranking is based on an analysis of indicators classified under three themes: people, planet and benefits. The first axis reflects the social and human implications of mobility systems based on indicators such as transport coverage, reliability, schedules or maintenance of infrastructure; the second considers the environmental impacts and measures the current levels of greenhouse gas emissions and atmospheric pollution, as well as efforts to reduce these emissions, infrastructure for electric vehicles and bicycles, levels of traffic congestion or the increase of urban green areas. Finally, the third axis analyses the efficiency and reliability of the mobility system regarding growth and support for companies, including important indicators like commute times in public transport in the city, ticket prices, and the contribution of the public sector to financing the system and overall use of the public transport network.

The city of Barcelona is located in 6th position in the world ranking and 1st in Europe in the 'people' category, 39th in the world and 27th in Europe in the category 'planet' –where the first ten positions are awarded to European cities–, and 44th in the world and 21st in Europe in the category 'benefits'. These strong results for Barcelona are thanks to the compact nature of the city model and they can be improved upon given the city's decision to develop eco-mobility, and sustainable public transport as part of the *2013-2018 Barcelona City Mobility Plan*.

Barcelona's position. 2016



Source: *Sustainable Cities Mobility Index 2017*, Arcadis.

Sustainable urban mobility in cities. 2016

European Ranking	City	World Ranking
	Hong Kong	1
1	Zurich	2
2	Paris	3
	Seoul	4
3	Prague	5
4	Vienna	6
5	London	7
	Singapore	8
6	Stockholm	9
7	Frankfurt	10
8	Amsterdam	11
9	Copenhagen	12
	Tokyo	13
10	Munich	14
11	Lyon	15
	Beijing	16
12	Edinburgh	17
13	Milan	18
	Shenzhen	19
14	Hamburg	20
15	**Barcelona**	**21**
16	Berlin	22
	New York	23
17	Madrid	24
18	Rotterdam	25

Source: *Sustainable Cities Mobility Index 2017*, Arcadis.

Labour market and training

OBSERVATORI BARCELONA

Introduction

In 2016, the European Union's economy grew at a rate of 1.9%, which consolidated the improvements seen in labour indicators as of 2013. The recession had caused a reduction in employment and an increase in unemployment in Europe as a whole and –with more or less intensity– in most of the member countries. While unemployment levels are still higher than those experienced before 2008, there are significant contrasts between labour markets in the north and east of Europe and in the south of the continent, as well as differences between more or less disadvantaged groups.

This positive trend is also observed in Catalonia, which ended 2016 with a year-on-year increase in employment of more than 100,000 people and an annual fall in the number of unemployed of more than 110,000 people, according to the Labour Force Survey published by INE, the Spanish statistics authority. However, data for 2016 presented in the report show the employment rate in Catalonia is below the European average, while the unemployment rate almost doubles the EU average, despite having dropped since 2013.

Barcelona created net employment during 2016 for the third consecutive year, after seven years of labour adjustments. Indeed, the city ended the year with an additional 33,700 people affiliated with the social security system than the year before, with an activity rate (16 to 64 years) of 80.8% and an employment rate of 71.4% in the fourth quarter. These figures were 7.8 and 4.5 percentage points, respectively, above the European averages, while the rate of unemployment decreased to 11.6%, which is clearly below the averages of Catalonia and Spain and which reduces the difference with the EU-28's rate.

On the other hand, Catalonia had a part-time employment rate of 14.2% in 2016, which placed it 6.2 points below the EU average (20.4%) and 1 point below the Spanish rate (15.2%). The female rate is higher in all cases, with a lower rate for Catalonia too and a more marked difference with the rest of regional areas. The increase in part-time employment rates after the recession has been a widespread trend in Europe, especially relevant internationally given the impact this type of work generates on the quality of work.

Thanks to the City Council of Barcelona's Employment Strategy for Barcelona 2016-2020, the city is trying to encourage quality employment for all with the consensus of all stakeholders involved in the city. Based on four priority intervention policies, an employment action plan has been developed that promotes greater coordination of employment promotion policies and an increase in activities to meet the needs of the entire social diversity of the city. At the same time, it focuses on putting jobs at the center of municipal politics, with a transversal priority application of employment policy in all areas of the town hall, as well as bringing services to the neighbourhoods to adapt to the specific needs of citizens.

One of the area of Barcelona's key strategic advantages is its pool of well-qualified human capital. In 2016, the percentage of the working population with a university degree in Catalonia grew to 45.3% and, in the case of women workers, this exceeded 50% for the second time only, which is clearly higher than the average for the European Union.

Finally, Barcelona is still a benchmark as a city of educational excellence in business and the only European city with two institutions (IESE and ESADE) in the top ten best business schools ranking in Europe, according to *The Financial Times*.

Barcelona creates net employment for the third consecutive year, with almost 34,000 more workers compared to 2015

Employment rate in European regions in 2016

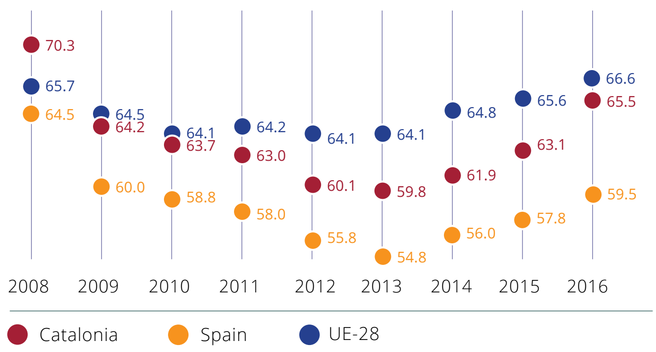
The employment rate increases in Catalonia

In 2016, the employment rate in the European Union grew 1 per cent compared to 2015, as a result of moderate increases in most regions analysed.

The employment rate in Catalonia and Spain increased for the third consecutive year –by 2.4 and 1.7 percentage points, respectively–, so that they are now above the growth rate of the EU average, although they continue to be among the lowest on the continent due to strong falls experienced from 2008 to 2013. The employment rate in Catalonia was 65.5%, which is below the European average for the eighth year, although it remains clearly above the Spanish rate, by 6 percentage points, and exceeding regions like those of Vienna, Rome or Brussels. On the other hand, the female employment rate increased by 2.4 points to 61.4% in Catalonia in 2016, meaning that it lies slightly above the European average (61.3%) and, more clearly, above the Spanish average (54.3%) and that of regions like Lombardy, although it remains far behind the leading regions (where it is over 70%).

In the fourth quarter of 2016, the employment rate stood at 71.4% in Barcelona, which meant it had increased by 2.2 percentage points since the same quarter in 2015. The female employment rate of the city (68.1%) is 6.4 percentage points above the average for Europe after experiencing a strong increase (+3.4 points) in annual terms. During the second quarter of 2017 there was a certain stabilization in the rate of employment in Barcelona, while the increases on this indicator continue in Catalonia (+1.5%).

Employment rate (%)



Source: Eurostat and Idescat

Employment rate in European regions. 2016

Female employment rate (%))	Region (CITY)	Employment rate (%)
75.3	Upper Bavaria (MUNICH)	79.6
76.9	Stockholm (STOCKHOLM)	78.5
73.3	Stuttgart (STUTTGART)	78.0
72.7	North Holland (AMSTERDAM)	77.1
74.8	Denmark (COPENHAGUEN)	77.1
74.9	Oslo (OSLO)	76.3
68.6	Prague (PRAGUE)	76.0
69.2	Darmstadt (FRANKFURT)	74.1
71.4	South Finland (HELSINKI)	73.2
65.5	London (LONDON)	72.7
67.6	South Holland (ROTTERDAM)	72.6
69.9	East Scotland (EDINBURGH)	72.5
68.9	Berlin (BERLIN)	71.6
67.9	Great Manchester (MANCHESTER)	70.8
64.4	Central Hungary (BUDAPEST)	70.8
68.8	Lithuania (VIRUS)	69.4
64.2	Mazowe (WARSAW)	69.0
64.4	Rhone-Alps (LION)	67.8
66.6	Lisbon (LISBON)	67.1
63.3	Île de France (PARIS)	66.6
61.3	**EUROPEAN UNION**	**66.6**
58.1	Lombardy (MILAN)	66.2
60.4	South and East (DUBLIN)	65.8
61.8	Community of Madrid (MADRID)	65.6
61.4	**Catalonia (BARCELONA)**	**65.5**
60.9	Basque Country (BILBAO)	65.1
62.6	Vienna (VIENNA)	64.9
51.8	Lazio (ROME)	59.9
54.3	**Spain**	**59.5**
56.6	Languedoc-Roussillon (MONTPELLER)	59.2
50.3	Brussels (BRUSSELS)	55.3

Note: Population between 15 and 64 years old.
The original database contains nearly 450 regions, although the table contains only a reference sample of selected regions.

Source: Eurostat

Part-time work in European regions in 2016

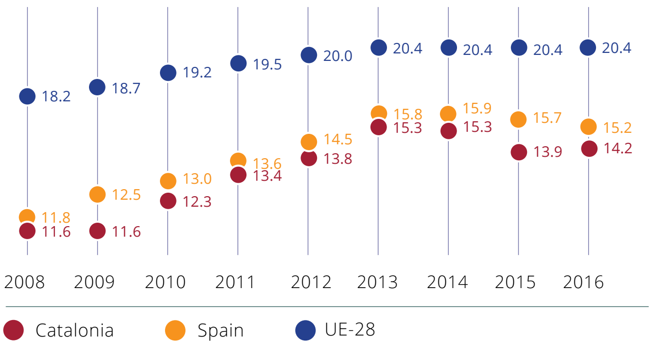
Catalonia has part-time employment rates that are lower than the European average

The part-time employment rate, which measures the proportion of people who work part-time compared to all the working population, stood at 14.2% in 2016 in Catalonia, which places it 6.2 percentage points below the EU average (20.4%), one point below the Spanish average (15.2%) and far from the regions that have the highest rates (those of Holland, Austria, Germany or Denmark), despite being higher than regions like Paris, the Community of Madrid or Lisbon. The female part-time employment rate, which is higher than in all the regions analysed than for men, stood at 21.5% in Catalonia, 11.1 percentage points below the EU average (32.6%), 2.6 percentage points below Spain (24.1%) and, again, far off the sorts of figures seen in leading countries (Holland, Austria, Germany or Denmark), where voluntary female part-time work is very common, which facilitates the work-family balance.

Regarding the overall trend, since the start of the recession the rate of part-time employment has increased significantly in the European Union and in Spain, as in Catalonia, with accumulated increases since 2007 close to 3 percentage points in all three areas. This trend is one of the ways the labour market has created flexibility. In most European countries this has also led to an increase in the percentage of involuntary part-time work.

As for the city of Barcelona, the total part-time employment rate stood at 13.7% in 2016, very similar that of Catalonia (14.2%) and, therefore, lower than the Spanish and EU averages. On the other hand, the female rate for the city (16.8%) is much lower than that of Catalonia, Spain and especially that of the whole of the European Union.

Part-time employment rate in European regions. 2012-2106 (%)



Source: Eurostat

Part-time employment rate in European regions. 2016

Female part-time employment rate (%)	Region (CITY)	Part-time employment rate (%)
72.2	North Holland (AMSTERDAM)	50.3
73.0	South Holland (ROTTERDAM)	47.9
41.0	Vienna (VIENNA)	30.3
46.9	Darmstadt (FRANKFURT)	28.4
44.6	Eastern Scotland (EDINBURGH)	28.2
50.0	Stuttgart (STUTTGART)	28.1
36.6	Berlin (BERLIN)	27.1
34.3	Denmark (COPENHAGEN)	26.9
44.7	Upper Bavaria (MUNICH)	25.9
39.3	Hamburg (HAMBURG)	25.2
37.2	Great Manchester (MANCHESTER)	24.8
36.0	Languedoc-Roussillon (MONTPELLER)	23.2
34.4	London (LONDON)	22.7
30.4	Stockholm (STOCKHOLM)	22.5
29.0	Oslo (OSLO)	22.4
33.6	South and East (DUBLIN)	22.2
33.1	Brussels (BRUSSELS)	21.4
32.6	**EUROPEAN UNION**	**20.4**
33.3	Rhône-Alpes (LYON)	20.3
32.9	Lazio (Rome)	20.2
32.2	Lombardy (MILAN)	18.3
28.7	Basque Country (BILBAO)	17.8
19.8	South Finland (HELSINKI)	15.6
24.1	**Spain**	**15.2**
21.5	**Catalonia (BARCELONA)**	**14.2**
21.3	Île-de-France (PARIS)	14.2
15.7	Bucharest Ilfov (BUCAREST)	13.5
19.4	Community of Madrid (MADRID)	13.1
14.5	Attica (ATHENS)	11.2
13.4	Lisbon (LISBON)	11.0
15.3	Prague (PRAGUE)	9.4
10.0	Lithuania (VIRUS)	8.0

Source: Eurostat

Unemployment rate in European regions in 2016

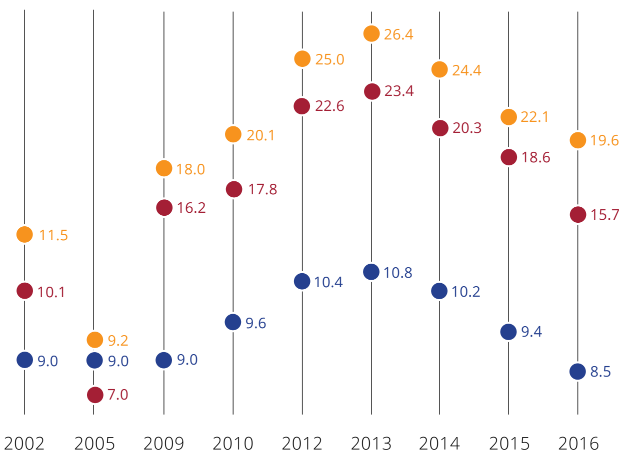
The unemployment rate falls in Catalonia, but remains far from the European average

With the European Union's economy recovering in 2016, the year ended with an unemployment rate of 8.5%, 0.9 percentage points lower than in 2015. The unemployment situation continues to affect southern European areas, such as Spain and Catalonia, even though the differential with respect to the European average has decreased compared to 2015, after this indicator experienced an annual decrease of 2.5 and 2.9 percentage points, respectively.

The unemployment rate in Catalonia reaches an average annual rate of 15.7% in 2016 meaning it stands at 7.2 percentage points above the European average and it is still far off from the main benchmark regions, but continues below the Spanish average (19.6%). The female unemployment rate stood at 16.9%, 2.5 percentage points below that of 2015, although it is above the overall unemployment rate.

In the fourth quarter of 2016, the unemployment rate in Barcelona was 11.6%, with a year-on-year rate falling for the fourth consecutive year (-1.7 percentage points). With this trend, the city's unemployment rate is closer to that of the European Union –which it surpasses by more than 3 percentage points– than to the Spanish average.

Unemployment rate (%)



Catalonia Spain UE-28

Source: Eurostat

Unemployment rate in European regions. 2016

Female unemployment rate (%)	Region (CITY)	Unemployment rate (%)
2.0	Prague (PRAGUE)	2.2
2.4	Upper Bavaria (MUNICH)	2.4
3.1	Stuttgart (STUTTGART)	3.3
3.6	Central Hungary (BUDAPEST)	3.8
3.7	Darmstadt (FRANKFURT)	4.0
3.6	Hamburg (HAMBURG)	4.1
4.1	Oslo (OSLO)	4.6
3.9	Eastern Scotland (EDINBURGH)	4.8
6.0	North Holland (AMSTERDAM)	5.5
5.1	Mazowsze (WARSAW)	5.5
6.1	London (LONDON)	5.6
5.6	Great Manchester (MANCHESTER)	6.1
6.7	Stockholm (STOCKHOLM)	6.5
7.1	Denmark (COPENHAGEN)	6.6
7.5	South Holland (ROTTERDAM)	7.1
8.6	Lombardy (MILAN)	7.4
7.2	South Finland (HELSINKI)	7.4
6.2	South and East (DUBLIN)	7.5
7.0	Berlin (BERLIN)	7.8
6.7	Lithuania (VIRUS)	7.9
8.0	Rhône-Alpes (LYON)	8.0
8.7	**EUROPEAN UNION**	**8.5**
8.9	Island of France (PARIS)	9.2
11.6	Lazio (ROME)	11.1
9.6	Vienna (VIENNA)	11.3
11.2	Lisbon (LISBON)	11.9
11.5	Languedoc-Roussillon (MONTPELLER)	12.0
13.1	Basque Country (BILBAO)	12.6
16.5	Community of Madrid (MADRID)	15.7
16.9	**Catalonia (BARCELONA)**	**15.7**
16.0	Brussels (BRUSSELS)	16.7
21.4	**Spain**	**19.6**
26.2	Attica (ATHENS)	23.0

Note: population over 15 years old.
The database contains nearly 450 regions, although the table shows only a benchmark sample of selected regions.

Source: Eurostat

Working population with tertiary education in European regions in 2016

More than half of women workers in Catalonia have tertiary education

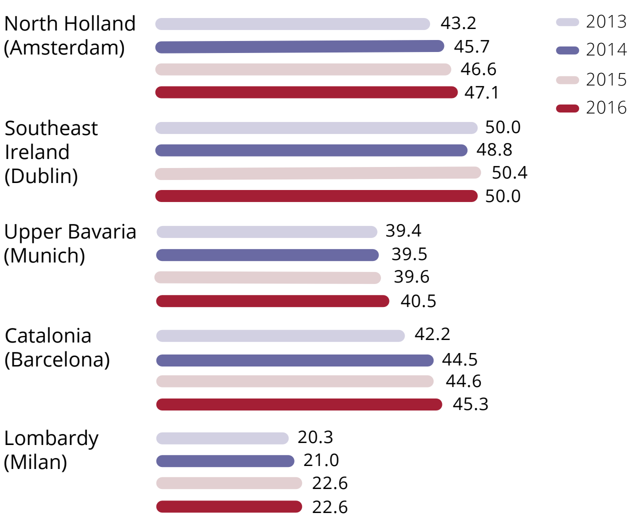
According to Eurostat data, in 2016, 45.3% of the working population in Catalonia had a university degree, which represents an increase of 0.7 percentage points compared to the previous year. This number is clearly above the average for the European Union (35.5%) and exceeds benchmark regions like Manchester, Munich, Lyon or Berlin, as well as being above the average for Spain (42.8%).

The percentage of Catalan women working with university degrees exceeds 50% for the second consecutive year, standing at 51.1%, after stabilizing with respect to 2015. This indicator is again above the total, and remains way above the Union European percentage (39.4%) and also above benchmark European regions mentioned above and the average for Spain (48.7%).

These results show the progress in terms of higher education in Catalonia in recent years, and this offers a basis to develop further higher education levels for the labour force of Catalonia to bring them closer to northern European levels.

Working population with a university degree

(Percentage of total employment)



Source: Eurostat

Working population with a university degree in European regions. 2016

Women workers with university degree (%)	Region (CITY)	Total number of working people with university degree (%)
64.2	London (LONDON)	62.0
64.4	Oslo og Akershus (OSLO)	58.1
63.0	South Finland (HELSINKI)	55.8
59.6	Basque Country (BILBAO)	55.6
61.9	Brussels-Capital Region (BRUSSELS)	55.4
58.7	Eastern Scotland (EDINBURGH)	54.2
57.8	Stockholm (STOCKHOLM)	53.0
54.5	Île de France (PARIS)	52.8
55.9	Madrid (Community of) (MADRID)	52.6
55.4	Capital (Copenhagen)	50.6
53.3	South West Scotland (GLASGOW)	50.4
56.0	South and East (DUBLIN)	50.0
50.0	Vienna (AT) (VIENNA)	47.4
49.2	North Holland (AMSTERDAM)	47.1
52.2	Lithuania (VIRUS)	46.3
54.7	Attica (ATHENS)	46.3
51.1	**Catalonia (BARCELONA)**	**45.3**
43.4	Prague (PRAGUE)	44.6
53.1	Mazowsze (WARSAW)	44.5
46.9	Great Manchester (MANCHESTER)	44.2
53.0	Southwest (BG) (SOFIA)	43.9
45.1	Berlin (BERLIN)	43.4
47.3	Rhône-Alpes (LYON))	43.2
48.7	**Spain**	**42.8**
45.9	Provence-Alps-Cote d'Azur (MARSEILLE)	42.3
45.0	Bucharest Ilfov (BUCAREST)	41.6
43.0	South Holland (THE HAGUE)	41.2
35.8	Upper Bavaria (MUNICH)	40.5
43.2	Central Hungary (BUDAPEST)	39.3
44.2	Valencian Community (VALENCIA)	39.1
42.2	Midlands West (BIRMINGHAM))	38.8
39.4	**EUROPEAN UNION**	**35.5**

Note: Percentage of the population between 25 and 64 years old with a university degree.
The database contains nearly 450 regions, although the table only shows a reference sample of selected regions.

Source: Eurostat

Best European business schools in 2017

Barcelona is the only city with two education centres in the Top Ten MBA business schools ranking for Europe

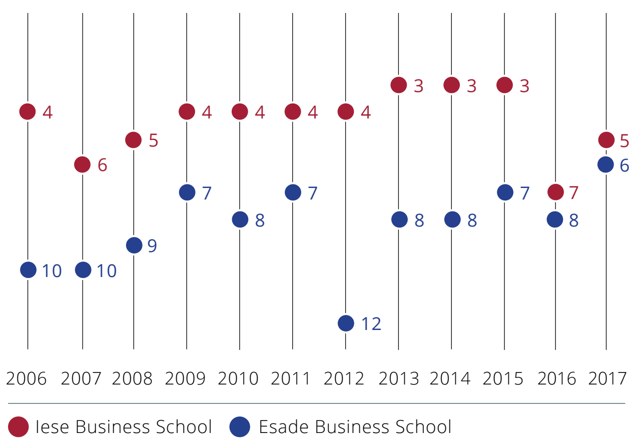
According to *The Financial Times*' listing of the top 100 full-time MBA programmes, which is now in its 17^{th} year, Barcelona's IESE and ESADE business schools stand in 5^{th} and 6^{th} respectively in Europe, still ahead of recognized schools like Saïd Business School of the University of Oxford or the Warwick Business School, both based in England. This means Barcelona remains the only city with two centres of education in the top ten MBA business school programmes in Europe for the fifth consecutive year. These two business schools are in the top twenty schools in the world, with IESE in 10^{th} and ESADE in 17^{th} position.

Regarding the results of the previous year, in 2017 both IESE and ESADE climb two positions in the European ranking and six spots in the world ranking.

On the other hand, according to the full-time MBA ranking *Which MBA?* for 2016, published annually by the Economist Intelligence Unit for the last fourteen years, IESE is 1^{st} in the European ranking and 8^{th} in the world, while ESADE is in 15^{th} spot at the European level and 54^{th} in the world.

Year after year, these indicators consolidate Barcelona as a city of excellence and a hub for business training at the international level.

Position in the European ranking

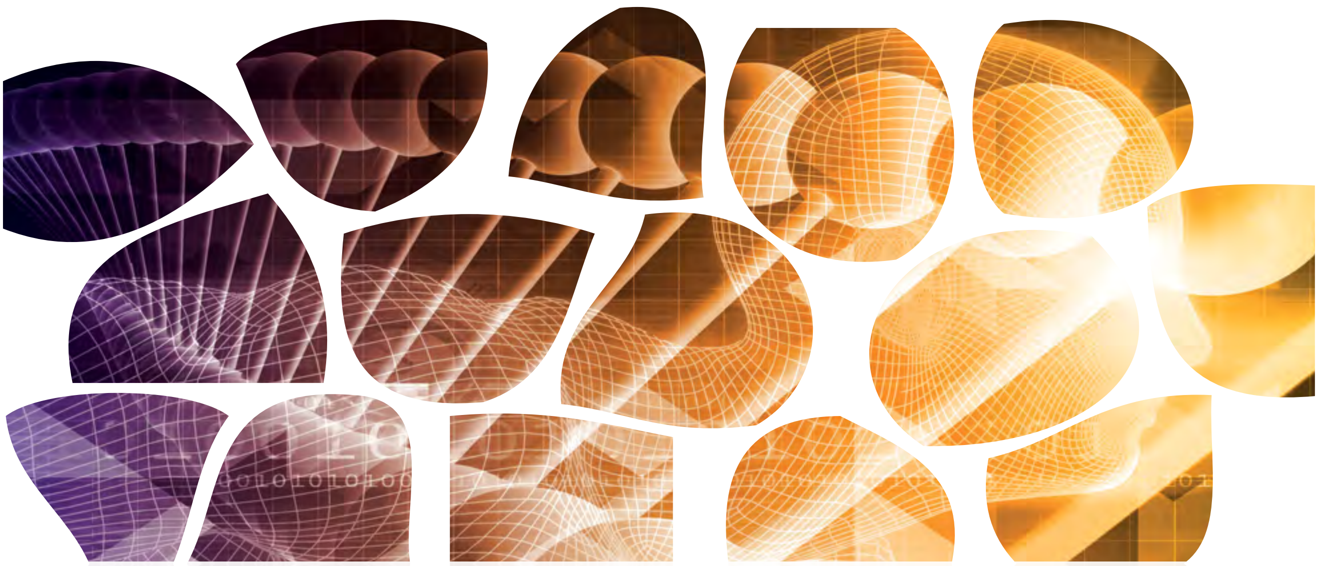


Source: *Global MBA Ranking, 2017.* Financial Times

Best European business schools. 2017

European ranking	Business school	City	World ranking
1	Insead	Fontainebleau	1
2	University of Cambridge: Judge	Cambridge	5
3	London Business School	London	6
4	IE Business School	Madrid	8
5	**IESE Business School**	**Barcelona**	**10**
6	**ESADE Business School**	**Barcelona**	**17**
7	HEC Paris	Paris	20
8	IMD	Lausanne	21
9	SDA Bocconi	Milan	22
10	Alliance Manchester Business School	Manchester	30
11	Rotterdam School of Management, Erasmus University	Rotterdam	31
12	University of Oxford: Saïd	Oxford	33
13	City University: Cass	London	37
14	Lancaster University Management School	Lancaster	42
15	Warwick Business School	Coventry	44
16	Imperial College Business School	London	45
17	Cranfield School of Management	Cranfield	53
18	Mannheim Business School	Mannheim	54
19	Universität St Gallen	St.Gallen	59
20	The Lisbon MBA	Lisbon	70
20	ESMT-European School of Management and Technology	Berlin	70
20	University College Dublin: Smurfit	Dublin	70
21	Edhec Business School	Roubaix	74
22	Durham University Business School	Durham	75
23	University of Strathclyde Business School	Glasgow	80
24	University of Edinburgh Business School	Edinburgh	91
25	Grenoble Ecole de Management	Grenoble	92
26	Birmingham Business School	Birmingham	97
27	Vlerick Business School	Brussels	99

Source: *Global MBA Ranking 2017.* Financial Times



Knowledge society

OBSERVATORI BARCELONA

Introduction

The 'Barcelona digital city 2017-2020, transition to technological sovereignty' plan continues to move forward along three lines of action: firstly, modernising the local Administration and carrying out digital transformation to meet current technological challenges and to be more efficient and effective; secondly, to diversify the digital economy and to give SMEs and entrepreneurs better access to public procurement processes and thus offer innovative solutions, and thirdly, promoting digital education to citizens, as well as facilitating active democracy, whilst promoting participative digital sovereignty to contribute to urban democracy, favouring the open and public control of data and safeguarding the rights and freedoms of digital citizenship in the business field. In 2017 it is worth mentioning that Barcelona Activa opened the MediaTIC Incubator, the first municipal center specialized in companies with high impact applied technology projects, primarily, in the fields of artificial intelligence, the "internet of things", robotics, space technologies and nanotechnology.

Technological entrepreneurship has become a new centre of activity in the city. According to the l'*European Digital City Index 2016*, Barcelona is positioned as the 9th European city with regards its support of digital entrepreneurship between the top 60 cities in Europe. At the same time, in 2017 Barcelona was considered the 5th top start-up hub in Europe for the third consecutive year, according to a ranking of EU-startups, as well as the 3rd top European city –after London and Berlin– to set up a startup, according to the British investment firm Atomico. This Entrepreneurial ecosystem feeds off the capacity to attract talent, supported by initiatives like 4YFN, a platform for the emerging business technology community, driven by the Mobile World Capital Barcelona (MWCB). According to the conclusions of a study carried out by Corporama, Catalonia is home to 23% of Spain's technology and digital companies, and Barcelona houses 90% of these.

In the knowledge economy it is necessary to emphasize the critical mass of Catalonia's labour market in sectors of high added value. In 2016, Catalonia was the 4th top region of Europe with the largest population employed in high and medium-high technology intensity manufacturing, and 9th regarding the amount of employment in knowledge and technology services and 5th regarding the percentage of working population in science and technology, with more of 780,000 working people in this sector. Female employment in the first two sectors accounts for around 30% of the total. Likewise, Barcelona is the 5th top city in Europe and 15th in the world in terms of academic publishing according to the *Knowledge Cities Ranking 2016*, prepared by the UPC's Center of Land Policy and Valuations. On the other hand, the city is located in 20th overall position in the *Global Cities Talent Competitiveness Index 2017* that values a city's capacity, attraction, growth, retention, use of abilities and construction of global knowledge to determine the assets of cities to attract and retain knowledge and creative workers.

In the field of innovation, Barcelona has progressed rapidly in recent years to stand in leading positions in the main world rankings. So, according to the tenth edition of the Innovation Cities Index 2016/17, Barcelona is 13th in the world and 5th in Europe in terms of innovation among 500 cities in the world analysed by the consultants 2thinknow, climbing fourteen spots with respect to 2015. Business Insider, along with 2thinknow, classifies Barcelona as 24th in terms of cities with greatest technology innovation and future projection. The magazine Fortune named Barcelona the most connected city in the world for the second consecutive year. Likewise, according a comparative analysis of innovation in regions in the *Europe Regional Innovation Scoreboard 2017*, developed by Eurostat, Catalonia is classified among European regions as 'Moderate + Innovator'. Performance in innovation overall in Catalonia increased relative to the 2016 and Barcelona enjoys better results than the European average on indicators such as population with tertiary education, employment in sectors using intensive knowledge and exports of products with medium and high technology content.

Barcelona is rated third top European city for starting up a firm

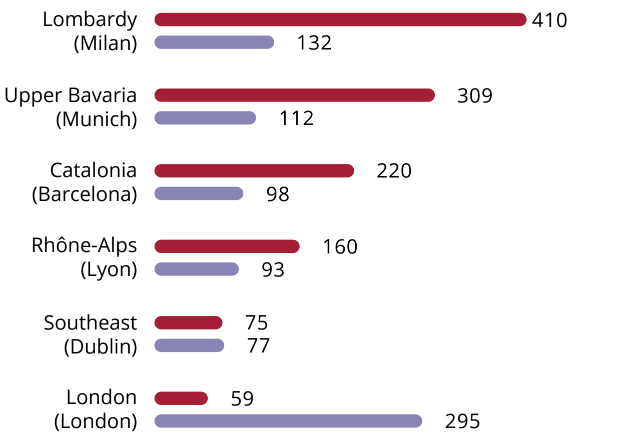
Population employed in technology manufacturing and technology services in European regions in 2016

Catalonia, fourth top European region with most workers engaged in technology manufacturing and ninth for technology services

In 2016, Catalonia was placed fourth amongst European regions with the largest number of people employed in high and medium-high intensity technology manufacturing, with a total of 220,000 people working in these sectors, according to Eurostat. Thus, the number of jobs accounted for by these activities increased by 15,100 (7.4% more than the previous year), and this meant Catalonia jumped one position to overtake Istanbul and now only falling below Stuttgart, Lombardy and Upper Bavaria. Almost 30% of this working population are women (65,500), 6.5% more than the previous year. As a result, Catalonia has a relative weighting in terms of employment in high and medium-high intensity technology manufacturing sectors of 6.9%, a percentage that places it in the mid part of the range of 317 European regions.

Catalonia is 9th amongst European regions in terms of employment in services in knowledge and high intensity technology services, with a total of 98,200 workers in 2016. Compared to the previous year, employment in these activities decreased by 3,100 people (-3.1%), although Catalonia remains in the same position in the ranking. However, a slight decrease in the weighting of these activities has been detected compared to the total workforce up to 3.1% (3.3% in 2015), a percentage that is located in the middle-high band of European regions. On the other hand, the female working population in this sector increased 6.6% respect to 2015 and stands at 30,700 women (31% of the total). Based on social security data, the weighting of these activities compared to the total number of jobs in the city of Barcelona reached 6.2% in December 2016.

Population employed in knowledge-intensive and high-tech services and those employed in high and medium-high intensity manufacturing technology. 2016



Population employed in high and medium-high intensity technology manufacturing (in thousands)

Population employed in knowledge-intensive and high-tech services (in thousands)

Source: Eurostat

Population employed in technology manufacturing and technology services in European regions. 2016

Knowledge-intensive and high technology services				High and medium-high intensity technology manufacturing		
% workers over total working population	Female workers (thousands)	Total working population (thousands)	Region (CITY)	% workers over total working population	Female workers (thousands)	Total working population (thousands)
2.2	15	48	Stuttgart (STUTTGART)	19.6	92	424
3.1	39	132	Lombardi (MILAN)	9.5	110	410
4.5	39	112	Upper Bavaria (MUNICH)	12.3	73	309
3.1	**31**	**98**	**Catalonia (BARCELONA)**	**6.9**	**66**	**220**
3.6	16	51	Karlsruhe (KARLSRUHE)	14.4	45	204
1.7	24	97	Istanbul (ISTANBUL)	3.7	44	204
2.6	18	48	Piedmont (TURIN)	11.1	54	201
2.4	17	47	Emilia-Romagna (BOLOGNA)	9.6	43	188
2.5	19	61	Düsseldorf (DÜSSELDORF)	7.1	37	173
6.1	103	322	Ile de France (PARIS)	3.2	44	167
3.6	19	71	Darmstadt (FRANKFURT)	8.4	43	167
3.6	28	78	Cologne (COLOGNE)	7.4	37	161
3.4	30	93	Rhone-Alps (LYON)	5.7	46	160
5.8	26	81	Central Hungary (BUDAPEST)	6.6	35	93
2.1	13	32	Loire (NANTES)	5.7	25	88
4.3	38	105	Masovia (WARSAW)	3.6	36	87
3.9	15	48	Midi Pyrenees (TOULOUSE)	6.4	18	80
7.8	75	221	Community of Madrid (Madrid)	2.7	22	76
5.1	23	77	South-east Ireland (DUBLIN)	4.9	26	75
2.1	10	29	Schleswig-Holstein (KIEL)	5.1	16	71
5.5	37	96	Berlin (BERLIN)	4.1	20	70
8.4	28	104	Berkshire, Buckinghamshire and Oxfordshire (OXFORD)	5.3	26	65
2.8	16	56	Provence-Alps-Cote d'Azur (MARSEILLE)	3.1	14	61
6.6	82	295	London (LONDON)	1.3	17	59
5.5	41	128	Lazio (ROME)	2.4	13	57
3.9	13	36	Hamburg (HAMBURG)	5.8	13	55
4.7	16	59	Gloucester, Wiltshire and north Somerset	4.1	7	51
4.2	14	51	East Anglia (EAST ANGLIA)	3.8	9	46
6.4	19	61	Region capital (COPENHAGEN)	4.5	19	43

Source: Eurostat

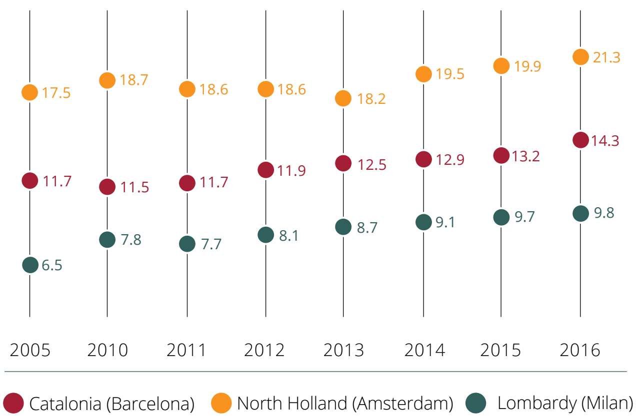
Population employed in science and technology in 2016 and expenditure on research and development in European regions in 2014

Catalonia is the fifth top European region in terms of employment in science and technology

Catalonia had 788,000 people with degree level education working in science and technology in 2016. This figure places it in 5th position in the ranking of European regions, behind Paris, London, Madrid and Istanbul, but above Warsaw, Lyon, Milan, Munich or Berlin, among others, according to Eurostat. This figure increased by 57,600 workers in Catalonia compared to the previous year (7.9%), meaning it recovered the two positions it had lost in the previous year's ranking when it was overtaken by the regions of Warsaw and Lyon. Thus, in Catalonia, the weighting of the working population dedicated to science and technology in relation to the total population stands at 14.3%, 2.4 percentage points more than in 2012.

In 2014, the intensity in research and development (R&D) in Catalonia stood at 1.49% of GDP, a value that is higher than in regions such as London or Lombardy. By contrast, Catalonia is still far behind the leading areas like Copenhagen, Stuttgart or Stockholm, and it now stands below the European average (2.04%) and the target set for the European strategy for 2020 (set at 3%). In 2015, Catalan companies generated more than a quarter part (25.6%) of the domestic business expenditure in R&D in Spain.

Population employed in science and technology
(as a percentage of the total population*)



Source: Eurostat
*Population between 15 and 74 years old.

Note: working people who have a degree in science and are employed as professionals or technicians.

Population employed in science and technology in 2016, and spending on research and development in the regions of Europe in 2014

Total R&D domestic expenditures (% GDP) 2014	Domestic expenditures in the business sector on R+D (% GDP) 2014	Region (CITY)	Employees in science and technology (in thousands) 2016	Employees in science and technology (% population*) 2016
2.91	1.99	Ile de France (PARIS)**	1,793	20.5
1.06	0.44	London (LONDON)	1,679	25.5
1.69	0.94	Community of Madrid (MADRID)	981	20.2
0.95	0.45	Istanbul (ISTANBUL)**	879	7.9
1.49	**0.85**	**Catalonia (BARCELONA)**	**788**	**14.3**
2.76	1.82	Rhone-Alps (LYON)**	755	16.1
1.33	0.93	Lombardy (MILAN)	735	9.8
1.70	0.81	Masovia (WARSAW)	734	18.5
4.41	3.35	Upper Bavaria (MUNICH)**	691	19.7
1.05	0.38	Andalusia (SEVILLE)	586	9.2
3.55	1.49	Berlin (BERLIN)**	549	20.2
6.00	5.51	Stuttgart (STUTTGART)**	524	17.0
2.46	1.50	Provence-Alps-Cote d'Azur (MARSEILLE)**	524	14.3
2.92	1.13	Cologne (COLOGNE)**	517	15.2
1.97	1.24	Düsseldorf (DÜSSELDORF)**	502	12.9
2.16	1.06	South Holland (ROTTERDAM)	484	17.8
3.12	2.48	Darmstadt (FRANKFURT)**	476	15.9
1.62	0.57	Lazio (ROME)	464	10.5
3.87	2.84	Stockholm (STOCHOLM)**	449	26.7
1.69	0.82	North Holland (AMSTERDAM)	447	21.3
0.95	0.45	Attica (ATHENS)**	426	14.6
0.57	0.27	Upper Silesia (KATOWICE)	421	12.5
1.53	1.10	South-East Ireland (DUBLIN)**	410	16.4
1.04	0.42	Valencian Community (VALENCIA)	409	11.1
1.83	1.36	Central Hungary (BUDAPEST)	408	17.9
---	---	Ankara (ANKARA)	405	10.4
1.40	1.14	Surrey, East Sussex and West Sussex (BRIGHTON)	399	19.4
1.14	0.76	South-West (BG) (SOFIA)	390	14.1
3.66	2.32	Berkshire, Buckinghamshire, and Oxfordshire (OXFORD)	376	21.9
1.03	0.32	Lithuania (VIRUS)	365	16.8

Note: workers who have a higher degree in science-related training and are employed as professionals or technicians. Domestic expenditure includes spending on capital, expenses and labour flows (both researchers and administrative staff) related to research activities in proportion to GDP.
* Population between 15 and 74 years old.
** Data for 2013 on domestic expenses in R+D (total and business).

Source: Eurostat

Main cities in the world in terms of academic scientific output in 2016

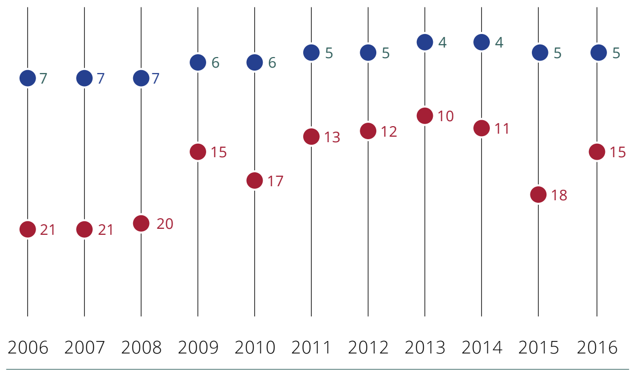
Barcelona came fifteenth among the world's cities and fifth in Europe

Barcelona, with 17,487 scientific papers, is the 5th top city in Europe and 15th in the world in terms of scientific academic output, according to the *Knowledge Cities Ranking 2016*, prepared by the Center for Land Policy and Valuations of the UPC. After a slight fall seen the previous year, Barcelona increased its number of publications by 2.7%, which means it jumps three positions in the world ranking to re-enter the top 15, whilst retaining 5th position in the European ranking. Barcelona has more science publications than cities like Los Angeles, Berlin, Cambridge (United Kingdom) or Oxford, although it is still far behind Beijing, London or Boston.

At the same time, of the 231 Advanced Grants awarded to researchers in 2016 by the European Council for Research, four have been awarded to Catalan institutions, which represents more than a third (36.4%) of the grants awarded to Spain (11). So, Catalan institutions have obtained as many Advanced Grants as Belgium (4) and similar to those of Denmark (5).

Main cities in the world with regard to the publishing of scientific papers

(Positioning of Barcelona in the world and European rankings)



Source: analysis of CPVS by the UPC from SCI data *(Science Citation Index).*

Main cities in the world with regard to the publishing of academic scientific papers. 2016

World ranking 2015	City	World ranking 2016	European ranking 2016	Papers 2016*
1	Beijing	1		77,093
2	London	2	1	43,664
3	Shanghai	3		38,365
4	New York	4		35,057
6	Boston	5		33,815
5	Seoul	6		33,653
8	Paris	7	2	32,312
7	Tokyo	8		32,000
9	Madrid	9	3	19,516
12	Moscow	10	4	18,929
17	Cambridge (USA)	11		18,335
11	Chicago	12		18,119
10	Baltimore	13		18,085
13	Toronto	14		17,808
18	**Barcelona**	**15**	**5**	**17,487**
14	Philadelphia	16		17,427
16	Los Angeles	17		17,414
15	Houston	18		17,408
19	São Paulo	19		17,149
21	Melbourne	20		16,641
20	Rome	21	6	16,258
22	Milan	22	7	15,558
23	Berlin	23	8	15,258
24	Singapore	24		15,008
27	Cambridge (UK)	25	9	13,953
25	Hong Kong	26		13,949
29	Oxford	27	10	13,431
28	Munich	28	11	13,430
26	Montreal	29		13,324
31	San Francisco	30		12,716
30	Amsterdam	31	13	12,644

*Data accessed on 18th of September 2017
Source: University Polytechnic of Catalonia Centre of Land Policy and Valuation, http:/*/www-cpsv.upc.es/KnowledgeCitiesRanking/*

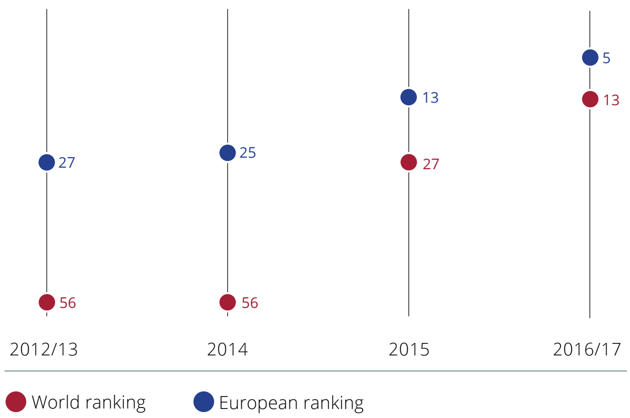
Innovation in cities around the world in 2017

Barcelona is the thirteenth most innovative city in the world and fifth in Europe

According to the tenth edition of the *Innovation Cities Index 2016/17*, Barcelona is ranked 13th top city of the world and 5th in Europe in terms of innovation between a group of 500 cities in the world analysed by consultants 2thinknow. In a ranking headed by London, followed by New York, then Tokyo, Barcelona jumped fourteen positions since last year. The consultants highlighted the fact that of six cities that have climbed to leading positions in the ranking, Barcelona has done so fastest, from the 56th in 2014 to 13th in 2017. The index classifies cities in terms of four categories of innovation, according to a score on 162 indicators that measure the right conditions for developing innovation in a city. Barcelona is in the top category "Nexus", along with 52 others. After comes the categories "Hub", "Node" and "Upstart". These 162 indicators are grouped into 31 segments that cover all the economic, industrial and social functions of an economy, which are summarized in three factors: cultural, human infrastructure and interconnected markets.

At the same time, Business Insider, along with 2thinknow, positions Barcelona as the 24th top city with the greatest technology innovation and future projection among a group of 85 cities throughout the world. This ranking classifies cities according to their level of adoption, development and use of high-tech solutions, based on ten factors related to technological advances, the number of patents registered per capita, start-ups, venture capital companies and the level of use of smartphones. In a ranking headed by American and Asian cities, Barcelona managed to qualify in the top 25 because of its intelligent urban infrastructure and growing population of engineers and industrial engineers. The study also highlights that Barcelona has a network that measures pollution, traffic noise and even the amount of bicycles that go along a street, which led them to qualify Barcelona as the most connected city in the world for the second consecutive year, according to *Fortune*.

Barcelona's position



Source: 2thinknow Innovation Cities™ Indexs

Innovation Cities Index

City	Ranking 2015	Ranking 2016/2017
London	1	1
New York	6	2
Tokyo	10	3
San Francisco-San Jose	2	4
Boston	4	5
Los Angeles	21	6
Singapore	8	7
Toronto	11	8
Paris	9	9
Vienna	3	10
Seoul	5	11
Amsterdam	7	12
Barcelona	**27**	**13**
Sydney	18	14
Munich	12	15
Dallas-Fort Worth	44	16
Berlin	14	17
Atlanta	65	18
Montreal	41	19
Chicago	16	20
Seattle	13	21
Houston	51	22
Madrid	56	23
Vancouver	35	24
Melbourne	33	25
Miami	47	26
Washington DC	29	27
Dubai	23	28
Milan	49	29
Beijing	40	30

Source: 2thinknow Innovation Cities™ Index 2016-2017: www.innovation-cities.com

European Digital City Index for 2016

Barcelona, among the ten most attractive European cities for digital entrepreneurship

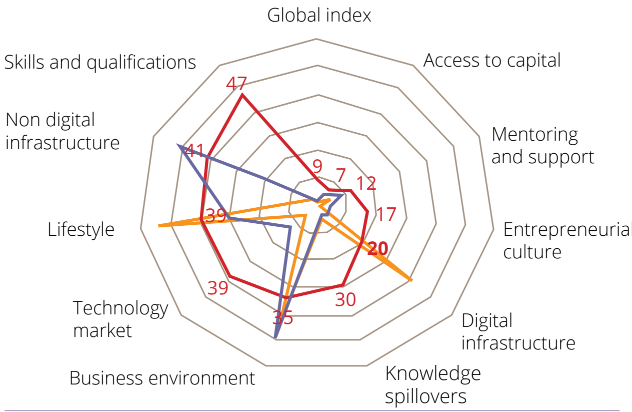
According to the second edition of the *European Digital City Index 2016*, Barcelona is the 9th top European city in terms of support for digital entrepreneurship among the top 60 cities in Europe (the 28 capitals of the EU and 32 cities that are considered important digital entrepreneurship hubs). In a ranking headed by London, followed by Stockholm and Amsterdam, Barcelona is above cities like Vienna, Munich, and Milan. Barcelona was best positioned on variables including access to capital, mentoring and assistance, entrepreneurial culture and digital infrastructure (7th, 12th, 17th, and 20th respectively) and worse on skills and lack of qualified labour force (47th). On other variables –like business environment, the technology market or knowledge transfers– the city is located in the mid range between the 30th and 41st position.

In terms of the city of Barcelona, the report highlighted the presence of government-funded initiatives like Barcelona Activa, which helps new companies to find funds to start their businesses, and the growing number of accelerator centres for emerging companies and Co-working events to facilitate knowledge exchange. But the previous edition also mentioned that, despite the existence of several venture capital firms and angel investors, these are insufficient to support the rapid growth of digital entrepreneurship in the city.

In 2017 Barcelona is considered as the 5th most important startup hub in Europe for the third consecutive year, according to a ranking of EU-startups, as well as the 3rd top European city –after London and Berlin– for establishing a start-up, according to the British investment firm Atomico.

European Digital City Index. 2016

(Positioning of the city per variable)



Barcelona London Estocolm

Source: *European Digital City Index 2016.* Nesta and the European Digital Forum think tank

NOTE variables:

Access to capital: the ability to attract early and late stage capital and financing by business angels and crowdfunding.

Business environment: ease of doing business (time and associated cost required), average cost of office rentals or commercial property prices, availability of team working spaces, access to data.

Digital infrastructure: average upload and download speeds of Internet data, cost of fixed broadband subscriptions, mobile connection speeds, homes with fibre optics in the building.

Skills and qualifications: average salary of software or web developers, web designers, etc. with five years of experience, percentage of people between 25 and 64 years old with higher education, the number people working in the ICT sector, number of employees in the finance and insurance sector, and percentage of population that can communicate in English.

Entrepreneurial culture: openness to take on the risks involved with starting a business, percentage of foreign population, the number of people collaborating online, the number of new companies compared to 1,000 people of working age, trust between fellow citizens, people's perception of entrepreneurs, number of Tweets related to entrepreneurship and number 'unicorn' emerging companies valued in thousands of millions of dollars.

Diffusion of knowledge: Nombre d'institucions de recerca del top 200 a escala mundial, i despesa d'R+D per habitant.

Lifestyle: quality of life index (accessibility to housing, pollution, taxes, crime, quality of healthcare, etc.) and living costs (cost of various goods and services).

Technology market: percentage of people using Internet to buy or acquire goods or services for private use over the last year, percentage of profits from electronic commerce (discounting the financial sector), subscription rates for broadband per 100 inhabitants, difference in the percentage of people that have shopped online.

Mentoring and managerial support: number networking and mentoring events, number of mentors, number of accelerator centres (who advise companies and promote emerging companies in exchange for payment), number of business angels.

Non-digital Infrastructure: average time and commute distances, population that travel up to 3 hours a day by train, and the number of flights from local airports.

European Digital Cities Index. 2016

Ranking	Global index 2015	Ranking	Global index 2016
1	London	1	London
2	Amsterdam	2	Stockholm
3	Stockholm	3	Amsterdam
4	Helsinki	4	Helsinki
5	Copenhagen	5	Paris
6	Paris	6	Berlin
7	Berlin	7	Copenhagen
8	Dublin	8	Dublin
9	Brussels	**9**	**Barcelona**
10	Munich	10	Vienna
11	Cambridge	11	Munich
12	Madrid	12	Cambridge
13	Oxford	13	Bristol
14	**Barcelona**	14	Madrid
15	Vienna	15	Oxford
16	Valletta	16	Manchester
17	Lisbon	17	Brussels
18	Luxembourg	18	Tallinn
19	Prague	19	Edinburgh
20	Tallinn	20	Hamburg
21	Milan	21	Lyon
22	Budapest	22	Aarhus
23	Cologne	23	Birmingham
24	Warsaw	24	Lisbon
25	Bratislava	25	Frankfurt
26	Nicosia	26	Eindhoven
27	Ljubljana	27	Utrecht
28	Rome	28	Cologne
29	Vilnius	29	Malmo
30	Bucharest	30	Uppsala

Source: *European Digital City Index* (Nesta and the European Digital Forum think tank).

Tourism

OBSERVATORI BARCELONA

Introduction

In 2016 tourism in Barcelona continued to be a key sector for powering the economic recovery. It was one of the motors of business activity for the city and Catalonia. Tourist activity in Barcelona increased during 2016 and reached record numbers of tourists and overnight stays. The number of tourists staying overnight in hotels in Barcelona reached almost 7.5 million (7,484,276 tourists), which was an increase of 5.5% compared to 2015. In the same line, hotel overnight stays increased 6%, up to 19,590,245. This strong trend came mainly from foreign tourism, but it has also been helped by a recovery in Spanish tourism and business tourism. Among the most popular fairs contributing to the high number of business tourists in 2016, we can highlight the Mobile World Congress, with 101,000 attendees; the CPhi Worldwide pharmaceutical meeting 2016, with 42,000 attendees and IBTM World 2016, with 15,000 attendees.

The strong position of the city of Barcelona as a destination for international tourism is reflected in the main benchmark rankings in the sector. So, in 2016, Barcelona is positioned 23rd amongst cities of the world that are most preferred by international visitors and 6th in Europe, up two positions in both rankings, according to the *Top 100 Cities Destinations Ranking. WTM London 2017 Edition*, by Euromonitor International. At the same time, Barcelona also climbed one position in the ranking of European cities with most overnight tourist stays in 2016, and it is located in 5th position, just behind London, Paris, Berlin and Rome, according to *European Cities Marketing Benchmarking Report 2017*. Also, according to data from TourMis, Barcelona is located in 4th position in terms of overnight stays of international tourists, behind London, Paris and Rome. The *Mastercard Index of Global Destination Cities 2016*, positions Barcelona in 11th in terms of spending by international tourism; while for Tripadvisor, Barcelona is in 7th top spot as the most popular destination in the world for tourists, 4th in Europe and 1st in Spain.

This strong performance in terms of tourist activity in the city has been boosted by city facilities and infrastructure. Barcelona Airport has grown the most of any of the top 10 European airports, and reaches 7th for the first time in the ranking of European airports in passenger volume, according to data from the Airport Traffic Report of ACI Europe. In 2016, Barcelona Airport registered a record figure of 44.2 million passengers, 11.2% more than in 2015. The intercontinental segment almost reached 4 million passengers (15.7% more than in 2015), according to the *Observatory of GPA Air Traffic*, a notable increase that can be explained to a large extent by the important increases in terms of flight connectivity now being offered. For the sixteenth time in a row, the Port of Barcelona is the main port of Europe and the Mediterranean and 4th in the world in terms of turnaround ports for cruises, according to MedCruise statistics. In 2016, 2.68 million cruise passengers passed through the Port of Barcelona, a figure beating the 2011 record (2.66 million cruise passengers). These fine results by the Port have been accompanied by regaining the title of best turnaround port operations given by the Cruise Insight magazine at the last Seatrade Cruise Global fair.

Barcelona's tourism sector smashes records in 2016 and continues to be one of the main economic engines of the city

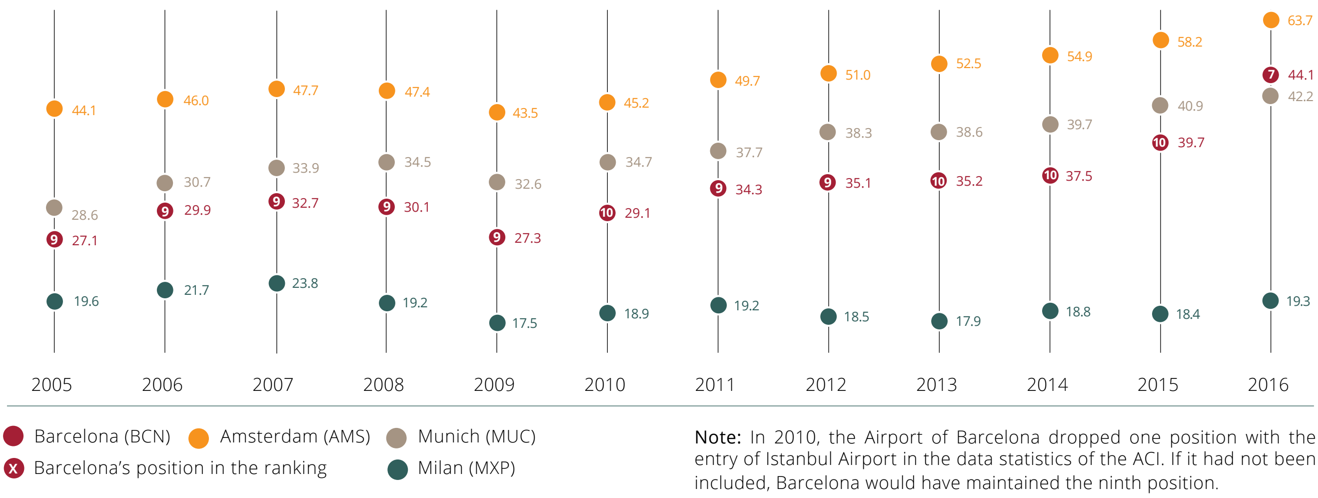
Top European airports in terms of passenger traffic in 2016

Barcelona airport climbs to 7th position amongst Europe's top airports

During 2016, Barcelona's airport reached new passenger records and now has nearly 45 million passengers, making it Europe's top 10 airport that most grew in 2016, increasing passenger numbers from 39.7 million in 2015 to 44.2 in 2016, a rise of 11.2%, according to data from the *Airport Traffic Report*, by ACI Europe. As a result of this positive trend, the airport of Barcelona climbed three positions in the European ranking and is now located in 7th place, according to passenger volumes, now beating Munich, Rome and London-Gatwick airports.

The annual evolution of passenger traffic has been positive in almost all the 25 major airports in Europe, with the exception of Moscow-Domodedovo, Istanbul and Frankfurt airports. The increase, however, has been heterogeneous: from 0.3% at Paris-Roissy airport to 11.7% in Lisbon. Barcelona, with a growth rate of 11.2%, is the 3rd fastest growing airport in 2016 of the 25 main airports in Europe. International traffic was the main motor of growth in Barcelona in 2016, with 32.3 million passengers (almost three quarters) of the total and an increase of 11.1% with respect to 2015. However, domestic air traffic has also grown intensely by 11.4%, reaching 11.8 million.

Passengers
(millions)



Note: In 2010, the Airport of Barcelona dropped one position with the entry of Istanbul Airport in the data statistics of the ACI. If it had not been included, Barcelona would have maintained the ninth position.

Source: Airport Traffic Reports. Airports Council International, ACI Europe, and the Barcelona Air Route Development Committee (CDRA).

Main European airports in terms of passenger volumes. 2016

City (airport)	Variation 2016/2015 (%)	Passengers
London Heathrow (LHR)	1.0	75,703,298
Paris Roissy (CDG)	0.3	65,933,145
Amsterdam (AMS)	9.2	63,625,664
Frankfurt (FRA)	-0.4	60,786,937
Istanbul (IST)	-2.0	60,119,215
Madrid (MAD)	7.7	50,420,583
Barcelona (BCN)	**11.2**	**44,154,693**
London-Gatwick (LGW)	7.1	43,117,370
Munich (MUC)	3.1	42,261,309
Rome-Fiumicino (FCO)	3.3	41,738,662
Moscow-Xeremetievo (SVO)	7.7	34,030,427
Paris-Orly (ORY)	5.3	31,237,865
Istanbul-Sabiha Gökçen (SAW)	5.2	29,577,735
Copenhagen (CPH)	9.1	29,043,287
Moscow-Domodedovo (DME)	-6.6	28,500,259
Dublin (DUB)	11.4	27,907,131
Zurich (ZHR)	5.3	27,666,428
Palma de Mallorca (PMI)	10.6	26,253,882
Oslo (OSL)	4.5	25,787,691
Manchester (MAN)	10.9	25,627,368
Stockholm-Arlanda (ARN)	6.7	24,682,466
London-Stansted (STN)	8.0	24,316,592
Düsseldorf (DUS)	4.7	23,521,919
Vienna (VIE)	2.5	23,352,016
Lisbon (LIS)	11.7	22,449,527

Source: *Airport Traffic Report 2016*. Airports Council International and the Barcelona Air Route Development Committee (CDRA).

International tourists in cities around the world in 2016

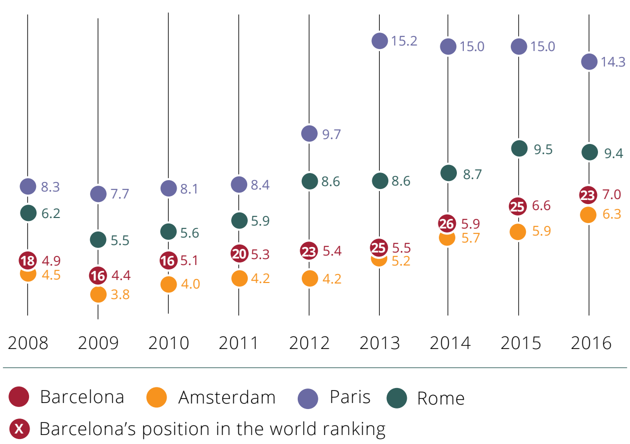
Barcelona is in the top 25 international tourist destinations

Barcelona is positioned 6th in Europe and 23rd in the world in terms of arrivals of international tourists out of a total of one hundred cities, according to the *Top Cities Destination Ranking report 2017 WTM London Edition*, by Euromonitor International. The number of international tourists who chose Barcelona as a tourist destination exceeded 7 million in 2016, 6.4% more than the previous year. On a global scale, Barcelona gained two positions in the ranking with respect to the previous year, and now stands ahead of Shanghai and Los Angeles. Likewise, in the European ranking, Barcelona also jumped two positions to overtake Antalya and Milan to reach a position just behind London, Paris, Rome, Istanbul and Prague.

At the same time, according to the *European Cities Marketing Benchmarking Report 2017*, Barcelona is the 5th top European city with the most overnight stays of tourists in 2016, behind London, Paris, Berlin and Rome, and climbing one position up from last year to beat Madrid. In terms of overnight stays by international tourists, however, Barcelona is in 4th position, behind London, Paris and Rome, according to data from TourMis. Finally, according to the latest edition of the *Global Destination Cities Index by Mastercard*, Barcelona is the 11th top city in the world regarding spending by international visitors.

International tourists

(thousands)



Note: As from 2008 there was a break in the data series because the number of cities analyzed was reduced from 150 to 100.

Source: *Top Cities Destination Rankings.* Euromonitor International

International tourists in cities around the world. 2016

City	Variation 2016/2015 (%)	International tourists (thousands)
Hong Kong	-0.5	26,552.7
Bangkok	13.4	21,251.7
London	3.3	19,190.3
Singapore	-1.6	16,604.0
Macau	7.6	15,391.9
Dubai	4.7	14,870.0
Paris	-4.2	14,392.0
New York	2.8	12,650.0
Shenzhen	10.0	12,571.0
Kuala Lumpur	1.1	12,290.4
Phuket	20.1	10,596.1
Rome	-1.7	9,396.4
Tokyo	9.7	9,272.9
Taipei	2.0	9,229.7
Istanbul	-26.1	9,174.4
Seoul	2.0	9,002.8
Guangzhou	8.3	8,618.7
Prague	17.4	8,182.5
Mecca	11.0	7,964.5
Miami	3.0	7,833.0
Delhi	25.4	7,447.8
Mumbai	24.8	7,194.3
Barcelona	**6.4**	**7,037.8**
Pattaya	-6.3	7,018.8
Shanghai	5.6	6,904.3
Las Vegas	-0.4	6,741.8
Milan	0.2	6,695.1
Amsterdam	7.6	6,345.1
Antalya	-43.2	6,173.4
Vienna	-6.1	5,367.6

Note: Arrivals includes both those foreign visitors arriving in the city as a first point of entry, and those reaching the city through another entry point. A visitor means a person who is in the city at least 24 hours and less than 12 months and staying in a private or group establishment.
Excluded are people on day trips (day trippers) and domestic tourists

Source: *Top Cities Destination Ranking 2017.* Euromonitor International

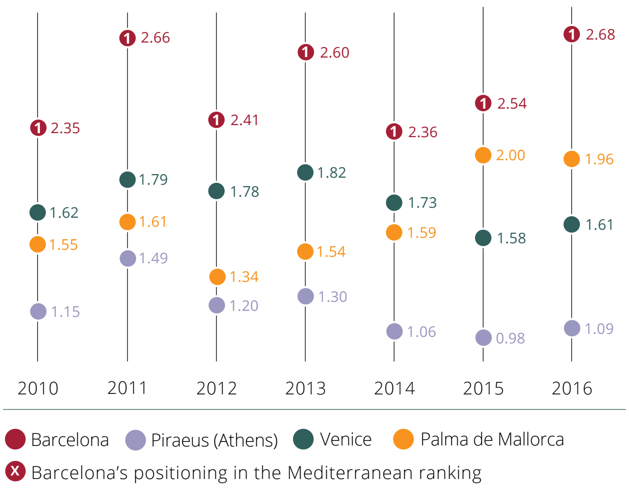
Cruise ships at Europe's main ports in 2016

The port of Barcelona sets new record for cruises and maintains its leadership in Europe

In 2016, the Port of Barcelona was again the top turnaround port in Europe for cruises for the sixteenth year in a row, setting a new record in terms of passenger numbers, according to statistics from MedCruise. Also, the Port of Barcelona was again 4th top turnaround in the world ahead of Venice, Southampton and New York, and only behind the three major port enclaves located in Florida, according to Cruise Insight magazine (Autumn 2017). Throughout 2016 some 2.68 million cruise passengers have passed through the Port of Barcelona (5.7% more than the previous year), a figure that exceeds the last record reached in 2011 (2.66 million). Importantly, almost 58% of cruises visiting Barcelona are turnarounds, meaning they begin or finish their trips in the city. This type of cruise –which is the most profitable for the city because guests usually spend some days in the city too– grew 14% with respect to 2015, while those just stopping decreased by 4%.

This success has seen the Port of Barcelona reclaim its title as the best turnaround cruise port, as awarded by Cruise Insight magazine (The global cruise market) during the Seatrade Cruise Global fair held in Florida last March 2017. The jury took into account the capacity of the port to efficiently perform various simultaneous operations at the start and end of any cruise, as well as the level of service excellence given by the cruise terminals.

Cruise passengers (millions of people)



Source: MedCruise and Ports de l'Estat

The main cruise ports in the Mediterranean. 2016

City	Variation 2016/2015 (%)	Passengers (thousands)
Barcelona	**5.7**	**2.684**
Civitavecchia	3.0	2.340
Balearic islands	-2.0	1.957
Venice	1.5	1.606
Marseille	10.1	1.597
Naples	2.9	1.306
The Piraeus	11.6	1.094
Genoa	19.9	1.017
Savona	-7.3	910
Ports of Tenerife	-5.2	884
Dubrovnik / Korcula	0.1	832
Livorno	15.8	808
Corfu	15.7	749
Valletta	2.2	683
Ports of the French Riviera	3.1	563
Kotor	21.4	537
Lisbon	2.0	522
Madeira ports	-10.0	522
Palermo	-6.7	510
La Spezia	-24.0	508
Malaga	5.7	443
Egyptian ports	116.6	412
Valencia	9.0	405
Gibraltar	17.4	404
Bari	8.9	401
Messina	13.9	373

Source: MedCruise and Ports de l'Estat

Prices and costs

OBSERVATORI BARCELONA

Introduction

A more favourable economic backdrop has marked the beginning of a growth phase that started in 2015, with the prices of rentals in the city of Barcelona rising for offices, commercial premises and houses, although in general terms they are still lower than those of the main European cities. Salaries, however, remain at the same levels despite a decrease in the unemployment rate and better economic prospects. Overall, despite price escalation, the different rankings that this chapter incorporates show that Barcelona continues to be competitive in terms of costs worldwide, but we should pay attention to the fact that the levels of prices and wages are located in the medium-low band compared to major European cities.

With data from the first half of 2017, Barcelona's position in the cost of living index has fallen compared to the benchmark (New York), according to Mercer Human Resource Consulting, while in Europe, Barcelona has climbed two positions in the ranking over the last two years, from 16th in 2015 to 14th in 2017, though it is still located in the central band of the main cities in the euro zone.

However, we should keep in mind that until 2016 inflation in the province of Barcelona has been very low or stagnant, and wages have also been contained. Thus, between 2012 and 2016, labour costs per hour remained steady at around the € 21/h in Catalonia, below the average of the euro area (€ 29.8/hr). According to statistics for 2015 carried out for UBS, the salary level in Barcelona is in the low-band when compared to other cities in Europe, only superior to those of Lisbon, Athens, Prague or Budapest, but it is far below other similar cities like Dublin, Munich, Amsterdam or Milan. In terms of gender, it is worth mentioning that in 2015 women's wages in Barcelona were on average 22.8% lower than men's, while the same wage gaps between Catalonia and Spain are slightly higher than those for Barcelona (25.2% and 25% respectively), whilst that of the European Union stood at 16.3%.

With regard to taxation, in 2016, there was a second drop in the tax rate for corporations, which went from 28% to 25%, which meant Spain moved towards the European average rate. This reduction is in addition to a reduction of personal income tax, which has been steadily applied between 2015 and 2016. As for social security contributions, Spain is characterized as having low payments by workers compared to the rest of European countries and, conversely, those paid by companies tend to be higher, so the sum of both mean that Spain is in the mid band and in line with the European average.

Finally, it should be noted that the city of Barcelona has a fairly competitive position in terms of office and commercial premises rentals which makes Barcelona more attractive as a city to do business in, despite price rise trends that began with an economic recovery in 2015 after years in retreat or stagnation. Regarding logistics land, in Barcelona, the yield on rentals is 6.3%, identical to those of Madrid or Milan, and higher than most European benchmark cities. Given the improvements to the economic situation and the growing attractiveness of Barcelona in global markets, this means that rental prices for housing are rising, although it is still below the values of the main cities of reference.

Barcelona continues to be a competitive city in terms of prices

Cost of living in cities around the world in 2017

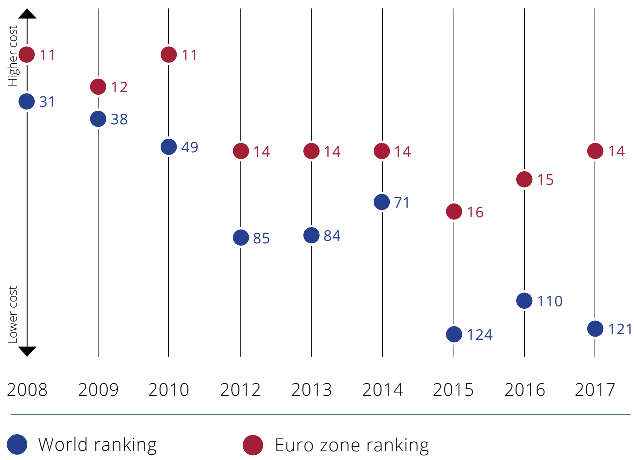
Barcelona drops in the ranking of cities with the highest costs of living

According to the study *Worldwide Cost of Living Survey* by Mercer, carried out on more than 200 products and basic services in 209 cities around the world, Barcelona dropped eleven positions in the ranking of cities with the highest cost of living between 2016 and the middle of 2017, moving from 110th to 121st and thus in a position similar to that of 2015 (124th).

Since the beginning of the economic recession in 2008 until 2015, Barcelona experienced a sharp decline in positions in the cost of living ranking, falling from 31st in 2008 to 124th in 2015, its lowest position since the data series began. This was due to the intense depreciation of the euro that occurred after the second part of 2014, as comparisons are made in relation to New York and, therefore, in US dollars, and this was added to a reduction in housing prices during the recession and a stagnation in consumer prices (inflation in the province of Barcelona in 2014, 2015 and 2016 was 0.3%, 0% and 0.2%, respectively).

However, if we compare the situation in Barcelona to that of other European cities that share the euro, Barcelona rose in the ranking in 2016 and again in 2017 in terms of having the highest costs of living. Specifically, Barcelona has gone from 16th (in 28 cities) in 2015, the year in which it reached its lowest position in the ranking, to 14th in 2017. This has to do with a new growth period for the economy which is causing increased consumer prices, and housing prices and rental prices. In conclusion, in 2017 there was a relative reduction in the cost of living in Barcelona in comparison with the world fundamentally caused by the low price of the euro, while when compared to other European cities there was a slight relative rise in costs of living.

Barcelona's position



Source: *Worldwide Cost of Living Survey, City Rankings*. Mercer Human Resource Consulting.

Note: 2011 data does not appear in the chart because they are not available to include in the European ranking.

Cost of living in cities around the world

Ranking 2016	City	Ranking 2017	Ranking 2016	City	Ranking 2017
2	Luanda	1	128	Sao Paulo	26
1	Hong Kong	2	24	Copenhagen	27
5	Tokyo	3	13	Lagos	28
3	Zurich	4	17	London	29
4	Singapore	5	23	Brazzaville	30
15	Seoul	6	34	Chicago	31
8	Geneva	7	28	Libreville	32
7	Shanghai	8	29	Nanjing	32
11	New York	9	54	Nagoya	34
13	Bern	10	37	Honolulu	35
10	Beijing	11	152	Saint Petersburg	35
12	Shenzhen	12	30	Tianjin	37
67	Moscow	13	45	Dhaka	37
16	Victoria	13	38	Washington DC	39
9	N'Djamena	15	41	Buenos Aires	40
19	Tel Aviv	16	45	Miami	41
6	Kinshasa	17	56	Abidjan	42
18	Guangzhou	18	32	Noumea	42
21	Dubai	19	31	Shenyang	42
22	Osaka	20	33	Qingdao	45
26	San Francisco	21	34	Chengdu	46
25	Abu Dhabi	22	71	Melbourne	46
27	Los Angeles	23	59	Oslo	48
42	Sydney	24	40	Djibouti	49
43	Taipei	24	**110**	**Barcelona**	**121**

Source: Mercer Human Resource Consulting, *Worldwide Cost of Living Survey. City Rankings* (2016 and june 2017).

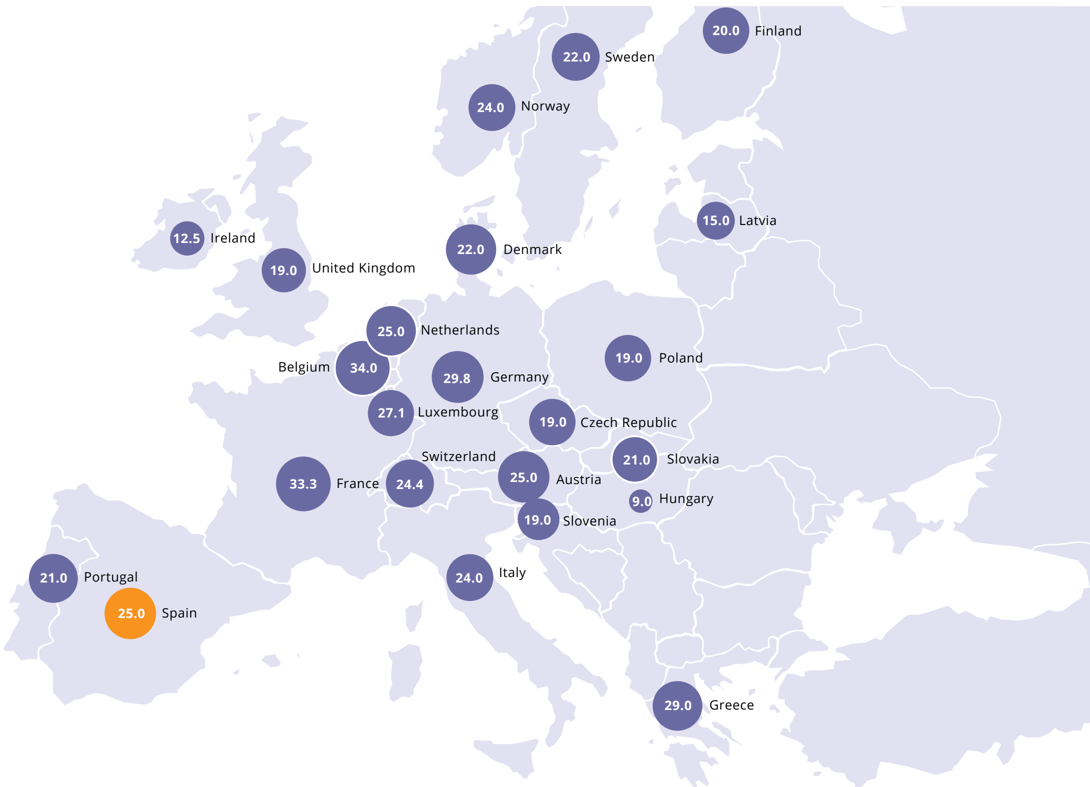
Corporation tax, VAT and social security payments in countries around the world in 2017

Tax rates paid by companies drop, nearing the European average rate

Spain continues in the mid-to-high band in Europe regarding tax rates in terms of the main taxation types, according to a study published by KPMG. On the one hand, the VAT rate is 21% and below those of Nordic countries (Denmark, Norway and Sweden, who pay 25%), and also Portugal (23%) and Italy (22%), but above those of Germany (19%) or France (20%). On the other hand, nominal tax on companies in Spain is currently 25% (after a recent drop carried out in 2016), which is now in line with the European average, although what should be done is a comparison once deductions and bonuses are included, which would most likely make the nominal rate much lower. Finally, if we compare the average rates of contributions to Social Security, we see the rates paid in Spain in terms of contributions is considerably lower compared to the rest of European countries (6%), while the rate paid by companies is in the high band (30%). As a whole, the average rate in Spain is situated in line with the European average.

According to the study *Paying Taxes* 2018, by PwC and the World Bank, Spanish companies had a total tax rate of 46.9% in 2016. This rate is higher than the average of European and EFTA countries (39.6%), but lower than the 49% seen in the previous year. In terms of concepts, it should be noted that most of this amount corresponds to taxes on work (35.6%), followed by corporate tax (10.6%) and other taxes (0.7%). The reduction of the total tax rate in relation to the previous year has focused on the tax paid by companies, which has gone from 12.4% to 10.6%, as a result of the last tax reduction.

Corporation tax. 2017 (%)



Source: KPMG, *Tax Rate Online 2017*.

Corporation tax, VAT and social security payments in countries around the world. 2017

Country	Base VAT rate (%)	Country	Base Corporate tax rate (%)	Country	Social security rates workers (%)	Country	Social security rates companies (%)
Hungary	27.0	United States	40.0	Netherlands	27.7	France	45.0
Denmark	25.0	Argentina	35.0	France	23.0	Slovakia	35.2
Norway	25.0	Belgium	34.0	Slovenia	22.1	Czech Republic	34.0
Sweden	25.0	France	33.3	Germany	20.8	China	33.9
Finland	24.0	Japan	30.9	Hungary	18.5	Belgium	32.5
Greece	24.0	Australia	30.0	Austria	18.1	Sweden	31.4
Ireland	23.0	India	30.0	Argentina	17.0	Italy	30.0
Poland	23.0	Germany	29.8	Greece	16.0	**Spain**	**29.9**
Portugal	23.0	Greece	29.0	Japan	14.5	Argentina	27.0
Slovenia	22.0	South Africa	28.0	Poland *	14.0	Greece	24.1
Italy	22.0	Luxembourg	27.1	Slovakia	13.4	Portugal	23.8
Argentina	21.0	Canada	26.5	Belgium	13.1	Latvia	23.6
Belgium	21.0	Austria	25.0	Luxembourg	12.5	Hungary	23.5
Spain	**21.0**	**Spain**	**25.0**	India	12.0	Finland	23.2
Latvia	21.0	Netherlands	25.0	Israel	12.0	Austria	21.5
Netherlands	21.0	Tunisia	25.0	Portugal	11.0	Poland	20.6
Czech Republic	21.0	China	25.0	Czech Republic	11.0	Germany	19.4
Austria	20.0	Switzerland	24.4	Latvia	10.5	Netherlands	18.5
Slovakia	20.0	Israel	24.0	China	10.5	Tunisia	16.6
France	20.0	Italy	24.0	Italy	10.5	Slovenia	16.1
United Kingdom	20.0	Norway	24.0	Finland	9.3	Luxembourg	15.2
Germany	19.0	South Korea	22.0	Tunisia	9.2	Japan	14.8
Cyprus	19.0	Denmark	22.0	South Korea	8.4	Norway	14.1
Tunisia	18.0	Sweden	22.0	Norway	8.2	United Kingdom	13.8
Israel	17.0	Slovakia	21.0	Cyprus	7.8	India	12.5
Luxembourg	17.0	Portugal	21.0	United States	7.7	Ireland	10.8
China	17.0	Finland	20.0	Sweden	7.0	South Korea	9.3
India	15.0	Slovenia	19.0	Canada	6.6	Cyprus	7.8
South Africa	14.0	Poland	19.0	**Spain**	**6.4**	United States	7.7

*Data for 2016

Note: the original database contains 138 countries, although the table shows a sample of selected countries of reference.

Source: KPMG, *Tax Rate Online 2017.*

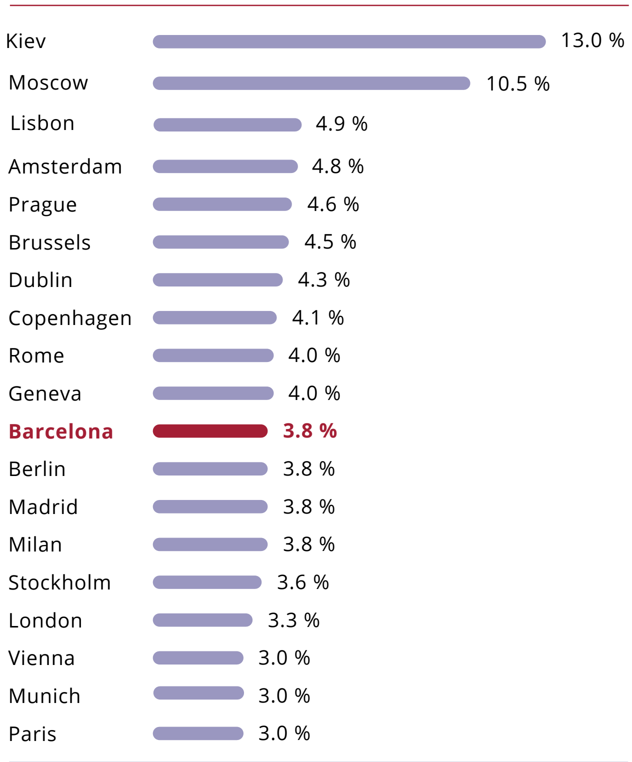
Office rental prices in cities in Europe in 2016

Prices in Barcelona are still lower than those in major European cities

In 2016, the price per square meter for office leases in Barcelona was € 258/year, according to a report prepared by Cushman & Wakefield Research, 8.9% more than the previous year. The city of Barcelona is in 30th position out of a total of 42 selected cities in the European area, and therefore in the middle-low band, with prices much lower than other big European capitals. However, Madrid is in an intermediate position in the ranking, with an office rental price of € 360/m²/year, showing a 5.3% increase over the previous year. The cities with the highest rental prices for offices are London (€ 1,513/m²/year) and, at a certain distance, Paris, Geneva and Zurich, with all three having prices above € 700/m²/year. However, Barcelona has an office rental price similar to that of cities such as Brussels, Budapest, Prague and Copenhagen, and well below those of reference cities such as Milan, Munich or Amsterdam.

Regarding the profitability of office leases, Barcelona has a yield rate of 3.8% and it is located in the low band of the ranking of European cities. Higher returns are observed in the cities of Kiev or Moscow (superior to 10%), while at the opposite end there is Paris, Munich and Vienna with returns of 3%. Other cities with a yield rate similar to that of Barcelona's are Hamburg, Berlin, Madrid, Oslo and Milan.

Yields on offices in European cities. 2016



Note: Yields refer to the return on investment in the office sector for each city.

Source: *The DNA of Real State: Q4 2016*. Cushman & Wakefield Research.

Rental prices for offices in cities in Europe. 2016

Ranking 2016	City	Var. year-on-year 2016/2015 (%)	office rentals 2016 (€/m²/year)
1	London city	-17.1	1,513
2	Paris	1.9	790
3	Geneva	1.4	746
4	Zurich	1.4	700
5	Moscow	-3.8	664
6	Stockholm	6.7	652
7	Dublin	0.0	592
8	Luxembourg	6.7	576
9	Milan	2.0	500
10	Istanbul	-6.2	466
11	Frankfurt	0.0	444
12	Oslo	-11.6	441
13	Helsinki	2.9	420
14	Edinburgh	-12.4	416
15	Munich	3.0	414
16	Manchester	-12.2	410
17	Birmingham	-7.8	404
18	Rome	0.0	400
19	Glasgow	-13.7	372
20	Amsterdam	0.0	370
21	Madrid	5.3	360
22	Düsseldorf	1.9	318
23	Berlin	10.6	312
24	Vienna	1.0	300
25	Hamburg	2.0	300
26	Warsaw	-1.0	285
27	Kiv	2.9	284
28	Brussels	0.0	275
29	Budapest	4.8	264
30	**Barcelona**	**8.9**	**258**
31	Prague	7.7	252
32	Copenhagen	3.3	249
33	Lisbon	2.7	228
34	Bucharest	0.0	222
35	Athens	0.0	204
36	Riga	-	192
37	Bratislava	3.3	186
38	Tallinn	-	186
39	Vilnius	-	180
40	Escoba	0.0	168
41	Sofia	4.0	156
42	Ljubljana	-	138

Source: Cushman & Wakefield Research, *The DNA of Real State, Q4. 2016 (Europe)*

Retail rental prices in cities around the world in 2017

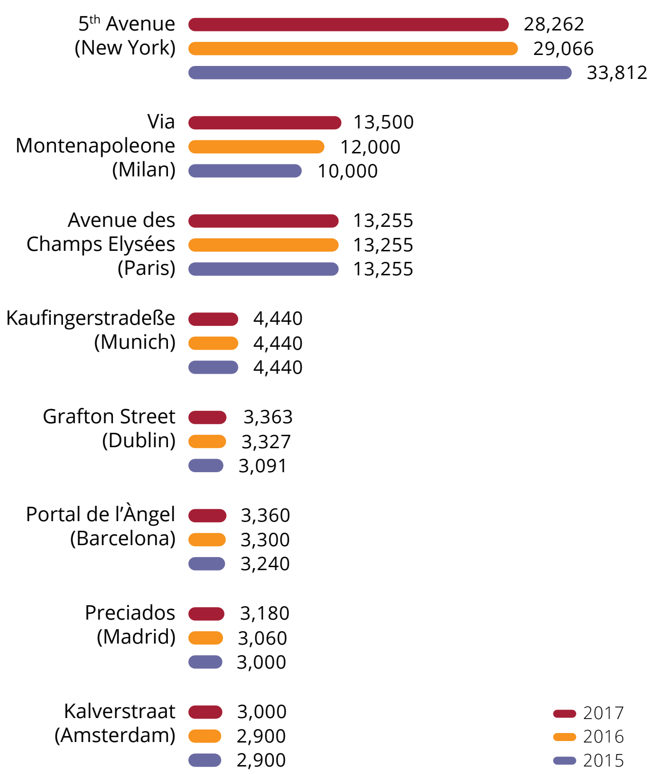
Rental prices of commercial premises continue to rise in the most expensive streets of the city

According to the report *Main Streets Across the World 2017* by Cushman & Wakefield, Portal de l'Àngel is again the most expensive street in Barcelona and the whole of Spain, and it remains in 14th in the world ranking. Specifically, the rental price of commercial premises in Portal de l'Àngel was € 3,360/m²/year in the second quarter of 2017, a price that is comparable to that of the most expensive streets in Dublin and Amsterdam. In contrast, the prices of premises in the main streets of the most expensive cities in Europe are New Bond Street in London and Via Montenapoleone in Milan, where prices are five and four times more expensive than in Barcelona, respectively.

In the ranking for Spain, the second place is taken by Calle de Preciados in Madrid, with an average price of € 3,180/m²/ year. Rental prices have increased by 1.8% in Portal de l'Àngel in 2017 and 3.9% in Calle de Preciados in Madrid. Portal de l'Àngel's position in the ranking of the world's most exclusive shopping streets is a reflection of the high rents that shops are paying in the centre of the city because of Barcelona's reputation and position as a city for tourism shopping.

Rental prices for retail premises

(€/m²/year)



Source: Cushman & Wakefield, *Main Streets Across the World.*

Rental prices for retail premises in cities around the world. 2017

2017	2016	Country	City	Street	Rentals retail premises (€/m²/year)
1	1	USA	New York	Upper 5th Avenue (49th-60th Sts)	28,262
2	2	Hong Kong (China)	Hong Kong	Causeway Bay (main street shops)	25,673
3	4	United Kingdom	London	New Bond Street	16,200
4	6	Italy	Milan	Via Montenapoleone	13,500
5	3	France	Paris	Avenue des Champs Elysees	13,255
6	5	Japan	Tokyo	The Ginza	11,308
7	7	Australia	Sydney	Pitt Street Mall	9,422
8	8	South Korea	Seoul	Myeongdong	8,598
9	9	Switzerland	Zurich	Bahnhofstrasse	8,310
10	10	Austria	Vienna	Kohlmarkt	4,620
11	11	China	Beijing	Wangfujing	4,498
12	12	Germany	Munich	Kaufinger/Neuhauser	4,400
13	13	Ireland	Dublin	Grafton Street	3,363
14	**14**	**Spain**	**Barcelona**	**Portal de l'Àngel**	**3,360**
15	19	Russia	Moscow	Stoleshnikov	3,071
16	17	Netherlands	Amsterdam	Kalverstraat	3,000
17	15	Singapore	Singapore	Orchard Road	2,905
18	18	Norway	Oslo	Karl Johan	2,831
19	25	Greece	Athens	Ermou	2,640
20	20	Luxembourg	Luxembourg	Grand Rue	2,580
21	21	Denmark	Copenhagen	Stroget (including Vimmelskaftet)	2,555
22	23	Czech Republic	Prague	Na Příkopě street	2,520
23	16	Turkey	Istanbul	Centre-Istiklal Street	2,311
24	28	India	New Delhi	Khan Market	2,191
25	22	Canada	Toronto	Bloor Street	2,180
26	27	Vietnam	Ho Chi Minh	Best Achieved Shopping Mall (GF)	2,100
27	24	Malaysia	Kuala Lumpur	Pavilion KL	2,084
28	29	Belgium	Antwerp	Meir	1,950
29	26	Taiwan	Taipei	Zhongxiao	1,830
30	30	New Zealand	Auckland	Queen Street	1,609

Note: This ranking only includes the most expensive shopping street in each country.

Source: Cushman & Wakefield, *Main Streets Across the World 2017. Dades segon trimestre del 2017.*

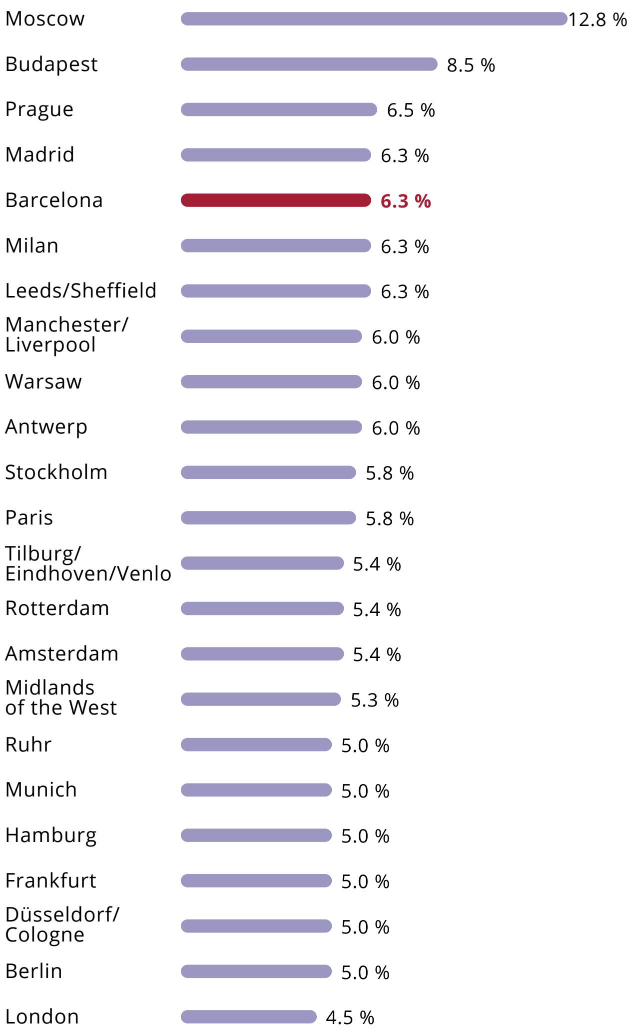
Prime logistics land rental prices in the world's main cities in 2017

Barcelona has higher logistics land rental prices than the average in the main European cities

The rental price of logistics land in Barcelona was 83.42 dollars per square meter in 2017, according to a report by CB Richard Ellis called *Global Prime Logistics Rents*. Barcelona is located in the mid-to-high band in a group of 50 of the most expensive cities due to the scarcity of land logistics land available in the Barcelona area. Specifically, the price of logistics land in Barcelona is similar to that of world benchmark cities like New Jersey, Canberra, Buenos Aires, Munich or Seoul, but inferior to that of cities that head the European ranking, such as London (\$ 192.24/m^2), Stockholm (\$ 100.75/m^2), and the Midlands, Manchester / Liverpool (\$ 87.73/m^2). The price in Madrid (\$ 67.38/m^2) is lower than Barcelona.

According to CB Richard Ellis, the yield on logistics land in Barcelona is 6.3%, identical to what you get in Madrid or Milan, and higher than most European cities of reference, except for Moscow and Budapest, which head the ranking in this market. Specifically, Barcelona's yields significantly exceed the profitability of German cities such as Munich, Hamburg, Frankfurt, Düsseldorf / Cologne or Berlin (5%).

Yields on prime land for logistics in cities in Europe in 2017



Note: Yields refer to the return on investment of logistics land for each city.

Source: CBRE, *Global Prime Logistics Rents*, july 2017.

Rental price of prime logistics land. 2017

Ranking	City	Country	Rental logistics land ($/m²/year)
1	Hong Kong	Hong Kong	348.75
2	Tokyo	Japan	196.12
3	London	United Kingdom	192.24
4	Singapore	Singapore	109.15
5	Shanghai	China	101.07
6	Stockholm	Sweden	100.75
7	Sydney	Australia	99.03
8	Shenzhen	China	94.83
9	Oakland	United States	93.97
10	LA / Orange Country	United States	91.71
11	Auckland	New Zealand	89.34
12	Brisbane	Australia	88.37
13	Midlands	United Kingdom	87.73
14	Manchester / Liverpool	United Kingdom	87.73
15	Seoul	South Korea	87.40
16	Munich	Germany	87.30
17	Buenos Aires	Argentina	86.22
18	**Barcelona**	**Spain**	**83.42**
19	Canberra	Australia	83.31
20	New Jersey	United States	81.16
21	Beijing	China	80.08
22	Perth	Australia	79.98
23	Frankfurt	Germany	79.65
24	Leeds / Sheffield	United Kingdom	77.61
25	South Florida	United States	75.67
26	Hamburg	Germany	74.49
27	Suzhou	China	72.87
28	Guangzhou	China	72.01
29	Seattle	United States	71.80
30	Moscow	Russia	70.83
31	Düsseldorf / Cologne	Germany	70.61
32	Adelaide	Australia	68.78
33	Madrid	Spain	67.38
34	Rotterdam	Netherlands	66.84
35	Amsterdam	Netherlands	64.26
36	Paris	France	64.26
37	Hangzhou	China	62.32
38	Ruhr	Germany	61.68
39	Chengdu	China	61.03
40	Vancouver	Canada	61.03
41	Mexico City	Mexico	60.82
42	Melbourne	Australia	60.71
43	Berlin	Germany	59.74
44	PA I-78/81 Corridor	United States	59.20
45	São Paulo	Brazil	59.20
46	Ningbo	China	58.88
47	Santiago de Chile	Chile	58.23
48	Inland Empire	United States	58.13
49	Budapest	Hungary	57.80
50	Prague	Czech Republic	57.80

Note: Yields refer to the return on investment of logistics land for each city.

Source: CBRE, *Global Prime Logistics Rents*, july 2017.

Price of housing rentals in the main European cities in 2017

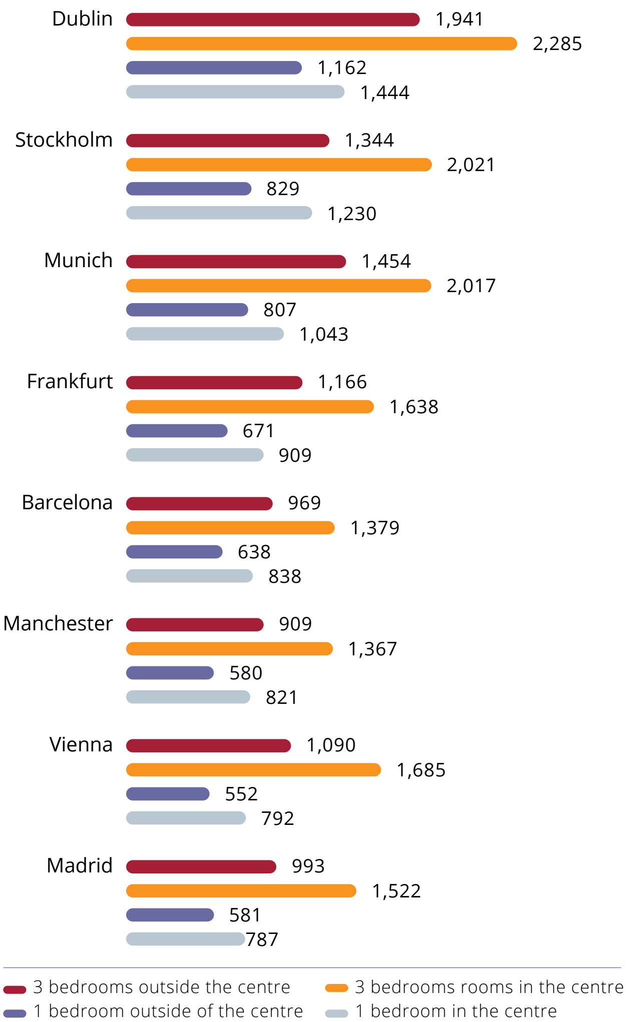
Barcelona is positioned 37th for rentals of one bedroom apartments in the centre

According to a data base belonging to Numbeo, in the first semester of 2017 the average rent of a one bedroom house in the centre of the city of Barcelona was € 838 per month, placing it 37th in the ranking of the 174 European cities analysed. A property with similar features, but located outside the centre, would cost some € 638 per month.

On the other hand, if you compare a family home with three bedrooms in the centre, Barcelona would have a lower position in the ranking, standing at 44th. In fact, the rental price of this type of property would be 1,379 €/month, similar to other cities such as Manchester or Stuttgart. If this property was outside the centre, the average rent is € 969. The positioning of Barcelona in the housing rental rankings for the centre of the city, according to what we consider a small or medium-sized home, could be because Barcelona has higher quality apartments in medium-sized housing than in small homes compared to other cities such as Madrid, Brussels, The Hague or Edinburgh, and that makes its prices more competitive.

Price of housing rentals. 2017

(€/m²/year)



Source: Numbeo. Data for the first half of 2017.

Price of housing rentals in the centre (€/month). 2017

Ranking	City	Country	3 rooms	1 room	Ranking	City	Country	3 rooms	1 room
1	London	United Kingdom	3,473	1,852	26	Bergen	Norway	1,756	982
2	Zurich	Switzerland	3,024	1,600	27	Reading	United Kingdom	1,528	975
3	Zug	Switzerland	2,586	1,573	28	Helsinki	Finland	1,802	965
4	Geneva	Switzerland	3,203	1,528	29	Cork	Ireland	1,610	961
5	Dublin	Ireland	2,585	1,444	30	Rotterdam	Netherlands	1,525	943
6	Reykjavík	Iceland	2,221	1,428	31	Bristol	United Kingdom	1,688	941
7	Amsterdam	Netherlands	2,404	1,416	32	Stuttgart	Germany	1,471	929
8	Luxembourg	Luxembourg	2,621	1,383	33	Frankfurt	Germany	1,638	909
9	Oslo	Norway	2,116	1,275	34	Eindhoven	Netherlands	1,341	907
10	Stockholm	Sweden	2,021	1,230	35	Milton Keynes	United Kingdom	1,416	896
11	Copenhagen	Denmark	2,240	1,227	36	Moscow	Russia	1,779	874
12	Cambridge	United Kingdom	1,902	1,204	**37**	**Barcelona**	**Spain**	**1,379**	**838**
13	Oxford	United Kingdom	2,227	1,192	38	Galway	Ireland	1,429	836
14	Basel	Switzerland	2,082	1,161	39	The Hague	Netherlands	1,487	831
15	Lausanne	Switzerland	2,406	1,125	40	Aarhus	Denmark	1,538	830
16	Lugano	Switzerland	2,441	1,111	41	Manchester	United Kingdom	1,367	821
17	Trondheim	Norway	1,853	1,091	42	Göteborg	Sweden	1,281	819
18	Paris	France	2,331	1,066	43	Edinburgh	United Kingdom	1,483	810
19	Bern	Switzerland	2,016	1,046	44	Vienna	Austria	1,685	792
20	Munich	Germany	2,017	1,043	45	Madrid	Spain	1,522	787
21	Milan	Italy	2,017	1,020	46	Southampton	United Kingdom	770	1,306
22	Brighton	United Kingdom	1,822	1,005	47	Leeds	United Kingdom	769	1,259
23	Stavanger	Norway	1,682	998	48	Bilbao	Spain	763	1,186
24	Rome	Italy	1,975	988	49	Brussels	Belgium	760	1,488
25	Utrecht	Netherlands	1,671	988	50	Sliema	Malta	759	1,550

Source: Numbeo. Data for the first half of 2017.

Wage levels in cities around the world in 2015

Barcelona has fallen in the ranking for salaries

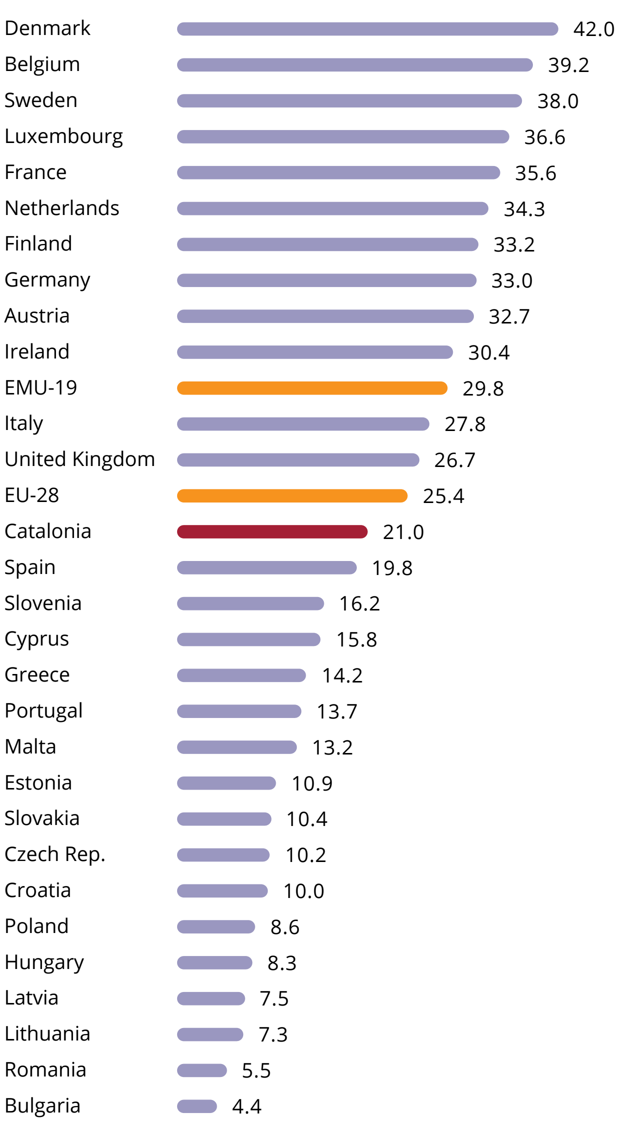
According to the report *Prices & Earnings Around the Globe*, prepared by UBS, which follows wage level trends in 72 cities around the world, between 2012 and 2015, the level of gross wages in Barcelona decreased relative to the benchmark city of New York. This trend was common to the main European cities of reference due to wage moderation and because of the depreciation of the euro. Barcelona drops a position in the world ranking and goes from 29th position in 2012 to 30th in 2015, and it remains in the intermediate range of the main European cities. It is below Dublin, Munich, Amsterdam, Milan or Lyon, among many others, but above cities such as Madrid, Lisbon, Prague or Budapest.

The decrease in net wages in Barcelona in the period analysed (that is, once taxes and contributions from social security payments are taken away) has been even more pronounced when analysed in net terms, which Indicates a differential impact due to taxes on salaries in Barcelona compared to the city of reference (New York).

If we compare the labour cost per hour between the countries pertaining to the European Union, Spain would be in 15th position of 28 countries, with € 19.8/hour, and Catalonia is slightly above, with € 21/hour. Catalonia has a labour cost per hour below the EU-28 average, with € 25.4, and even further from the average euro zone average (€ 29.8).

Wage costs per hour. 2016

(€)



Source: Eurostat and Idescat.

Salary levels in cities around the world. 2015

Ranking	City	Net salary	Gross salary	Ranking	City	Net salary	Gross salary
1	Zurich	141.8	131.3	25	Rome	54.2	60.0
2	Geneva	135.2	130.1	25	Nicosia	64.4	59.1
3	Luxembourg	97.1	106.4	25	Milan	53.1	58.7
4	New York	100.0	100.0	29	Lyon	62.8	58.6
5	Miami	92.9	92.4	**30**	**Barcelona**	**46.8**	**51.7**
6	Copenhagen	56.8	92.2	31	Madrid	46.2	50.9
7	Sydney	83.9	89.8	32	Hong Kong	51.3	49.4
8	Oslo	80.4	87.7	33	Tel Aviv	47.3	46.5
9	Los Angeles	88.2	87.5	34	Seoul	50.2	45.9
10	Chicago	84.5	85.2	35	Manama	53.1	45.7
11	Montreal	78.2	77.4	35	Dubai	46.9	40.4
12	Stockholm	63.7	76.0	35	Taipei	38.8	35.1
13	London	72.3	75.5	38	Sao Paulo	38.8	34.7
14	Brussels	61.1	72.8	39	Ljubljana	32.7	33.6
15	Toronto	69.5	71.4	40	Johannesburg	30.7	32.8
16	Tokyo	66.5	70.1	41	Doha	37.4	32.2
17	Auckland	68.6	70.0	42	Lisbon	32.0	31.9
18	Dublin	64.3	68.8	43	Athens	28.2	29.8
19	Vienna	69.7	68.5	44	Bratislava	27.6	28.4
20	Helsinki	62.8	67.8	45	Rio de Janeiro	30.3	26.8
21	Munich	68.2	67.7	46	Istanbul	26.0	26.5
22	Frankfurt	67.1	66.6	47	Tallinn	24.2	26.1
23	Amsterdam	53.3	65.3	48	Warsaw	22.4	23.2
24	Berlin	64.5	64.0	49	Santiago de Chile	25.1	23.1
25	Paris	67.1	62.8	50	Buenos Aires	26.3	22.6

Note: The effective hourly wage is calculated from 14 professions. The net salary is calculated after taxes and contributions to Social Security.

Source: *Prices & Earnings around the Globe 2015.* UBS.

SUMMARY OF RESULTS

Summary of results

In 2016, the economy in Catalonia and Barcelona continued to consolidate, driven by strong job creation, consumption, strong exports, very favorable financial conditions and a depreciation of the euro. For 2017, growth in Catalonia's GDP is expected to be 3.1%, according to estimates by Barcelona's Chamber of Commerce, although symptoms of slowdown in the second part of the year have been detected given the climate of uncertainty that could affect forecasts. In this environment, the city of Barcelona has managed to maintain its position in terms of economic activity and business at the international and European level across the majority of indicators included in the *2017 Report* of the Barcelona Observatory, and even improve on some of them.

The continuity of the positive trends seen in the Catalan economy for 2017 is confirmed by the results of the survey on business outlook by Eurochambres, whose results are very similar to the previous year. At the same time, other indicators reflect Barcelona's attractiveness as a **hub for business** and the strong image the city has abroad. In this sense, the city remains among the top 25 metropolises in the world in terms of global competitiveness, according to the *Global Power City Index 2017*, by the Mori Memorial Foundation, and it is positioned in 8th place in the world ranking in terms of having the best reputation in the *City RepTrak 2017* – jumping six positions with respect to the previous year. Barcelona also inspires confidence in the field of international investment, as shown by the fact that it has kept its place in the top ten major urban areas of the world attracting most foreign investment projects in the period 2013-2017, according to KPMG. On the other hand, it remains the third top city in the world in number of delegates and in terms of number of international conferences organized in 2016, according to the ICCA. Also, it stands out because of its entrepreneurial spirit and business opportunities, with higher entrepreneurial activity and a TEA rate that stands at 7% for the province of Barcelona in 2016, which is higher than those of Germany, Finland or Italy, but below the EU average (8.1%); while the female entrepreneurship rate stands at 6.2%, in line with the EU average (6%).

The report's chapter on **quality of life, social cohesion and sustainability** has been renewed this year with the incorporation of two new indicators regarding sustainability: connected and cohesive cities, and sustainable urban mobility in cities of the world. Regarding dimensions associated with quality of life, Barcelona is ranked 13th safest city in the world, according to *The Safe Cities Index 2017* – a position that is two spots higher than the previous year, and 4th in terms of sport, according to the *Ranking of Sports Cities 2016*. Regarding social cohesion, the rate of risk of poverty or social exclusion (AROPE) in Catalonia remains lower than that of the European Union. Regarding indicators that refer to sustainability, Barcelona has a relatively low volume of CO_2 emissions per inhabitant relative to other cities in the world. It is amongst the top fifteen cities with regard to levels of digital equipment, technological maturity, cohesion and institutions focused on the objective of sustainable development, according to the *Networked Society City Index 2016* report; in the global ranking on sustainable urban mobility it is in 21st position in the world and 15th in Europe, according to the *Sustainable Cities Mobility Index 2017* report

Regarding the **labour market**, 2016 followed the positive trend that started in 2014. Barcelona created net employment for the third consecutive year, recording a significant fall in year-on unemployment, although the unemployment rate is still above the European average. The employment rate in Catalonia is still below the European average for the eighth consecutive year. This chapter also incorporates a new indicator, the part-time employment rate (total and the rate for women), which shows a widespread increase since the start of the recession, although it is still lower than the European average (14.2% versus 20.4%). The part-time employment rate for women is above 21.5% but this is lower than the EU average (32.6%).

In terms of higher **education**, Barcelona is a benchmark for business training. It is the only European city with two schools (IESE and ESADE) among the top ten business schools in Europe in 2017, a place it has occupied for five consecutive years, according to the *Financial Times*. Barcelona also stands out in terms of the qualifications of its human capital, with a percentage of workers with university studies that continues to be clearly above the EU average (45.3% and 35.5% respectively in 2016), and in the case of female workers, this is higher than 50% (51.1%) for the second time. It is also higher than the EU average (39.4%), according to Eurostat data.

In the field of **knowledge and technology**, Barcelona is well positioned at the European level, becoming a benchmark in technological entrepreneurship and innovation. According to the E*uropean Digital City Index 2016*, Barcelona is the 9th top European city in terms of support for digital entrepreneurship among 60 major European cities. Also, Barcelona is the 13th top city in the world –jumping 14 positions with respect to the previous year- and 5th in Europe in terms of innovation among 500 cities analyzed for the tenth edition of the *2016/17 Innovation Cities Index*, prepared by consultants 2thinknow. With regard to scientific production, Barcelona's decision to boost research has meant the city is ranked 5th in Europe and 15th in the world in terms of scientific production, according to an annual report prepared by the University Polytechnic of Catalonia. These strong results in the knowledge area is reflected by significant levels of employment in high added value sectors in 2016: Catalonia was the 4th top European region in terms of population employed in high and medium-high technology intensity manufacturing, and 5th in terms of population working in science and technology –with 788,000 people employed in this area–, and it is 9th in terms of having the highest population employed in knowledge-intensive high-technology services.

The **tourism** sector is still one of the key engines driving the city's economic activity. Its results have been positive again in 2016 and Barcelona is positioned as a leading city in terms of its attraction for tourism, both at the European and international level. Barcelona's position as a destination for international tourism remains strong and this is reflected in the *Top 100 City Destinations Ranking WTM London 2017* edition, where Barcelona is ranked 6th top city in Europe and 23rd in the world in terms of international visitors. According to the *European Cities Marketing Benchmarking Report 2017*, Barcelona is the 5th top European city with most international tourist visits, just behind London, Paris, Berlin and Rome. These strong results in terms of tourism is reflected by the performance of its main transport facilities and infrastructure. Barcelona airport has grown most amongst the top 10 European airports in 2016 to reach 7th place in the ranking of European airports in terms of passenger volume, according to the Airport Traffic Report published by ACI Europe, with a record number of 44.2 million passengers in 2016 (11.2% more than 2015). On the other hand, in 2016, the port of Barcelona retained its top spot for the sixteenth consecutive year as the main port in Europe and the Mediterranean, and 4th in the world in terms of cruise passenger traffic at turnaround ports, according to statistics published by MedCruise, with a record number of 2.68 million cruise passengers (5.7% more than the previous year).

Barcelona continues to be competitive in terms of **prices and costs** at the world level, despite an incipient rise in prices accompanying the economic recovery. Importantly, this chapter has been renewed and includes two new indicators: housing prices and the prices of prime logistics land, and the indicator of corporate tax and VAT has been widened to include social security contributions by workers and companies. The city of Barcelona maintains a fairly competitive position in terms of rental prices for offices and commercial premises, which favors the attractiveness of Barcelona as a city for doing business. Regarding land for logistics, in Barcelona the yield on logistics land is 6.3%, identical to those seen in Madrid or Milan, and this places it in the middle-to-high price band amongst benchmark European cities, according to CB Richard Ellis. The improving economic situation and growing attractiveness of the city in global markets has meant that the rental prices of housing in Barcelona have risen, but these remain below the values found in the main European cities of reference. As regards the costs of living, Barcelona fell in the ranking of the cost of living index in relation to the reference city (New York), according to Mercer Human Resource Consulting. On the other hand, the city has risen two positions in the European ranking, going from 16th in 2015 to 14th in 2017, but it is still located in the mid range of the main cities in the euro zone.

For the seventh consecutive year, the 2017 Report of the Barcelona Observatory has published a special report on the ***Business Climate in the Metropolitan Area of Barcelona (AMB)***, which analyzes the business trends seen in 2016, business performance in the first three quarters of 2017 and the outlook for the fourth quarter. This analysis shows a consolidation of economic recovery until the third quarter of 2017. According to the results of the *Business Climate Survey* in the AMB, business performance in the AMB (carried out at the end of September) continued to be positive for the first three quarters of 2017 and even showed a slight increase in growth rates compared with to the previous year. However, in the fourth quarter, the Catalan economy began to show signs of slowdown, mainly due to a weakness in domestic demand and an increase in uncertainty. However, business executives expect that business performance in the fourth quarter of 2017 is positive across all sectors and this is slightly better than predictions seen the previous year, except in the hotel trade.

Summary of results

	Global competitiveness 2017	Best reputation 2017	Foreign investment projects 2013-2017	Rate of entrepreneurial activity[1,3] 2016	Business outlook, exports[1,3] 2018	Organization of international congresses 2016	Safe cities 2017	Cities of sports 2016
1	London	Sydney	London	Brazil	Portugal	Berlin	Tokyo	London
2	New York	Copenhagen	Shanghai	Canada	Romania	Paris	Singapore	Rio de Janeiro
3	Tokyo	Vienna	Hong Kong	Estonia	Austria	**Barcelona**	Osaka	Lausanne
4	Paris	Stockholm	New York	Argentina	Spain	Vienna	Toronto	**Barcelona**
5	Singapore	Vancouver	Paris	United States	Cyprus	London	Melbourne	Paris
6	Seoul	London	São Paulo	Netherlands	Malta	Singapore	Amsterdam	Los Angeles
7	Amsterdam	Melbourne	Sydney	Ireland	Bulgaria	Madrid	Sydney	Sydney
8	Berlin	**Barcelona**	**Barcelona**	Poland	Estonia	Amsterdam	Stockholm	Tokyo
9	Hong Kong	Mian	Dublin	China	Turkey	Lisbon	Hong Kong	Edmonton
10	Sydney	Toronto	Beijing	Slovakia	Slovakia	Seoul	Zurich	New York
11	Los Angeles	Amsterdam		United Kingdom	Croatia		Frankfurt	Melbourne
12	Frankfurt	Tokyo		Switzerland	Finland		Madrid	Beijing
13	Beijing	Rome		Portugal	Luxembourg		**Barcelona**	Copenhagen
14	...	Montreal		...	...		Seoul	Doha
15	**24 Barcelona**	Edinburgh		**Barcelona**	**Barcelona**		San Francisco	Berlin

[1] The ranking refers to a selected sample [2] The ranking refers to regions or provinces [3] The ranking refers to countries [4] Ranking runs from low to high values

Risk of poverty or social exclusion[1,2,4]	Emissions of CO_2 equivalent per capita[1,4]	Sustainable urban mobility	Connected cities	Employment rate[1,2]	Part-time employment rate[1,2]	Unemployment rate[1,2,4]	Workers with tertiary education[1,2]
2016	**2017**	**2017**	**2016**	**2016**	**2016**	**2016**	**2016**
Prague	Addis Abeba	Hong Kong	Stockholm	Munich	Amsterdam	Prague	London
Helsinki	Recife	Zurich	London	Stockholm	Rotterdam	Munich	Oslo
Bratislava	Lima	Paris	Singapore	Stuttgart	Vienna	Stuttgart	Helsinki
Stockholm	Stockholm	Seoul	Paris	Amsterdam	Frankfurt	Budapest	Bilbao
Oslo	Moscow	Prague	Copenhagen	Copenhagen	Edinburgh	Frankfurt	Brussels
Ljubljana	**Barcelona**	Vienna	Helsinki	Oslo	Stuttgart	Hamburg	Edinburgh
Amsterdam	Paris	London	New York	Prague	Berlin	Oslo	Stockholm
Barcelona	Quito	Singapore	Oslo	Frankfurt	Copenhagen	Edinburgh	Paris
Copenhagen	Rio de Janeiro	Stockholm	Tokyo	Helsinki	Munich	Amsterdam	Madrid
Warsaw	Madrid	Frankfurt	Seoul	London	Hamburg	Warsaw	Copenhagen
Milan	Istanbul	Amsterdam	Taipei	Rotterdam	Manchester	London	Glasgow
Bern	Mexico City	Copenhagen	Los Angeles	Edinburgh	Montpellier	Manchester	Dublin
Madrid	Vancouver	Tokyo	**Barcelona**	Berlin	London	Stockholm	Vienna
Budapest	Buenos Aires	---	Hong Kong	...	---	...	...
Dublin	Taipei	**21 Barcelona**	Berlin	**Barcelona**	**Barcelona**	**Barcelona**	**Barcelona**

[1] The ranking refers to a selected sample [2] The ranking refers to regions or provinces [3] The ranking refers to countries [4] Ranking runs from low to high values

	Business schools 2017	Population employed in high and medium-high technology manufacturing[2] 2016	People working in science and technology[2] 2016	Scientific production 2016	Innovative cities 2017	Digital cities 2016	Airport passengers 2016	International tourists 2016
1	Fontainebleau Insead	Stuttgart	Paris	Beijing	London	London	London Heathrow (LHR)	Hong Kong
2	Cambridge University of Cambridge: Judge	Milan	London	London	New York	Stockholm	Paris-Roissy (CDG)	Bangkok
3	London London Business School	Munich	Madrid	Shanghai	Tokyo	Amsterdam	Amsterdam (AMS)	London
4	Madrid IE Business School	**Barcelona**	Istanbul	New York	San Francisco – San Jose	Helsinki	Frankfurt (FRA)	Singapore
5	**Barcelona Iese Business School**	Karlsruhe	**Barcelona**	Boston	Boston	Paris	Istanbul (IST)	Macau
6	**Barcelona Esade Business School**	Istanbul	Lyon	Seoul	Los Angeles	Berlin	Madrid (MAD)	Dubai
7	Paris HEC Paris	Turin	Milan	Paris	Singapore	Copenhagen	**Barcelona (BCN)**	Paris
8	Lausanne IMD	Bologna	Warsaw	Tokyo	Toronto	Dublin	London-Gatwick (LGW)	New York
9	Milan SDA Bocconi	Düsseldorf	Munich	Madrid	Paris	**Barcelona**	Munich (MUC)	Shenzhen
10	Manchester Alliance Manchester Business School	Paris	Sevilla	Moscow	Vienna	Vienna	Rome-Fiumicino (FCO)	Kuala Lumpur
11	Rotterdam Rotterdam School of Management	Frankfurt	Berlin	Cambridge (USA)	Seoul	Munich	Moscow Xeremetievo (SVO)	Phuket
12	Oxford University of Oxford: Saïd	Cologne	Stuttgart	Chicago	Amsterdam	Cambridge	Paris-Orly (ORY)	Rome
13	London City University Cass	Lyon	Marseille	Baltimore	**Barcelona**	Bristol	Istanbul (SAW)	Tokyo
14	Lancaster Lancaster University Management School	Budapest	Cologne	Toronto	Sydney	Madrid	Copenhagen (CPH)	...
15	Coventry Warwick Business School	Nantes	Düsseldorf	**Barcelona**	Munich	Oxford	Moscow Domodedovo (DME)	**23 Barcelona**

[1] The ranking refers to a selected sample [2] The ranking refers to regions or provinces [3] The ranking refers to countries [4] Ranking runs from low to high values

Cruise passengers in Europe 2016	Cost of living 2017	Corporate Tax[1,3] 2017	Office rental prices 2016	Retail premises rental prices 2017	Rental price for prime logistics land 2017	Rental price of housing 2017	Salary levels 2015
Barcelona	Luanda	United States	City of London	New York Upper 5th Avenue	Hong Kong	London	Zurich
Civitavecchia	Hong Kong	Argentina	Paris	Hong Kong Causeway Bay	Tokyo	Zurich	Geneva
Balearic islands	Tokyo	Belgium	Geneva	London New Bond Street	London	Zug	Luxembourg
Venice	Zurich	France	Zurich	Milan Via Montenapoleone	Singapore	Genoa	New York
Marseille	Singapore	Japan	Moscow	Paris Avenue des Champs-Élysées	Shanghai	Dublin	Miami
Naples	Seoul	Australia	Stockholm	Tokyo The Ginza	Stockholm	Reykjavík	Copenhagen
The Piraeus	Geneva	India	Dublin	Sydney Pitt Street Mall	Sydney	Amsterdam	Sydney
Genoa	Shanghai	Germany	Luxembourg	Seoul Myeongdong	Shenzhen	Luxembourg	Oslo
Savona	New York	Greece	Milan	Zurich Bahnhofstrasse	Oakland	Oslo	Los Angeles
Ports of Tenerife	Bern	South Africa	Istanbul	Vienna Kohlmarkt	Los Angeles	Stockholm	Chicago
Dubrovnik/Korcula	Beijing	Luxembourg	Frankfurt	Beijing Wangfujing	Auckland	Copenhagen	Montreal
Livorno	Shenzhen	Canada	Oslo	Munich Kaufinger/Neuhauser	Brisbane	Cambridge	Stockholm
Corfu	Moscow	Austria	Helsinki	Dublin Grafton Street	Midlands	Oxford	London
Valletta	...	**Barcelona**	...	**Barcelona Portal de l'Àngel**	---	---	...
Ports of the French Riviera	**121 Barcelona**	Netherlands	**30 Barcelona**	Moscow Stoleshnikov	**18 Barcelona**	**37 Barcelona**	**30 Barcelona**

[1] The ranking refers to a selected sample [2] The ranking refers to regions or provinces [3] The ranking refers to countries [4] Ranking runs from low to high values

Positioning of Barcelona in international cities rankings

Global competitiveness. 2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	24
London	New York	Tokyo	Paris	Singapore	Seoul	Amsterdam	Berlin	Hong Kong	Sydney	Los Angeles	Frankfurt	Beijing	...	**Barcelona**

Best reputation. 2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sydney	Copenhagen	Vienna	Stockholm	Vancouver	London	Melbourne	**Barcelona**	Milan	Toronto	Amsterdam	Tokyo	Rome	Montreal	Edinburgh

Foreign investment projects. 2013-2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
London	Shanghai	Hong Kong	New York	Paris	São Paulo	Sydney	**Barcelona**	Dublin	Beijing					

Safe cities. 2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Tokyo	Singapore	Osaka	Toronto	Melbourne	Amsterdam	Sydney	Stockholm	Hong Kong	Zurich	Frankfurt	Madrid	**Barcelona**	Seoul	San Francisco

Sustainable urban mobility. 2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	21
Hong Kong	Zurich	Paris	Seoul	Prague	Vienna	London	Singapore	Stockholm	Frankfurt	Amsterdam	Copenhagen	Tokyo	...	**Barcelona**

European Business Schools. 2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Fontainebleau Insead	Cambridge University of Cambridge: Judge	London London Business School	Madrid IE Business School	**Barcelona** IESE Business School	**Barcelona** ESADE Business School	Paris HEC París	Lausanne IMD	Milan SDA Bocconi	Manchester Alliance Manchester Business School	Rotterdam Rotterdam School of Management	Oxford University of Oxford: Saïd	London City University Cass	Lancaster Lancaster University	Coventry Warwick Business School

Scientific Production. 2016

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Beijing	London	Shangai	New York	Boston	Seoul	Paris	Tokyo	Madrid	Moscow	Cambridge (USA)	Chicago	Baltimore	Toronto	**Barcelona**

Digital cities in Europe. 2016

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
London	Stockholm	Amsterdam	Helsinki	Paris	Berlin	Copenhagen	Dublin	**Barcelona**	Vienna	Munich	Cambridge	Bristol	Madrid	Oxford

Innovative cities. 2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
London	New York	Tokyo	San Francisco-San Jose	Boston	Los Angeles	Singapore	Toronto	Paris	Vienna	Seoul	Amsterdam	**Barcelona**	Sydney	Munich

European airports by passenger volume. 2016

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
London Heathrow (LHR)	Paris Roissy (CDG)	Amsterdam (AMS)	Frankfurt (FRA)	Istanbul (IST)	Madrid (MAD)	**Barcelona** (BCN)	London Gatwick (LGW)	Munich (MUC)	Rome Fiumicino (FCO)	Moscow Xeremetievo (SVO)	Paris Orly (ORY)	Istanbul (SAW)	Copenhagen (CPH)	Moscow Domodedovo (DME)

Cost of living . 2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	121
Luanda	Hong Kong	Tokyo	Zurich	Singapore	Seoul	Geneva	Shangai	New York	Bern	Beijing	Shenzhen	Moscow	...	**Barcelona**

Retail premises rental prices. 2017

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
New York Upper 5th Avenue	Hong Kong Causeway Bay	London New Bond Street	Milan Via Montenapoleone	Paris Avenue des Champs-Élysées	Tokyo The Ginza	Sydney Pitt Street Mail	Seoul Myeongdong	Zurich Bahnhofstrasse	Vienna Kohlmarkt	Beijing Wangfujing	Munich Kaufinger/ Neuhauser	Dublin Grafton Street	**Barcelona** Portal de l'Àngel	Moscow Stoleshnikov

SPECIAL REPORT

Business Climate in the Metropolitan Area of Barcelona

Situation in 2016 and outlook for 2017

OBSERVATORI BARCELONA

Executive summary

Best results since 2009

2016 registered the best results on the *Business Climate Survey* in the Metropolitan Area of Barcelona (AMB) since 2009 (beginning of the series), in line with a general improvement in the economic situation:

- Business performance and employment continue to be positive for the second consecutive year and with more intensity than the previous year
- The fall in prices is still moderate
- The fall in prices is becoming more moderate
- Investment follows a positive upward trend for the third consecutive year

Strong performance across the main business sectors

- Business performance is progressing positively across all the main sectors on average for the first time since 2009
- Employment and investment is almost positive across all sectors, and prices are steadying in all sectors
- The construction business stands out as the sector that has improved most on all the variables analysed (Except for investment, which has stayed practically stable)
- The hospitality sector shows the most positive results in terms of business performance, prices and investment (together with the industrial sector)

Factors that limit business performance

Regarding the factors that limit the progress of businesses in 2016:

- Weak demand continues being the factor most mentioned by companies, but this factor is less relevant for the fourth consecutive year
- On the contrary, the increase in competition, the second most mentioned factor, increases for the third consecutive year, and practically equals weak demand
- The third factor, difficulties finding financing, loses importance and is nearly the same as the fourth factor, the lack of adequate labour force, which gains in importance

Strong outlook

- In 2017, business performance in the AMB is positive for the first three quarters of the year, improving slightly on the growth seen in 2016
- The prospects for business performance in the fourth quarter of 2017 are positive for all sectors and this is an improvement with respect to the previous year, except for the accommodation and food service industry

Situation and trends in the business climate in 2016

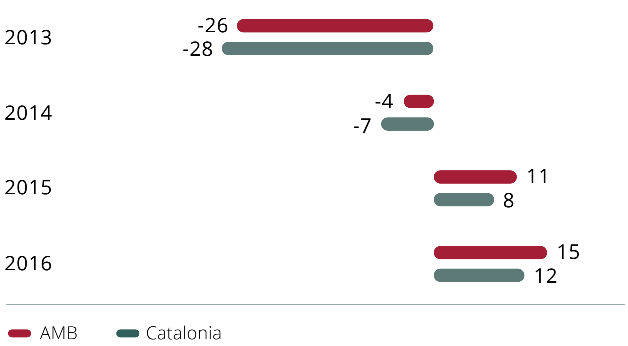
Business performance in the Metropolitan Area of Barcelona registers best results since 2009

The positive results registered in 2016 in terms of **business performance** intensified compared to the year previous, achieving the best results since 2009 in Catalonia and the Metropolitan Area of Barcelona, according to the *Survey on Business Climate* conducted by the Chamber of Commerce of Barcelona and Idescat. For the second year running, business performance recorded a positive balance in the AMB (Metropolitan Area of Barcelona) and in Catalonia. These results show how business performance improvements that started in 2014 have consolidated in line with Catalonia's GDP growth in 2016, which Idescat estimates at 3.5%.This growth has been due to a recovery in domestic demand, especially household consumption, as well as strong export results.

Thus, even though the percentage of executives that consider business performance has been favourable the overall balance remained virtually unchanged (28% in 2016 and 27% in 2015), the percentage of executives indicating performance was unfavourable has decreased, from 16% in 2015 to 13% in 2016. As a result, there was an overall balance of 15% in 2016, 4 percentage points higher than the previous year. Quarterly, the balances have remained fairly stable over the first three quarters (about 14%), while in the last quarter there has been an improvement that brought about the most positive overall balance in the entire data series (19%).

Business performance across the whole economy[1]. Comparison with Catalonia

Balance[2], 1n %

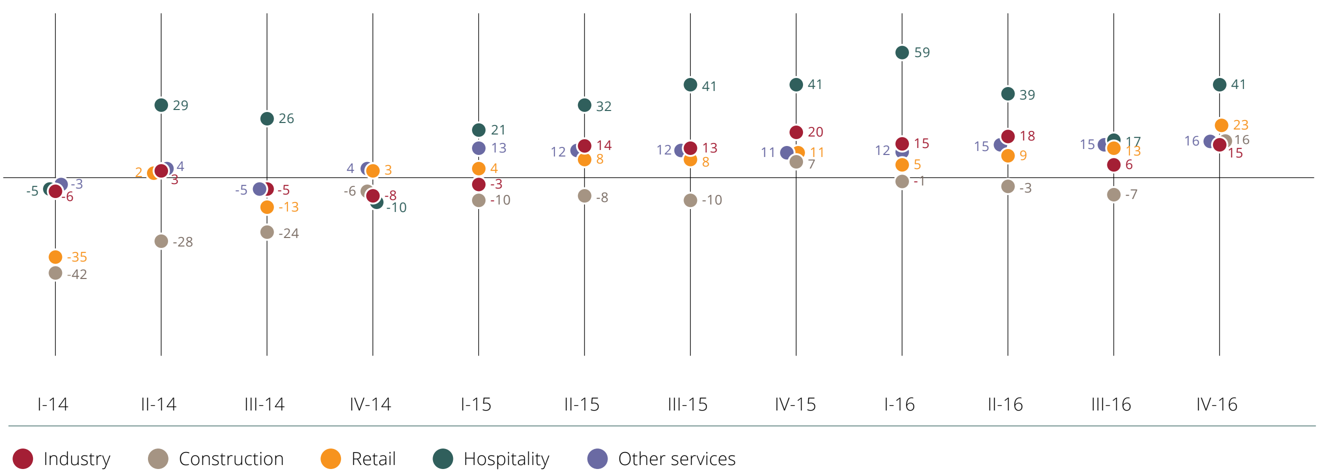


Source: Chamber of Commerce of Barcelona and Idescat

1. The results for the whole economy are the aggregation of results for industry, construction, retail, accommodation and food services, and other services. Since 2013, data for Spain has not been presented in the survey because this data is not available. INE only publishes results for the Harmonized Business Climate Indicator for all sectors in Spain.
2. The overall balance is the difference between the percentage of businesses indicating that the variable being analysed recorded a positive performance and the percentage that noted that performance was negative. It should be mentioned that in the case of the accommodation and food services sector the quarterly balances are subject to seasonality, and the series are too short to smooths.

Business performance by sectors

Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

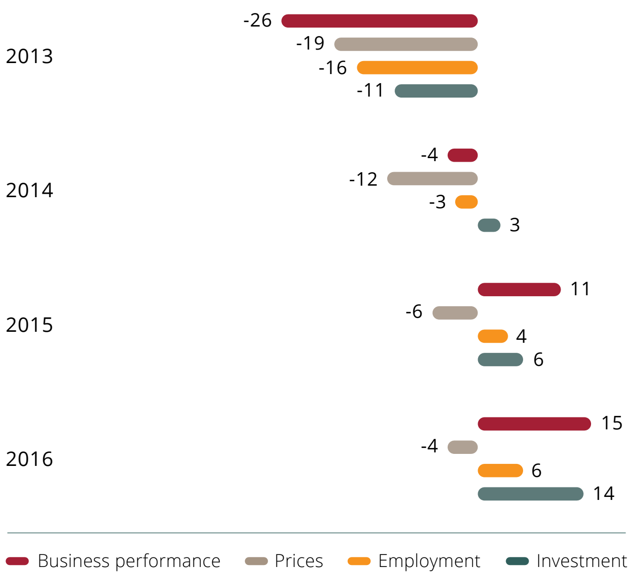
Business performance in Catalonia as a whole also improved in 2016, while maintaining the positive differential of 3 percentage points in favour of the Metropolitan Area of Barcelona (AMB) (12% and 15%, respectively).

This improvement in business performance has been widespread across all sectors according to the yearly averages and, in addition, they are positive in all sectors for the first time since 2009. The fourth quarter stands out because we find the most positive balance of the year in the construction, retail and other services sectors.

Falls in prices in the AMB continue to soften in 2016 for the fourth consecutive year and are nearing stabilization. Thus, the balance between positive responses (increase in prices) and negative (decrease in prices) is still negative, but less so than in the four previous years. However, the survey's quarterly data show that the negative balance in terms of prices was increasing as the year progressed. On the other hand, the results by sectors point to a moderation in the fall in prices overall, although the hospitality sector is the only one that registered an annual positive balance (price increases) for the second consecutive year.

Business performance trends for the economy in the AMB

Balance, in %

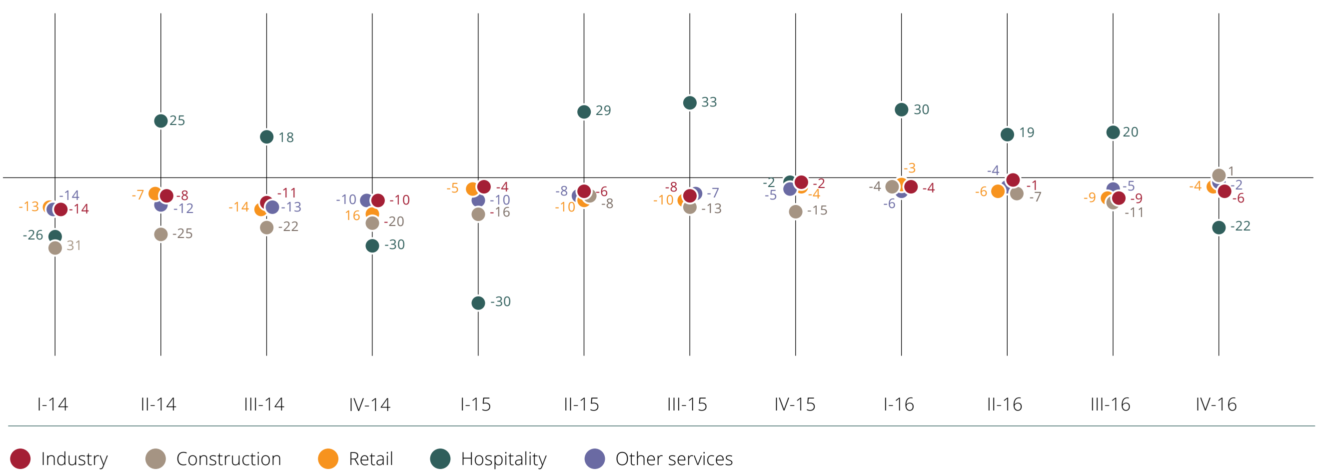


Source: Chamber of Commerce of Barcelona and Idescat

Employment in the AMB recorded a strong performance in 2016, with a balance that was slightly more positive than the previous year. Employment maintains the percentage of positive answers (growth of the number of people employed), standing at 18%; while reducing the percentage of responses that were negative (decrease in the number of people employed), from 13% in 2015 to 11% in 2016. Quarterly results show that the improvement in the employment trend has been seen throughout the year, as each had positive balances (around 6%). These strong results confirm a change in the overall trend seen in the labour market as from 2015, as indicated by EPA figures for the number of paid up workers with the Social Security system in Catalonia and the province of Barcelona.

Trends in prices by sector

Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Trends in employment by sector

Balance, in %

Source: Chamber of Commerce of Barcelona and Idescat

However, the employment trend by sectors has been different. The other services sector has seen the most substantial improvements and, in addition, it has become the sector with the most positive annual average balance (9%). Industry and commerce have stayed stable compared to the previous year, with a balance of 5% in 2016 in both cases. Construction registers a negative balance (-1%), but this is the least negative balance since the data series began in 2009. Finally, the hospitality sector has registered a negative balance for employment (-4%), which has not occurred since 2012, and it also registered the worse outcome at a sectoral level.

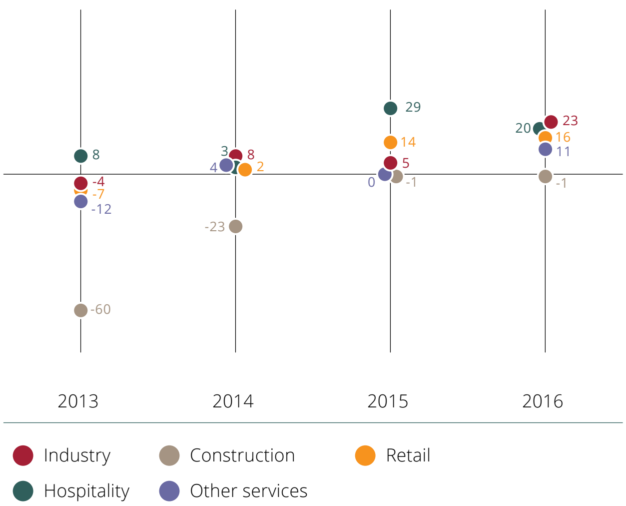
Investment is the variable that improved most with respect to the previous year, registering a positive balance for the third consecutive year. This general improvement is due to growth in positive answers (increase in investment), which goes from 22% in 2015 to 26% in 2016, while negative answers decreased (decrease in investment), which went from 16% in 2015 to 11% in 2016. We can relate this a rise in gross fixed capital formation in Catalonia, which saw an annual increase of 5.2% in 2016, according to Idescat data.

All sectors have seen an improvement in investment in 2016 compared to the previous year, with the exception of the hospitality industry, which worsened, and construction, which was nearly a neutral balance (-1%) for the second consecutive year. Thus, the industrial sector experienced the most positive balance in terms of investment (23%) per sector, followed by the hotel and hospitality industry (20%).

As mentioned, business performance is slightly more positive in the AMB than in Catalonia. A very similar trend and results were seen in both these areas in terms of prices, employment and investment.

Trends in investment by sector

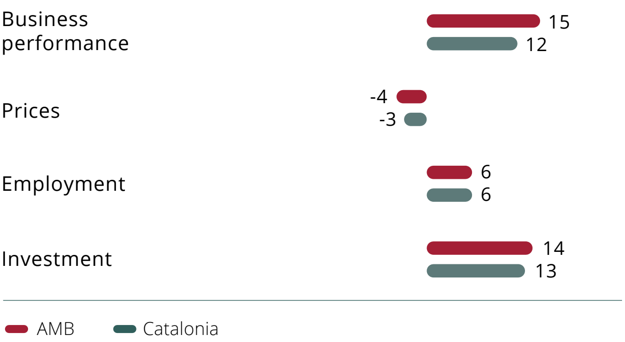
Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Business climate across the whole economy. 2016
Comparison with Catalonia

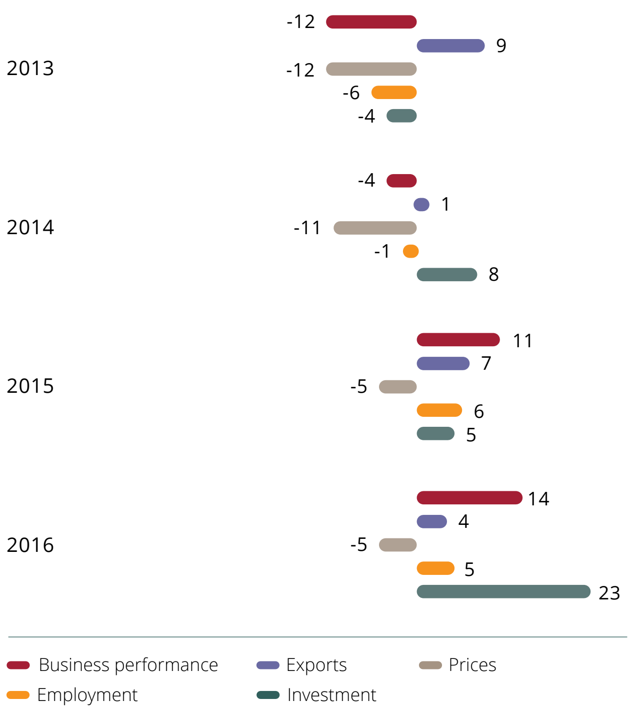
Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Trends in the business climate in the industrial sector in the AMB

Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Sectoral results

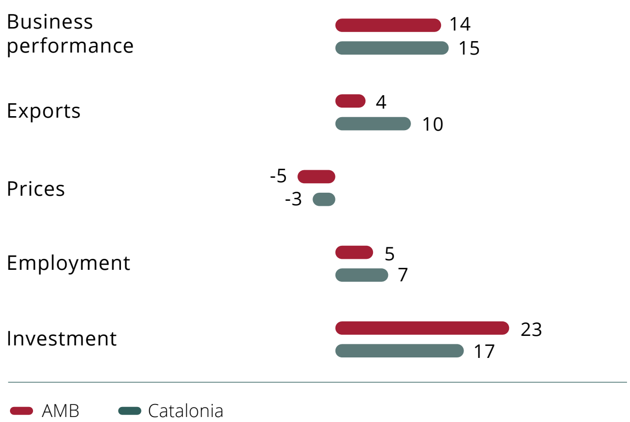
Improvements to business performance in the AMB in 2016 were generalised across all sectors of the AMB analysed in the *Survey on Business Climate*, but, undoubtedly, the hospitality and accommodation industry is the sector that continues to present the most positive results. However, importantly there was a notable improvement experienced by the construction sector, which showed a positive balance for the whole of the year for the first time since the data series began. Likewise, the rest of sectors (industry, commerce and other services) also saw noticeable improvement.

The **industrial sector** in the AMB showed strong results that were positive on all variables analysed, with the exception of prices. Business performance improved for executives in this sector with the most positive balance since the data series began (14%). Industrial production data published by INE also show the industrial sector's positive dynamics in 2016: the IPI index for Catalan industry has registered growth of 3.3%, to reach 2.6% in 2015.

This improvement in business performance in the industrial sector has been boosted by strong results in terms of **investment**, which shows the most positive balance in recent years and the best of all sectors analysed (23%). Indeed, the percentage of executives that indicated growth in investment increased from 25% in 2015 to 33%. At the same time, the percentage that said investment had fallen decreased from 20% in 2015 to 10% in 2016.

Business climate in the industrial sector. 2016
Comparison with Catalonia

Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

The **prices of products and services** have followed a similar pattern to that seen the previous year. So, in 2016, the percentage of executives that indicated growth in terms of prices and those indicating a decrease remained at 5% and 10%, respectively, which led to a negative overall balance of 5 percentage points in both years.

Employment in the industrial sector achieved better results that were positive for the second consecutive year and very similar to those seen last year. However, quarterly balances were less intense and resulted in slightly negative results for the fourth quarter (-1%).

Exports in the industrial sector lost some dynamism compared to a year ago due to the results seen in the third quarter, which registered a negative balance (-4%), something that had not happened since the same quarter in 2014. This loss of dynamism is shown by data from the Department of Customs and Special Taxes of the Spanish Tax Administration Agency, which show a growth in exports of goods from the province of Barcelona of 2.2% in 2016, less than half than that achieved the previous year (from 6.3%).

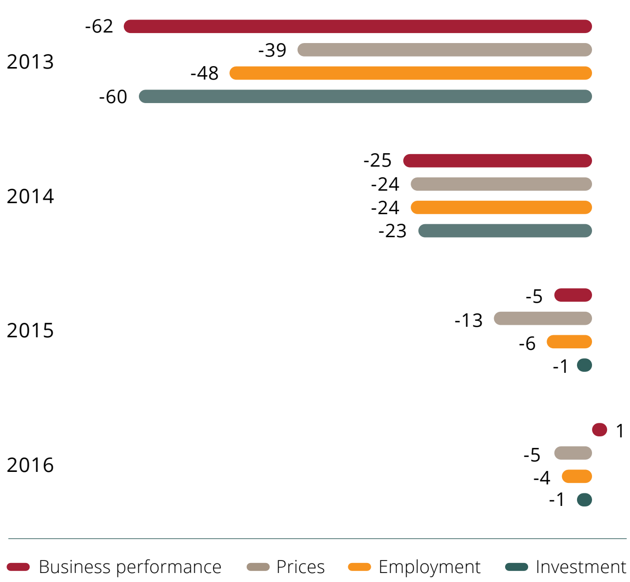
The results of the *Business Climate Survey* show that the overall balance for exports in the industrial sector in the AMB in 2016 were less positive than those for Catalonia. Likewise, business performance and employment in the industrial sector have been slightly more positive in Catalonia than in the AMB. On the other hand, investment has been clearly more positive in the AMB. Lastly, prices have followed a similar trend in both areas.

The **construction** sector continues to register balances that are less favourable, but this sector also stands out for registering the most marked improvements across all the variables analysed (because its balances fell most in percentage points). This meant that employment, investment and prices practically stabilized, and there was a balance that was slightly positive for business performance throughout the year.

This has been possible thanks to a consolidation of economic recovery for the construction sector during the year 2016, after a harsh adjustment process that began in the middle of 2008. In fact, this sector registered a positive rate of GVA in 2016 for the second consecutive year. This is reflected in residential housing prices that began to grow, mortgage loans have also begun to rise and the sale of houses has increased. On the other hand, public works tenders in Catalonia continued to register a decline in 2016, but to a lesser extent than in the previous year.

Trends in the business climate in the construction sector in the AMB

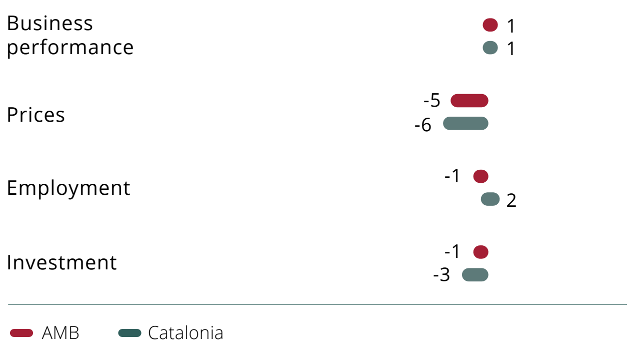
Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Business climate in the construction sector. 2016 Comparison with Catalonia

Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Regarding the **business performance**, the percentage of executives indicating a favourable result (21%) was above the percentage that said this was unfavourable (20%), resulting in a slightly positive balance, which hadn't happened since the beginning of the data series. However, the balance for the construction sector was again the least positive of all sectors analysed. Also, it should be noted that this strong performance came about because the last quarter of 2016 registered the best balance since of 2009 (16%), with the percentage of executives that consider performance to be favourable standing at twice the amount saying performance was unfavourable (32% and 16%, respectively).

The fall in **prices** continued to level off in 2016 for the fourth consecutive year, nearly reaching stabilization. So, though the percentage of executives that points to an increase in construction prices has increased slightly from 2% in 2015 to 5% in 2016, the percentage of business people that say prices have fallen diminishes in a higher proportion, from 14% in 2015 to 10% in 2016.

In terms of **employment**, there is also a clear improvement regarding 2016, the second highest of all sectors, and the balance has practically stabilised (1%). Quarterly, we see an improvement on the second semester, where positive balances are recorded compared to the first half of the year, when balances were negative (around -9%). Thus, during the whole of 2016, the percentage of executives indicating that employment will diminish was 20% (compared to 22% by 2015), and those forecasting that it will increase was 19% (16% the previous year).

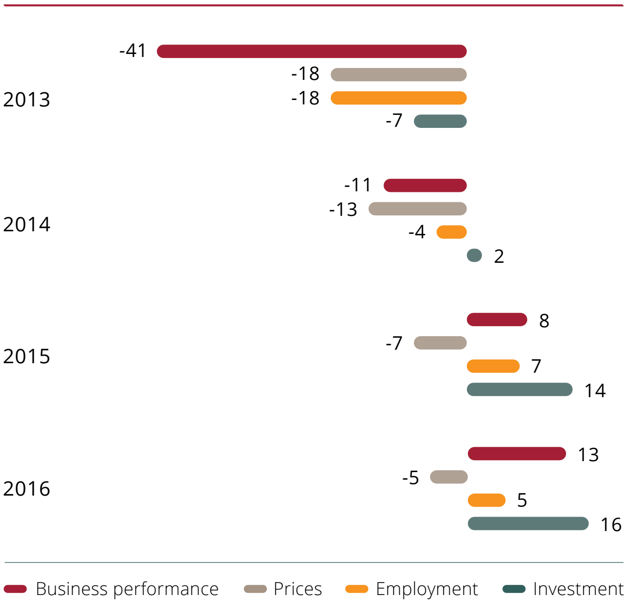
Finally, **investment** was the only variable that did not improve compared to 2015 and it maintains its negative balance of 1 per cent. 13% of executives claimed this had fallen, and 12% indicated it had increased (compared to 16% and 17% in 2015, respectively).

The results of the *Business Climate Survey* in the construction sector shows an overall negative balance that is very similar in the AMB and the whole of Catalonia in 2016, with the exception of employment, where Catalonia had a slightly positive balance.

The **commerce and retail** sector recorded positive results in 2016, however, while the balances for business performance and investment were more positive than the previous year, those for employment and prices were slightly less positive. These good results have been partly thanks to a recovery in domestic sales throughout 2016. Thus, the sales index for the retail trade in Catalonia registered a growth of 2.9% at constant prices, but lower than the previous year (3.2%).

Trends in the business climate in the retail and commerce sector in the AMB

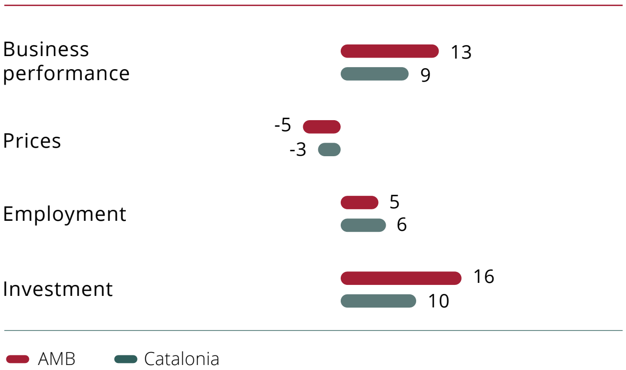
Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Business climate in the retail and commerce sector. 2016.
Comparison with Catalonia

Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Indeed, the retail and commercial sector in the AMB registered a positive balance in terms of **business performance** in 2016 for the second consecutive year since the start of the data series in 2009. This strong result was due to the percentage of executives indicating that business had improved (from 26% in 2015 to 30% in 2016), while the percentage of executives that indicate that business performance had been unfavourable virtually remained the same (from 18% in 2015 to 17% in 2016). Throughout the year there had been a positive trend with progressive improvements, and in the fourth quarter the balance was the widest since the start of the data series (23%).

The **fall in prices** has slowed down progressively in the last four years, from a balance of -18% in 2013 to -5% in 2016. This is due to a decrease in the percentage of executives that indicated a decline, up to 12% (26% in 2013), since the percentage of business people indicating that prices had risen remained almost the same both years (6% and 7%, respectively).

Regarding **employment**, the balance is positive for the second consecutive year, but losing some intensity with respect to 2015. This was partly due to the negative response experienced during the first quarter of the year, since the rest of the year the balance was positive. On the one hand, the percentage of positive answers (increase of employment) has doubled between the first and the fourth quarter (from 11% to 22%) and, on the other, the percentage of negative answers (reduction in employment) was practically the same in both quarters (15% the first, and 14% the fourth).

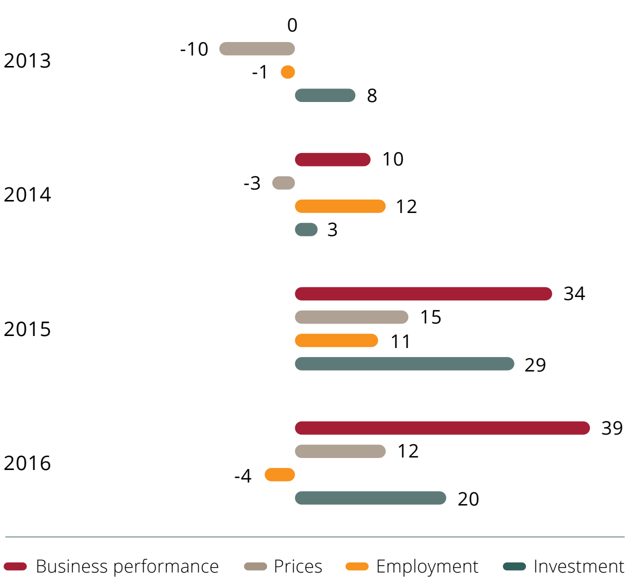
In terms of **investment**, there was also an improvement in 2016 which brought about a slightly more positive balance than the previous year. Therefore, investment continues to follow the upward trend started in 2014. Thus, the percentage of executives indicating an increase in investment exceeded those pointing to a decrease, 26% and 10%, respectively (compared to 25% and 11% in 2015, respectively).

The magnitude of the balances seen for the variables analysed in *The Business Climate Survey* for retail and commerce were more positive in the AMB for business performance and investment, while for employment and prices the balances are very similar in both areas.

The **hotel and food** services industry is the sector that has registered the best results in terms of business performance in the *Business Climate Survey* in 2016. These results

Trends in the business climate in the hospitality sector in the AMB

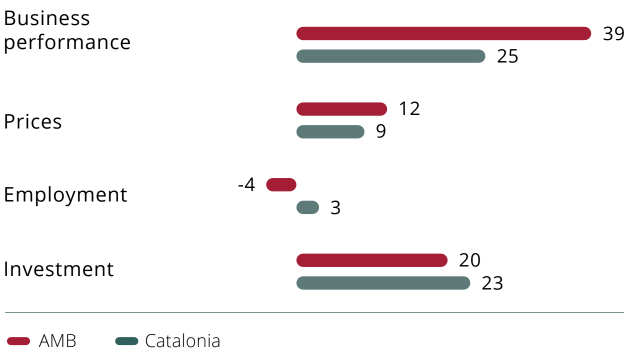
Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Business climate in the hospitality sector. 2016 Comparison with Catalonia

Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

are in line with the strong performance seen by tourism in Catalonia during the last few years, thanks mainly to an increase in foreign tourism and the recovery of domestic tourism. The number of tourists from abroad in Catalonia has increased 4% and the spending by this tourism increased 3.7% in 2016. Also, tourist hotel overnight stays by foreigners in Catalonia have increased by 8.4%, while those coming from Spanish tourism grew by 7.3% in 2016.

Indeed, **business performance** by the hotel industry was not just better than the other sectors analysed, but the width of the balance also increased compared to the previous year (39% in 2016 and 34% in 2015). Thus, for the whole of 2016, 47% of business executives indicated business performance was favourable, almost six times more than the 8% that qualified it as unfavourable, while in 2015 these percentages were 48% and 14%, respectively.

Prices in the hotel industry are the only ones that recorded positive values compared to other sectors analysed (12%). This could be related with an increase in the quality of the hotel supply and also due to higher demand.

Investment in the hotel industry has become more moderate during 2016, going from a balance of 29% in 2015 to 20% in 2016, the second best sector result. The percentage of the business leaders that indicated there had been an increase in investment far exceeded the amount indicating a decrease: 24% and 4%, respectively.

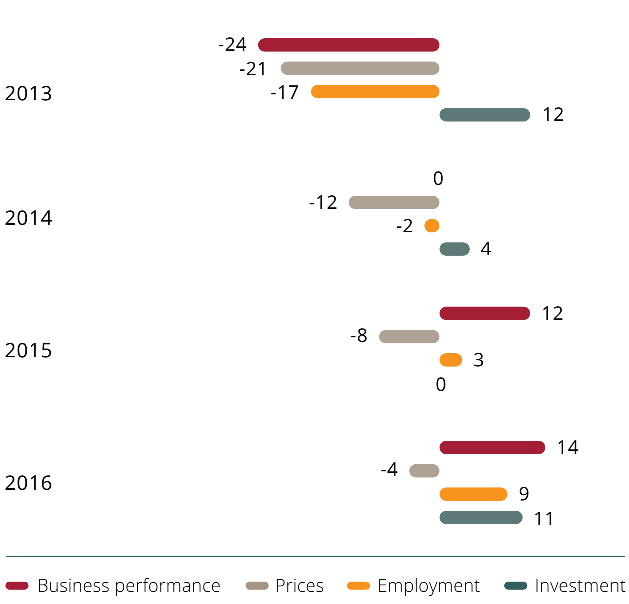
However, the **number of people employed** in the hotel industry is the only indicator that experienced a negative dip, ending up worse than the previous year. This is due to a sharp drop in employment that occurred during the second half of the year and, especially, during the last quarter. In fact, the balance seen in the fourth quarter of 2016 (-34%) is the most negative of all the last quarters since 2009.

According to the *Business Climate Survey*, in 2016 business performance in the hotel industry showed better results in the AMB than in Catalonia. Investment and employment performed better in Catalonia than the AMB.

The **other services** sector has the best data of the last years for the whole set of variables analysed. On the one hand, **business performance**, was the second best sector result, just behind the hospitality sector and equivalent to that of the industrial sector (14%). The balance increased slightly with respect to the previous year, as the percentage of business executives in this sector in the

Trends in the business climate in the other services sector in the AMB

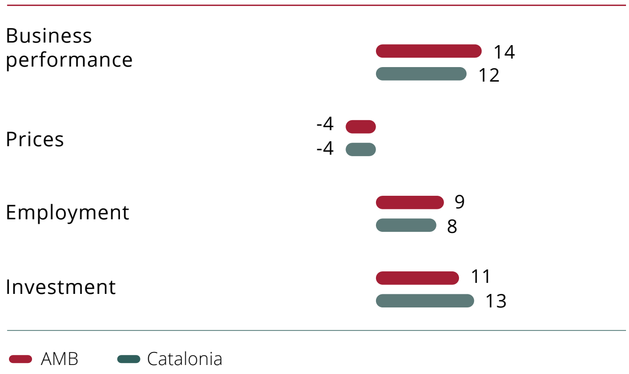
Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

Business climate in the other services sector. 2016 Comparison with Catalonia

Balance, in %



Source: Chamber of Commerce of Barcelona and Idescat

AMB indicating business performance was unfavourable decreased (from 13% in 2015 to 11% in the 2016), while the percentage that signalled it was favourable remained constant at 25%.

The **decline in prices** levelled off to stands at -4% in 2016. With respect to 2015, the percentage of business people pointing to a fall in prices reduced to 8% (11% in 2015). For the fifth consecutive year the percentage of business executives indicating an increase (3%) remained constant. This moderation becomes more evident with the quarterly data: as the year went on the decline in prices fell in line with increases in private consumption.

Employment in the other services sector registered a strong increase during 2016, and obtained the best sector result (9%). Thus, in 2016, the percentage of business executives indicating a decrease in employment fell to 12% (15% by 2015), while an increasing percentage of executives said employment grew, up to 21% (18% by 2015). It should be noted that in terms of quarterly results, there was a positive balance for the first time since the beginning of the crisis.

Investment registered the second most important improvement in 2015, just behind that of the industrial sector. Specifically, there was a balance of 11% compared to a neutral balance (zero balance) recorded the previous year.

The other services sector registered similar results in Catalonia and the AMB. In terms of business performance and employment, the balances obtained were slightly higher in the AMB. Investment showed better results in Catalonia, where it was positive and improved. Prices showed the same results in both areas.

Factors that limited business performance in 2016

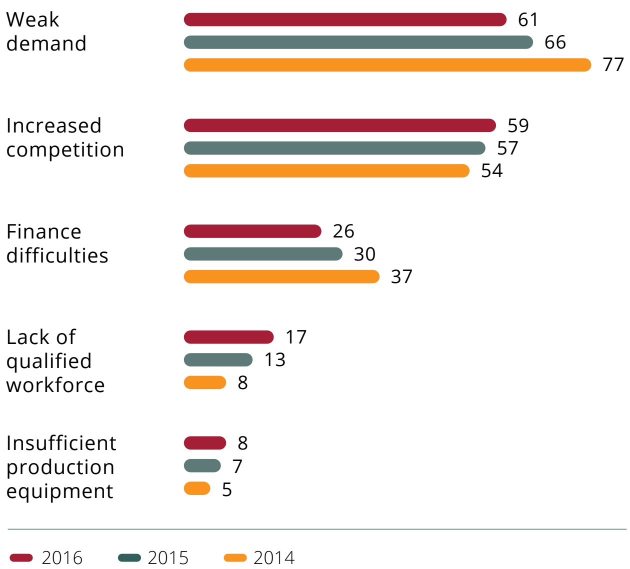
Weak demand is still the factor limiting business performance most, but it is losing relevance

Weak demand continued to be the most mentioned factor by business executives as limiting business performance in 2016, but this lost importance compared to the rest of factors for the fourth consecutive year due to a recovery in private consumption. Increased competition, the second most mentioned factor limiting business performance, gains in relevance and almost equals the first factor.

At the same time, the continuous improvements in conditions in financial markets meant difficulties finding finance became less relevant in terms of limiting factors, after the rises registered during the years of the recession. Even so, it is the third most important limiting factor mentioned, but almost on a par with the fourth limiting factor, the lack of qualified workforce.

Factors that limit business performance across the whole economy. Comparison 2014-2016

In %



Source: Chamber of Commerce of Barcelona and Idescat

Sector results

In 2016, the most important limiting factor effecting business performance in the Metropolitan Area of Barcelona is still **weak demand**, but this factor loses relevance for the fourth consecutive year, mainly due to a recovery of domestic consumption. 61% of the AMB's business people indicated that weak demand limited business performance in 2016, a lower percentage than the 66% recorded in 2015.

This reduced relevance has been widespread in all the sectors analysed in the *Business Climate Survey*. It is no longer the main limiting factor except for the industrial sector and other services sector (along with an increase in competition). Retail and industrial sectors have been most affected by this factor (with 67% and 66% of answers). On the other hand, the construction sector was the least worried about this factor, although it had occupied the top place in recent years (with 53%).

The second factor most mentioned by the business community in the AMB as limiting business performance was the **increase in competition**, with 59% of answers, a percentage that increases slightly with respect to that registered in 2015 (57%). Now, this relative gain in weighting is mainly in the construction sector, but also in the commerce sector and industrial sectors, while for the hospitality and other services sectors is fell very slightly. Consequently, this factor became the main limiter of business performance for all sectors, except for the industrial sector. The hospitality sector continues to register the highest percentage of business executives that mention it as a limiting factor impeding business progress (77%), while the industrial sector mentioned it least (50%).

The third limiting factor stopping business performance was **financing difficulties**, which was mentioned by 26% of the AMB's business people, a percentage which is lower than the previous two years (30% and 37%, respectively). This relative loss in importance has been due to the economic recovery and improvements to conditions found in financial markets.

Importantly, less difficulties finding financing is a factor common to all sectors, except for the industrial sector, where it remains stable. The hotel industry and construction industry both found financing difficulties to be far less important, while for other sectors it is not so important. However, the construction sector remains the most affected by difficulties finding financing, with 33% of companies pointing to this factor. Afterwards comes the Industrial sector, commerce and other services (26%-27%). Lastly, in the hospitality industry, only 13% of business people mentioned the difficulties of financing as a limiting factor of business performance.

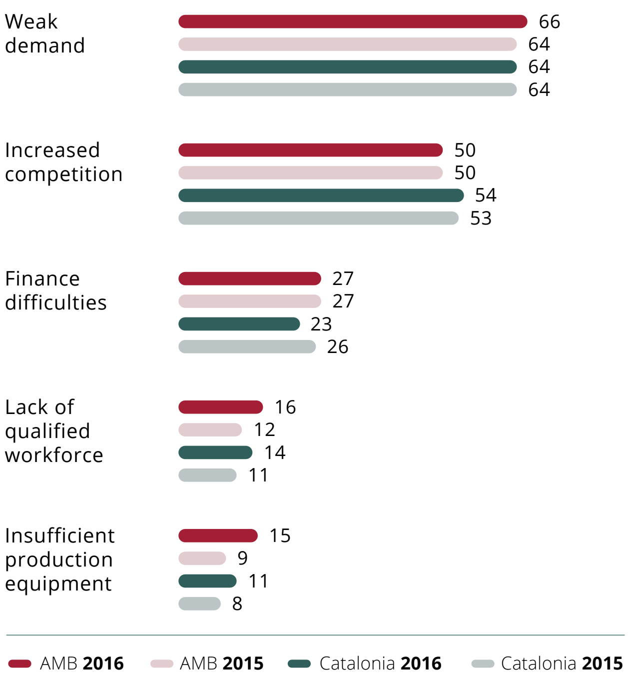
The following limiting factors were far less important: lack of adequate workforce to meet company needs (with 17% of responses) and insufficient production equipment (with 8% of responses). Although these two factors were less important by comparison to the first three, it is worth mentioning the increases they registered in 2016 with respect to the previous year, especially the lack of adequate workforce (from 13% to 17%). The increase in importance of this last factor is found across all sectors, but above all in the hotel industry (passing from 20% in 2015 to 28% in 2016).

Comparing the results of these sectors in the AMB with those of the whole of Catalonia, we can conclude:

- Weak demand limited business performance just as much in the AMB as in the whole of Catalonia in 2016 (61% compared to 62%, respectively) and there were only notable differences in the construction sector, where it is much higher in the AMB than Catalonia (64% and 53%, respectively).
- The percentage of business people who mention the increase in competition as a limiting factor to business performance is also almost the same in the AMB as in Catalonia, 59% and 58%, respectively. However, significant differences are seen in the hospitality and construction sectors, because this factor has more importance in the AMB than in Catalonia (10 percentage points in both cases).
- Financing difficulties are equally limiting in the AMB and Catalonia (26% and 25%, respectively). The most notable difference for all sectors is found in the construction sector (33% in the AMB versus 39% in Catalonia).
- A lack of qualified and adequate workforce is similar in both the AMB and Catalonia. However, in the construction sector it is significantly higher in Catalonia than in the AMB (20% and 8%, respectively).

Factors that limit business performance in the industrial sector

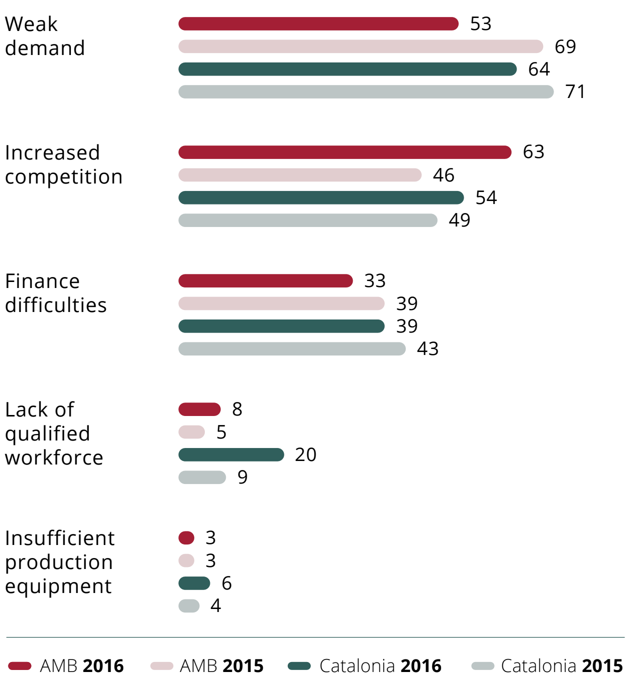
In %



Source: Chamber of Commerce of Barcelona and Idescat

Factors that limit business performance in the construction sector

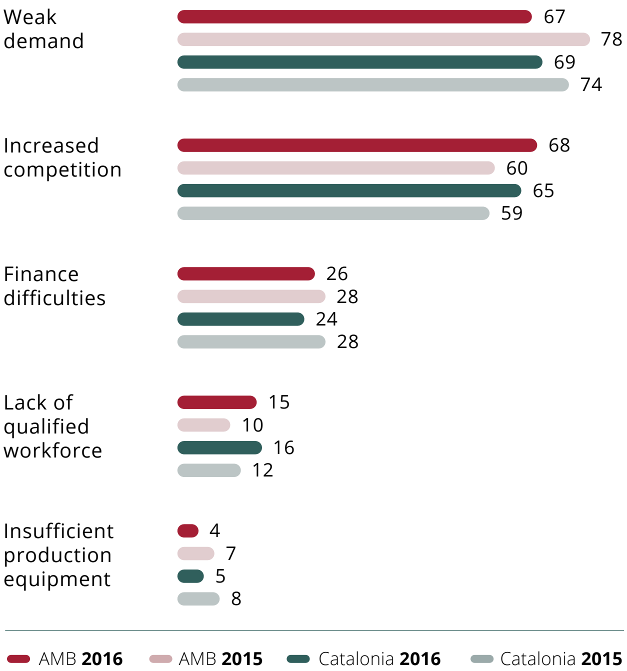
In %



Source: Chamber of Commerce of Barcelona and Idescat

Factors that limit business performance in the retail and commerce sector

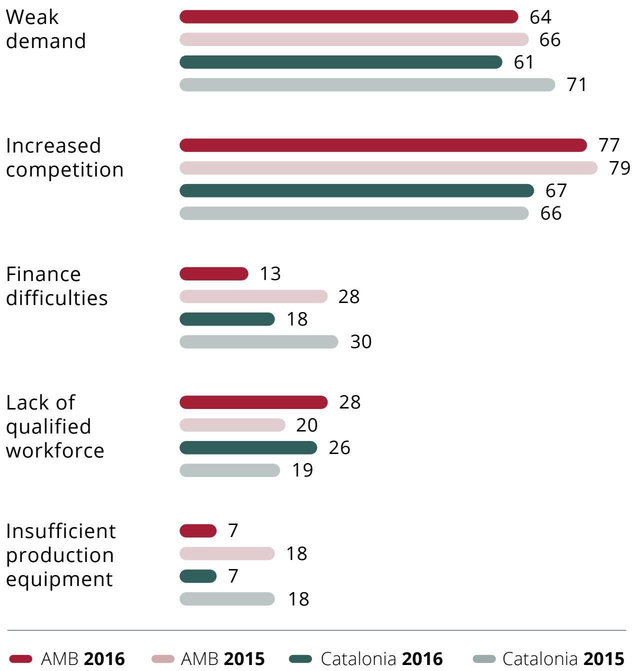
In %



Source: Chamber of Commerce of Barcelona and Idescat

Factors that limit business performance in the hospitality sector

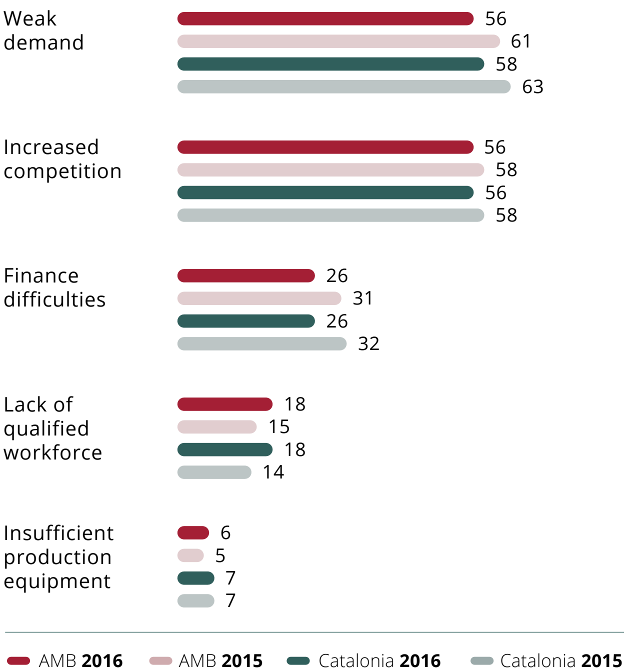
In %



Source: Chamber of Commerce of Barcelona and Idescat

Factors that limit business performance in the other services sector

In %



Source: Chamber of Commerce of Barcelona and Idescat

Situation and outlook for business performance in 2017

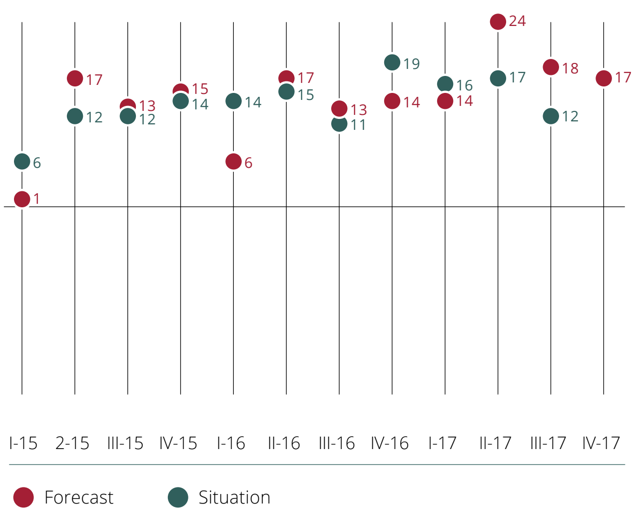
Business performance was positive in the AMB during the first 3 quarters of 2017, improving slightly on the previous year

Until the third quarter of 2017, the economic recovery remained solid in Catalonia, benefiting from the world context (expansive monetary policy in developed countries, lower prices for petrol and the ending of recession in economies like Brazil or Russia). According to the results of the Business Climate Survey, business performance in the AMB continued to be positive for the first three quarters of the year with a slightly improved growth rate with respect to the previous year. Likewise, all sectors experienced a positive balance until the third quarter of 2017, and on average they have achieved levels that are higher than those of 2016, except for the industrial sector.

However, during the 4Q the Catalan economy began to show signs of deceleration, mainly due to weak domestic demand, derived, to a large extent, by the political tension that has affected the economy due to an increase in uncertainty and loss of confidence. This has paralysed investment projects and increased saving-precaution, leading to a slowdown in private consumption. As a result of this environment of uncertainty and a slowdown in the economy, Barcelona Chamber of Commerce expects growth for the Catalan economy to be 3.1% for 2017, four tenths less than in 2016 (3.5%). However, according to the results of this Survey (carried out at the end of September) the outlook of business people is positive for business performance for 4T 2017 for all sectors, which is slightly better than those of a year ago, except for the hospitality industry. Retail and commerce is the sector that has the most positive outlook and the maximum of this sector since 2010.

Business performance across the whole economy[1].

Balance[5], in %



Source: Chamber of Commerce of Barcelona and Idescat

5. The overall balance for the situation that each sector finds itself in is taken as the difference between the percentage of businesses who say business performance has been favourable and the percentage of businesses who say that this was unfavourable. In the case of forecasts, this was the difference between the percentage of businesses who expect business performance will be favourable and the percentage that forecast it will be unfavourable.

Business performance outlook by sector

Balances, in %

Source: Chamber of Commerce of Barcelona and Idescat

Appendix on methodology

Sectors featured in the *Business climate survey*

Industry

01 Food, beverages and tobacco (CCAE-2009: 10 to 12)

02 Textiles, clothing, leather and footwear (CCAE-2009: 13 to 15)

03 Wood and cork, paper and printing industries (CCAE-2009: 16 to 18)

04 Chemical, rubber and other non-metal minerals industries (CCAE-2009: 20 to 23)

05 Metallurgy and manufacturing of metal products (CCAE-2009: 24 and 25)

06 Manufacture of machinery and mechanical equipment, and electrical products, computers, electronic and optical products (CCAE-2009: 26 to 28)

07 Other industries (CCAE-2009: 05 to 09, 19, 29 to 33, 35 to 39)

Construction

Section F of the CCAE-2009 is considered, with divisions:

41 Construction of buildings

42 Construction of civil engineering works

43 Specialised construction activities

Retail and commerce

01 Retail trade of food products, beverages and tobacco specialized (CCAE-2009: 472)

02 Retail trade of household goods, cultural and recreational goods in specialized shops (CCAE: 475 and 476)

03 03 Other types of retail (CCAE-2009: 473, 474, 477, 478, 479)

04 04 Retail in non specialised stores (CCAE-2009: 471)

05 Sales and repairs of motor vehicles and scooters (CCAE-2009: 45)

06 Wholesale trading and intermediary trading (CCAE-2009: 46)

Hospitality

CCAE-2009: 55 and 56

55 Accommodation Services

56 Food and Beverage Services

Other services

01 Information and communication (CCAE-2009: 58 to 63)

02 Legal and accounting activities (CCAE-2009: 69)

03 R&D, advertising and market research and scientific and technical activities (CCAE-2009: 71 to 75)

04 Administrative and support service activities (CCAE-2009: 77 to 82)

05 Other Services (CCAE-2009: 49 to 53, 64 to 66, 68, 92, 93 and 96)

Sampling errors. Barcelona Metropolitan Area 2016*

Sectors	Sample	Error[6]
Industry	164	7.6%
Construction	87	10.5%
Retail	209	6.8%
Hospitality		91 10.3%
Other services	526	4.3%
Total	**1,076**	**3.0%**

* Quarterly average

Source: Barcelona Chamber of Commerce and Idescat

6. Maximum possible error calculated from a simple random sample.

Ajuntament de Barcelona

Cambra de Comerç de Barcelona