



How Cities and Regions Compete Globally for Tomorrow's Talents

A European Exploration

D&L Partners, SA

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This study was commissioned in late 2015 by Bizkaia Talent with the aims of providing the basis for a local talent competitiveness index based on a robust methodology and readable rankings, and articulating a small number of strategic priorities through which Basque Country could enhance its talent competitiveness. The report builds on the established core methodology that has been at the heart of the Global Talent Competitiveness Index (GTCI).

Bizkaia Talent is a non-profit organisation tasked with fostering and facilitating the implementation of the necessary conditions for attracting, connecting and retaining in Bilbao, the Historic Territory of Bizkaia and the Basque Country in general, highly qualified people in the areas of knowledge and innovation.

D&L Partners is a global strategy consulting firm that specializes in providing innovation, skills and technology advice to governments and multinational organizations.

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I. Introduction

I.A Background

As the world economy becomes more global and more mobile, work transcends national and sectoral boundaries. This has brought issues related to talent to the forefront of corporate as well as government strategies. In fact, in recent years, talent has outranked more traditional business and investment considerations such as quality of infrastructure and real estate costs.

As a discipline and a research topic, talent has always been at the crossroads of economics, demographics, sociology and anthropology. In the 20th century, one of the central debates surrounding this topic was “*Do people follow jobs, or do jobs follow people?*”

Today, as proclaimed by an April 2016 Wall Street Journal headline, “*people are the [new] natural resources*”. Consequently, operations and jobs are drawn to geographies that are rich in talent. In the global economy, talent is viewed chiefly through the prism of in-migration of skilled, educated people from within the home country as well from other countries. It is now recognized as the factor that will largely determine the ability of countries, regions and cities to connect to globalized value chains and develop successful strategies for sustainable growth.

The 2015 adoption of the Sustainable Development Goals (SDGs) at the UN General Assembly has articulated a renewed global agenda for environmental sustainability, social inclusion and economic development. A consensus that has emerged worldwide since the SDGs’ promulgation is that achieving these goals will require a shift in focus towards sub-national approaches, discourses and methodologies.

Compared to the 'Millennium Development Goals' of 2000 (MDGs), SDGs clearly give a more central role to human resources as an agent of development. This is a reflection of what has happened in all parts of the world, and in all types of economies over the last few decades: talent is key to growth, innovation and competitiveness, and it needs to be regarded as a global resource which is not only renewable, but can also be grown, improved and developed in global and inclusive ways.



International mobility of talent has therefore become a core dimension of any national or regional strategy. The talent equation is increasingly determined by local considerations and initiatives. Cities and regions that previously focused their attention on attracting corporate investment and tourists are now turning to a new target – skilled professionals.



I.B Genesis of the present report

Initiated in the course of 2015, the present report is at the intersection of two main streams of efforts:

1. The Global Talent Competitiveness Index (GTCI) series

Published annually since 2013, GTCI is an annual benchmarking study measuring the ability of countries to compete for talent. It has been designed as a practical tool for governments, businesses and non-profit organisations, and ranks over 100 economies according to their ability to develop, attract and retain talent.



Very early on in its research on international competition for talent, the GTCI team reached the conclusion that talent attraction was increasingly driven by local considerations and strategies. Focusing on the nation-to-nation dimensions of talent competitiveness – particularly in areas such as talent attraction and mobility – creates limitations to understanding how and why talent flows from some parts of the world, such as cities and regions, to others.

2. The effort on the part of Bizkaia Talent since its creation in 2005

From its initial remit to incentivize young talents around the area of Bilbao – Bizkaia – Basque Country to seek out career opportunities locally rather than search for them in other countries, today the agency works to attract, retain and connect talent from all over the world. While working on the ground, at home and abroad, to attract talent to Basque Country, Bizkaia Talent was quick to gain a deep understanding of the global considerations involved.

The agency's agility and commitment have greatly contributed to positioning the Basque region within a core group of vanguard EU and global regions. Bizkaia is now at the forefront of articulating the agenda for talent, innovation and growth. Through these accomplishments, Bizkaia Talent has established itself as a thought leader and a recognized voice within global structures including the World Economic Forum, professional and industry associations across the EU and networks of Basque professionals worldwide.

Moreover, the efforts made by Bizkaia Talent to weave an intricate net of collaborations with a significant number of cities and regions - in Europe and beyond – have also made the agency a perfect partner for a research like the one presented in this report.



The two sets of visions, efforts and achievements incarnated by Bizkaia Talent on one hand and the GTCI on the other, were bound to converge. They have taken the form of a joint initiative aimed at bringing local context and relevance to the GTCI data engine and messages, engaging local stakeholders and other players, and giving a boost to local programs in mapping and quantifying the region's talent competitiveness.

This report is one of the products of this ongoing partnership. In this inaugural edition of the index and for the purposes of this report, the analytical focus has been on cities and regions located in Europe. The output of this effort is a **European Cities Talent Competitiveness Index (ECTCI)**. In this initial, first-year version, the index includes 27 cities located in European Union countries and representing a mix of national capitals, regional centres as well as up-and-comers in the talent competitiveness space.

Putting forward a ranking of cities such as ECTCI that may be considered side by side with GTCI's ranking of countries allows for a deeper and more complete assessment of how global competition for talent plays out. In addition, it is envisaged that future research will build on this knowledge and incorporate cities and regions from other parts of the world, particularly cities whose economic competitiveness has grown in step with their success in attracting global talent.

We hope that the benchmarking opportunities and frameworks presented in this document will serve not as an academic exercise or reference point, but rather as a tool for action, measuring talent-related indicators in order to understand and improve them.

Note: Despite the European focus of the report and the underlying data index, vignettes and mini-cases that are interspersed throughout the document have been borrowed from cities and regions around the world. Their value is in the learning points they present, and the possible 'best practices' they may offer.

I.C Structure of this report

The core of this report includes the following sections:

- In chapter II, we examine the global context of talent competitiveness and link this developing context to some of the key messages of the GTCI series since its inception.

- In chapter III, we trace the emergence of cities and regions as the main movers and shakers in the global competition for talent. We consider the underlying and ongoing trends – demographic, political, economic, socio-cultural, technological - that have fuelled the rise of cities and regions to the forefront of issues related to talent.
- Chapter IV provides an overview of the main challenges associated with collecting talent-related data at sub-national level. It goes on to outline the methodology adopted in designing, structuring and populating the current version of ECTCI.
- Chapter V offers some technical references to the methodology used to build and analyse ECTCI
- In the final section (Chapter VI), we provide a summary of ECTCI's rankings at index as well as sub-index/pillar level. We then draw out some cogent trends, emerging stories and other findings depicted by the data.
- Finally, the Appendices (annexes and references) serve as a reference library where the reader can inspect and verify in more detail the composition and scope of the index, its pillars and its individual variables.



II. Mapping the world of talent competitiveness

II.A Talent, the new global currency

In the history of modern management, talent was not always the first and foremost consideration on the minds of those running business organizations. For many decades, the emphasis was on securing corporations' access to production supplies and materials at reasonable price points. In that equation, the work force was plentiful, affordable and easily replaceable – an equilibrium greatly aided by the continued arrival on the market of new labour segments (e.g. women, rural residents, immigrants from neighbouring countries). In time, material components as the overriding focus of production gave way to structure and process. By the 1980s, organizations embraced the ethos of 'lean and mean', seeking a new competitive edge by reconfiguring their links and flows between their existing assets including workers.

With the rise of information technology and new types of finance, the 1990s produced what came to be known as the 'war for talent'. This rhetoric and discourse emphasized the importance of talent to the success of organizations. It was a reflection of an increasingly competitive landscape for recruiting and retaining talented employees. Regardless of its structure and size, without "the right people", a company was unlikely to succeed in a new landscape of globalization, growing competition and industry deregulation. Post-2000, countries are competing globally to grow better talents, attract the talents they need, and retain those that contribute to national competitiveness, innovation and growth. They also seek to put economic and social policies in place that will facilitate these goals.

More recently, employment considerations (*'flexicurity'* and the need to fight mass unemployment, especially among younger generations), as well as a higher emphasis on quality of life (work-life balance eg) have combined with profound transformations of the 'world of work' (automation, *'uberization'*, inter alia) to produce a radically different global landscape for talent competitiveness. Talent strategies and talent policies have become more complex to design and more challenging to implement.



In this context, governments, businesses and various other stakeholders need quantitative instruments that can help them inform their decisions (as investors, employers, employees or job seekers), and design and implement better policies in areas such as education, human resource management and immigration.

This is the purpose of the GTCI.

II.B Benchmarking talent competitiveness

Since its inaugural launch in 2013, GTCI's key messages have had to do with the importance of stable environments (market, business, regulatory) and education; openness to interactions with the outside world; and the success of smaller economies and city-states (Switzerland, Singapore) in the global competition for talent. GTCI's findings have shown that many talent-competitive countries are small and rich, and that at national level, the majority of GTCI leaders to date have been European countries.

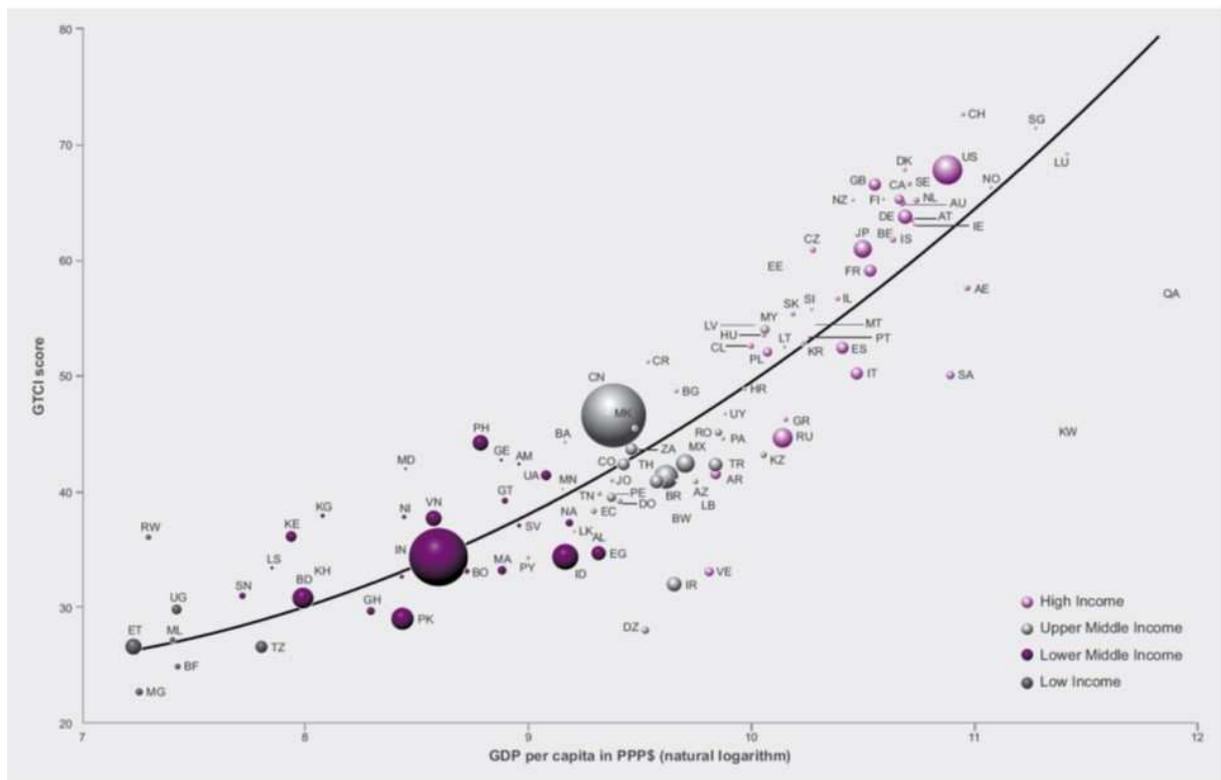
Some key learning points identified by the GTCI series, 2013 - 2016

- Talent can be grown internally or externally, depending on the characteristics of the economy.
- Talent development is not an end unto itself. It needs to be considered in the broader context of employability.
- Talent development in the 21st century must go beyond the traditional pillar of formal education. Balancing Global Knowledge Skills and Vocational Skills is key to success.
- Capital-surplus countries are advised to invest astutely in fostering their talent competitiveness so as to build a sustainable economy.
- Technological changes will affect new segments of the labour market, implying changes in the required profile of employable skills.
- Mobility has become a key ingredient in talent development. *Brain circulation* has displaced the old paradigms of '*brain drain vs. brain gain*'.
- In a world of brain circulation, cities and regions are becoming critical players in the competition for global talent. Many cities are emerging as talent hubs that attract highly-skilled and creative workers from all over the world.

The most recent edition of the index has emphasized the importance of mobilizing talent to boost prosperity, and to nurture a broader mobility mindset. The complex interplay between demographic, economic, political and technological forces increasingly contributes to the emergence of an unprecedented international landscape, in which competition for talent takes new shapes. As a result, mobility is in the process of being redefined on a global scale.

Cities and regions are often better positioned than countries to develop and brand the type of features (e.g. quality of life) that are attractive to both internal and international migrants. In addition, cities can successfully differentiate themselves through local capabilities, such as the ones they deploy to respond to market opportunities created by innovation. In fact, this combination of branding and agility can significantly boost the talent competitiveness potential of smaller cities, compared to the ‘usual suspects’, i.e. large urban hubs and metropolis.

GTCI scores vs. GDP per capita



Source: *The Global Talent Competitiveness Index 2015-16, chapter 1, p.34*

GTCI's conceptual framework and structure

Conceptually, GTCI's parameters are based on the Attract-Grow-Retain framework applied in the corporate environment to shape talent management strategies:

- ✓ Attracting talent means growing the talent pool through migration of skilled workers as well as the removal of barriers to the talent pool.
- ✓ Growing talent goes beyond education to denote vocational training and continuous learning.
- ✓ Retaining talent is necessary to ensure sustainable growth in the face of the global opportunities available to skilled workers.

GTCI's six pillars/sub-indices

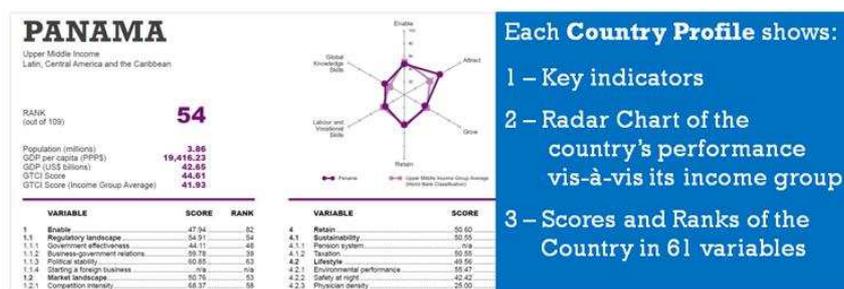


These three dimensions are complemented with the presence and quality of regulatory, market and business landscapes that can facilitate or impede talent attraction and growth, collectively subsumed into the Enable sub-index of the GTCI framework. The result is an index that rests on six pillars of talent competitiveness, as shown in the diagram above.

GTCI's basic structure has proven remarkably robust.¹ Every year, feedback on previous editions, additional research and the availability of new data allow for enrichments to be made to the initial model.

GTCI data tables and country profiles

For each of the countries covered, GTCI provides 'country profiles' in the form of a single-page visualisation of the country's main data. Country profiles include in particular a spider chart describing the performance of the country considered against each of the pillars of the model.



6.1.1 Tertiary-educated workforce

Labour force with tertiary education (%) | 2012

RANK	COUNTRY	VALUE	SCORE	RANK	COUNTRY	VALUE	SCORE
1	United States (2008)	61.92	100.00	57	Finland	19.90	31.99
2	Canada (2008)	49.50	79.12	57	Slovakia	19.80	31.99
3	Israel (2008)	46.16	72.96	59	Chile (2011)	19.70	31.83
4	Cyprus	41.50	67.04	59	Uruguay (2011)	19.70	31.83
4	Ireland	41.30	67.04	61	Tunisia (2011)	19.40	31.34
6	Japan (2008)	41.40	66.88	62	Egypt (2011)	19.20	31.02
7	Luxembourg	41.20	66.56	63	Kuwait (2011)	19.10	30.88
8	Belgium	39.80	64.30	64	Iran (2008)	18.80	30.37
9	Finland	38.20	61.71	65	Turkey	18.30	29.56
10	United Kingdom	38.10	61.55	66	Italy	17.90	28.62
11	Norway	37.40	60.42	67	Romania	17.60	28.41
				67	Brazil (2011)	17.20	27.79

In the Data Tables each country's normalised score and corresponding rank on the 61 variables is presented.

1.2.3 Cluster development

Average answer to the question: In your country's economy, how prevalent are well-developed and deep clusters? [1 = nonexistent; 7 = widespread in many fields] | 2014

RANK	COUNTRY	VALUE	SCORE	RANK	COUNTRY	VALUE	SCORE
1	Italy	5.60	76.64	57	Bangladesh	3.85	47.47
2	Germany	5.49	74.86	58	Sri Lanka	3.84	47.25
3	United Arab Emirates	5.49	74.83	59	Namibia	3.51	45.51
4	United States	5.42	73.65	60	Slovakia	3.80	46.73
5	Switzerland	5.35	72.53	61	Romania	3.78	46.40
6	Netherlands	5.35	72.42	62	Morocco	3.78	46.27
7	Japan	5.28	71.39	63	Barbados	3.77	45.10
8	Malaysia	5.28	71.29	64	Vietnam	3.76	45.97
9	United Kingdom	5.23	70.56	65	Estonia	3.73	45.56
10	Qatar	5.21	70.21	66	Ghana	3.73	45.48
11	Singapore	5.13	69.81	67	Colombia	3.71	45.15
11	Finland	5.06	67.73	68	Dominican Republic	3.68	44.69
13	Norway	5.06	67.66	69	Kuwait	3.67	44.54
14	Austria	4.95	65.82	70	Uganda	3.53	42.08
15	Luxembourg	4.85	64.18	71	Tunisia	3.51	41.78
16	Ireland	4.80	63.33	72	Latvia	3.50	41.67
17	Canada	4.77	62.89	72	Lithuania	3.50	41.67
18	Sweden	4.74	62.32	74	Hungary	3.49	41.54
19	Belgium	4.70	61.61	75	Poland	3.48	41.40
20	Saudi Arabia	4.66	61.00	76	Uruguay	3.47	41.12
21	Brazil	4.63	60.44	77	Bolivia	3.46	40.97
22	China	4.56	59.30	78	Macedonia	3.46	40.96
23	Indonesia	4.53	58.81	79	Slovenia	3.43	40.43
24	India	4.50	58.38	80	Iran	3.42	40.37

¹ The European Commission's Joint Research Centre (JRC) has conducted regular assessments of the GTCI model. Its audit resulted in suggestions focused on dealing with variables displaying strong co-linearity, reconsidering variables whose behavior in the overall framework approximated 'noise', and repositioning some indicators across different pillars of the index.

GTCI's reception to date

Despite its relatively brief history, GTCI has been embraced by policymakers, industry and media as a 'golden standard' for mapping out, conceptualizing and measuring developments in the global as well as national talent competitiveness space. Press and media coverage has been extensive², and growing every year since GTCI's creation. A series of global, regional and local events have contributed to GTCI's notoriety, and to its improvement through continuous feedback from its users.



² See <http://global-indices.insead.edu/gtci/gtci-media.cfm>

The report also benefits from the support of a prestigious advisory board, who contributes to its respectability and visibility³.

In public policy in particular, the index has proved to be a strategic yet practical tool for testing and gauging the effectiveness of government initiatives aimed at enhancing a country's talent attractiveness along a set of defined dimensions.

6 | FTReports FINANCIAL TIMES Friday 26 February 2016

Employment Global Best Practice

Talent scarcity spurs global hunt

Mobility Policy-makers are under pressure to help companies attract in-demand staff, says *Hannah Murphy*

Global mobility is morphing from a niche offering for a few select employees to a necessary fix for one of the biggest problems facing multinational employers: a scarcity of talent.

But as the battle to attract and retain the best employees goes global, countries are having to change the way they support companies within their borders and encourage inward movement.

International mobility has traditionally been associated with tempting staff to relocate from developed countries to emerging markets, with the lure of an expatriate lifestyle and a generous pay package.

This model of mobility is undergoing rapid transformation, human resources experts say, as economies with ageing populations are faced with acute workforce shortages.

Germany will face a labour short

Countries compete for the world's most talented workers

Working age populations are declining ...
As a % of total

Year	Brazil	China	High income countries
2000	65	65	65
05	70	70	65
10	75	75	65
15	70	70	65
20	70	70	65
25	68	68	65
30	65	65	65
35	62	62	65
40	60	60	65
45	58	58	65
50	55	55	65

... causing severe talent shortages
Labour deficit by 2030, million people

Country	Labour deficit by 2030 (million people)
Brazil	40.9
China	24.5
Germany	10.0
Canada	2.3
Italy	0.9

Competing for talent: the top 10 countries
Global Talent Compete Insead, Adecco Group and the Institute score more than 100 to generate an overall ranking

Rank 2015 (rank 2014)	Country
1 (1)	Switzerland
2 (2)	China

RUSSIA IS RANKED #53

human resources adviser Total Reward Solutions. "When you go there, they even have an employee from the government who helps companies move in and set up," he says.

The UK ranks seventh overall, but falls drastically short when it comes to the gender earnings gap, where it ranks 71st out of the 109 countries included in the index.

The importance of fairness and transparency should not be underestimated, says Adecco Group's Mr Marshall, who calls such factors "hygiene issues".

Countries can also do a lot to boost the brand perception of their cities, whether by building opera houses and art galleries to make a place

³ The GTCI Advisory Board includes Talal Abu-Ghazaleh, Founder and Chairman, Talal Abu-Gazaleh Organization; Thierry Breton, Chairman and CEO of Atos and former Minister of the Economy, Finance and Industry for France; Peter Cappelli, George W. Taylor Professor of Management and Director, Center for Human Resources at Wharton, University of Pennsylvania; Yoko Ishikura, Professor Emeritus, Hitotsubashi University and former Senior Manager at McKinsey Tokyo; Mats Karlsson, Director, The Swedish Institute of International Affairs and former Vice-President of the World Bank; Arnoud De Meyer, President, Singapore Management University; Vineet Nayar, Founder, Sampark Foundation and former CEO of HCL Technologies.

III. Cities and regions as competitors for talent

III.A Why the emphasis on cities and regions?

When it comes to promoting prosperity and well-being, it is local governments who control many of the available policy levers. According to OECD's 2014 estimates, local authorities are responsible for around 40% of total public expenditure and 60% of public investment in the OECD area. In P. Khanna's 2016 book *Connectography*, cities are taking on an enhanced role in 21st-century governance. In fact, they may be poised to overtake states as the prime movers and shakers in global economy, politics, business and communications. The more a city invests in physical, online and financial infrastructure, the greater its future role will be in a world where connectivity is the chief commodity. The book's argument – equally lauded and derided in business press – is not an isolated one. Cities today are becoming the undisputed centres of gravity. They enjoy the crushing majority of economic activity along with an ever greater portion of the world's population.



Cities and regions not only compete for talent – they often act as leaders who define new ways to grow, attract and retain talent. Globally competitive and locally relevant, they attract outside knowledge and identify new roles and opportunities for themselves in the global economy.

As mentioned in the introduction, the 20th-century notion that ‘people move to where the jobs are’ has been for the most part replaced with ‘jobs tend to go where the talent is’. In the old days, cities that attracted talent were typically places hosting large industries and companies. Today, talent (especially higher-level talent) can be attracted selectively; moreover, it can ‘radiate’ from its current locales to new places that offer better opportunities and quality of life for skilled individuals and their families.

In many locales, the presence of quality talent is complemented by efficient diffusion of international communications and technology. Particularly new cohorts of creative talent such as ‘digital nomads’ have been attracted to places which offer a low cost of living combined with good-quality and affordable internet connectivity.

Four key trends that have pushed cities and regions to the fore

The past few years and decades have seen a number of momentous trends which in concert have established talent as a primarily local issue, and cities/regions as the main building blocks in the global talent competition. In the present report, we have identified four principal reasons why talent is drawn to specific cities and regions:

1) Fast rate of worldwide urbanization

- The present-day regulatory, market and business landscapes are heavily exposed to urbanization, with the global population increasingly migrating not only to a few dozen mega-cities but also to regional urban centres in general.
- Cities and regions have also established themselves as anchors and indeed enablers of industry presence, R&D clusters, and corporate internationalization and specialization programs.
- In consequence, a growing share of business takes place in urban environments where people seek to ‘live, work, play, communicate, and access information’ in the same city.

2) Cities – and business – as social landscapes and social playgrounds

- Post-2000, the dominant narrative has been of business as a social place where people and organizations meet, interact, and seek to realize their aspirations.
- This development has brought to the fore such considerations as quality of life and quality of environment. Cities are expected to provide not only job opportunities and higher incomes but also pursue sustainable growth and give rise to inclusive communities.
- Correspondingly, the argument has emerged that it is often the social and general quality-of-life characteristics of particular places that attract desired workers. These characteristics typically play out at local, i.e. regional/city level rather than at the more 'abstract' and remote national levels.
- In practical terms, this means a shift in urban design and planning from developer-driven to resident/city-driven. In the same dimension, cities are expected to show innovative management. Those that have done well in attracting talent are embracing co-creation with local citizens and start-ups to leverage technology and improve the quality of life.
- This movement is sometimes described as 'new urbanism'. Regions and cities seek to become sustainable by correctly valuing their natural, historic and cultural assets, minimizing the use of the planet's resources and preparing for a low-carbon future. They seek to make urban design patterns more attractive by overcoming the legacy of dispersed, single-use city segments and embracing mixed-use, walkable neighbourhoods that are favoured by university graduates. Public green spaces, nature trails and natural amenities are all high on the list of skilled workers' quality-of-life expectations.

3) Universities, business schools and other higher-learning institutes act as magnets for industry clusters

- Once talent has been attracted to a particular location, it will seek further opportunities for learning, education and growth.
- Good-quality colleges, universities and business schools have always maintained strong links with their host cities and local communities. The name 'Harvard' associates 'Cambridge, Massachusetts', rather than 'USA'. The cities of Oxford and Cambridge have become synonymous with the world-class universities and business schools located in their midst.
- Similarly, a number of talent-competitive cities around the world have also pursued strategies to establish themselves as seats of national-level research agencies.

4) Lifestyle

- In addition to considerations such as cost of living, healthcare and safety, lifestyle is a big part of what retains talent in specific urban areas. 40% of the explained variation of OECD residents' self-reported life satisfaction is accounted for by regional characteristics, with individual characteristics accounting for the other 60%.
- For modern-day talents, a good lifestyle involves flexible, no-hassle housing options; access to international-calibre culture; presence of cultural and creative industries offering the latest in art, fashion and cuisine.
- Lifestyle also involves innovative use of digital communications and their application to new collaborative business models and creative processes. All of these are the modern hallmarks of a democratized and entrepreneurial urban landscape.
- Major global or regional events (e.g., Olympic Games, World Expos, UNESCO World Heritage sites, European 'Capitals of Culture', etc.) also act as catalysts in setting off a city or region against its competitors in the battle to retain highly-skilled talent.

III.B ECTCI's sub-index/pillar structure is reflective of these trends

These four groups of factors serve to directly inform four of the ECTCI's six pillars:



The additional two pillars that constitute the ECTCI reflect the avenues through which cities and regions draw upon and use the talent they have enabled, attracted, grown and managed to retain. These pillars have to do with the way cities and regions utilize skills, particularly in terms of secondary education and vocational enrolment; and with their capacity to connect with global networks and build on these networks to generate knowledge:



When combined, the four dimensions of why talent is drawn to cities and the two additional aspects of how talent is handled in the skills and global knowledge equations collectively yield the six-pillar structure of ECTCI.

The six pillars of the European Talent Competitiveness Index (2016)



IV. Building a cities/regions index of talent competitiveness

In terms of data collection and availability, many economists have described regions and cities as “orphans”. Despite acting as engines of their countries’ economic growth and conduits for foreign investment, their economic management involves a number of different tiers of government. In particular, the continued emphasis on publishing economic data and other relevant statistics at national rather than sub-national level has created a void in economic and business policy.

In this section we look at the current global landscape of collecting and publishing talent-related metrics using sub-national/region/city data points. We outline some of the main challenges governments and researchers encounter in sourcing data at city/region level. We then proceed to describe the methodology underpinning this first edition of the ECTCI.

IV.A Proliferation of indices; paucity of relevant data

There are a number of challenges that analyst and policy experts need to recognize and work to overcome in collecting and critically assessing talent-related information on cities and regions:

- In recent years, the topic of cities and their newfound power and influence in global domains has become popular in the media as well as across knowledge sectors. Rankings of liveable cities, green cities, safe cities, cities of the future etc. etc. have been published by business journals, universities, management consultancies, accounting firms and travel & lifestyle publications. They have provided assessments and forecasts of individual cities’ /regions’ attractiveness to investment. Some have rated cities along a specific developmental or quality-of-life indicator such as safety, environmental sustainability etc.
- In addition, informal, self-reported, real-time rankings and indices have appeared on a number of internet websites and forums.
- Despite filling a gap, at least partially, this plethora of rankings and indices makes the task of discerning quality information even more difficult for local governments, businesses and citizens to find reliable tools that would guide their actions and strategies. To add to the confusion, there are wide variances among the sets of ‘leading’ cities put forward by different indices.
- **This challenge is compounded by the continued dearth in published materials of information directly relevant to the talent dimension of competitiveness.**

Sample of commonly referenced cities-focused indices

Index	Published by	Focus	Coverage	No. of variables
European Cities and Regions of the Future	FDI Magazine	Investment landscape	Top 25 cities	Several dozen
Cities in Motion Index	IESE business school	Smarter cities, governance, urban planning, human capital	180 cities worldwide	77
EIU Liveability Ranking	Economist Intelligence Unit	Living conditions	140 cities worldwide	30
EIU Best Cities	Economist Intelligence Unit	Complementing the Liveability Ranking with a particular emphasis on spatial characteristics of cities	70 cities worldwide	14
Quality of Living Rankings	Mercer	Quality of living, personal safety for international employees	230 cities worldwide	39
Quality of Life Survey	Monocle	Public transport, international connectivity, safety, nightlife	25 cities worldwide	22

In consequence, the task of benchmarking cities and regions specifically in the area of talent competitiveness has become more and more pressing. It has also become increasingly evident that going forward, looking more closely at the sub-national level, i.e. regions and cities, and their role in boosting environmental sustainability, social inclusion and economic development will require stronger commitment from local stakeholders.

IV.B Europe is leading the way in city/region data availability

Notwithstanding the inherent challenges of identifying, verifying and collecting sub-national data that is relevant to issues of talent competitiveness, there are geographic regions, subject areas and analytical departure points that lend themselves well to explorations in this space.

EU structures and agencies in particular (e.g. Eurostat, Eurobarometer) have made a commendable and long-standing effort to generate and publish statistical data related to EU regions – an undertaking virtually unknown in many other parts of the world. Although the data is of general statistical nature, i.e. not defined with talent considerations in mind, it provides a rich, detailed and historical source of information on many of the factors shaping the talent discourse. These include, for instance,

education enrolment rates, education outcomes correlated with age/gender, employment rates and other valuable indicators.

Other relevant information that provides regional granularity and casts new light at the dynamics of regions' and cities' social and economic development can be gleaned from reports regularly published by the EU Structural Funds (assessing the effectiveness of individual EU regions drawing down funding from EU-wide structural and cohesion funds), the European Commission's Regional Innovation Monitor series, reports on trends in European clusters, and other sources.

In addition to statistical data availability, EU regions themselves have organized on-the-ground initiatives aimed at exploring on a practical as well as conceptual level some of the emerging dynamics of regional and city-level trends in talent competitiveness. The following table lists a few notable examples of such programmes.

International Regions Benchmarking Consortium

Sponsored by Boeing and Microsoft, the consortium explores the dynamics between economic opportunities and cost of living as factors in attracting in-migration of talent from within the home country and abroad. Member cities include Barcelona, Helsinki, Stockholm and Munich alongside a few cities in Asia and North America. (www.internationalregions.org)

Talent Attraction Management in the Nordic Regions and Cities (TAM Project)

Launched in 2013 to provide Nordic cities and region with strategies and tools for an organised talent attraction, TAM is a partnership-based development project which also aims to illustrate how public and private actors can build a successful collaboration for Talent Attraction Management. (<http://tendensor.com/news/tendensor-news/nordic-project-talent-attraction>)

Talent Retention in the Baltic Sea Region

Co-financed by EU's European Regional Development Fund, this toolkit outlines activities and services for welcoming, receiving and integrating talents in cities and regions in the Baltic Sea Region. (www.bdforum.org/tag/toolkit-on-talent-retention)

Challenges linked to skills, know-how and workforce capabilities have also been mapped out in documents such as the e-Skills Manifesto, a European Commission blueprint for acquiring, nurturing and retaining e-skilled talent in the 21st century. The document provides an overview of the benefits that EU economies can derive from digital transformation, and the repercussions this holds out for EU's skills and jobs composition. Meanwhile, the Commission also launched the Grand Coalition for Digital Jobs, a multi-stakeholder partnership designed to tackle the lack of digital skills in Europe and the many unfilled IT-related vacancies across the continent's industry sectors.

V. Methodology behind ECTCI

V.A Structure of the ECTCI model

The ECTCI model applied in this study seeks to respect the philosophy and structure of GTCI. It is therefore based on a holistic definition of talent, as well as a comprehensive approach to the pull and push factors of talent attraction, growth and retention.

Similarly, in selecting individual variables for inclusion in each of the ECTCI's six pillars, effort was made to preserve and mirror the GTCI's composition of variables as closely as possible. Where variations did occur, it was with the following considerations and objectives in mind:

- **Data availability:**

Some of GTCI's variables are only available at national rather than sub-national level. In some instances, this was mitigated through the use of proxies (see below).

- **Data applicability:**

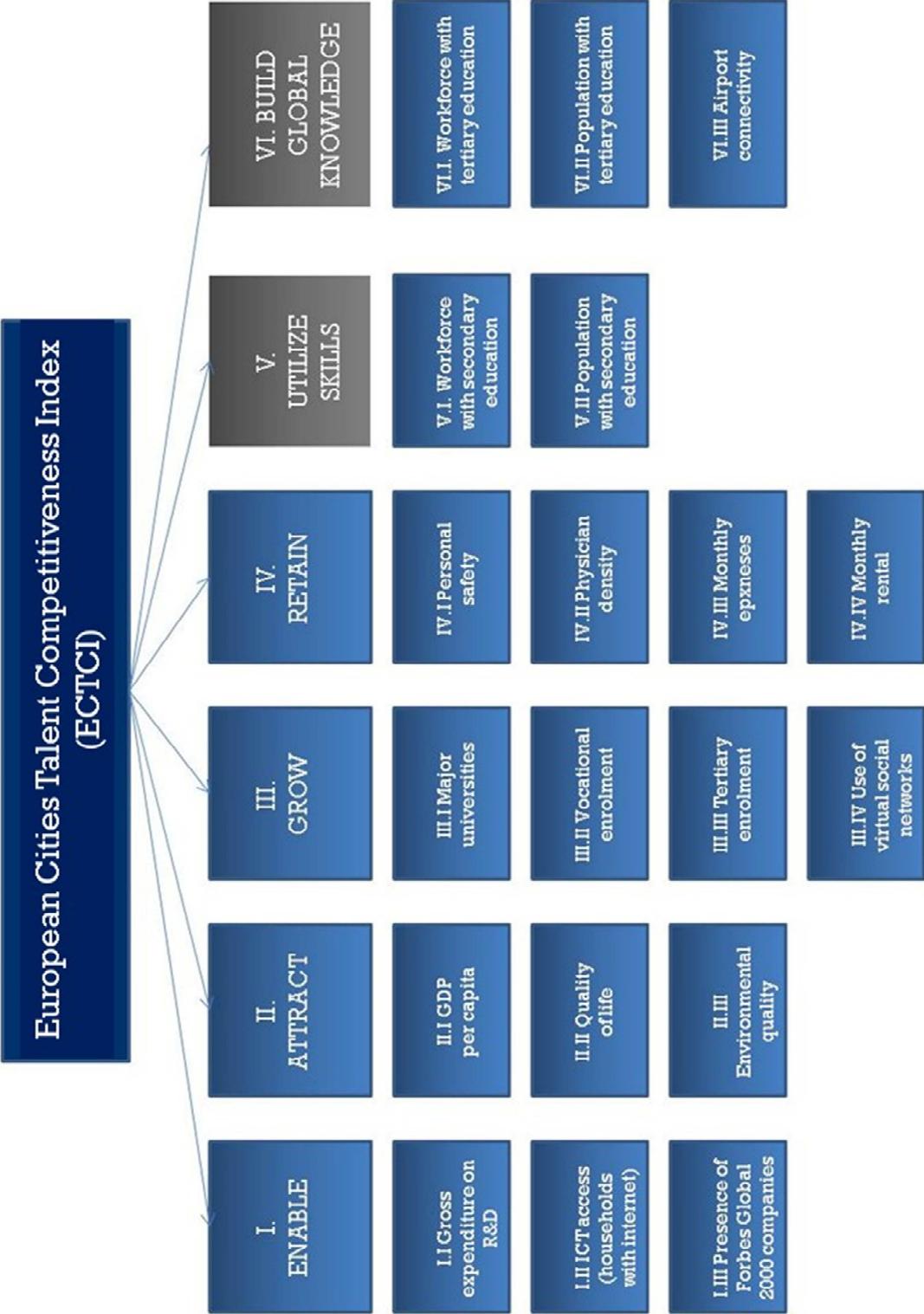
Some GTCI variables directly reflect trends and policies set by central governments (e.g. legal frameworks, labour laws). As such, they are of limited use when making direct comparisons of cities and regions with other cities and regions, particularly within the same country.

- **Data relevance:**

As much as possible, the ECTCI aims to internalize the spirit of what previous chapters in this study outlined regarding the tangible/"real" nature of communities represented by cities and regions, as opposed to the more abstract/imagined character of communities forged on the basis of ethnic and other national identifications. This guiding principle opened the door to the inclusion of several variables capturing the ease, convenience, safety and quality of day-to-day local life as experienced by talents including expatriates.

In addressing those three dimensions, significant value was drawn from the meetings and discussions that D&L's team had with local counterparts in Bilbao since 2015. The resulting structure of the ECTCI, grouping 19 variables into six pillars/sub-indices, is depicted in the diagram on the next page.

ECTCI pillars and constituent variables



V.B Data sources, proxies, normalization

The following data sources were used in populating the ECTCI:

- EU-wide statistical engines such as Eurostat, Eurobarometer
- National-level statistical bureaus, e.g. Swiss Statistics (BFS)
- Local sources including government agency websites, reports and related press releases and other statements
- Publicly available global rankings e.g. EIU Best Cities ranking
- Where applicable, recognized global data sets such as Forbes Global 2000, Times Higher Education (THE)
- Survey- and self-report-based online data aggregators such as Numbeo, Knoema

In modelling a first edition of a complex data index such as ECTCI, a targeted and judicious use of definitional and numerical **proxies** is required to achieve a desired degree of data completeness and representation. To that end, the index has in some cases incorporated the following types of proxies:

- *Regional-level data points taken to represent cities:*
Particularly where up-to-date, detailed information on EU regions was available and where “Region X” and “City of X” are often used interchangeably in a number of contexts
- *Country-level GTCI data appropriated to represent cities:*
Applicable to smaller-sized cities located in small countries, whereby the city’s population (without suburbs / adjacent metropolitan areas) amounts to at least 25% of the total country population
- *Injecting data points from online tools into published indices:*
Where existing branded indices like EIU rankings did not include a particular city listed in ECTCI, the city’s corresponding ranking/score on Numbeo.com could be supplemented, after having its score correlated/traced to a city that was ranked as a leader in both sources (i.e. EIU and Numbeo).

Having applied the proxies, the data set was **tested for completeness**. Cities as well as variables where 50% or more of data points was not available were eliminated, thus ensuring that the sample remained representative.

To achieve data **normalization** for indicators where higher values indicate higher outcomes, the normalization formula applied was $100 \times (value - min) / (max - min)$. With indicators where higher values indicate worse outcomes (e.g. monthly expenses, rentals), the formula was $[-100 \times (value - min) / (max - min)] + 100$.

V.C ECTCI's geographic coverage

For this first edition of ECTCI, 27 cities located in 17 EU member countries were included in the index. The countries represent a mix of northern and southern Europe, as well as a cross-section of the 'old' EU-12/15 and the 'new' EU-28. The cities were nominated on the basis of their reputation and growing footprint in attracting global talent, rather than as a function of their size or national-capital status.

Cities included in this year's ECTCI



VI. ECTCI findings

VI.A ECTCI findings at a glance

The aggregate results which combine data points and the corresponding scores across the six pillars of talent competitiveness have produced the following ranking:

No.	City	Total score
1	Copenhagen	74.0
2	Zurich	67.7
3	Helsinki	65.4
4	Gothenburg	62.6
5	Madrid	60.2
6	Paris	59.4
7	Eindhoven	57.8
8	Dublin	57.2
9	Cardiff	56.2
10	Berlin	55.6
11	Vienna	55.1
12	London	54.4
13	Birmingham	53.9
14	Bilbao	53.7
15	Barcelona	52.1
16	Brno	51.8
17	Tallinn	51.2
18	Hanover	51.0
19	Krakow	50.5
20	Bologna	49.3
21	Nantes	48.1
22	Kiel	47.2
23	Riga	47.0
24	Zaragoza	46.6
25	Milan	44.9
26	Turin	39.8
27	Valletta	33.5

Copenhagen has pulled away from the remainder of the cities in a dramatic manner, leaving even top-3 performers significantly behind. The trio of Zurich, Helsinki, Gothenburg have likewise placed in a 'league of their own', as indicated by their aggregate scores.

The core of index sample is taken up by cities whose performance in the index is shown to be at some remove from the leaders. At the same time, their relative score differentials within this core group are modest, and rapid movement up and down the ranking can be anticipated in the years to come. This group includes three cities in Spain (Bilbao, Madrid, Barcelona) alongside established competitors such as London, Paris and Vienna.

The underperforming cluster of cities whose total ECTCI score failed to exceed 50 out of 100 is dominated by smaller cities (Kiel, Nantes) and cities located in Italy and/or the Mediterranean region (Bologna, Milan, Turin). Only one of the cities located in the emerging countries of central & eastern Europe, Riga, reported an aggregate score lower than 50. This suggests that cost-of-living indicators and education enrolment rates continue to exert a strong influence on cities' ability to attract talent, and can partly outweigh major structural weaknesses such as the absence of a recognized regional university.

VI.B Key messages

Among the main findings reflected in this index:

Three of the top four spots are occupied by Scandinavian cities

The index results make a clear case that the high cost of living in Copenhagen, Helsinki and Gothenburg has been more than offset by these cities' physical and information infrastructure and connectivity, strong international linkages, and consistently high performance in quality-of-life indicators.

The top ranking also reflects the success of Scandinavian cities and regions' concerted strategies for attracting and retaining international talent. These programs have been overseen by agencies such as Copenhagen Capacity – the Copenhagen Region's official organisation for investment promotion and regional development, which has put forward a multi-stakeholder, multi-initiative talent strategy for 2014 – 2017.

Index Top 10: Northern Europe dominates the continent's talent competitiveness



Small is where the action is

With the exception of Paris and Madrid as two large metropolises and national capitals, eight cities in the Top 10 have an average population of just below 400,000. This confirms that the pattern of highly-educated individuals predominantly gravitating to large conurbations is a thing of the past. A big city size continues to come with many advantages in terms of jobs and connectivity – but it is no longer synonymous with opportunity.

Similarly, several non-capital cities have ranked in the Top 10 of the index. Whereas cities like Cardiff and Eindhoven might once have been relegated to a “Tier II” or even “Tier III” category, in today’s landscape of European and global talent competitiveness they have emerged among the top few.

The combination of a small, liveable, easy-to-navigate city with the presence of a world-leading industrial corporation has proved particularly powerful and compelling. It offers many skilled workers the ‘best of both worlds’ by situating them in a safe and family-friendly community – yet without exacting a cost of foregoing career and networking opportunities in exchange. Conversely, for the company this is a unique opportunity to present itself at its best along the aforementioned ‘business in society’ dimensions, by becoming not only an anchor of local employment but a virtual ‘hometown hero’ around which the bulk of the city’s not only economic but also social, cultural and philanthropic activities revolve. To be told publicly by community leaders that, for instance, “Intel continues to be a key partner in Malaysia’s nation-building”,⁴ is literally the type of publicity and CSR footprint that money cannot buy.

Peoria, Illinois: Corporate headquarters of Caterpillar

In the area surrounding this mid-sized city in the US Mid-West, Caterpillar employs a total of 16,000 people, and has been the primary customer of an estimated 40 per cent of local businesses.

Despite its continued global expansion, Caterpillar has made announcements that it was staying put in Peoria for the long haul. It is also in the process of upgrading its existing headquarters in the city, despite having received aggressive tax incentive offers from a number of locations around the USA.

The talent formula is logical yet delicate

Human capital has been a central ingredient of development plans drawn up at many levels – international, national, industrial, corporate, regional, municipal. Nonetheless, as the ECTCI index shows, a city’s or a region’s attractiveness to capital, industry or even tourism is generally a poor predictor for how well the city/region will compete with other cities/regions in attracting and retaining talent. Becoming a talent hotspot means managing and balancing a number of considerations that are crucial in the talent equation: rapid growth can easily create housing shortages, put pressure on public infrastructure, and exacerbate existing inequalities. High income can

⁴ Intel Malaysia celebrates 40 years of excellence in innovation. Press release. <http://www.intel.com/content/dam/www/public/apac/xa/en/asset/world-economic-forum/pdf/Investing%20in%20asean%20region/article%203/Press%20Release%20-%20Intel%20Msia%2040th%20Anni%20rev4%20clean.pdf>

translate into high cost. In domains such as health and safety, a locale's perception and reputation may take an instant to damage and many years to repair. In other words, to be a magnet for talent is to risk becoming a victim of one's success.

VI.C Findings derived from sub-index level

An analysis of the six pillars of ECTCI yields the following insights:

No city is equally strong in every pillar

The pillars of talent competitiveness do not exist in isolation. Particularly with the high-performing cities, there is evidence of complementarities: For instance, higher GDP levels will over time naturally lead to higher technology penetration rates and better quality of education and healthcare. Many of these complementary developments will take the form of virtuous cycles, such as higher-ranked universities attracting a higher calibre of teaching and research staff and producing graduates whose quality and skills will in turn be demanded and rewarded in the marketplace.



Overall low performers are not without ammunition in the market for talent

Copenhagen, the overall index leader, ranked Top 3 in four of the six pillars. Zurich established a Top 3 spot in three of the pillars. Elsewhere, individual cities show significant variations in their pillar rankings, with some of the overall bottom performers earning a Top 10 spot in another pillar. Valletta, Malta, for instance, placed last in the overall index ranking, yet was rated No.9 in the “Retain” pillar/sub-index.

In a 2016 global survey of 14,000 expatriates, **Malta** was ranked as **one of the best places for foreigner to live**. The Expat Insider 2016 survey asked respondents to rate 43 different aspects of life abroad on a scale of one to seven, with topics ranging from the friendliness of locals to taxation and provision of services.



Malta ranked well in all quality of life sub-categories, topping the list for leisure options and coming a close second in personal happiness. Expats also rated Malta very well when asked how easy it was to settle down and make new friends.

Almost half of all Malta-based foreigners who took the survey said they were planning on living in Malta forever - much higher than the 31 per cent global average.

Adapted from a Times of Malta news story

ECTCI data at the pillar level

Pillar I: Enable

1	Dublin	91.3
2	Zurich	80.9
3	Copenhagen	76.9
4	Paris	71.1
5	Helsinki	67.4
6	Eindhoven	59.8
7	Gothenburg	59.5
8	Hanover	56.9
9	Berlin	55.1
10	London	45.1

Pillar II: Attract

1	Zurich	95.2
2	Paris	81.4
3	Copenhagen	80.4
4	Vienna	80.1
5	Eindhoven	77.0
6	London	76.4
7	Helsinki	74.6
8	Berlin	74.1
9	Gothenburg	70.4
10	Nantes	70.3

Pillar III: Grow

1	Copenhagen	92.5
2	Helsinki	78.5
3	Madrid	77.7
4	Gothenburg	71.5
5	Cardiff	70.6
6	London	67.3
7	Barcelona	67.2
8	Birmingham	66.1
9	Zurich	62.2
10	Krakow	60.4

Pillar IV: Retain

1	Vienna	79.0
2	Bilbao	77.6
3	Brno	76.3
4	Tallinn	73.1
5	Cardiff	71.5
6	Barcelona	69.9
7	Zaragoza	69.8
8	Krakow	68.9
9	Valletta	68.7
10	Riga	67.5

Pillar V: Utilize skills

1	Brno	100
2	Krakow	88.2
3	Kiel	87.7
4	Hanover	85.9
5	Vienna	72.2
6	Riga	70.6
7	Berlin	70.5
8	Tallinn	68.1
9	Nantes	63.6
10	Bologna	59.6

Pillar VI: Build global knowledge

1	Copenhagen	76.5
2	Zurich	70.8
3	Bilbao	63.3
4	Madrid	63.1
5	Gothenburg	56.1
6	Dublin	54.8
7	Barcelona	54.2
8	Helsinki	53.2
9	Paris	44.6
10	Birmingham	44.1

VII. Summary and conclusions

This report has traced and contextualized the rise of cities and regions to a position of prominence in the talent competitiveness landscape around the world. It provided a review of the main sources of existing data on sub-national actors, and highlighted the gaps in information that is commonly available to policymakers. It then proceeded to design and construct the inaugural edition of the European Talent Competitiveness Index (ECTCI), populating it with data on 27 European Union cities across 19 variables. The ECTCI findings were presented through a discussion of cities and regions' relative performance along the six dimensions represented by the index's pillars.

Main drivers and key constraints

The pillars of the ECTCI model emulate the logical structure and coherence of the Global Talent Competitiveness Index which has been published annually since 2013. Although the four 'input pillars' of ECTCI are almost the same as the ones of the original (country) model, they rely on a different logic, which is that of four key trends, namely: (1) the fast trend of urbanization that characterizes the global economy, (2) the changing interaction between business and social dimensions of cities, (3) the growing importance of both education and cluster presence to build 'talent magnets', and (4) the increasing value granted to lifestyle by internationally mobile talents.

The last two pillars of the ECTCI model describe respectively how cities use talents, and how they build global knowledge around them.

On the constraints side, the availability of reliable and comparable data remains a key challenge, for which Europe seems to be better equipped.

Key messages and avenues for action

From a European-wide point of view, three key lessons emerge from the present exploration, namely:

- 1) **Scandinavians do it better** – There is clearly a set of important lessons that can be learned (and possibly adapted) from the experience of cities like Copenhagen, Gothenburg and other northern cities.

- 2) **Small is where some of the most innovative action is** – Although large cities such as Paris, Berlin or Madrid rank high in ECTCI, the remarkable performance of smaller cities (typically in the range of 100,000 to 500,000 inhabitants) show that much can be learned from their respective – often innovative – experiences; this is probably where the largest number of ‘best practices’ can be identified in the future.
- 3) **Talent strategies are a complex equation, and international cooperation is key to identify its solutions** – Because they deal with the human factor, talent strategies have to be both strategic in their objectives, and subtle in their implementation. Cities are the ideal context to provide the necessary combination of policies and innovations. Enhancing connections and exchanges of data and experiences among them will be a key ingredient for success.

A time to reflect, and take action

CALL FOR COOPERATION

At the present stage of conceptualizing issues of talent competitiveness at sub-national levels, and with comprehensive benchmarks and other analytical tools only emerging, cities and regions will do well to learn from their peers. There is a lot to be shared – data, information, best practices, annual meetings, ideas for learning platforms and multi-stakeholder partnerships – and to learn about what has worked well and what has not.

CALL FOR DATA COLLECTION

There is only so much statistical and other meaningful information that cities and regions can expect to be generated at national and international levels. In their day-to-day functioning, cities and regions naturally produce a wealth of ‘on-the-ground’ data points. It is only a matter of collecting and systematizing it so that it can yield new possibilities for evaluating, forecasting and planning.

CALL FOR FEEDBACK

In the talent space, success is defined by individuals including foreign talents. It is how they perceive and experience life and work in their adopted city and region that ultimately shapes the city/region’s reputation among highly-skilled workers. Therefore, cities and regions need to do all they can to motivate their international talent to share feedback, observations and ideas with the planners, policymakers and regional talent agencies.

The above points draw out the fact that the war for talent is rarely waged on half a dozen different fronts simultaneously. Rather, every city and region brings its own value propositions as well as deficiencies to the talent landscape. The objective of an effective, well-informed and ultimately successful planning process will be to craft a strategy that maximizes the appeal of one's strengths and compensates for what may be perceived as weak spots. In place of aiming to be "all things to all people", it is measurable goals and timelines, owned by clearly-identified stakeholders and champions, that will lift a city/region's position in the talent competitiveness space. It is most likely at that (sub-pillar) level that the ECTCI model will be most useful to cities wanted to identify their own 'low hanging fruit' and key challenges is enhancing their talent competitiveness.

December 2016

VIII. Annexes, references

VIII.A ECTCI: Data per pillar (ranked according to ECTCI total score)

No.	City	SCORE IN PILLAR ONE: ENABLE	1.1 Gross expenditure on R&D (% of GDP)	Score	1.2 ICT access (% of households with internet access at home)	Score	1.3 Forbes Global 2000 companies	Score
1	Copenhagen	67.8	4.95%	100.0	91%	89.1	14.2	41.6
2	Zurich	62.2	3.00%	59.9	95%	97.8	29.0	85.0
3	Helsinki	62.0	3.98%	80.0	95%	97.8	8.3	24.3
4	Gothenburg	56.0	3.66%	73.5	91%	89.1	5.4	15.8
5	Madrid	39.3	1.75%	34.2	86%	78.3	5.4	15.8
6	Paris	54.6	2.90%	57.8	87%	80.4	25.6	75.1
7	Eindhoven	54.0	2.64%	52.9	96%	100.0	9.0	26.4
8	Dublin	58.4	n/a	n/a	88%	82.6	34.1	100.0
9	Cardiff	35.9	1.17%	22.2	88%	82.6	2.9	8.5
10	Berlin	54.9	3.55%	73.0	92%	91.3	0.3	0.9
11	Vienna	36.1	1.60%	31.1	84%	73.9	3.4	10.0
12	London	40.0	1.00%	18.7	93%	93.5	7.9	23.2
13	Birmingham	39.4	1.67%	32.5	89%	84.8	0.9	2.6
14	Bilbao	38.6	2.09%	41.2	83%	71.7	2.9	8.5
15	Barcelona	33.4	1.50%	29.0	81%	67.4	3.8	11.1
16	Bmo	37.8	2.86%	57.0	76%	56.5	0.0	0.0
17	Tallinn	41.9	2.18%	43.0	88%	82.6	0.0	0.0
18	Hanover	51.9	2.84%	56.6	92%	91.3	7.8	22.9
19	Krakow	24.9	1.30%	24.9	n/a	n/a	0.0	0.0
20	Bologna	34.4	1.65%	32.1	79%	63.0	8.0	23.5
21	Nantes	33.8	1.22%	23.2	86%	78.3	0.0	0.0
22	Kiel	39.9	1.47%	28.4	92%	91.3	0.0	0.0
23	Riga	22.7	0.66%	11.7	76%	56.5	0.0	0.0
24	Zaragoza	25.1	0.90%	16.7	77%	58.7	0.0	0.0
25	Milan	30.1	1.30%	24.9	78%	60.9	4.6	13.5
26	Turin	31.8	1.98%	38.9	75%	54.3	2.2	6.5
27	Valetta	28.4	0.84%	15.4	81%	67.4	2.5	7.3

No.	City	SCORE IN PILLAR TWO: ATTRACT	2.1 GDP per capita (USD)	Score	2.2	Score	2.3	Score
					Quality of life		Environmental quality	
1	Copenhagen	80.4	49,019	58.6	82.5	82.7	87.3	100.0
2	Zurich	95.2	82,410	100.0	88.0	92.2	82.3	93.5
3	Helsinki	74.6	51,454	61.6	76.6	72.4	79.3	89.7
4	Gothenburg	70.4	41,354	49.1	78.7	76.1	76.5	86.0
5	Madrid	69.2	41,554	49.3	83.5	84.4	67.1	73.9
6	Paris	81.4	59,611	71.7	87.1	90.6	73.2	81.8
7	Eindhoven	77.0	44,412	52.9	86.1	88.9	78.9	89.1
8	Dublin	60.1	55,270	66.3	67.7	57.0	54.0	56.9
9	Cardiff	62.9	31,470	36.8	86.1	88.9	n/a	n/a
10	Berlin	74.1	37,701	44.5	85.9	88.6	79.0	89.3
11	Vienna	80.1	47,307	56.5	86.2	89.1	83.3	94.8
12	London	76.4	54,383	65.2	83.5	84.4	71.6	79.7
13	Birmingham	56.2	32,396	38.0	75.0	69.7	57.1	60.9
14	Bilbao	62.3	38,047	45.0	80.7	79.5	n/a	n/a
15	Barcelona	46.4	36,125	42.6	66.3	54.6	42.4	41.9
16	Brno	52.8	27,276	31.6	74.3	68.5	55.1	58.3
17	Tallinn	46.7	18,783	21.1	71.3	63.3	53.0	55.6
18	Hanover	26.9	45,189	53.8	n/a	n/a	n/a	n/a
19	Krakow	34.8	25,997	30.0	61.0	45.4	32.4	29.0
20	Bologna	60.0	47,670	56.9	74.5	68.8	52.0	54.3
21	Nantes	70.3	37,082	43.8	90.7	96.9	n/a	n/a
22	Kiel	n/a	n/a	n/a	n/a	n/a	n/a	n/a
23	Riga	44.5	21,103	24.0	60.9	45.2	59.6	64.2
24	Zaragoza	69.7	33,587	39.4	92.5	100.0	n/a	n/a
25	Milan	46.2	57,074	68.6	58.9	41.8	31.9	28.3
26	Turin	36.3	38,237	45.2	62.0	47.1	22.7	16.4
27	Valletta	40.4	22,780	26.0	67.2	56.2	40.2	39.1

No.	City	SCORE IN PILLAR THREE: GROW	3.1 Major universities		3.2 Vocational enrolment (%)		3.3 Tertiary enrolment (%)		3.4 % of individuals in social networks	
			Score	Score	Score	Score	Score	Score		
1	Copenhagen	92.5	35	90.0	34.2%	93.6	98.8%	88.8	71%	97.4
2	Zurich	62.2	20	100.0	34.6%	94.7	36.4%	30.3	43%	23.7
3	Helsinki	78.5	67	80.0	23.9%	65.0	97.2%	87.3	65%	81.6
4	Gothenburg	71.5	151	60.0	31.0%	84.7	62.2%	54.5	67%	86.8
5	Madrid	77.7	12	88.0	23.9%	65.0	110.8%	100.0	56%	57.9
6	Paris	54.5	36	90.0	19.7%	53.3	58.3%	50.8	43%	23.7
7	Eindhoven	50.7	301	40.0	16.5%	44.4	63.1%	55.3	58%	63.2
8	Dublin	55.5	151	60.0	16.2%	43.6	71.2%	62.9	n/a	n/a
9	Cardiff	70.6	151	60.0	36.5%	100.0	47.7%	40.9	65%	81.6
10	Berlin	43.5	301	40.0	18.9%	51.1	61.6%	53.9	45%	28.9
11	Vienna	29.7	151	60.0	10.8%	28.6	19.5%	14.5	40%	15.8
12	London	67.3	18	100.0	9.7%	25.6	61.9%	54.2	68%	89.5
13	Birmingham	66.1	101	70.0	35.6%	97.5	45.5%	38.9	56%	57.9
14	Bilbao	46.3	401	30.0	19.7%	53.3	90.4%	80.9	42%	21.1
15	Barcelona	67.2	16	84.0	18.3%	49.4	89.5%	80.1	55%	55.3
16	Brno	35.2	0	0.0	15.3%	41.1	87.8%	78.5	42%	21.1
17	Tallinn	41.3	0	0.0	19.3%	52.2	76.7%	68.1	51%	44.7
18	Hanover	37.4	301	40.0	17.5%	47.2	42.4%	36.0	44%	26.3
19	Krakow	60.4	301	40.0	28.0%	76.4	73.2%	64.8	n/a	n/a
20	Bologna	47.1	201	50.0	20.8%	56.4	80.5%	71.6	38%	10.5
21	Nantes	31.4	0	0.0	23.1%	62.8	54.1%	46.9	40%	15.8
22	Kiel	42.1	151	60.0	14.5%	38.9	41.7%	35.3	47%	34.2
23	Riga	44.0	0	0.0	25.3%	68.9	65.1%	57.2	53%	50.0
24	Zaragoza	49.2	401	30.0	20.2%	54.7	78.7%	69.9	50%	42.1
25	Milan	58.8	25	75.0	36.0%	100.0	62.5%	54.8	36%	5.3
26	Turin	40.6	151	60.0	22.2%	54.7	54.8%	47.6	34%	0.0
27	Valletta	25.5	0	0.0	6.7%	17.2	41.2%	34.8	53%	50.0

No.	City	SCORE IN PILLAR FOUR: RETAIN	4.1	Score	4.2	Score	4.3 Monthly expenses for four-person family (EUR)	Score	4.4 Rent per month, 3-bedroom apt city centre	Score
			Personal safety score		Physicians per 1,000 people					
1	Copenhagen	63.4	84.4	90.0	4.4	51.5	3,157	46.9	2,119	65.3
2	Zurich	45.2	76.6	77.0	5.0	60.3	4,994	0.0	3,168	43.4
3	Helsinki	63.7	77.0	77.7	4.4	51.5	2,884	53.9	1,803	71.8
4	Gothenburg	58.0	60.0	49.4	3.9	44.1	2,829	55.3	1,264	83.1
5	Madrid	65.3	65.8	59.1	4.4	51.5	2,296	68.9	1,326	81.8
6	Paris	55.7	71.3	68.2	4.0	45.6	3,162	46.8	2,268	62.2
7	Eindhoven	63.3	80.6	83.7	2.3	20.6	2,443	65.2	1,238	83.6
8	Dublin	50.9	52.8	37.4	n/a	n/a	2,993	51.1	2,169	64.2
9	Cardiff	71.5	65.5	58.6	n/a	n/a	2,328	68.1	1,041	87.7
10	Berlin	66.6	66.6	60.4	4.9	58.8	2,444	65.1	1,312	82.1
11	Vienna	79.0	83.8	89.0	6.9	88.2	2,536	62.8	1,603	76.0
12	London	51.3	77.4	78.4	n/a	n/a	3,169	46.6	3,871	28.8
13	Birmingham	61.0	51.5	35.3	n/a	n/a	2,409	66.0	1,337	81.5
14	Bilbao	77.6	88.6	97.0	4.9	58.8	2,301	68.8	1,127	85.9
15	Barcelona	69.9	78.4	80.0	4.2	48.5	2,354	67.4	1,235	83.7
16	Brno	76.3	77.9	79.2	3.7	41.2	1,527	88.6	628	96.3
17	Tallinn	73.1	82.5	86.9	3.3	35.3	1,995	76.6	730	93.8
18	Hanover	64.0	67.4	61.7	3.5	38.2	n/a	n/a	824	92.2
19	Krakow	68.9	73.0	71.0	2.3	20.6	1,466	90.1	742	93.9
20	Bologna	63.8	65.3	58.2	4.1	47.1	2,540	62.7	1,059	87.3
21	Nantes	62.3	69.9	65.9	2.8	27.9	2,440	65.2	930	90.0
22	Kiel	65.2	n/a	n/a	3.9	44.1	n/a	n/a	1,108	86.3
23	Riga	67.5	68.5	63.6	3.1	32.4	1,953	77.7	630	96.3
24	Zaragoza	69.8	n/a	n/a	3.9	44.1	2,301	68.8	612	96.6
25	Milan	58.2	70.9	67.6	3.6	39.7	2,721	58.1	2,018	67.4
26	Turin	56.4	50.1	32.9	3.5	38.2	2,444	65.1	963	89.3
27	Valletta	68.7	78.3	79.9	3.5	38.2	n/a	n/a	1,033	87.9

No.	City	SCORE IN PILLAR FIVE: UTILIZE SKILLS	5.1 Labour force with secondary education	Score	5.2 Population with secondary education	Score
1	Copenhagen	41.0	36.4%	40.8	35.6%	41.1
2	Zurich	57.6	49.3%	62.0	42.8%	53.2
3	Helsinki	44.5	39.4%	45.7	36.9%	43.3
4	Gothenburg	56.6	46.5%	57.4	44.4%	55.8
5	Madrid	23.2	25.7%	23.2	24.9%	23.2
6	Paris	48.6	43.6%	52.6	37.7%	44.6
7	Eindhoven	50.0	42.0%	50.0	40.9%	50.0
8	Dublin	34.5	37.1%	41.9	27.2%	27.1
9	Cardiff	51.5	44.2%	53.6	40.5%	49.3
10	Berlin	70.5	57.8%	76.0	49.9%	65.0
11	Vienna	72.2	54.2%	70.1	55.4%	74.2
12	London	41.7	42.9%	51.5	30.0%	31.8
13	Birmingham	51.2	43.9%	53.1	40.5%	49.3
14	Bilbao	17.1	21.8%	16.8	21.4%	17.4
15	Barcelona	16.5	22.1%	17.3	20.4%	15.7
16	Brno	100.0	72.4%	100.0	70.8%	100.0
17	Tallinn	68.1	53.0%	68.1	n/a	n/a
18	Hanover	85.9	62.8%	84.2	63.4%	87.6
19	Krakow	88.2	64.0%	86.2	64.9%	90.1
20	Bologna	59.6	48.6%	60.9	45.8%	58.2
21	Nantes	63.6	50.4%	63.8	48.9%	63.4
22	Kiel	87.7	63.7%	85.7	64.6%	89.6
23	Riga	70.6	58.7%	77.5	49.1%	63.7
24	Zaragoza	24.5	26.7%	24.8	25.4%	24.1
25	Milan	47.9	46.7%	57.7	33.7%	38.0
26	Turin	57.7	47.8%	59.5	44.4%	55.8
27	Valletta	16.0	31.0%	31.9	11.0%	0.0

No.	City	SCORE IN PILLARSIX: BUILD GLOBAL KNOWLEDGE	6.1	Score	6.2	Score	6.3 Airport connectivity	Score
			Tertiary-educated workforce		Tertiary-educated population			
1	Copenhagen	76.5	43.8%	65.7	48.1%	95.2	47.3	68.7
2	Zurich	70.8	34.3%	47.6	34.8%	64.8	68.6	100.0
3	Helsinki	53.2	47.5%	72.7	27.3%	47.7	27.3	39.2
4	Gothenburg	56.1	37.0%	52.8	50.2%	100.0	11.3	15.6
5	Madrid	63.1	49.0%	75.5	47.2%	93.2	14.8	20.7
6	Paris	44.6	33.7%	46.5	26.0%	44.7	29.5	42.4
7	Eindhoven	44.0	32.1%	43.5	33.2%	61.2	19.3	27.4
8	Dublin	54.8	41.5%	61.3	21.5%	34.5	47.3	68.7
9	Cardiff	39.0	36.5%	51.8	33.1%	61.0	3.5	4.2
10	Berlin	29.4	28.1%	35.9	26.0%	44.7	5.9	7.7
11	Vienna	37.1	31.0%	41.4	29.1%	51.8	13.1	18.3
12	London	35.8	38.1%	54.8	24.3%	40.9	8.6	11.7
13	Birmingham	44.1	33.4%	45.9	38.8%	74.0	9.2	12.5
14	Bilbao	63.3	51.3%	79.9	47.0%	92.7	12.4	17.2
15	Barcelona	54.2	39.4%	57.3	37.0%	69.9	24.8	35.5
16	Bmo	22.3	23.7%	27.5	23.3%	38.6	1.3	0.9
17	Tallinn	43.3	37.2%	53.1	37.2%	70.3	5.0	6.3
18	Hanover	26.1	22.8%	25.8	23.0%	37.9	10.7	14.7
19	Krakow	32.1	31.0%	41.4	27.3%	47.7	5.5	7.1
20	Bologna	24.9	20.1%	20.7	18.7%	28.1	18.4	26.0
21	Nantes	40.8	33.0%	45.2	30.4%	54.8	15.9	22.4
22	Kiel	22.3	23.2%	26.6	23.4%	38.8	1.7	1.4
23	Riga	34.5	31.1%	41.6	28.8%	51.1	8.1	10.9
24	Zaragoza	40.7	38.3%	55.2	35.7%	66.9	0.7	0.0
25	Milan	17.0	17.9%	16.5	12.8%	14.6	14.2	19.9
26	Turin	14.7	17.9%	16.5	16.2%	22.4	4.1	5.1
27	Valletta	17.0	20.9%	22.2	11.9%	12.6	11.7	16.2

VIII.B ECTCI: Data per pillar (ranked according to pillar score)

No.	City	SCORE IN PILLAR ONE: ENABLE	1.1 Gross expenditure on R&D (% of GDP)	Score	1.2 ICT access (% of households with internet access at home)	Score	1.3 Forbes Global 2000 companies	Score
1	Dublin	91.3	n/a	n/a	88%	82.6	34.1	100.0
2	Zurich	80.9	3.00%	59.9	95%	97.8	29.0	85.0
3	Copenhagen	76.9	4.95%	100.0	91%	89.1	14.2	41.6
4	Paris	71.1	2.90%	57.8	87%	80.4	25.6	75.1
5	Helsinki	67.4	3.98%	80.0	95%	97.8	8.3	24.3
6	Eindhoven	59.8	2.64%	52.9	96%	100.0	9.0	26.4
7	Gothenburg	59.5	3.66%	73.5	91%	89.1	5.4	15.8
8	Hanover	56.9	2.84%	56.6	92%	91.3	7.8	22.9
9	Berlin	55.1	3.55%	73.0	92%	91.3	0.3	0.9
10	London	45.1	1.00%	18.7	93%	93.5	7.9	23.2
11	Madrid	42.8	1.75%	34.2	86%	78.3	5.4	15.8
12	Tallinn	41.9	2.18%	43.0	88%	82.6	0.0	0.0
13	Bilbao	40.5	2.09%	41.2	83%	71.7	2.9	8.5
14	Birmingham	40.0	1.67%	32.5	89%	84.8	0.9	2.6
15	Kiel	39.9	1.47%	28.4	92%	91.3	0.0	0.0
16	Bologna	39.5	1.65%	32.1	79%	63.0	8.0	23.5
17	Vienna	38.3	1.60%	31.1	84%	73.9	3.4	10.0
18	Brno	37.8	2.86%	57.0	76%	56.5	0.0	0.0
19	Cardiff	37.8	1.17%	22.2	88%	82.6	2.9	8.5
20	Barcelona	35.8	1.50%	29.0	81%	67.4	3.8	11.1
21	Nantes	33.8	1.22%	23.2	86%	78.3	0.0	0.0
22	Turin	33.2	1.98%	38.9	75%	54.3	2.2	6.5
23	Milan	33.1	1.30%	24.9	78%	60.9	4.6	13.5
24	Valletta	30.0	0.84%	15.4	81%	67.4	2.5	7.3
25	Zaragoza	25.1	0.90%	16.7	77%	58.7	0.0	0.0
26	Krakow	24.9	1.30%	24.9	n/a	n/a	0.0	0.0
27	Riga	22.7	0.66%	11.7	76%	56.5	0.0	0.0

No.	City	SCORE IN PILLARTWO: ATTRACT	2.1 GDP per capita (USD)	Score	2.2 Quality of life	Score	2.3 Environmental quality	Score
1	Zurich	95.2	82,410	100.0	88.0	92.2	82.3	93.5
2	Paris	81.4	59,611	71.7	87.1	90.6	73.2	81.8
3	Copenhagen	80.4	49,019	58.6	82.5	82.7	87.3	100.0
4	Vienna	80.1	47,307	56.5	86.2	89.1	83.3	94.8
5	Eindhoven	77.0	44,412	52.9	86.1	88.9	78.9	89.1
6	London	76.4	54,383	65.2	83.5	84.4	71.6	79.7
7	Helsinki	74.6	51,454	61.6	76.6	72.4	79.3	89.7
8	Berlin	74.1	37,701	44.5	85.9	88.6	79.0	89.3
9	Gothenburg	70.4	41,354	49.1	78.7	76.1	76.5	86.0
10	Nantes	70.3	37,082	43.8	90.7	96.9	n/a	n/a
11	Zaragoza	69.7	33,587	39.4	92.5	100.0	n/a	n/a
12	Madrid	69.2	41,554	49.3	83.5	84.4	67.1	73.9
13	Cardiff	62.9	31,470	36.8	86.1	88.9	n/a	n/a
14	Bilbao	62.3	38,047	45.0	80.7	79.5	n/a	n/a
15	Dublin	60.1	55,270	66.3	67.7	57.0	54.0	56.9
16	Bologna	60.0	47,670	56.9	74.5	68.8	52.0	54.3
17	Birmingham	56.2	32,396	38.0	75.0	69.7	57.1	60.9
18	Brno	52.8	27,276	31.6	74.3	68.5	55.1	58.3
19	Tallinn	46.7	18,783	21.1	71.3	63.3	53.0	55.6
20	Barcelona	46.4	36,125	42.6	66.3	54.6	42.4	41.9
21	Milan	46.2	57,074	68.6	58.9	41.8	31.9	28.3
22	Riga	44.5	21,103	24.0	60.9	45.2	59.6	64.2
23	Valletta	40.4	22,780	26.0	67.2	56.2	40.2	39.1
24	Turin	36.3	38,237	45.2	62.0	47.1	22.7	16.4
25	Krakow	34.8	25,997	30.0	61.0	45.4	32.4	29.0
26	Hanover	n/a	45,189	53.8	n/a	n/a	n/a	n/a
27	Kiel	n/a	n/a	n/a	n/a	n/a	n/a	n/a

No.	City	SCORE IN PILLAR THREE: GROW	3.1 Major universities		3.2 Vocational enrolment (%)		3.3 Tertiary enrolment (%)		3.4 % of individuals in social networks	
			Score	Score	Score	Score	Score	Score		
1	Copenhagen	92.5	35	90.0	34.2%	93.6	98.8%	88.8	71%	97.4
2	Helsinki	78.5	67	80.0	23.9%	65.0	97.2%	87.3	65%	81.6
3	Madrid	77.7	12	88.0	23.9%	65.0	110.8%	100.0	56%	57.9
4	Gothenburg	71.5	151	60.0	31.0%	84.7	62.2%	54.5	67%	86.8
5	Cardiff	70.6	151	60.0	36.5%	100.0	47.7%	40.9	65%	81.6
6	London	67.3	18	100.0	9.7%	25.6	61.9%	54.2	68%	89.5
7	Barcelona	67.2	16	84.0	18.3%	49.4	89.5%	80.1	55%	55.3
8	Birmingham	66.1	101	70.0	35.6%	97.5	45.5%	38.9	36%	57.9
9	Zurich	62.2	20	100.0	34.6%	94.7	36.4%	30.3	43%	23.7
10	Krakow	60.4	301	40.0	28.0%	76.4	73.2%	64.8	n/a	n/a
11	Milan	58.8	25	75.0	36.0%	100.0	62.5%	54.8	36%	5.3
12	Dublin	55.5	151	60.0	16.2%	43.6	71.2%	62.9	n/a	n/a
13	Paris	54.5	36	90.0	19.7%	53.3	58.3%	50.8	43%	23.7
14	Eindhoven	50.7	301	40.0	16.5%	44.4	63.1%	55.3	58%	63.2
15	Zaragoza	49.2	401	30.0	20.2%	54.7	78.7%	69.9	50%	42.1
16	Bologna	47.1	201	50.0	20.8%	56.4	80.5%	71.6	38%	10.5
17	Bilbao	46.3	401	30.0	19.7%	53.3	90.4%	80.9	42%	21.1
18	Riga	44.0	0	0.0	25.3%	68.9	65.1%	57.2	53%	50.0
19	Berlin	43.5	301	40.0	18.9%	51.1	61.6%	53.9	45%	28.9
20	Kiel	42.1	151	60.0	14.5%	38.9	41.7%	35.3	47%	34.2
21	Tallinn	41.3	0	0.0	19.3%	52.2	76.7%	68.1	51%	44.7
22	Turin	40.6	151	60.0	22.2%	54.7	54.8%	47.6	34%	0.0
23	Hanover	37.4	301	40.0	17.5%	47.2	42.4%	36.0	44%	26.3
24	Brno	35.2	0	0.0	15.3%	41.1	87.8%	78.5	42%	21.1
25	Nantes	31.4	0	0.0	23.1%	62.8	54.1%	46.9	40%	15.8
26	Vierna	29.7	151	60.0	10.8%	28.6	19.5%	14.5	40%	15.8
27	Valletta	25.5	0	0.0	6.7%	17.2	41.2%	34.8	53%	50.0

No.	City	SCORE IN PILLAR FOUR: RETAIN	4.1		4.2		4.3 Monthly		4.4 Rent per	
			Personal safety score	Score	Physicians per 1,000 people	Score	expenses for four-person family (EUR)	Score	month, 3-bedroom apt city centre	Score
1	Vienna	79.0	83.8	89.0	6.9	88.2	2,536	62.8	1,603	76.0
2	Bilbao	77.6	88.6	97.0	4.9	58.8	2,301	68.8	1,127	85.9
3	Brno	76.3	77.9	79.2	3.7	41.2	1,527	88.6	628	96.3
4	Tallinn	73.1	82.5	86.9	3.3	35.3	1,995	76.6	750	93.8
5	Cardiff	71.5	65.5	58.6	n/a	n/a	2,328	68.1	1,041	87.7
6	Barcelona	69.9	78.4	80.0	4.2	48.5	2,354	67.4	1,235	83.7
7	Zaragoza	69.8	n/a	n/a	3.9	44.1	2,301	68.8	612	96.6
8	Krakow	68.9	73.0	71.0	2.3	20.6	1,466	90.1	742	93.9
9	Valletta	68.7	78.3	79.9	3.5	38.2	n/a	n/a	1,033	87.9
10	Riga	67.5	68.5	63.6	3.1	32.4	1,953	77.7	630	96.3
11	Berlin	66.6	66.6	60.4	4.9	58.8	2,444	65.1	1,312	82.1
12	Madrid	65.3	65.8	59.1	4.4	51.5	2,296	68.9	1,326	81.8
13	Kiel	65.2	n/a	n/a	3.9	44.1	n/a	n/a	1,108	86.3
14	Hanover	64.0	67.4	61.7	3.5	38.2	n/a	n/a	824	92.2
15	Bologna	63.8	65.3	58.2	4.1	47.1	2,540	62.7	1,059	87.3
16	Helsinki	63.7	77.0	77.7	4.4	51.5	2,884	53.9	1,803	71.8
17	Copenhagen	63.4	84.4	90.0	4.4	51.5	3,157	46.9	2,119	65.3
18	Eindhoven	63.3	80.6	83.7	2.3	20.6	2,443	65.2	1,238	83.6
19	Nantes	62.3	69.9	65.9	2.8	27.9	2,440	65.2	930	90.0
20	Birmingham	60.9	51.5	35.3	n/a	n/a	2,409	66.0	1,337	81.5
21	Milan	58.2	70.9	67.6	3.6	39.7	2,721	58.1	2,018	67.4
22	Gothenburg	56.4	50.1	32.9	3.5	38.2	2,444	65.1	963	89.3
23	Turin	56.4	50.1	32.9	3.5	38.2	2,444	65.1	963	89.3
24	Paris	55.7	71.3	68.2	4.0	45.6	3,162	46.8	2,268	62.2
25	London	51.3	77.4	78.4	n/a	n/a	3,169	46.6	3,871	28.8
26	Dublin	50.9	52.8	37.4	n/a	n/a	2,993	51.1	2,169	64.2
27	Zurich	45.2	76.6	77.0	5.0	60.3	4,994	0.0	3,168	43.4

No.	City	SCORE IN PILLAR FIVE:	5.1 Labour force with secondary education	Score	5.2 Population with secondary education	Score
		UTILIZE SKILLS				
1	Brno	100.0	72.4%	100.0	70.8%	100.0
2	Krakow	88.2	64.0%	86.2	64.9%	90.1
3	Kiel	87.7	63.7%	85.7	64.6%	89.6
4	Hanover	85.9	62.8%	84.2	63.4%	87.6
5	Vienna	72.2	54.2%	70.1	55.4%	74.2
6	Riga	70.6	58.7%	77.5	49.1%	63.7
7	Berlin	70.5	57.8%	76.0	49.9%	65.0
8	Tallinn	68.1	53.0%	68.1	n/a	n/a
9	Nantes	63.6	50.4%	63.8	48.9%	63.4
10	Bologna	59.6	48.6%	60.9	45.8%	58.2
11	Turin	57.7	47.8%	59.5	44.4%	55.8
12	Zurich	57.6	49.3%	62.0	42.8%	53.2
13	Gothenburg	56.6	46.5%	57.4	44.4%	55.8
14	Cardiff	51.5	44.2%	53.6	40.5%	49.3
15	Birmingham	51.2	43.9%	53.1	40.5%	49.3
16	Eindhoven	50.0	42.0%	50.0	40.9%	50.0
17	Paris	48.6	43.6%	52.6	37.7%	44.6
18	Milan	47.9	46.7%	57.7	33.7%	38.0
19	Helsinki	44.5	39.4%	45.7	36.9%	43.3
20	London	41.7	42.9%	51.5	30.0%	31.8
21	Copenhagen	41.0	36.4%	40.8	35.6%	41.1
22	Dublin	34.5	37.1%	41.9	27.2%	27.1
23	Zaragoza	24.5	26.7%	24.8	25.4%	24.1
24	Madrid	23.2	25.7%	23.2	24.9%	23.2
25	Bilbao	17.1	21.8%	16.8	21.4%	17.4
26	Barcelona	16.5	22.1%	17.3	20.4%	15.7
27	Valletta	16.0	31.0%	31.9	11.0%	0.0

No.	City	SCORE IN PILLAR SIX:	6.1	Score	6.2	Score	6.3 Airport connectivity	Score
		BUILD GLOBAL KNOWLEDGE	Tertiary-educated workforce		Tertiary-educated population			
1	Copenhagen	76.5	43.8%	65.7	48.1%	95.2	47.3	68.7
2	Zurich	70.8	34.3%	47.6	34.8%	64.8	68.6	100.0
3	Bilbao	63.3	51.3%	79.9	47.0%	92.7	12.4	17.2
4	Madrid	63.1	49.0%	75.5	47.2%	93.2	14.8	20.7
5	Gothenburg	56.1	37.0%	52.8	50.2%	100.0	11.3	15.6
6	Dublin	54.8	41.5%	61.3	21.5%	34.5	47.3	68.7
7	Barcelona	54.2	39.4%	57.3	37.0%	69.9	24.8	35.5
8	Helsinki	53.2	47.5%	72.7	27.3%	47.7	27.3	39.2
9	Paris	44.6	33.7%	46.5	26.0%	44.7	29.5	42.4
10	Birmingham	44.1	33.4%	45.9	38.8%	74.0	9.2	12.5
11	Eindhoven	44.0	32.1%	43.5	33.2%	61.2	19.3	27.4
12	Tallinn	43.3	37.2%	53.1	37.2%	70.3	5.0	6.3
13	Nantes	40.8	33.0%	45.2	30.4%	54.8	15.9	22.4
14	Zaragoza	40.7	38.3%	55.2	35.7%	66.9	0.7	0.0
15	Cardiff	39.0	36.5%	51.8	33.1%	61.0	3.5	4.2
16	Vienna	37.1	31.0%	41.4	29.1%	51.8	13.1	18.3
17	London	35.8	38.1%	54.8	24.3%	40.9	8.6	11.7
18	Riga	34.5	31.1%	41.6	28.8%	51.1	8.1	10.9
19	Krakow	32.1	31.0%	41.4	27.3%	47.7	5.5	7.1
20	Berlin	29.4	28.1%	35.9	26.0%	44.7	5.9	7.7
21	Hanover	26.1	22.8%	25.8	23.0%	37.9	10.7	14.7
22	Bologna	24.9	20.1%	20.7	18.7%	28.1	18.4	26.0
23	Brno	22.3	23.7%	27.5	23.3%	38.6	1.3	0.9
24	Kiel	22.3	23.2%	26.6	23.4%	38.8	1.7	1.4
25	Milan	17.0	17.9%	16.5	12.8%	14.6	14.2	19.9
26	Valletta	17.0	20.9%	22.2	11.9%	12.6	11.7	16.2
27	Turin	14.7	17.9%	16.5	16.2%	22.4	4.1	5.1

VIII.C ECTCI: Definition and sources of variables

PILLAR	VARIABLE	SOURCE
Enable	1.1 Gross expenditure on R&D (% of GDP)	Eurostat, OECD, Knoema, national statistical bureaus, other local sources
	1.2 ICT access (% households with internet access at home)	Eurostat, Knoema
	1.3 Presence of Forbes Global 2000 companies	Forbes
Attract	2.1 GDP per capita	Eurostat, Global Metro Monitor, Oxford Economics, Moody's Analytics
	2.2 Quality of life	EIU Best Cities, Numbeo Quality of Life Index
	2.3 Environmental quality	EIU Best Cities, Numbeo Pollution Index
Grow	3.1 Major universities*	Times Higher Education (THE), Financial Times ranking of global MBA programmes / business schools*
	3.2 Vocational enrolment (%)	Eurostat, with GTCI scores used as a proxy where necessary
	3.3 Tertiary enrolment (%)	Eurostat, GTCI, national statistical bureaus
	3.4 Individuals in social networks (%)	Eurostat, Knoema
Retain	4.1 Personal safety score	EIU Safe Cities Index, Numbeo
	4.2 Physician density (physicians per 1,000 people)	WHO, Eurostat, OECD
	4.3 Monthly expenses for four-person family (normalised in euros)	Numbeo
	4.4 Rent per month, three-bedroom apartment in city centre (normalised in euros)	Numbeo
Utilise Skills	5.1 Workforce with secondary education (%)	Eurostat, GTCI
	5.2 Population with secondary education (%)	Eurostat, GTCI
Build Global Knowledge	6.1 Workforce with tertiary education (%)	Eurostat, GTCI
	6.2 Population with tertiary education (%)	UNESCO
	6.3 Airport connectivity (largest airport servicing the city; adjusted by population)	Airports Council International

* Cities that are hosts to universities ranked 1–25 in the world were awarded 100 points; 26–50: 90 points; 51–100: 80 points; 101–150: 70 points; 151–200: 60 points; 201–300: 50 points; 301–400: 40 points; 401–500: 30 points. In addition, business schools received points equal to (100 – Financial Times ranking). See <http://rankings.ft.com/businessschoolrankings/global-mba-ranking-2016>.

VIII.D References

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