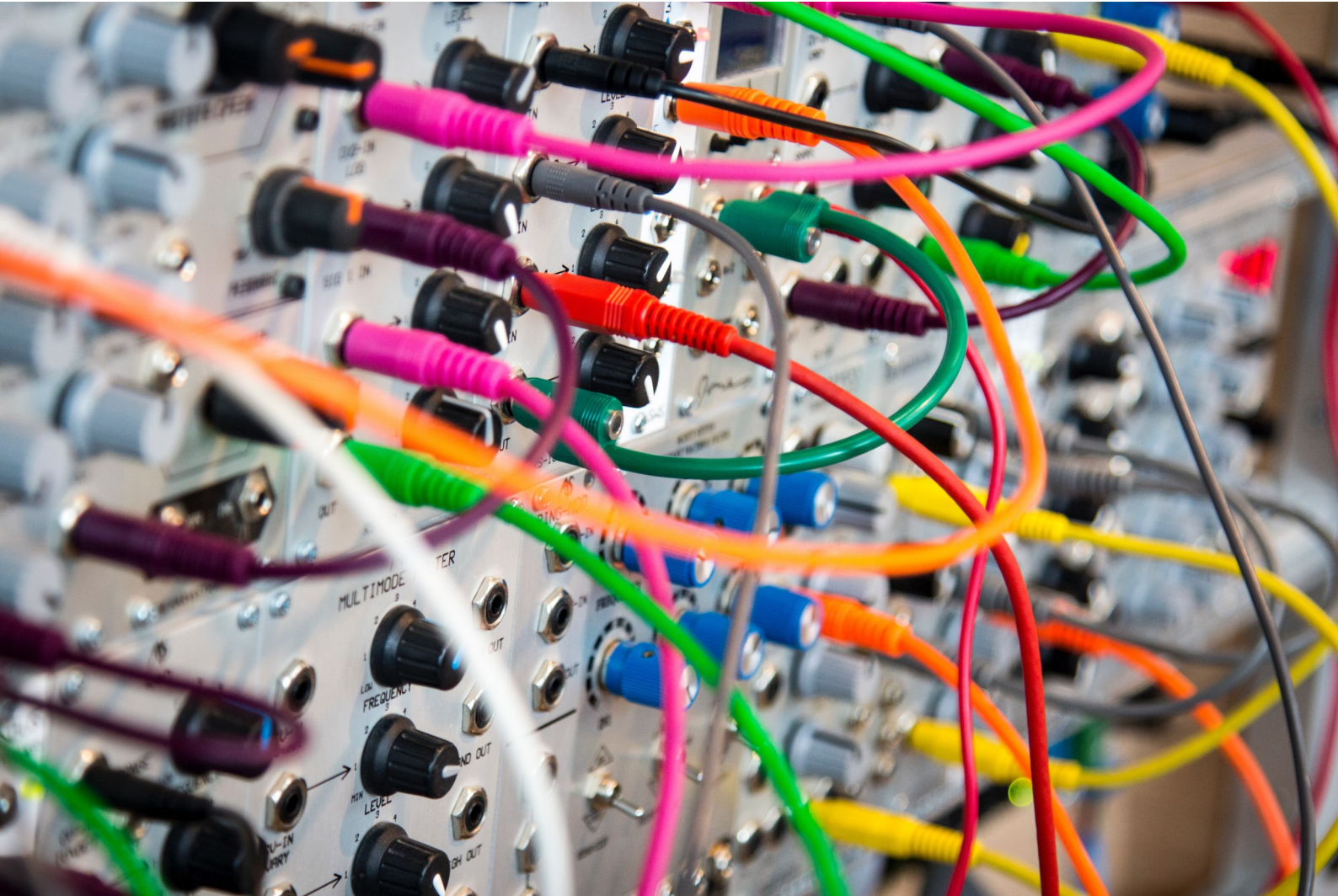




# The Smart Centres Index 1



July 2020



Distributed Futures





We are pleased to present the first edition of the Smart Centres Index (SCI 1).

The SCI has been developed by Z/Yen, as part of its Long Finance Initiative and the Distributed Futures Programme to track the development of technology and financial centres across the world in their support for and readiness for new technology applications. It aims to help investors, governments, and regulators track the attractiveness of technology centres for new technologies and products by measuring how attuned centres and their regulatory systems are to attracting innovation and growth in Science, Technology, Energy Systems, Machine Learning, Distributed Ledgers, and Fintech.

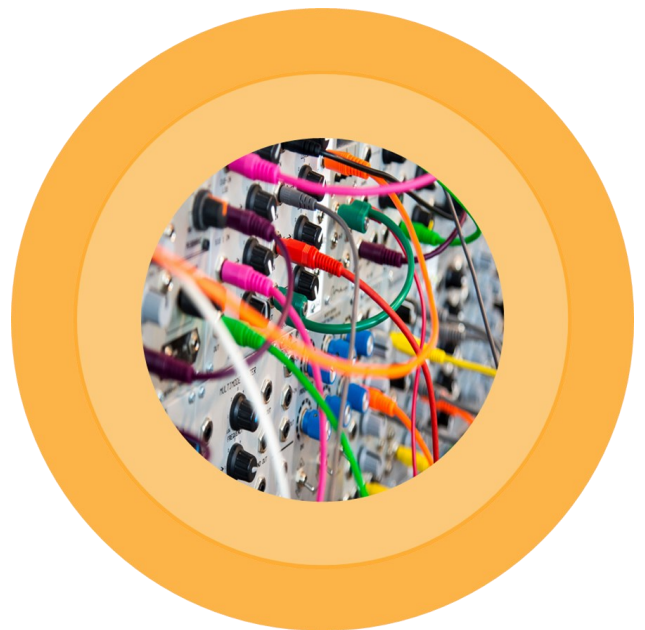
The SCI tracks three dimensions related to innovation and technology in the cities that we rank:

- Innovation Support - the support provided by regulatory and other systems to innovation and technology in a centre.
- Creative Intensity - the intensity of technology and innovation services and opportunities in a centre.
- Delivery Capability - the quality of the technology and innovation work that is taking place in a centre.

**Z/Yen** helps organisations make better choices - our clients consider us a commercial think-tank that spots, solves, and acts. Our name combines Zen and Yen - 'a philosophical desire to succeed' - in a ratio, recognising that all decisions are trade-offs. One of Z/Yen's specialisms is the development and publication of research combining factor analysis and professional assessments.

**Long Finance** is a Z/Yen initiative designed to address the question **"When would we know our financial system is working?"** This question underlies Long Finance's goal to improve society's understanding and use of finance over the long-term. In contrast to the short-termism that defines today's economic views the Long Finance time-frame is roughly 100 years.

The authors of this report, Mike Wardle and Professor Michael Mainelli, would like to thank Bikash Kharel, Alex Kemsley, and the rest of the Z/Yen team for their contributions with research, modelling, and ideas.



Cover Photo by [John Barkiple](#) on [Unsplash](#)

## Foreword

Greetings from Busan, I would like to congratulate Z/Yen on the publication of THE Smart Centres Index, and appreciate the opportunity to contribute to the first edition. Given the current environment, tracking financial and commercial centres' strengths in technology and innovation has become even more important.

In Busan, we are well aware of the importance of leading the way in technology – whether it relates to manufacturing, digitisation, or the development of fintech and blockchain – and are taking proactive steps to support innovative businesses in Busan.

The South Korean government has selected Busan as a Smart City to create an innovative industrial ecosystem and to pioneer a leading model for future Smart Cities. With its advanced IT infrastructure, Busan has attracted global leaders such as Amazon and Microsoft, to serve as a central hub for cloud innovation and data infrastructure in Asia.

Busan has also been designated as a special blockchain regulatory free zone by the government, providing opportunities for fintechs to develop new blockchain technologies. This test bed environment will further be enhanced with U-Space Busan International Finance Center (BIFC), a central fintech hub dedicated to supporting companies throughout their lifecycle, from technology development, marketing, consulting to investment.

On 1 July 2020, Busan Metropolitan City, along with financial institutions and local financial services businesses, formed the Busan Finance Center (BFC) to operate as a control centre for the Busan financial hub. BFC will collaborate with various institutions and drive innovative businesses and technology in the wider economy of Busan, Korea, and northeast Asia.

We are pleased to introduce the Smart Centres Index as a way to examine the progress made by cities in their approach to technology and innovation. We look forward to Busan being featured in the index.

**Mr. Jong Hwa KIM**  
President of Busan Finance Center



## Summary And Headlines

### Overview

Welcome to the first edition of the Smart Centres Index (SCI 1). This research builds on previous work undertaken by Z/Yen to look at the development of a [Smart Jurisdictions Index](#) published in 2018 and updated in 2019.

We have developed the Smart Centres index to focus on financial and commercial centres across the world in relation to their approach to and delivery of innovation and technology, including Science, Energy Systems, Machine Learning, Distributed Ledgers, and Fintech, along with other applications. We look at cities rather than countries in developing the index as we consider that it is in cities and other commercial clusters that the development of business is driven forward.

The fourth industrial revolution, focused on the development of digital services and technology, is driving change across all aspects of our lives. Places that are successful in building a strong digital ecosystem will have a major economic lead.

The SCI is a factor assessment index, combining a number of instrumental factors - data measures drawn from a range of data providers across the world - and assessments given by business and finance professionals of three dimensions related to innovation and technology:

- Innovation Support - the approach taken to regulation and support for the innovation and technology industry provided by the commercial ecosystem.
- Creative Intensity - the extent to which technology and innovative industries are embedded in the economy of the centre.
- Delivery Capability - the quality of the work being undertaken in the field in the centre.

These dimensions are brought together in the overall SCI ratings to produce the index, which will be updated every six months.

As with any piece of longitudinal research, these initial rankings are subject to change in future editions of the index.

### Index Results

- London takes first place in the index, with New York second, and Singapore in third place.
- Five of the top ten places in the ranking are taken by US centres.
- The leading centres are strong across all three of the SCI dimensions.
- Chinese centres do not feature as strongly as we might have expected, and score on average lower for Innovation Support than their overall rating.
- The great majority of centres featured in SCI 1 are located in North America, Asia/Pacific, and Western Europe.

## North America

- Ten North American centres feature in the SCI, and the US dominates the top of the rankings, with US cities taking five of the top ten places globally - New York, San Francisco, Los Angeles, Chicago, and Boston.
- Along with ranking second overall, New York also ranks second in each of the three dimensions which make up the SCI.
- Vancouver scores high in creative intensity, ranking 9th against its overall SCI ranking of 17th.

## Asia/Pacific

- Three of the 13 Asia/Pacific centres in the index - Singapore, Hong Kong, and Tokyo - feature in the world top ten.
- The majority of Asia/Pacific centres scored lower for innovation support, including regulation, than their overall ranking in the SCI.
- Chinese centres such as Shenzhen, which have strong technology ecosystems, do not feature as highly in the index as we might have expected. This may be because those commenting on Chinese centres know more Hong Kong, Beijing and Shanghai better than other centres.

## Western Europe

- Twenty centres in Western Europe feature in the index, with London and Zurich in the global top ten.
- The majority of Western European centres score higher for innovation support, including regulation, than their overall rank. This suggests that systems of public support for, and regulation of innovation and technology are a strength in the region.
- Stockholm scores significantly higher than its overall rating in creative intensity, while Oxford and Cambridge in the UK score significantly higher for delivery capability.

## Other Regions

- Only five of the centres in SCI 1 are from other regions of the world - Middle East & Africa, Eastern Europe & Central Asia, and Latin America & The Caribbean.
- Of these centres, Dubai is rated highest, ranked at 34th in the world.

## Commentary

The role of regulators in providing support for innovation appears to be a factor that affects the ability of centres to thrive in the fields of innovation, technology and science. Setting an appropriate balance of regulation and support will be key to future performance.

Regulation and support systems need to consider the effects of Economic, Social and Institutional regulation both in promoting and holding back the development of innovation. Table 1 sets out a range of areas which regulators need to address to find the right balance in this field.

**Table 1 | Approaches To Regulation**

Potential Positive Effect On Innovation	Type Of Regulation	Potential Negative Effect On Innovation
<ul style="list-style-type: none"> <li>• Increased incentives for innovation</li> <li>• Allows efficient competition and takeovers</li> <li>• Provides incentives to improve productivity</li> </ul>	<b>Economic Regulation</b> <ul style="list-style-type: none"> <li>• Price &amp; competition</li> <li>• Market Entry</li> <li>• Mergers &amp; acquisitions</li> <li>• Monopolies &amp; antitrust</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced incentives for R&amp;D spend and co-operation</li> <li>• Restrictions on market entry</li> <li>• Reduced competitive pressure to innovate</li> </ul>
<ul style="list-style-type: none"> <li>• Promotes eco-friendly alternatives</li> <li>• Improves salaries</li> <li>• Increases acceptance of new products</li> </ul>	<b>Social Regulation</b> <ul style="list-style-type: none"> <li>• Environmental</li> <li>• Health &amp; Safety</li> <li>• Product &amp; Consumer safety</li> </ul>	<ul style="list-style-type: none"> <li>• Restricts innovation</li> <li>• Increased compliance cost</li> </ul>
<ul style="list-style-type: none"> <li>• Job security</li> <li>• Promotes investment in innovation and R&amp;D</li> </ul>	<b>Institutional Regulation</b> <ul style="list-style-type: none"> <li>• Liability</li> <li>• Employment Protection</li> <li>• Bankruptcy</li> <li>• Intellectual Property</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced incentive to innovate</li> <li>• High adjustment costs</li> <li>• Restricted availability of finance</li> </ul>

**SCI 1**

SCI 1 was compiled using 127 instrumental factors. These quantitative measures are provided by third parties including the World Bank, The Economist Intelligence Unit, the OECD, and the United Nations. Details can be found in Appendix 4.

The instrumental factors were combined with 965 assessments provided by respondents to the [SCI online questionnaire](#). Details of the 92 respondents are shown in Appendix 2. Further details of the methodology behind SCI 1 are in Appendix 3.

We researched 128 commercial and financial centres for this edition of the index. The 48 centres listed in SCI 1 are those which received a minimum of seven assessments from survey respondents. We are likely to increase this minimum for entry to the index in future editions. Assessments of respondents' home centres were excluded from the data, in order to avoid home centre bias.

## SCI 1 Ranks And Ratings

**Table 2 | Smart Centres Index 1: Ranks And Ratings**

Centre	SCI 1	
	Rank	Rating
London	1	760
New York	2	754
Singapore	3	736
San Francisco	4	717
Los Angeles	5	714
Chicago	6	713
Hong Kong	7	713
Tokyo	8	708
Boston	9	704
Zurich	10	698
Washington DC	11	693
Shanghai	12	693
Geneva	13=	692
Dallas/Fort Worth	13=	692
Sydney	15	691
Stockholm	16	690
Vancouver	17=	689
Oxford, UK	17=	689
Cambridge, UK	17=	689
Glasgow	20	688
Beijing	21=	685
Austin	21=	685
Luxembourg	23	683
Amsterdam	24	682

Centre	SCI 1	
	Rank	Rating
New Delhi	25	682
Dublin	26	681
Toronto	27	681
Shenzhen	28	679
Mumbai	29=	676
Edinburgh	29=	676
Kuala Lumpur	29=	676
Guangzhou	32	670
Munich	33	666
Milan	34=	666
Dubai	34=	666
Manila	36	665
Brussels	37	664
Bangkok	38	663
Frankfurt	39	658
Madrid	40	657
Rome	41	655
Cape Town	42	653
Guernsey	43	652
Paris	44	651
Isle of Man	45	647
Johannesburg	46	646
Moscow	47	644
Cayman Islands	48	624

## The Three SCI Dimensions

We develop the SCI ratings and rankings by looking at three separate dimensions of technology and innovation development:

- Innovation Support - the approach taken to regulation and support for the innovation and technology industry provided by the commercial ecosystem.
- Creative Intensity - the extent to which technology and innovative industries are embedded in the economy of the centre.
- Delivery Capability - the quality of the work being undertaken in the field in the centre.

We develop ratings for each of these dimensions, which are ranked equally in creating the SCI. Full details of the separate ratings for each dimension are at Appendix 1 to this report. Table 3 shows the rating details for each dimension for the top 20 centres in SCI 1.

**Table 3 | Rating Details For SCI 1 Dimensions**

SCI 1 Ranking	Centre	SCI Dimensions					
		Innovation Support		Creative Intensity		Delivery Capability	
		Rank	Rating	Rank	Rating	Rank	Rating
1	London	1	260	1	252	1	248
2	New York	2	256	2	251	2	248
3	Singapore	3	250	3	246	3	240
4	San Francisco	7	243	4	241	5	233
5	Los Angeles	5	247	5	241	13	227
6	Chicago	4	247	7	238	8	228
7	Hong Kong	6	244	11	233	4	235
8	Tokyo	11	240	6	240	8	228
9	Boston	7	243	13	233	8	228
10	Zurich	10	241	14	231	15	225
11	Washington DC	9	242	23	227	18	225
12	Shanghai	27	232	11	233	8	228
13=	Geneva	15	238	15	231	21	223
13=	Dallas / Fort Worth	16	237	16	231	19	224
15	Sydney	13	239	24	227	16	225
16	Stockholm	27	232	8	234	20	224
17=	Vancouver	23	235	9	234	28	220
17=	Oxford, UK	12	240	33	221	7	228
17=	Cambridge, UK	14	238	36	219	6	232
20	Glasgow	17	236	22	227	16	225



This analysis shows the effect that particular dimensions have on the placing of centres in the SCI. In particular:

- The top three centres in the index ranking hold the top three positions in each of the dimensions, demonstrating a balance of strengths.
- Small centres such as Oxford and Cambridge in the UK are stronger on innovation support and delivery capability/quality, but less strong on the intensity and amount of business transacted in the centre.
- A similar pattern applies to places such as Boston, Washington DC, Hong Kong, Glasgow, and Sydney.
- In other centres, such as Shanghai, intensity and capability scores are high, but innovation support rates lower, perhaps reflecting a more closed approach to regulation and business openness.
- In Stockholm and Vancouver, the creative intensity score is much higher than the overall score.

The SCI results showing the contribution of each dimension are shown in Chart 1.

## SCI 1: Further Analysis

### Additional Centres

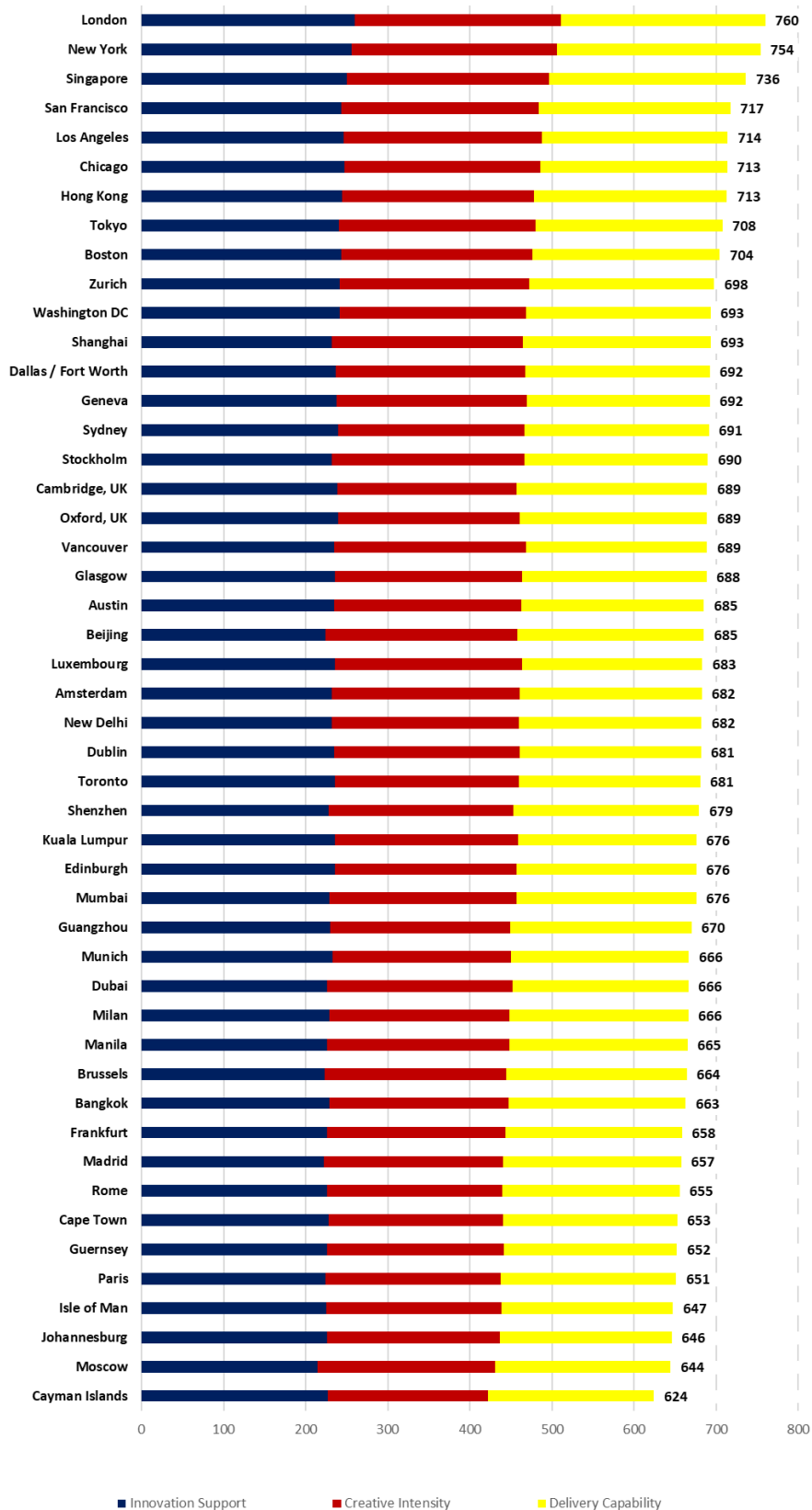
The current SCI survey includes 128 commercial and financial centres. The 48 centres rated in SCI 1 will increase as more assessments are received for other centres.

We asked respondents to identify whether there were additional centres that they thought would become more significant as technology centres over the next two to three years.

In Western Europe, Berlin was mentioned the most times, and people also mentioned Barcelona, Turin, Sophia-Antipolis in Southern France, and Belfast. In Eastern Europe and Central Asia, Kiev and Bucharest were highlighted, while in Asia/Pacific, Bangalore, India, and Suzhou New District in China were listed. In North America, Miami and Tampa/St Petersburg in Florida, Kansas City, and Phoenix were mentioned.

We will take these views into account in future versions of the SCI survey.

Chart 1 | SCI 1: Contribution Of The Dimensions To Overall Ratings



ADVERTISEMENT

# TIME FOR BUSAN



Busan takes the great leap to be the maritime finance and derivatives hub of Asia through the **Busan International Finance Center**. The government strongly supports work to foster specialized finance. And to go further, Busan is preparing for the future of finance by establishing a fintech hub center "U-Space BIFC".

## 63rd Floor, Landmark of BIFC

Busan Metropolitan City provides a long-term free lease for part of the top(63rd) floor of the BIFC Building to financial institutions for 25 years.

- Rental area : 165m<sup>2</sup> of the BIFC 63rd floor (total area of the 63rd floor is 1,566m<sup>2</sup>)
- Savings : USD 1.25 million (annual USD 50,000 x 25 years)

And there are also attractive incentives package including tax exemption and subsidies.

*Please send your email to : [kianue@korea.kr](mailto:kianue@korea.kr)  
for Busan Web Seminar registration in 3rd quarter(TBD).*



## SCI 1 Further Analysis

### Expected Change In Centres

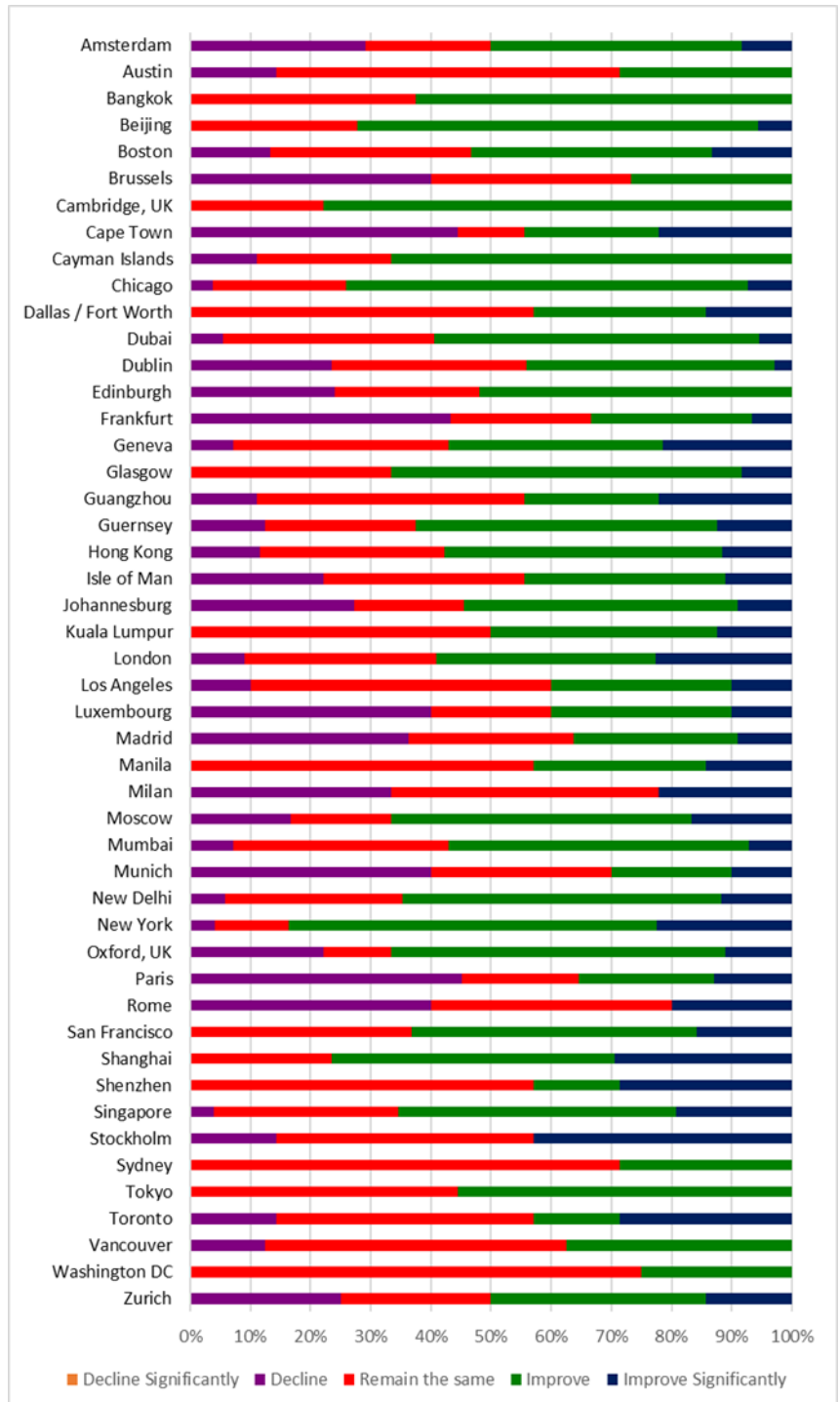
We also asked respondents to indicate whether the technology and innovation offer in the centres that they rated were likely to improve, decline or stay the same over the next two to three years.

Over 20% of respondents considered that the technology offering in the following centres would improve significantly:

- Cape Town
- Geneva
- Guangzhou
- London
- Kuala Lumpur
- Milan
- Rome
- Shanghai
- Shenzhen
- Stockholm.

Conversely, over 30% of respondents thought that the technology offering in the following centres would decline:

- Brussels
- Cape Town
- Frankfurt
- Isle Of Man
- Johannesburg
- Luxembourg
- Madrid
- Milan
- Munich
- Paris
- Rome.



## Instrumental Factors

SCI 1 is created using 127 instrumental factors which relate to a range of aspects of competitiveness, including measures relating to technology development.

Table 4 shows the top fifteen instrumental factors in terms of their correlation with the SCI ranking of depth and quality. The correlation between the SCI and a number of well-established indices has increased over time.

Those factors with the highest correlation tend to be composite indices that reflect a city's approach to sustainability. Such metrics describe the local environment in which financial sector workers are operating, and the alignment of economic policies with the inclusive and green economic outcomes prioritised in the UN's Sustainable Development Goals.

**Table 4 | Top Ten Instrumental Factors By R Squared Correlation**

Instrumental Factor	R Squared
OECD Country Risk Classification	0.748
The Global Financial Centres Index	0.490
The GFCI FinTech Index	0.464
Innovation Cities Global Index	0.387
Global Power City Index	0.373
The Global Fintech Index	0.361
Global Innovation Index	0.352
World Competitiveness Scoreboard	0.343
Ease of Doing Business Index	0.333
4G Availability %	0.311

Focusing only on the instrumental factors which relate to technology, the factors most closely correlated in terms of their R Squared relationship with the SCI ratings are set out in Table 5.

**Table 5 | Top Five Technology Instrumental Factors By R Squared Correlation**

Technology Factors	R Squared
GFCI FinTech Index	0.464
The Global FinTech Index	0.361
Global AI Index	0.234
ISO TC307 Participation	0.108
E-Participation Index	0.083

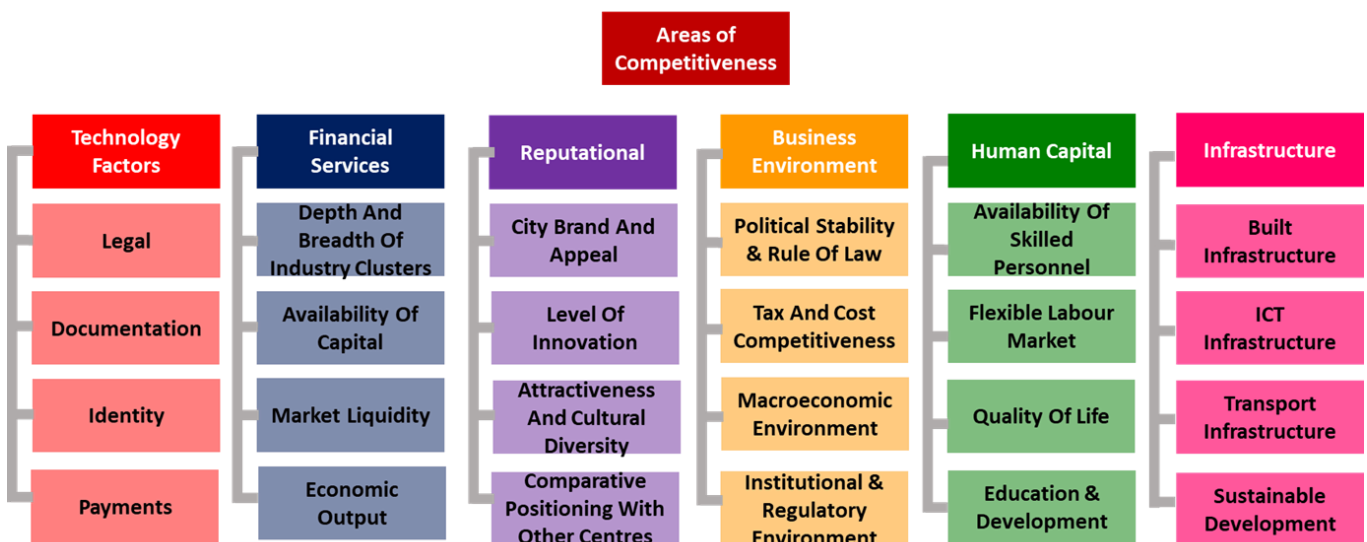
## Areas Of Competitiveness

The instrumental factors and data sets used in the SCI model are grouped into six broad areas:

- Technology
- Financial Services
- Reputational
- Business Environment
- Human Capital
- Infrastructure.

These areas and the instrumental factor themes which comprise each area are shown in Chart 2.

Chart 2 | SCI Areas Of Competitiveness



To assess centres’ technology and innovation offerings perform against each of these areas, the SCI model is run for each area separately. The top ranked 15 centres for in each sub-index are shown in Table 6.

London and New York take first or second place in each of the sub-indices as well as the overall SCI ranking. Generally the strong centres in the index have a balance of strengths across all six areas of competitiveness. Outside the leading centres, some centres have distinct areas of strength, for example, business environment for Toronto and Vancouver and human capital for Oxford and Cambridge in the UK.

**Table 6 | Top 15 Centres By Areas Of Competitiveness**

Rank	Technology	Financial Services	Reputational	Business Environment	Human Capital	Infrastructure
1	New York	New York	London	New York	New York	London
2	London	London	New York	London	London	New York
3	Singapore	Los Angeles	Singapore	Singapore	Singapore	Singapore
4	San Francisco	San Francisco	San Francisco	San Francisco	Chicago	Hong Kong
5	Chicago	Singapore	Chicago	Chicago	Los Angeles	San Francisco
6	Boston	Chicago	Hong Kong	Hong Kong	San Francisco	Chicago
7	Los Angeles	Boston	Los Angeles	Boston	Tokyo	Boston
8	Tokyo	Hong Kong	Stockholm	Los Angeles	Boston	Los Angeles
9	Hong Kong	Washington DC	Tokyo	Sydney	Kuala Lumpur	Tokyo
10	Zurich	Sydney	Boston	Toronto	Shanghai	Zurich
11	Geneva	Dallas/Fort Worth	Sydney	Vancouver	Hong Kong	Shanghai
12	Shanghai	Shenzhen	Toronto	Tokyo	Washington DC	Geneva
13	Washington DC	Tokyo	Zurich	Washington DC	Zurich	Washington DC
14	Toronto	Zurich	Shanghai	Dallas/Fort Worth	Oxford, UK	Dallas/Fort Worth
15	Sydney	Austin	Vancouver	Zurich	Cambridge, UK	Oxford, UK

### Index Ranking For Technology

We have conducted an analysis of the assessments provided by respondents using only the instrumental factors that have a direct relationship to technology. This analysis produces slightly different results to the main index, as shown in the comparison in Table 7. The plus and minus figures show the difference between the main index and the index calculated using only technology factors.

Comparing the ranking using only technology factors with the overall SCI rankings makes minor differences for the most part, with a few of the top centres moving up or down one or two places. However, in the technology rankings, Boston gains three places compared with the overall SCI; and Toronto gains thirteen places.

**Table 7 | Top 15 Centres Using All Factors And Only Technology Factors**

SCI 1		
Rank	All Factors	Technology Factors
1	London	New York (+1)
2	New York	London (-1)
3	Singapore	Singapore
4	San Francisco	San Francisco
5	Los Angeles	Chicago (+1)
6	Chicago	Boston (+3)
7	Hong Kong	Los Angeles (-2)
8	Tokyo	Tokyo
9	Boston	Hong Kong (-2)
10	Zurich	Zurich
11	Washington DC	Geneva (+2)
12	Shanghai	Shanghai
13	Geneva	Washington DC (-2)
14	Dallas/Fort Worth (=13th)	Toronto (+13)
15	Sydney	Sydney

*“Blockchain technology has taken a strong hold in China in the last two years. The difference in Chinese practice from others is that it mainly applies the technology to social reform, refactoring economic processes, and so on. China has also put in strong efforts to curb irregularities surrounding cryptocurrencies. Last year, the Chinese Central Bank officially announced DC/EP, a state response to the revolution of currency digitalization. The pandemic of covid-19, on the other hand, is driving economic activities in the cyber space in China, in a speed never seen before. At the same time, issues such privacy protection, etc. cannot be avoided.”*

**CEO, Research Institute, Beijing**



## Commentary On Factors

The SCI survey asks respondents to comment on factors that affect the development of technology and innovation in centres, and in particular regulation, taxation, and the availability of skills. The results are summarised in Table 8.

**Table 8 | Commentary On Areas Of Competitiveness**

Area Of Competitiveness	Number Of Mentions	Main Themes
Regulatory Environment	33	<ul style="list-style-type: none"> <li>• Some concerns about over-regulation in the EU.</li> <li>• Asia seen as opening up through regulatory approaches.</li> <li>• Data protection will be a key theme.</li> <li>• Sandboxes and other ways to promote innovation important.</li> <li>• Need better understanding of tech among regulators.</li> </ul>
Taxation	27	<ul style="list-style-type: none"> <li>• Tax not such an important factor and unlikely to drive change.</li> <li>• Location of businesses becoming less important, and increasingly tax will follow the location where profit is made.</li> <li>• Stability in tax regimes important.</li> <li>• Targeted incentives to encourage innovation would help.</li> </ul>
The Availability Of Skills	31	<ul style="list-style-type: none"> <li>• Flexibility in labour markets is vital, and the UK may suffer as a result of leaving the EU.</li> <li>• Education needs to develop to deliver the skills required in technology businesses, not just in coding.</li> </ul>

*“London is clearly moving ahead of the pack in terms of regulation. This applies to both the way regulation is implemented, monitored and enforced. London is already the most transparent financial centre in terms of transparency and will increase its lead in the coming years.”*

**Management Director, Consultancy, London**

**Regulatory intervention and support** was seen as important, but respondents noted that there needed to be better understanding of technology among regulators, so that regulatory action was supportive and not obstructive. There was concern that the EU might over-regulate and stifle innovation going forwards. Sandbox arrangements were seen as a useful drive towards innovation.

**Taxation** was seen as less important by a number of respondents, although others noted that tax incentives were useful. Location of companies would be increasingly less important, with taxation increasingly focused on the places where revenues were created.

Several respondents noted that the **availability of skills** would increasingly depend on flexibility in labour markets and free movement. There was a need for improvements in education and both higher education and vocational skills development was seen as important.

We asked respondents to identify interesting and successful initiatives in the fields of technology and innovation. These included:

- The combined use of artificial intelligence and blockchain to solve copyright problem and allow rightsholders to control their data and protect their interests.
- The Internet Of Things (IOT) and computer software development.
- Successful entrepreneurs from more marginal jurisdictions who have benefited from outsourcing using major financial centres as a front end test bed for next generation technology supported from those other jurisdictions.
- Technologies around food waste reduction and food technology (local and vertical farming).
- Gaia-X: European Initiative for next gen cloud and edge computing.
- In London - Lloyd's Lab and other London Insurance Market Instech incubator schemes.

*“Taxation should be aligned with potential positive impact. So think about a model that uses the current taxes based on the earnings of a technology company, but then applies discount or subtraction based on how many jobs was created, how much of economic positive impact that company had, etc. etc. So there should be a gross tax to net tax model to help companies continuously innovate.”*

**Senior Vice President, Human Resources, Technology Firm, London**

## Connectivity

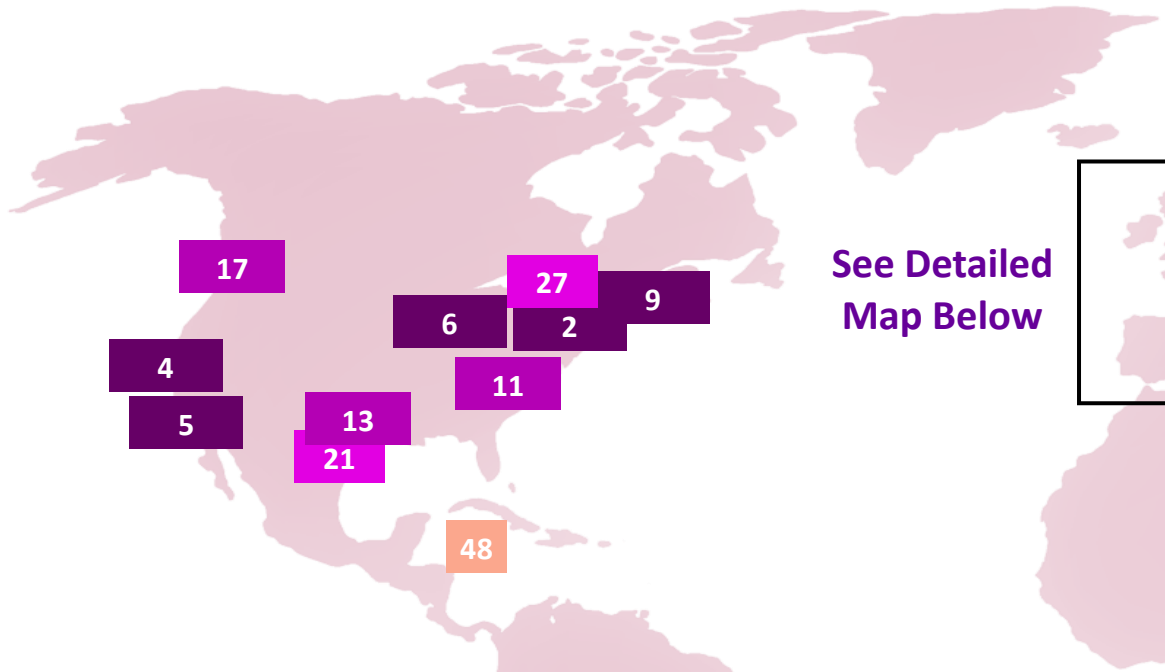
Another indication of the strength of a centre is to look at how well connected it is with other centres in the world. In the SCI, we can look at the number of assessments received by centres and the number of centres that provided assessments. Table 9 shows the relationship between these factors for the centres receiving the highest number of assessments. There is no direct correlation between the number of responses and overall performance in the index. Those receiving a high number of assessments but not ranked highly in the SCI may need to focus on improving their underlying performance.

**Table 9 | Relationship Between Number And Spread Of Assessments For The Top 15 Centres Ranked On The Number Of Assessments Received**

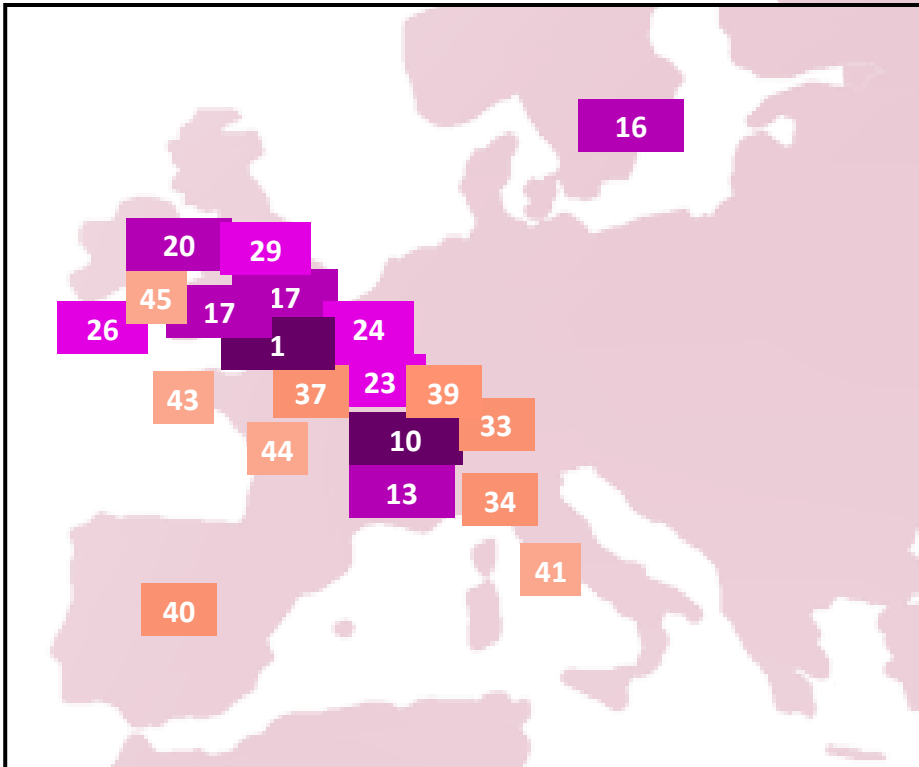
Centre	Number of Assessments	Number of Centres Providing Assessments
New York	49	15
Dubai	37	12
Dublin	34	10
Paris	31	8
Frankfurt	30	8
Zurich	28	8
Chicago	27	8
Hong Kong	26	14
Singapore	26	13
Edinburgh	25	6
Amsterdam	24	8
London	22	16
San Francisco	19	8
Beijing	18	10
New Delhi	17	6

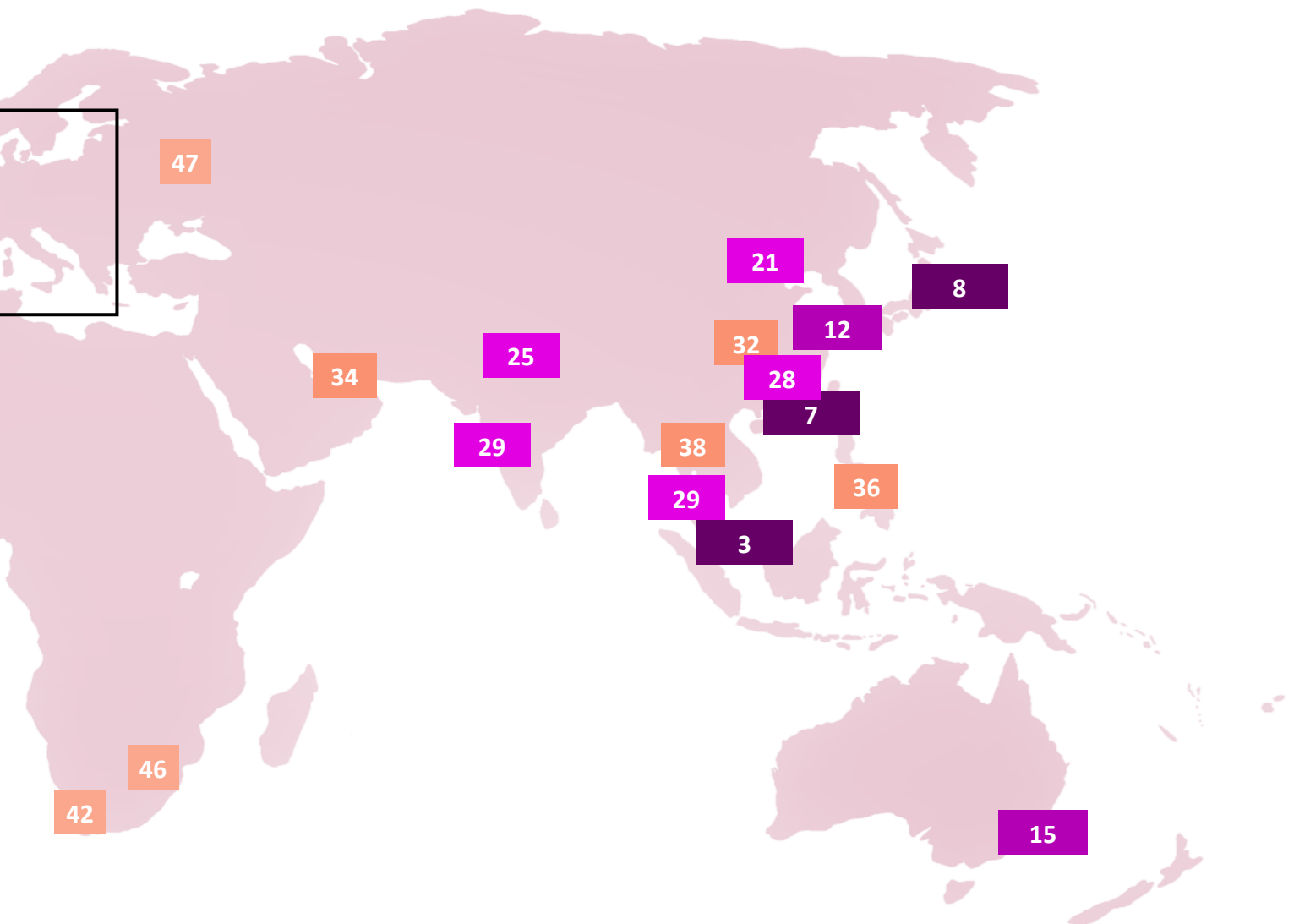
Assessments of the home centre of respondents are excluded from the data as there is the possibility of home centre bias. This bias can be positive or negative when compared with assessments from other centres, but on average home centre assessments are higher than assessments from other centres.

## The SCI 1 World - Centres In The Index



See Detailed Map Below





The numbers indicate the rank of each centre in SCI 1.

An interactive map showing the data for each centre is at <https://www.longfinance.net/programmes/financial-centre-futures/smart-centres-index/sci-1-explore-data/sci-1-map/>

## Regional Analysis

In our analysis of the SCI data, we look at six regions of the world to explore centres' strengths in technology and finance. In this first edition of the SCI, the majority of the centres included in the index are located in North America, Asia/Pacific, and Western Europe.

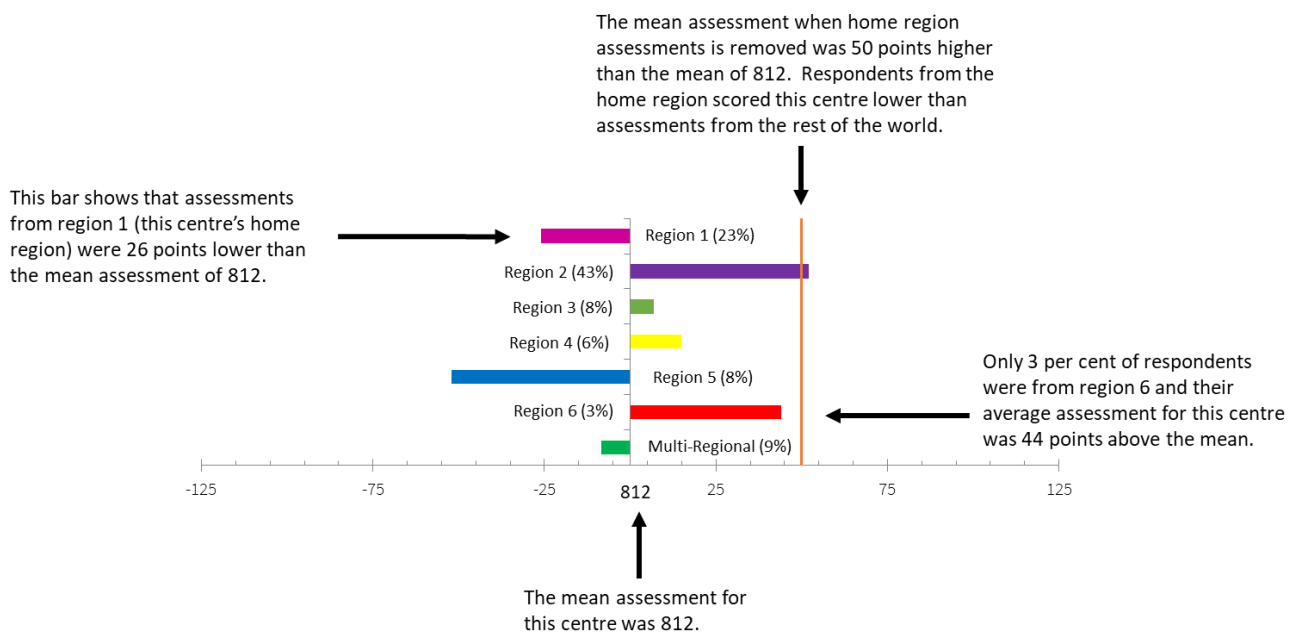
Alongside the ranks and ratings of centres, we investigate the average assessments received by regions and centres in more detail. We display this analysis in charts, which show:

- the mean assessment provided to that centre;
- the difference in the mean assessment when home region assessments are removed from the analysis;
- the difference between the mean and the assessments provided by respondents based in other regional centres; and
- the proportion of assessments provided by each region.

Chart 3 shows an example of this analysis. Coloured bars to the left of the vertical axis indicate that respondents from that region gave lower than average assessments. Bars to the right indicate respondents from that region gave higher than average assessments. Assessments given to a centre by people based in that centre are excluded to remove 'home' bias.

The additional vertical axis (in red) shows the mean of assessments when assessments from the home region are removed. The percentage figure noted by each region indicates the percentage of the total number of assessments that are from that region.

**Chart 3 | Example: Assessments Compared With The Mean For A Centre**



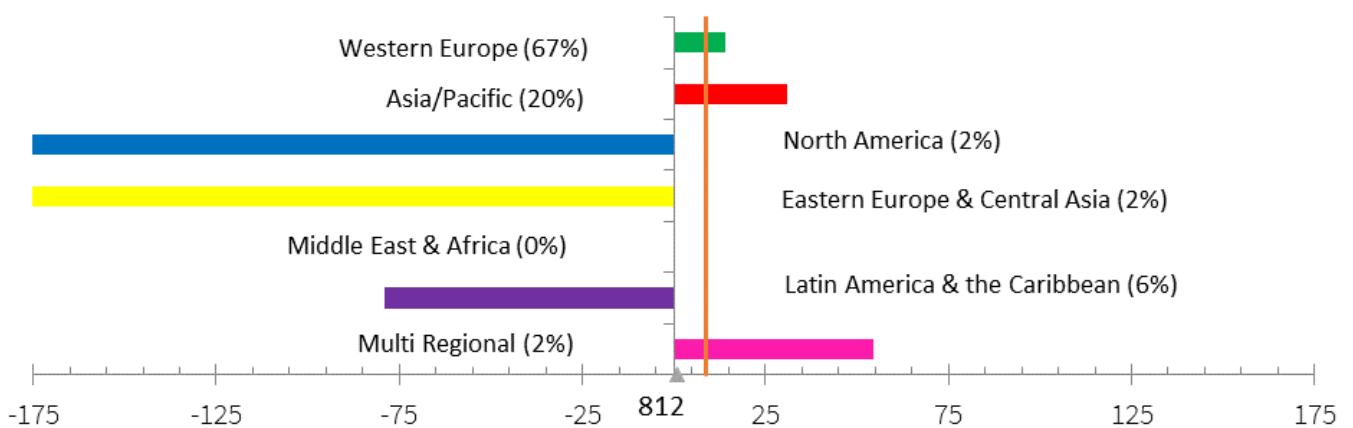
## North America

- Ten North American centres feature in the SCI. US centres take the top seven ranking places in the region, with five centres in the global top ten.
- Innovation support scores higher than the other dimensions among US centres.
- Vancouver scores high for creative intensity.
- Washington DC, Dallas/Fort Worth and Vancouver score significantly lower for delivery capability than their overall rankings.

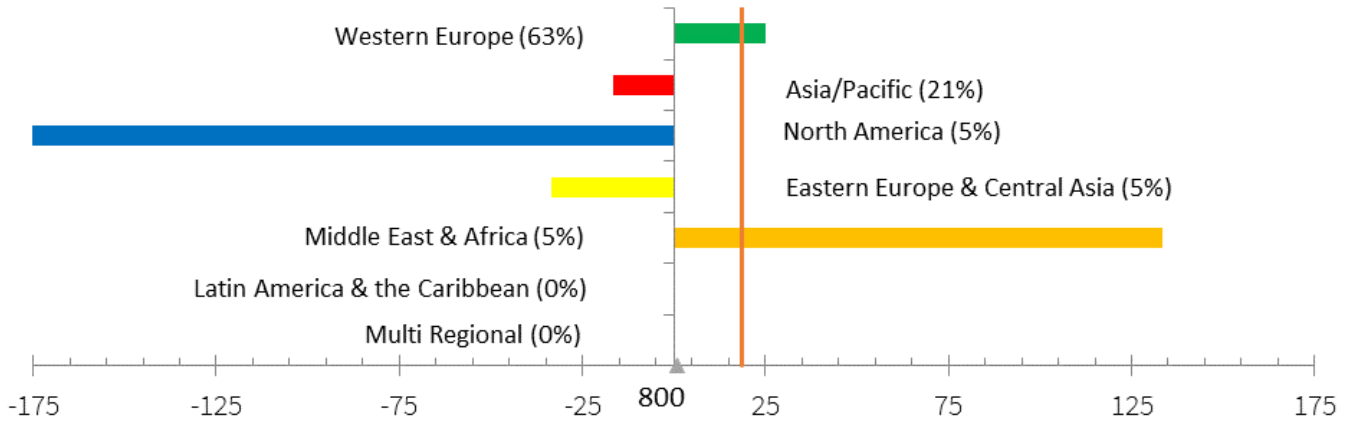
**Table 10 | North American Centres In SCI 1**

Centre	SCI 1		Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating	Rank	Rating
New York	2	754	2	256	2	251	2	248
San Francisco	4	717	7	243	4	241	5	233
Los Angeles	5	714	5	247	5	241	13	227
Chicago	6	713	4	247	7	238	8	228
Boston	9	704	7	243	13	233	8	228
Washington DC	11	693	9	242	23	227	18	225
Dallas/Fort Worth	13	692	16	237	16	231	19	224
Vancouver	17	689	23	235	9	234	28	220
Austin	21	685	22	235	20	228	22	222
Toronto	27	681	20	235	28	225	26	221

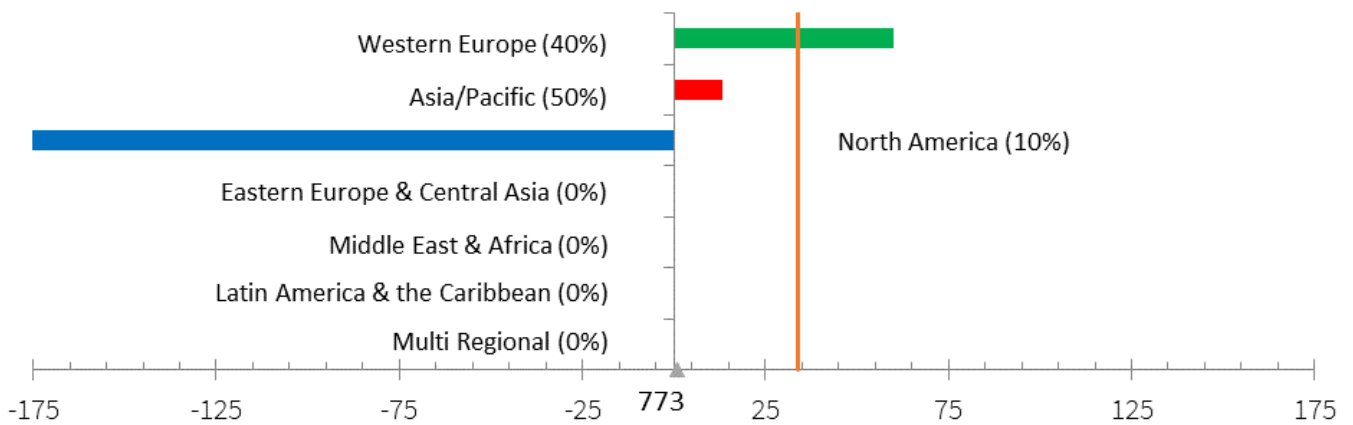
**Chart 4 | New York Average Assessments – Difference From The Mean**



**Chart 5 | San Francisco Average Assessments – Difference From The Mean**



**Chart 6 | Los Angeles Average Assessments – Difference From The Mean**



*“The scarcity of human technical capital will propel the development of AI systems, which will become coupled to mechanical systems for physical repair and ‘construction’. This is going to become especially needed in low-tax jurisdictions where in-migration of skilled worker is statute barred, a typical instance of poor human resource planning and discriminatory political practices.”*

**CEO, Investment Promotion Agency, Turks & Caicos**



## Asia/Pacific

- There are 13 Asia/Pacific centres in SCI 1.
- Three of these centres, Singapore, Hong Kong, and Tokyo, feature in the world top ten.
- The majority of Asia/Pacific centres scored lower for innovation support, including regulation, than their overall ranking in the SCI.

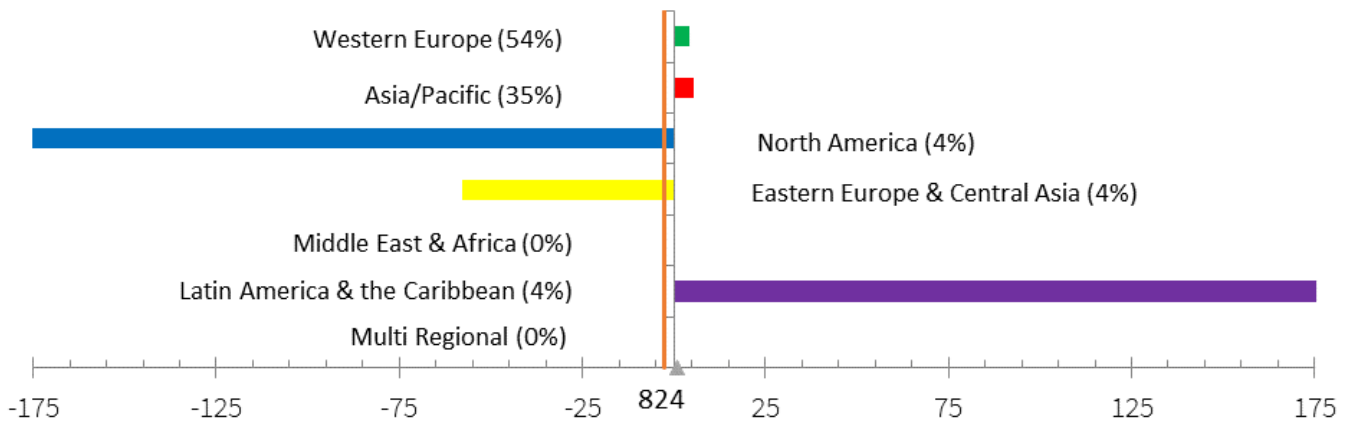
**Table 11 | Asia/Pacific Centres In SCI 1**

Centre	SCI 1		Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating	Rank	Rating
Singapore	3	736	3	250	3	246	3	240
Hong Kong	7	713	6	244	11	233	4	235
Tokyo	8	708	11	240	6	240	8	228
Shanghai	12	693	27	232	11	233	8	228
Sydney	15	691	13	239	24	227	16	225
Beijing	21	685	44	224	9	234	12	227
New Delhi	25	682	27	232	19	228	22	222
Shenzhen	28	679	34	228	27	226	14	226
Mumbai	29	676	31	229	20	228	32	219
Kuala Lumpur	29	676	17	236	29	223	36	217
Guangzhou	32	670	30	230	35	219	24	221
Manila	36	665	37	226	30	222	35	217
Bangkok	38	663	32	229	37	218	39	215

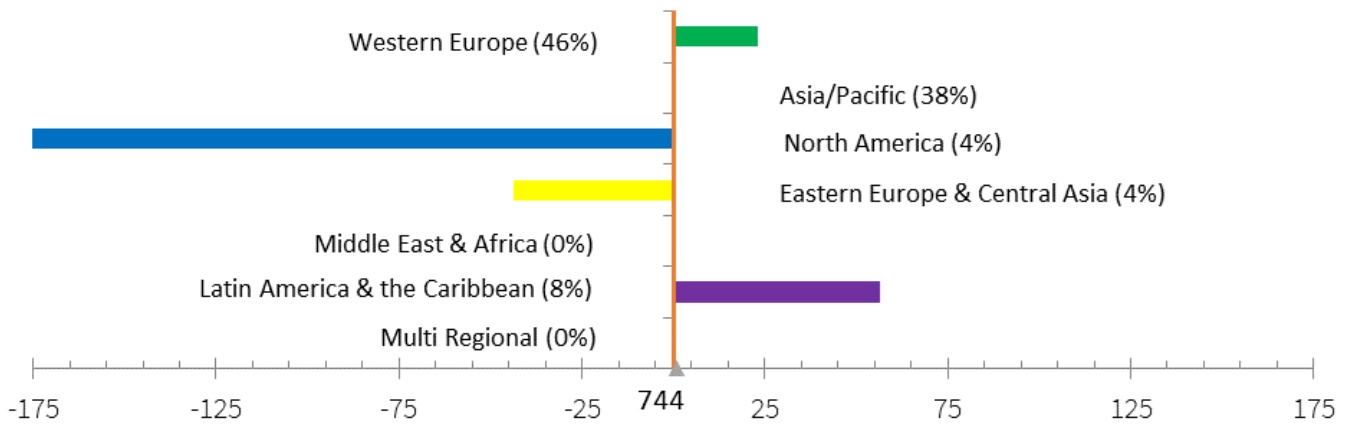
*“I would like to see regulatory bodies themselves, taking more interest in tech. The Financial Conduct Authority (FCA) for example, should be embracing and encouraging Instech initiatives on behalf of the industry.”*

**Commercial Director, Insurance Software Development, London**

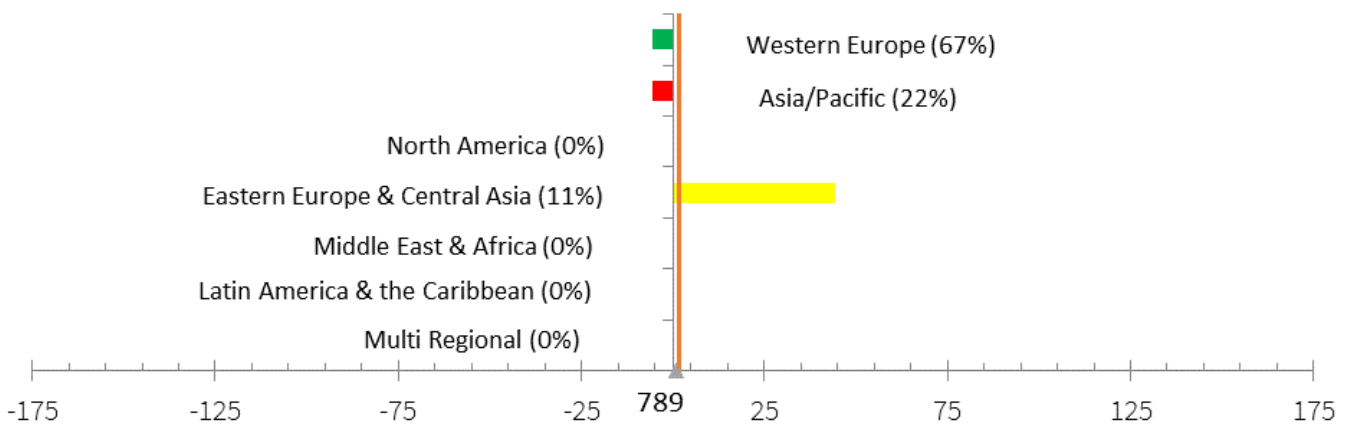
**Chart 7 | Singapore Average Assessments – Difference From The Mean**



**Chart 8 | Hong Kong Average Assessments – Difference From The Mean**



**Chart 9 | Tokyo Average Assessments – Difference From The Mean**



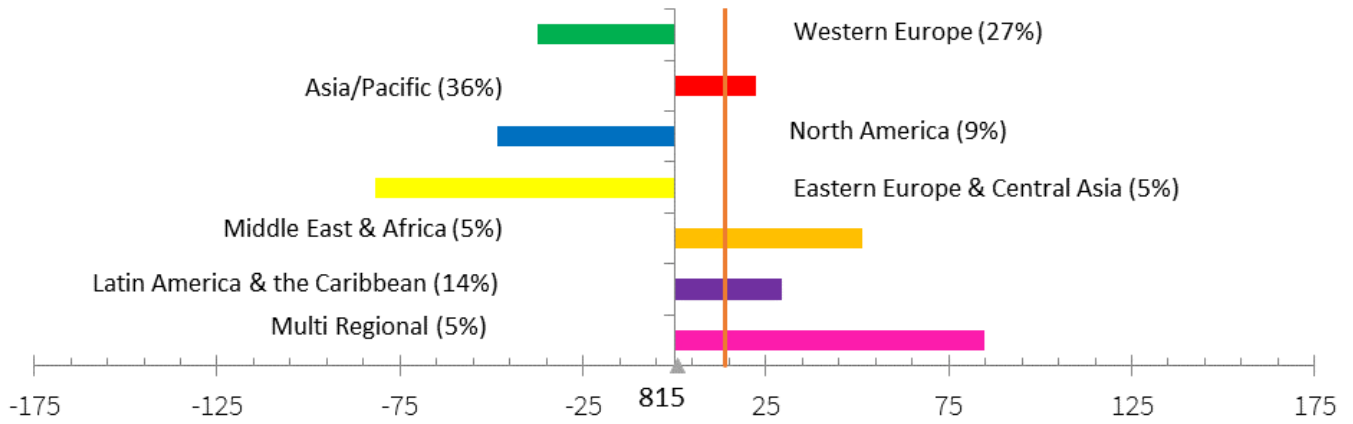
## Western Europe

- Twenty centres in Western Europe feature in SCI 1, with London taking first place and Zurich also placed in the top ten.
- The majority of Western European centres score higher for innovation support, including regulation, than their overall rank. This suggests that systems of public support for, and regulation of innovation and technology are a strength in the region.
- Stockholm scores significantly higher than its overall rating in creative intensity, while Oxford and Cambridge in the UK score significantly higher for delivery capability.

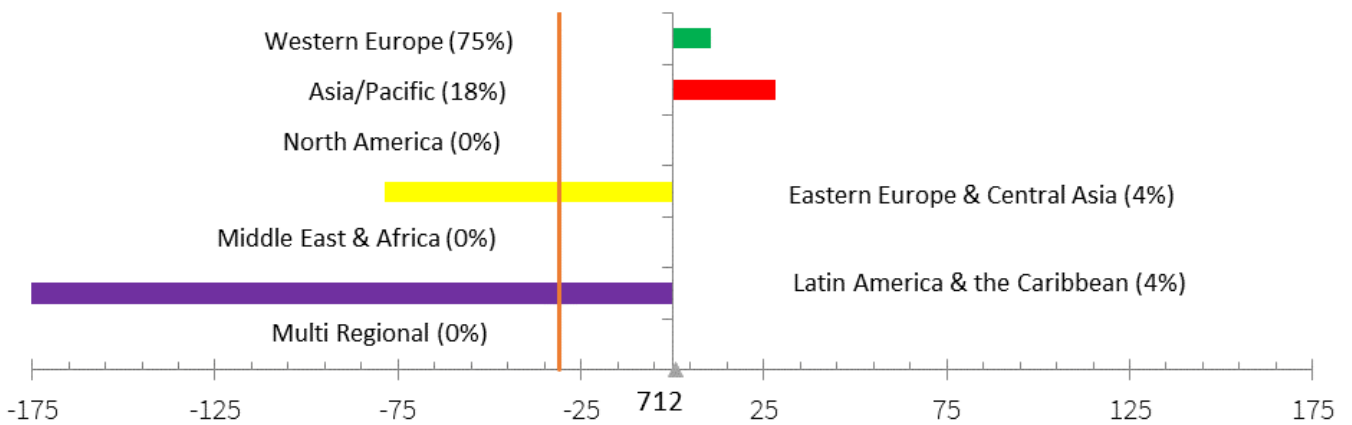
**Table 12 | Western European Centres In SCI 1**

Centre	SCI 1		Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating	Rank	Rating
London	1	760	1	260	1	252	1	248
Zurich	10	698	10	241	14	231	15	225
Geneva	13	692	15	238	15	231	21	223
Stockholm	16	690	27	232	8	234	20	224
Oxford, UK	17	689	12	240	33	221	7	228
Cambridge, UK	17	689	14	238	36	219	6	232
Glasgow	20	688	17	236	22	227	16	225
Luxembourg	23	683	20	235	18	229	30	219
Amsterdam	24	682	26	232	17	229	24	221
Dublin	26	681	24	234	26	226	26	221
Edinburgh	29	676	19	236	32	221	30	219
Munich	33	666	25	233	40	217	37	216
Milan	34	666	33	229	34	219	33	218
Brussels	37	664	46	223	31	221	29	220
Frankfurt	39	658	37	226	39	217	40	215
Madrid	40	657	47	222	38	218	34	217
Rome	41	655	37	226	44	213	38	216
Guernsey	43	652	40	226	42	216	45	211
Paris	44	651	45	224	43	214	41	214
Isle of Man	45	647	43	225	45	213	46	209

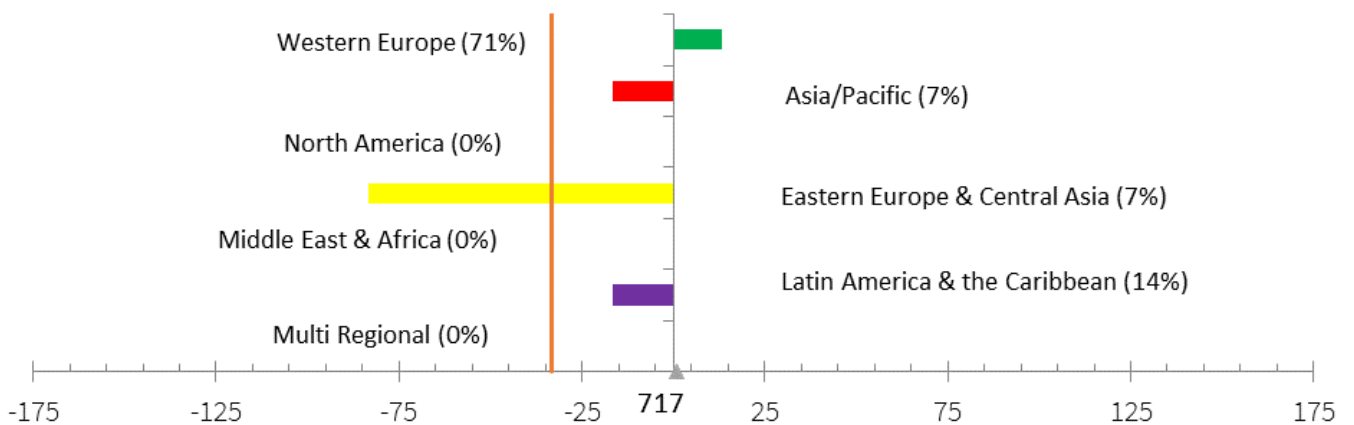
**Chart 10 | London Average Assessments – Difference From The Mean**



**Chart 11 | Zurich Average Assessments – Difference From The Mean**



**Chart 12 | Geneva Average Assessments – Difference From The Mean**



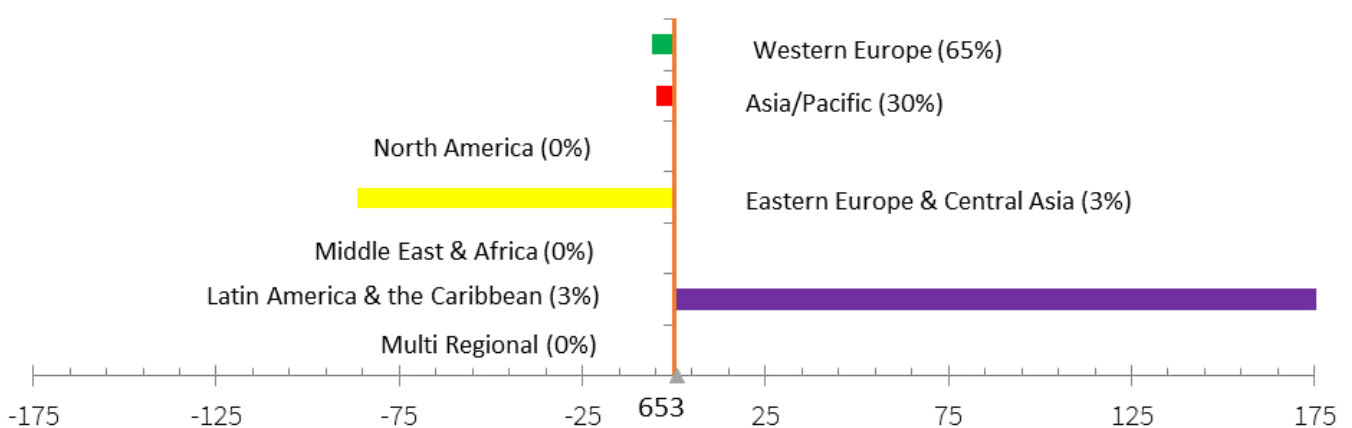
## Other Regions

- At present, there are only five other centres which feature in the SCI from the other regions of the world - Middle East & Africa, Eastern Europe & Central Asia, and Latin America & The Caribbean shown in Table 13.
- Dubai scores high for creative intensity, and the Cayman Islands score relatively highly for innovation support.
- We would expect other centres to enter the index as they receive further assessments in the SCI survey.

**Table 13 | Other Regions' Centres In SCI 1**

Centre	SCI 1		Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating	Rank	Rating
Dubai	34	666	42	226	24	227	41	214
Cape Town	42	653	34	228	46	212	44	213
Johannesburg	46	646	40	226	47	210	46	209
Moscow	47	644	48	215	41	216	43	213
Cayman Islands	48	624	36	227	48	195	48	202

**Chart 13 | Dubai Average Assessments – Difference From The Mean**

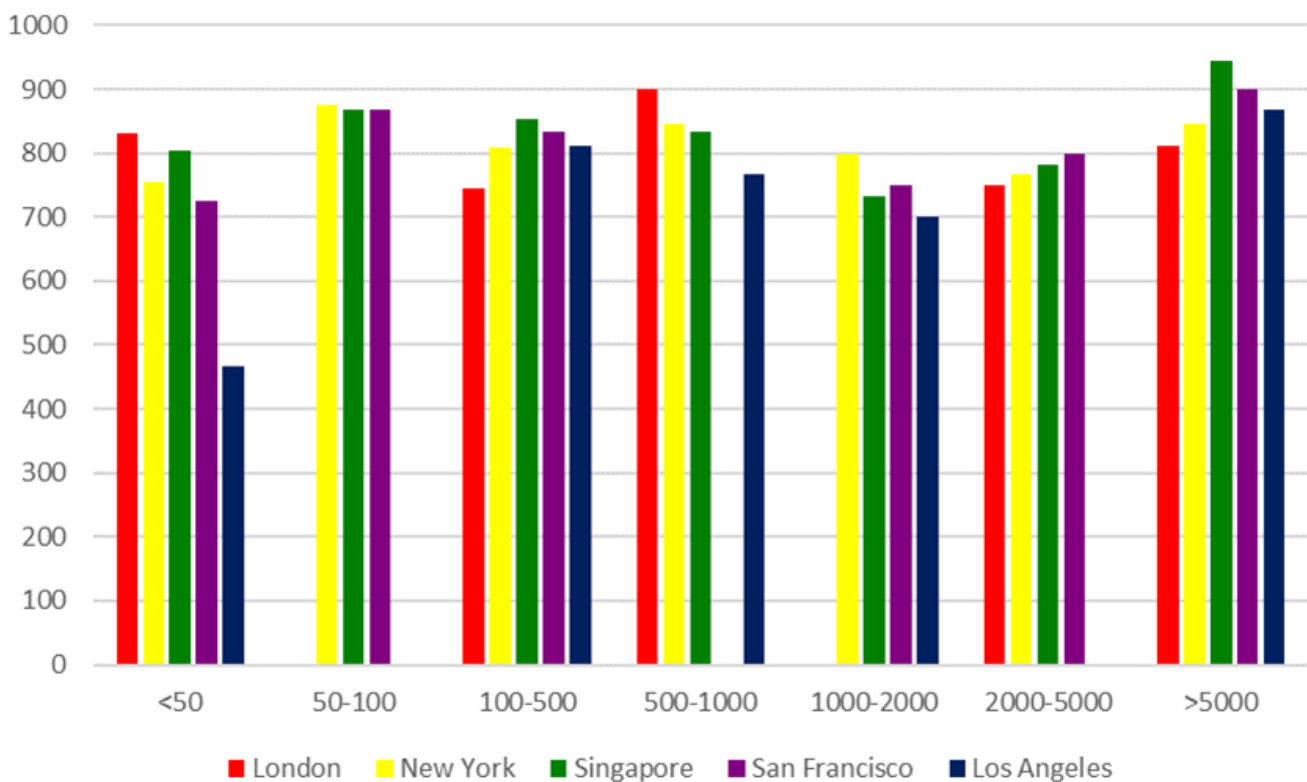


## Organisation Size

There is variation in how centres are viewed by respondents working for different sizes of organisation. Taking the top five centres in the index, Chart 14 shows the average of the assessments given by respondents in different sizes of organisation.

Centres had a mixed range of responses, with London, for example, receiving higher ratings from those working in the smallest organisations and those in organisations with 500-1,000 staff. Singapore was rated higher by those working in the largest organisations. New York received its highest assessments from those working in organisations with 50-100 staff.

**Chart 14 | Average Assessments By Respondents' Organisation Size**



*“Gibraltar has set up New Technologies in Education (NTiE) working group. A collaboration between the Government, the University of Gibraltar and private sector firms leading in the new technology space to create the educational environment to provide those skills.”*

**Senior Executive, Government Body, Gibraltar**

## Reputation

In the SCI model, we look at reputation by examining the difference between the weighted average assessment given to a centre and its overall rating. The first measure reflects the average score a centre receives from finance professionals around the world weighted for the age of the response. The second measure is the SCI score itself, which represents the average assessment adjusted to reflect the instrumental factors.

Where a centre has a higher average assessment than its SCI rating, this indicates that respondents' perceptions of a centre are more favourable than the quantitative measures alone suggest. Centres in this position may need to examine the focus on their underlying strengths and build a solid foundation.

Many of the leading centres in the SCI have a positive reputational advantage.

**Table 14 | Top 15 Centres – Reputational Advantage In SCI 1**

Centre	Weighted Average Assessment	SCI 1 Rating	Reputational Advantage
Singapore	824	736	88
San Francisco	802	717	85
Tokyo	791	708	83
New York	816	754	62
Shenzhen	741	679	62
Los Angeles	775	714	61
Boston	759	704	55
London	814	760	54
Chicago	764	713	51
Shanghai	744	693	51
Sydney	733	691	42
Stockholm	729	690	39
Hong Kong	746	713	33
Geneva	722	692	30
New Delhi	711	682	29

Table 15 shows the 15 centres with the greatest reputational disadvantage – an indication that respondents’ perceptions of a centre are less favourable than the quantitative measures alone would suggest. These centres may need to market their strengths to ensure that their underlying quality is known to respondents.

**Table 15 | Bottom 15 Centres – Reputational Disadvantage In SCI 1**

Centre	Weighted Average Assessment	SCI 1 Rating	Reputational Advantage
Frankfurt	638	658	-20
Paris	606	651	-45
Milan	620	666	-46
Rome	608	655	-47
Guangzhou	622	670	-48
Cape Town	604	653	-49
Madrid	604	657	-53
Isle of Man	584	647	-63
Moscow	579	644	-65
Guernsey	578	652	-74
Austin	610	685	-75
Bangkok	585	663	-78
Brussels	586	664	-78
Cayman Islands	542	624	-82
Johannesburg	553	646	-93

*“Transparency and consistency in tax regimes is key -- so people can plan and manage products, systems and personal lives.”*

**Director, Consultancy, Dubai**



## Appendix 1: Assessment Details

**Table 16 | Details Of SCI Assessments By Centre**

Centre	SCI 1	SCI 1	Assessments		
	Rank	Rating	Number	Average	St.
London	1	760	22	815	137
New York	2	754	49	812	156
Singapore	3	736	26	824	132
San Francisco	4	717	19	800	154
Los Angeles	5	714	10	773	143
Chicago	6	713	27	762	123
Hong Kong	7	713	26	744	158
Tokyo	8	708	9	789	86
Boston	9	704	15	756	164
Zurich	10	698	28	712	164
Washington	11	693	8	683	154
Shanghai	12	693	17	739	145
Geneva	13=	692	14	717	192
Dallas / Fort	13=	692	7	705	143
Sydney	15	691	7	729	103
Stockholm	16	690	7	729	172
Vancouver	17=	689	8	688	97
Oxford, UK	17=	689	9	704	96
Cambridge, UK	17=	689	9	696	103
Glasgow	20	688	12	675	118
Beijing	21=	685	18	694	204
Austin	21=	685	7	610	158
Luxembourg	23	683	10	687	157
Amsterdam	24	682	24	669	145

Centre	SCI 1	SCI 1	Assessments		
	Rank	Rating	Number	Average	St. Dev
New Delhi	25	682	17	706	179
Dublin	26	681	34	676	126
Toronto	27	681	7	695	109
Shenzhen	28	679	7	733	145
Mumbai	29=	676	14	686	195
Edinburgh	29=	676	25	660	104
Kuala Lumpur	29=	676	8	679	171
Guangzhou	32	670	9	619	200
Munich	33	666	10	670	132
Milan	34=	666	9	626	187
Dubai	34=	666	37	653	159
Manila	36	665	7	681	169
Brussels	37	664	15	584	136
Bangkok	38	663	8	583	145
Frankfurt	39	658	30	640	130
Madrid	40	657	11	603	163
Rome	41	655	10	610	122
Cape Town	42	653	9	607	202
Guernsey	43	652	8	579	143
Paris	44	651	31	611	151
Isle of Man	45	647	9	578	193
Johannesburg	46	646	11	555	135
Moscow	47	644	12	586	207
Cayman Islands	48	624	9	544	179

Table 17 | Details Of Assessments Of SCI Dimensions By Centre

Centre	SCI Dimensions					
	Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Ratin	Rank	Rating	Rank	Rating
London	1	260	1	252	1	248
New York	2	256	2	251	2	248
Singapore	3	250	3	246	3	240
San Francisco	7	243	4	241	5	233
Los Angeles	5	247	5	241	13	227
Chicago	4	247	7	238	8	228
Hong Kong	6	244	11	233	4	235
Tokyo	11	240	6	240	8	228
Boston	7	243	13	233	8	228
Zurich	10	241	14	231	15	225
Washington	9	242	23	227	18	225
Shanghai	27	232	11	233	8	228
Geneva	15	238	15	231	21	223
Dallas/Fort Worth	16	237	16	231	19	224
Sydney	13	239	24	227	16	225
Stockholm	27	232	8	234	20	224
Vancouver	23	235	9	234	28	220
Oxford, UK	12	240	33	221	7	228
Cambridge, UK	14	238	36	219	6	232
Glasgow	17	236	22	227	16	225
Beijing	44	224	9	234	12	227
Austin	22	235	20	228	22	222
Luxembourg	20	235	18	229	30	219
Amsterdam	26	232	17	229	24	221
New Delhi	27	232	19	228	22	222
Dublin	24	234	26	226	26	221
Toronto	20	235	28	225	26	221
Shenzhen	34	228	27	226	14	226
Mumbai	31	229	20	228	32	219
Edinburgh	19	236	32	221	30	219
Kuala Lumpur	17	236	29	223	36	217
Guangzhou	30	230	35	219	24	221
Munich	25	233	40	217	37	216
Milan	33	229	34	219	33	218
Dubai	42	226	24	227	41	214
Manila	37	226	30	222	35	217
Brussels	46	223	31	221	29	220
Bangkok	32	229	37	218	39	215
Frankfurt	37	226	39	217	40	215
Madrid	47	222	38	218	34	217
Rome	37	226	44	213	38	216
Cape Town	34	228	46	212	44	213
Guernsey	40	226	42	216	45	211
Paris	45	224	43	214	41	214
Isle of Man	43	225	45	213	46	209
Johannesburg	40	226	47	210	46	209
Moscow	48	215	41	216	43	213
Cayman Islands	36	227	48	195	48	202

## Appendix 2: Respondents' Details

**Table 18 | Respondents By Industry Sector**

Industry Sector	Number Of Respondents	Percentage Of Respondents
Technology	24	26%
Banking	3	3%
Debt Capital Markets	1	1%
Insurance	11	12%
Investment Management	6	7%
Knowledge	10	11%
Policy and Public Finance	9	10%
Professional Services	26	28%
Not Specified	2	2%
<b>Total</b>	<b>92</b>	<b>100%</b>

**Table 19 | Respondents By Region**

Region	Number Of Respondents	Percentage Of Respondents
Western Europe	64	70%
Asia/Pacific	14	15%
North America	2	2%
Middle East & Africa	2	2%
Eastern Europe & Central Asia	3	3%
Latin America & The Caribbean	6	7%
Multi-Regional	1	1%
<b>Total</b>	<b>92</b>	<b>100%</b>

**Table 20 | Respondents By Size Of Organisation**

Size Of Organisation	Number Of Respondents	Percentage Of Respondents
Fewer than 50	33	36%
50 to 100	9	10%
100 to 500	12	13%
500 to 1,000	5	5%
1,000 to 2,000	6	7%
2,000 to 5,000	4	4%
More than 5,000	23	25%
Not Specified	0	0%
<b>Total</b>	<b>92</b>	<b>100%</b>



## Appendix 3: Methodology

The SCI provides ratings for the innovation and technology offering of commercial and financial centres. The process involves taking two sets of ratings – one from survey respondents and one generated by a statistical model – and combining them into a single ranking.

For the first set of ratings, the **centre assessments**, respondents use an online questionnaire to rate three dimensions:

- Innovation Support - the approach taken to regulation and support for the innovation and technology industry provided by the commercial ecosystem.
- Creative Intensity - the extent to which technology and innovative industries are embedded in the economy of the centre.
- Delivery Capability - the quality of the work being undertaken in the field in the centre.

Ratings are given using a ten point scale ranging from very poor to excellent. Responses are sought from a range of individuals drawn from the financial services and technology sectors, non-governmental organisations, regulators, universities, and trade bodies.

For the second set of ratings, a support vector engine uses a database of indicators, or **Instrumental Factors**, that contains quantitative data about each centre, to predict how each respondent would have rated the financial centres they do not know. These instrumental factors draw on data from 127 different sources covering technology, financial services, reputation, business environment, human capital, and infrastructure. A full list of the instrumental factors used in the model is in Appendix 5.

The respondents' actual ratings as well as their predicted ratings for the centres they did not rate, are then combined into a single table to produce ratings for each dimension. These are then added together, using equal weighting to create the SCI ranking.

### Factors Affecting The Inclusion Of Centres In The SCI

The questionnaire lists a total of 128 commercial and financial centres which can be rated by respondents. The questionnaire also asks whether there are financial centres currently in the survey that will become significant over the next two to three years. Centres which are not currently within the questionnaire and which are mentioned in response to this question will be added to the questionnaire for future editions.

We give a financial centre a SCI rating and ranking if it receives a statistically significant minimum number of assessments from individuals based in other geographical locations - at least seven in SCI 1. This means that not all 120 centres in the questionnaire receive a ranking. We will keep this number under review for further editions of the index as the number of assessments increases.

We will also develop rules as successive indices are published as to when a centre may be removed from the rankings, for example, if over a 24 month period, a centre has not received a minimum number of assessments.

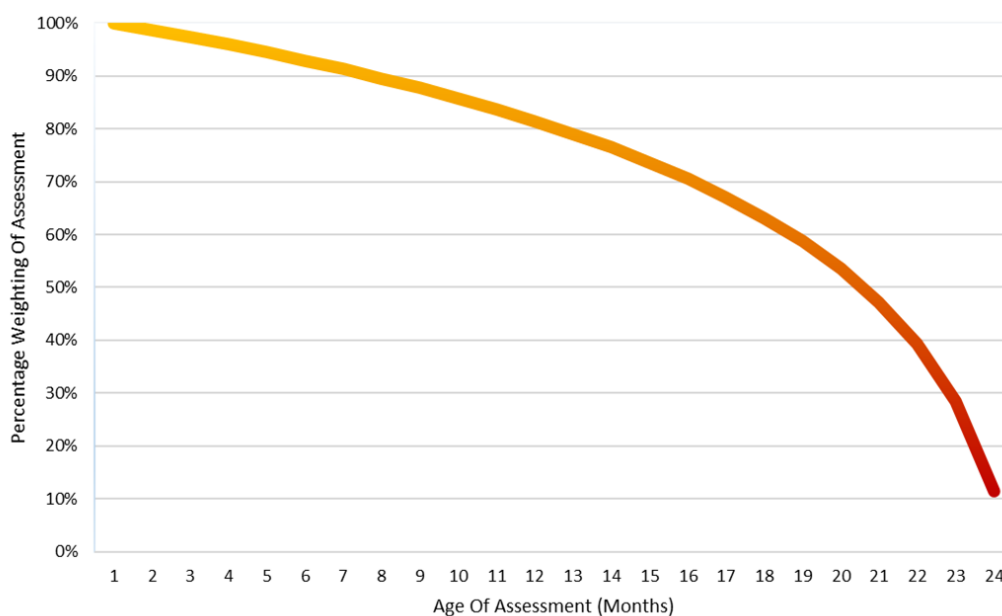
## Centre Assessments

Centre assessments are collected via an online questionnaire which runs continuously and which is at [www.smartcentresindex.net/survey/](http://www.smartcentresindex.net/survey/). A link to this questionnaire is emailed to a target list of respondents at regular intervals. Other interested parties can complete the questionnaire by following the link given in SCI publications.

In calculating the SCI:

- The score given by a respondent to their home centre, and scores from respondents who do not specify a home centre, are excluded from the model – this is designed to prevent home bias.
- Financial centre assessments are included in the SCI model for 24 months after they have been received – we consider that this is a period during which assessments maintain their validity.
- Financial centre assessments from the month when the SCI is created will be given full weighting with earlier responses given a reduced weighting on a logarithmic scale as shown in Chart 15 - this recognises that older ratings, while still valid, are less likely to be up-to-date.

**Chart 15 | Reduction In Weighting As Assessments Get Older**



## **Instrumental Factor Data**

For the instrumental factors, we have the following data requirements:

- Data series should come from a reputable body and be derived by a sound methodology.
- Data series should be readily available (ideally in the public domain) and be regularly updated.

The rules on the use of instrumental factor data in the model are as follows:

- Updates to the indices are collected and collated every six months.
- No weightings are applied to indices.
- Indices are entered into the SCI model as directly as possible, whether this is a rank, a derived score, a value, a distribution around a mean or a distribution around a benchmark.
- If a factor is at a national level, the score will be used for all centres in that country; nation-based factors will be avoided if financial centre (city)-based factors are available.
- If an index has multiple values for a city or nation, the most relevant value is used.
- If an index is at a regional level, the most relevant allocation of scores to each centre is made (and the method for judging relevance is noted).
- If an index does not contain a value for a particular financial centre, a blank is entered against that centre (no average or mean is used).

## **Factor Assessment**

Neither the financial centre assessments nor the instrumental factors on their own can provide a basis for the construction of the SCI.

The centre assessments rate centres on their technology and innovation performance, but each individual completing the questionnaire will:

- Be familiar with only a limited number of centres - probably no more than 10 or 15 centres.
- Rate a different group of centres making it difficult to compare data sets.
- Consider different aspects of centres' performance in their ratings.

The instrumental factors are based on a range of different models. Using just these factors would require some system of totaling or averaging scores across instrumental factors. Such an approach would involve a number of difficulties:

- Indices are published in a variety of different forms: an average or base point of 100 with scores above and below this; a simple ranking; actual values, e.g., \$ per square foot of occupancy costs; or a composite 'score'.
- Indices would have to be normalised, e.g., in some indices, a high score is positive while in others a low score is positive.
- Not all centres are included in all indices.
- The indices would have to be weighted.

Given these issues, the SCI uses a statistical model to combine the financial centre assessments and instrumental factors.

This is done by conducting an analysis to determine whether there is a correlation between the centre assessments and the instrumental factors we have collected about each centre. This involves building a predictive model of the rating of centres' technology and innovation offerings using a support vector machine (SVM).

An SVM is a supervised learning model with associated machine learning algorithms that analyse data used for classification and regression analysis. SVMs are based upon statistical techniques that classify and model complex historic data in order to make predictions on new data. SVMs work well on discrete, categorical data but also handle continuous numerical or time series data.

The SVM used for the SCI provides information about the confidence with which each specific rating is made and the likelihood of other possible ratings being made by the same respondent.

The model then predicts how respondents would have assessed centres with which they are unfamiliar, by answering questions such as:

*If a respondent gives Singapore and Sydney certain assessments then, based on the instrumental factors for Singapore, Sydney, and London, how would that person assess London?*

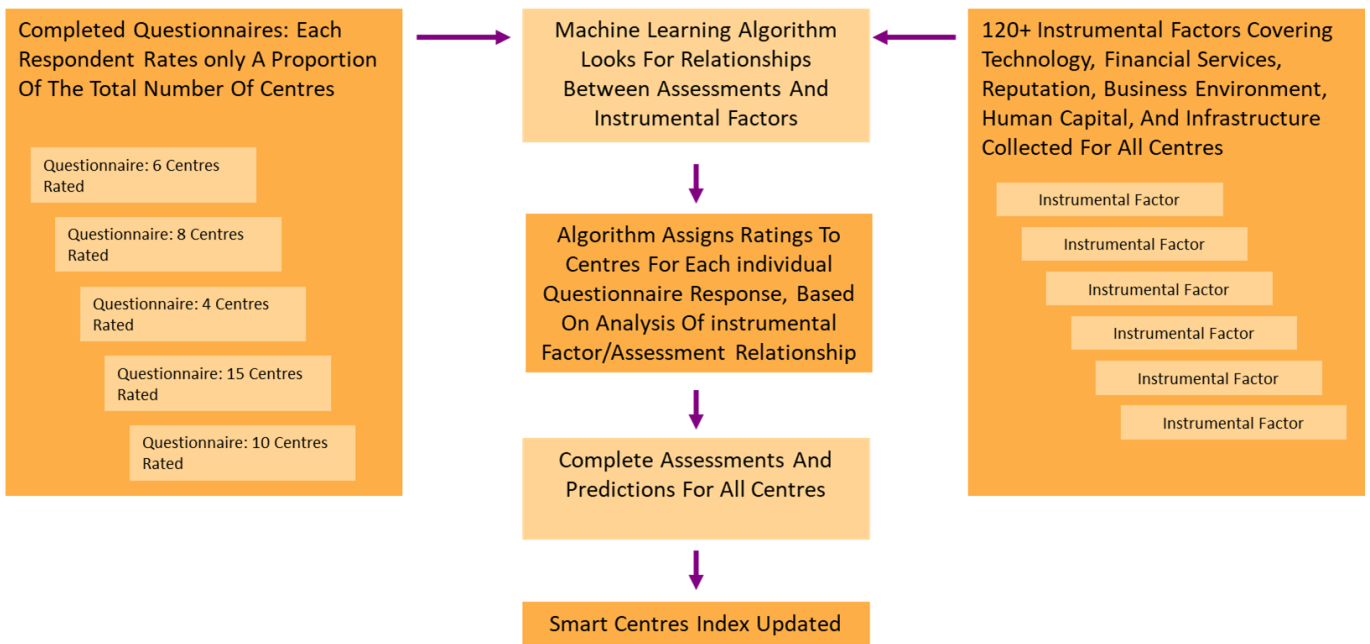
Or

*If Oxford, UK and Dallas/Fort Worth have been given a certain assessment by this respondent, then, based on the instrumental factors for Oxford, UK, Dallas/Fort Worth, and Beijing, how would that person assess Beijing?*

Centre rating predictions from the SVM are re-combined with actual centre assessments to produce ratings for each dimension of the SCI, which are combined into a single rating for financial centres' innovation and technology performance.

The process of creating the SCI is outlined in Chart 16 below.

**Chart 16 | The SCI Process**





## Appendix 4: Instrumental Factors

**Table 21 | Instrumental Factor Correlation With SCI Ratings - Highest 30 Factors**

Instrumental Factors	R-squared
OECD Country Risk Classification	0.748
The Global Financial Centres Index	0.490
GFCI FinTech Index	0.464
Innovation Cities Global Index	0.387
Global Power City Index	0.373
The Global Fintech Index	0.361
Global Innovation Index	0.352
World Competitiveness Scoreboard	0.343
Ease of Doing Business Index	0.333
4G Availability %	0.311
Household net financial wealth	0.305
Quality of Domestic Transport Network	0.302
JLL Real Estate Transparency Index	0.291
Quality of Road Infrastructure	0.281
FDI Inward Stock (in million dollars)	0.274
Total Net Assets of Regulated Open-End Funds	0.271
Capitalisation of Stock Exchanges	0.256
Government Effectiveness	0.250
Value of Share Trading	0.245
Global Cybersecurity Index	0.241
Personal Tax Rates	0.239
Regulatory Quality	0.238
Business Environment Rankings	0.236
Rule of Law	0.234
Global AI Index	0.234
Crude oil input to refineries	0.231
Global Competitiveness Index	0.231
Number of High Net Worth Individuals	0.230
Best Countries for Business	0.217
Worldwide Broadband Speed League	0.216

**Table 22 | Technology Factors**

Instrumental Factor	Source	Website
E-Participation Index	United Nations	<a href="https://publicadministration.un.org/en/eparticipation">https://publicadministration.un.org/en/eparticipation</a>
UN International Sale Of Goods	United Nations	<a href="https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&amp;mtdsg_no=X-10&amp;chapter=10">https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&amp;mtdsg_no=X-10&amp;chapter=10</a>
ISO TC307 Participation	International Organisation For Standardisation	<a href="https://www.iso.org/committee/6266604.html">https://www.iso.org/committee/6266604.html</a>
Online Censorship Rank	VPN Mentor	<a href="https://www.atkearney.com/foreign-direct-investment-confidence-index">https://www.atkearney.com/foreign-direct-investment-confidence-index</a>
Volume Of Bitcoin Trades	Coin Dance	<a href="https://coin.dance/volume/localbitcoins">https://coin.dance/volume/localbitcoins</a>
Legal Status Of Bitcoin	Coin Dance	<a href="https://coin.dance/poli/legality">https://coin.dance/poli/legality</a>
Use Of Blockchain In Land Registration	Airtable Blockchain in Government Tracker	<a href="https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true">https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true</a>
Use Of Blockchain In Identity Management	Airtable Blockchain in Government Tracker	<a href="https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true">https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true</a>
Use Of Blockchain For Trade Finance	Airtable Blockchain in Government Tracker	<a href="https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true">https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true</a>
Use Of Blockchain In Healthcare	Airtable Blockchain in Government Tracker	<a href="https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true">https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true</a>
Use Of Blockchain In Voting	Airtable Blockchain in Government Tracker	<a href="https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true">https://airtable.com/universe/expsQEGKoZO2lExKK/blockchain-in-government-tracker?explore=true</a>
Global AI Index	Tortoise Intelligence	<a href="https://www.tortoisemedia.com/intelligence/ai">https://www.tortoisemedia.com/intelligence/ai</a>
GFCI FinTech Index	Z/Yen Group	<a href="https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/">https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/</a>
The Global Fintech Index	Findexable	<a href="https://findexable.com/">https://findexable.com/</a>

**Table 23 | Financial Services Factors**

Instrumental Factor	Source	Website
Capitalisation Of Stock Exchanges	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/december-2019/market-statistics">https://focus.world-exchanges.org/issue/december-2019/market-statistics</a>
Value Of Share Trading	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/december-2019/market-statistics">https://focus.world-exchanges.org/issue/december-2019/market-statistics</a>
Volume Of Share Trading	The World Federation of Stock Exchanges	<a href="https://statistics.world-exchanges.org/ReportGenerator/Generator#">https://statistics.world-exchanges.org/ReportGenerator/Generator#</a>
Broad Stock Index Levels	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/december-2019/market-statistics">https://focus.world-exchanges.org/issue/december-2019/market-statistics</a>
Value Of Bond Trading	The World Federation of Stock Exchanges	<a href="https://statistics.world-exchanges.org/ReportGenerator/Generator#">https://statistics.world-exchanges.org/ReportGenerator/Generator#</a>
Domestic Credit Provided By Banking Sector (% of GDP)	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=FS.AST.DOMS.GD.ZS">http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=FS.AST.DOMS.GD.ZS</a>
Percentage of Firms Using Banks To Finance Investment	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=IC.FRM.BNKS.ZS">http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=IC.FRM.BNKS.ZS</a>
Total Net Assets Of Regulated Open-End Funds	Investment Company Institute	<a href="http://www.icifactbook.org/">http://www.icifactbook.org/</a>
Islamic Finance Country Index	Islamic Banks and Financial Institutions	<a href="http://www.gifr.net/publications">http://www.gifr.net/publications</a>
Net External Positions Of Banks	The Bank for International Settlements	<a href="http://www.bis.org/statistics/annex_map.htm">http://www.bis.org/statistics/annex_map.htm</a>
External Positions Of Central Banks As A Share Of GDP	The Bank for International Settlements	<a href="http://www.bis.org/statistics/annex_map.htm">http://www.bis.org/statistics/annex_map.htm</a>
Liner Shipping Connectivity Index	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=IS.SHP.GCNW.XQ">http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=IS.SHP.GCNW.XQ</a>
Global Connectedness Index	DHL	<a href="http://www.logistics.dhl/gci">www.logistics.dhl/gci</a>
Economic Performance Index	The Brookings Institution	<a href="https://www.brookings.edu/research/global-metro-monitor-2018/#rank">https://www.brookings.edu/research/global-metro-monitor-2018/#rank</a>
Business Process Outsourcing Location Index	Cushman & Wakefield	<a href="http://www.cushmanwakefield.com/en/research-and-insight/2016/business-process-outsourcing-location-index-2016/">http://www.cushmanwakefield.com/en/research-and-insight/2016/business-process-outsourcing-location-index-2016/</a>
Financial System Green Alignment	Corporate Knights	<a href="https://www.finance-watch.org/publication/global-green-finance-index-3/">https://www.finance-watch.org/publication/global-green-finance-index-3/</a>
Protected Land Area % Of Land Area	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=ER.LND.PTLD.ZS&amp;country=">http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=ER.LND.PTLD.ZS&amp;country=</a>
Climate-Aligned Bonds Outstanding By Country Of Issuer	CBI	<a href="https://www.climatebonds.net/green-bond-segments-stock-exchanges">https://www.climatebonds.net/green-bond-segments-stock-exchanges</a>
Sustainable Stock Exchanges (Y/N)	UN Sustainable Stock Exchange Initiative	<a href="http://www.sseinitiative.org/sse-partner-exchanges/list-of-partner-exchanges/">http://www.sseinitiative.org/sse-partner-exchanges/list-of-partner-exchanges/</a>
Green Bond Segments On Stock Exchanges (Y/N)	CBI	<a href="https://www.climatebonds.net/green-bond-segments-stock-exchanges">https://www.climatebonds.net/green-bond-segments-stock-exchanges</a>
The Global Green Finance Index (Depth)	Z/Yen Group	<a href="https://www.longfinance.net/programmes/financial-centre-futures/global-green-finance-index/">https://www.longfinance.net/programmes/financial-centre-futures/global-green-finance-index/</a>
The Global Green Finance Index (Quality)	Z/Yen Group	<a href="https://www.longfinance.net/programmes/financial-centre-futures/global-green-finance-index/">https://www.longfinance.net/programmes/financial-centre-futures/global-green-finance-index/</a>
The Global Financial Centres Index	Z/Yen Group	<a href="https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/">https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/</a>

**Table 24 | Reputational Factors**

Instrumental Factor	Source	Website
World Competitiveness Scoreboard	IMD	<a href="https://www.imd.org/wcc/world-competitiveness-center-rankings/world-competitiveness-ranking-2019/">https://www.imd.org/wcc/world-competitiveness-center-rankings/world-competitiveness-ranking-2019/</a>
Global Competitiveness Index	World Economic Forum	<a href="http://reports.weforum.org/global-competitiveness-report-2019/competitiveness-rankings/">http://reports.weforum.org/global-competitiveness-report-2019/competitiveness-rankings/</a>
Foreign Direct Investment Inflows	UNCTAD	<a href="http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96740">http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96740</a>
FDI Confidence Index	AT Kearney	<a href="https://www.atkearney.com/foreign-direct-investment-confidence-index">https://www.atkearney.com/foreign-direct-investment-confidence-index</a>
GDP Per Person Employed (Constant 2011 PPP \$)	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators">http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators</a>
Global Innovation Index	INSEAD	<a href="http://www.globalinnovationindex.org/content.aspx?page=GII-Home">http://www.globalinnovationindex.org/content.aspx?page=GII-Home</a>
Global Intellectual Property Index	Taylor Wessing	<a href="https://united-kingdom.taylorwessing.com/en/ip-index/reports">https://united-kingdom.taylorwessing.com/en/ip-index/reports</a>
RPI (% Change On Year Ago)	The Economist	<a href="https://www.economist.com/economic-and-financial-indicators/2020/01/09/economic-data-commodities-and-markets">https://www.economist.com/economic-and-financial-indicators/2020/01/09/economic-data-commodities-and-markets</a>
Number Of International Association Meetings	World Economic Forum	<a href="http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=NRFAIREX">http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=NRFAIREX</a>
Innovation Cities Global Index	2ThinkNow Innovation Cities	<a href="https://www.innovation-cities.com/index-2019-global-city-rankings/18842/">https://www.innovation-cities.com/index-2019-global-city-rankings/18842/</a>
Big Mac Index	The Economist	<a href="http://www.economist.com/content/big-mac-index">http://www.economist.com/content/big-mac-index</a>
Sustainable Economic Development	Boston Consulting Group	<a href="https://www.bcg.com/en-gb/publications/2019/seda-measuring-well-being.aspx">https://www.bcg.com/en-gb/publications/2019/seda-measuring-well-being.aspx</a>
Global Enabling Trade Report	World Economic Forum	<a href="https://www.weforum.org/focus/global-enabling-trade-report-2016">https://www.weforum.org/focus/global-enabling-trade-report-2016</a>
Good Country Index	Good Country Party	<a href="https://www.goodcountry.org/index/results">https://www.goodcountry.org/index/results</a>
Legatum Prosperity Index	Legatum Institute	<a href="http://www.prosperity.com/#!/ranking">http://www.prosperity.com/#!/ranking</a>
FDI Inward Stock (In Million Dollars)	UNCTAD	<a href="http://unctad.org/en/Pages/DIAE/World%20Investment%20Report/Annex-Tables.aspx">http://unctad.org/en/Pages/DIAE/World%20Investment%20Report/Annex-Tables.aspx</a>
Quality Of Nationality Index	Henley Partners	<a href="https://nationalityindex.com/#">https://nationalityindex.com/#</a>
Global Power City Index	The Mori Memorial Foundation	<a href="http://mori-m-foundation.or.jp/english/ius2/gpci2/index.shtml">http://mori-m-foundation.or.jp/english/ius2/gpci2/index.shtml</a>

**Table 25 | Business Environment Factors**

Instrumental Factor	Source	Website
Business Environment Rankings	EIU	<a href="http://country.eiu.com/All">http://country.eiu.com/All</a>
Ease Of Doing Business Index	The World Bank	<a href="https://www.doingbusiness.org/en/reports/global-reports/doing-business-2020">https://www.doingbusiness.org/en/reports/global-reports/doing-business-2020</a>
Operational Risk Rating	EIU	<a href="http://www.viewswire.com/index.asp?layout=homePubTypeRK">http://www.viewswire.com/index.asp?layout=homePubTypeRK</a>
Real Interest Rate	The World Bank	<a href="https://databank.worldbank.org/reports.aspx?source=world-development-indicators&amp;series=FR.INR.RINR">https://databank.worldbank.org/reports.aspx?source=world-development-indicators&amp;series=FR.INR.RINR</a>
Global Services Location	AT Kearney	<a href="https://www.atkearney.com/digital-transformation/gsl">https://www.atkearney.com/digital-transformation/gsl</a>
Corruption Perception Index	Transparency International	<a href="https://www.transparency.org/cpi2018">https://www.transparency.org/cpi2018</a>
Corporate Tax Rates	PWC	<a href="https://www.pwc.com/payingtaxes">https://www.pwc.com/payingtaxes</a>
Personal Tax Rates	OECD	<a href="https://stats.oecd.org/index.aspx?DataSetCode=TABLE_I6">https://stats.oecd.org/index.aspx?DataSetCode=TABLE_I6</a>
Tax Revenue as Percentage of GDP	The World Bank	<a href="https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS">https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS</a>
Bilateral Tax Information Exchange Agreements	OECD	<a href="http://www.oecd.org/ctp/exchange-of-tax-information/taxinformationexchangeagreementstieas.htm">http://www.oecd.org/ctp/exchange-of-tax-information/taxinformationexchangeagreementstieas.htm</a>
Economic Freedom Of The World	Fraser Institute	<a href="http://www.freetheworld.com/release.html">http://www.freetheworld.com/release.html</a>
Government Debt as % of GDP	CIA	<a href="https://www.cia.gov/library/publications/the-world-factbook/rankorder/2186rank.html">https://www.cia.gov/library/publications/the-world-factbook/rankorder/2186rank.html</a>
OECD Country Risk Classification	OECD	<a href="http://www.oecd.org/trade/topics/export-credits/documents/cre-crc-current-english.pdf">http://www.oecd.org/trade/topics/export-credits/documents/cre-crc-current-english.pdf</a>
Global Peace Index	Institute for Economics & Peace	<a href="http://www.visionofhumanity.org/">http://www.visionofhumanity.org/</a>
Financial Secrecy Index	Tax Justice Network	<a href="http://www.financialsecrecyindex.com/">http://www.financialsecrecyindex.com/</a>
Government Effectiveness	The World Bank	<a href="http://info.worldbank.org/governance/wgi/index.aspx#home">http://info.worldbank.org/governance/wgi/index.aspx#home</a>
Open Government	World Justice Project	<a href="http://worldjusticeproject.org/rule-of-law-index">http://worldjusticeproject.org/rule-of-law-index</a>
Regulatory Enforcement	World Justice Project	<a href="http://worldjusticeproject.org/rule-of-law-index">http://worldjusticeproject.org/rule-of-law-index</a>
Press Freedom Index	Reporters Without Borders (RSF)	<a href="https://rsf.org/en/ranking/2019">https://rsf.org/en/ranking/2019</a>
Currencies	Swiss Association for Standardization (SNV)	<a href="http://www.currency-iso.org/en/home/tables/table-a1.html">http://www.currency-iso.org/en/home/tables/table-a1.html</a>
Commonwealth Countries	The Commonwealth	<a href="http://thecommonwealth.org/member-countries">http://thecommonwealth.org/member-countries</a>
Common Law Countries	CIA	<a href="https://www.cia.gov/library/publications/the-world-factbook/fields/308.html">https://www.cia.gov/library/publications/the-world-factbook/fields/308.html</a>
Inflation, GDP Deflator	The World Bank	<a href="https://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG">https://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG</a>
Rule Of Law	The World Bank	<a href="http://info.worldbank.org/governance/wgi/index.aspx#home">http://info.worldbank.org/governance/wgi/index.aspx#home</a>
Political Stability and Absence of Violence/Terrorism	The World Bank	<a href="http://info.worldbank.org/governance/wgi/index.aspx#home">http://info.worldbank.org/governance/wgi/index.aspx#home</a>
Regulatory Quality	The World Bank	<a href="http://info.worldbank.org/governance/wgi/index.aspx#home">http://info.worldbank.org/governance/wgi/index.aspx#home</a>
Control Of Corruption	The World Bank	<a href="http://info.worldbank.org/governance/wgi/index.aspx#home">http://info.worldbank.org/governance/wgi/index.aspx#home</a>

**Table 25 (continued) | Business Environment Factors**

Instrumental Factor	Source	Website
Best Countries For Business	Forbes	<a href="https://www.forbes.com/best-countries-for-business/list/">https://www.forbes.com/best-countries-for-business/list/</a>
Global Cybersecurity Index	ITU	<a href="http://www.itu.int/en/ITU-D/Cybersecurity/Pages/GCI.aspx">http://www.itu.int/en/ITU-D/Cybersecurity/Pages/GCI.aspx</a>
Open Budget Survey	International Budget Partnership	<a href="http://survey.internationalbudget.org/#download">http://survey.internationalbudget.org/#download</a>
Crude Oil Input To refineries	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>

**Table 26 | Human Capital Factors**

Instrumental Factor	Source	Website
Graduates in social Science, Business and Law (As % Of Total Graduates)	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=Education%20Statistics&amp;series=UIS.FOSGP.5T8.F400">http://databank.worldbank.org/data/reports.aspx?source=Education%20Statistics&amp;series=UIS.FOSGP.5T8.F400</a>
Gross Tertiary Graduation Ratio	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=Education%20Statistics&amp;series=SE.TER.CMPL.ZS">http://databank.worldbank.org/data/reports.aspx?source=Education%20Statistics&amp;series=SE.TER.CMPL.ZS</a>
Henley Passport Index	Henley Partners	<a href="https://www.henleypassportindex.com/passport">https://www.henleypassportindex.com/passport</a>
Human Development Index	UN Development Programme	<a href="http://hdr.undp.org/en/2019-report/download">http://hdr.undp.org/en/2019-report/download</a>
Citizens Domestic Purchasing Power	UBS	<a href="https://www.ubs.com/microsites/prices-earnings/en/">https://www.ubs.com/microsites/prices-earnings/en/</a>
Number of High Net Worth Individuals	Capgemini	<a href="https://www.worldwealthreport.com/">https://www.worldwealthreport.com/</a>
Homicide Rates	UN Office of Drugs & Crime	<a href="https://dataunodc.un.org/crime/">https://dataunodc.un.org/crime/</a>
Average Precipitation In Depth	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=AG.LND.PRPC.MM">http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=AG.LND.PRPC.MM</a>
Global Skills Index	Hays	<a href="http://www.hays-index.com/">http://www.hays-index.com/</a>
Linguistic Diversity	Ethnologue	<a href="http://www.ethnologue.com/statistics/country">http://www.ethnologue.com/statistics/country</a>
Global Terrorism Index	Institute for Economics & Peace	<a href="http://visionofhumanity.org/indexes/terrorism-index/">http://visionofhumanity.org/indexes/terrorism-index/</a>
World Talent Rankings	IMD	<a href="https://www.imd.org/wcc/world-competitiveness-center-rankings/world-talent-ranking-2019/">https://www.imd.org/wcc/world-competitiveness-center-rankings/world-talent-ranking-2019/</a>
Household Net Adjusted Disposable Income	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>
Household Net Financial Wealth	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>
Education Attainment	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>
Life Expectancy	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>
Employees Working Very Long Hours	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>
Human Freedom Index	Cato Institute	<a href="https://www.cato.org/human-freedom-index">https://www.cato.org/human-freedom-index</a>

**Table 27 | Infrastructure Factors**

Instrumental Factor	Source	Website
JLL Real Estate Transparency Index	Jones Lang LaSalle	<a href="http://greti.jll.com/greti/rankings">http://greti.jll.com/greti/rankings</a>
ICT Development Index	United Nations	<a href="http://www.itu.int/net4/ITU-D/idi/2017/index.html">http://www.itu.int/net4/ITU-D/idi/2017/index.html</a>
Telecommunication Infrastructure Index	United Nations	<a href="https://publicadministration.un.org/egovkb/en-us/Data-Center">https://publicadministration.un.org/egovkb/en-us/Data-Center</a>
Quality Of Domestic Transport Network	World Economic Forum	<a href="http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=TRSP EFFICY">http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=TRSP EFFICY</a>
Quality Of Road Infrastructure	World Economic Forum	<a href="http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=EOSQ057">http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=EOSQ057</a>
Roadways Per Land Area	CIA	<a href="https://www.cia.gov/library/publications/the-world-factbook/rankorder/2085rank.html">https://www.cia.gov/library/publications/the-world-factbook/rankorder/2085rank.html</a>
Railways Per Land Area	CIA	<a href="https://www.cia.gov/library/publications/the-world-factbook/rankorder/2121rank.html">https://www.cia.gov/library/publications/the-world-factbook/rankorder/2121rank.html</a>
Networked Readiness Index	World Economic Forum	<a href="http://reports.weforum.org/global-information-technology-report-2016/">http://reports.weforum.org/global-information-technology-report-2016/</a>
World Energy Trilemma Index	World Energy Council	<a href="https://trilemma.worldenergy.org/">https://trilemma.worldenergy.org/</a>
Open Data Barometer	World Wide Web Foundation	<a href="https://opendatabarometer.org/4thedition/?_year=2016&amp;indicator=ODB">https://opendatabarometer.org/4thedition/?_year=2016&amp;indicator=ODB</a>
Environmental Performance Index	Yale University	<a href="https://epi.envirocenter.yale.edu/epi-topline">https://epi.envirocenter.yale.edu/epi-topline</a>
Global Sustainable Competitiveness Index	Solability	<a href="http://solability.com/the-global-sustainable-competitiveness-index/the-index">http://solability.com/the-global-sustainable-competitiveness-index/the-index</a>
Logistics Performance Index	The World Bank	<a href="http://lpi.worldbank.org/international/global">http://lpi.worldbank.org/international/global</a>
Water Quality	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>
INRIX Traffic Scorecard	INRIX	<a href="http://inrix.com/scorecard/">http://inrix.com/scorecard/</a>
Labelled Green Bonds Issued By Country Of Issuer	Corporate Knights	<a href="https://www.finance-watch.org/publication/global-green-finance-index-3/">https://www.finance-watch.org/publication/global-green-finance-index-3/</a>
Forestry Area	World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=AG.LND.FRST.ZS&amp;country=">http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=AG.LND.FRST.ZS&amp;country=</a>
CO2 Emissions Per Capita	World Bank	<a href="https://data.worldbank.org/indicator/EN.ATM.CO2E.PC">https://data.worldbank.org/indicator/EN.ATM.CO2E.PC</a>
4G Availability %	Open Signal	<a href="https://www.opensignal.com/reports/2019/05/global-state-of-the-mobile-network">https://www.opensignal.com/reports/2019/05/global-state-of-the-mobile-network</a>
Worldwide Broadband Speed League	Cable	<a href="https://www.cable.co.uk/broadband/speed/worldwide-speed-league/">https://www.cable.co.uk/broadband/speed/worldwide-speed-league/</a>
Share Of Wind And Solar In Electricity Production	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>
Energy Intensity Of GDP	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>
Share Of Renewables In Electricity Production	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>

**Vantage**Financial  
Centres

Vantage Financial Centres is an exclusive network of financial centres around the world looking for a deeper understanding of financial centre competitiveness. Members receive enhanced access to SCI GFCI and GGFI data, marketing opportunities, and training for centres seeking to enhance their profile and reputation.



Seoul is a rising star among the financial cities of the world. It is already one of the top 10 cities in the world based on various indices, and it has many more opportunities to offer as a financial hub and great growth potential. Seoul believe global financial companies are our true partners for growth. There are many incentives provided to global financial companies that enter into Seoul, such as the financial incentives provided when moving into IFC, so that we can all jointly work towards the growth and development of the financial market.

It is sure that Seoul will become a top star of global financial hubs in the near future! Pay close attention to Seoul's potentials and preemptively gain a foothold in the Seoul financial hub. Seoul is the gateway to Northeast Asia and the world.

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Since 2009 Busan Metropolitan City has been developing a financial hub specialized in maritime finance and derivatives. With its strategic location in the center of the southeast economic block of Korea and the crossroads of a global logistics route, Busan envisions growing into an international financial city in Northeast Asia. Following the successful launch of the 63-story Busan International Finance Center in 2014, the second phase development of the Busan Financial Hub was completed in 2018, residing the fintech hub center and financial museum. In addition, Busan has been designated as a Regulation-Free Blockchain Zone by the government, becoming a hub of the financial industry that applies the new technology.

With this world-class business infrastructure, BIFC offers an attractive incentive package to global financial leaders, including 25 years of free office rentals to be offered to a small number of companies.

BIFC will support you to identify opportunities in Busan, one of the fastest developing cities in Asia.

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Casablanca Finance City is an African financial and business hub located at the crossroads of continents. Recognized as the leading financial center in Africa, and partner of the largest financial centers in the world, CFC has built a strong and thriving community of members across four major categories: financial companies, regional headquarters of multinationals, service providers and holdings.

CFC offers its members an attractive value proposition and a premium "Doing Business" support that fosters the deployment of their activities in Africa. Driven by the ambition to cater to its community, CFC is committed to promoting its members expertise across the continent, while enabling fruitful business and partnership synergies through its networking platform.

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Abu Dhabi Global Market (ADGM), an award-winning financial centre in the capital of the UAE, opened for business in October 2015, consisting of three independent authorities: the Registration Authority (RA); the Financial Services Regulatory Authority (FSRA); and ADGM Courts. Comprised of the three independent authorities where Common English Law is directly applicable, ADGM plays an essential role in the diversification of the economy in the UAE and is committed to providing a comprehensive business ecosystem operating with the highest standards of integrity and is renowned for its ease of doing business.

Strategically situated in Abu Dhabi, home to one of the world's largest sovereign wealth funds, ADGM plays a vital role in positioning Abu Dhabi as a global trade and business hub and serves as a link between the growing economies of the Middle East, Africa and South Asia to the rest of the world. ADGM has earned industry recognition as the Financial Centre of the Year (MENA) four years in a row as well as being recognized as the leading FinTech Hub in the region.

**[www.adgm.com/](http://www.adgm.com/) [info@adgm.com](mailto:info@adgm.com)**



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Please find out more at: [www.vantagefinancialcentres.net](http://www.vantagefinancialcentres.net) or by contacting Mike Wardle at [mike\\_wardle@zyen.com](mailto:mike_wardle@zyen.com)



Global Times Consulting

Global Times Consulting Co. is a strategic consultancy with a focus on China. We help Chinese (local) governments at all levels to build their reputation globally, providing strategic counsel, stakeholder outreach and communications to support their sustainable development. We also partner with multinational companies operating in this dynamic but challenging market, serving as a gateway to China. In addition, we help Chinese companies extend their reach overseas.

Global Times Consulting Co. adopts a research and knowledge-based approach. With extensive contacts and deep insights into China's political and economic landscape, we develop and execute integrated programs for stakeholder relations and reputation management. Our extensive relationship with media and government organizations in China and worldwide helps us successfully execute programs and achieve desired goals.

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Dubai International Financial Centre (DIFC) is one of the world's most advanced financial centres, and the leading financial hub for the Middle East, Africa and South Asia (MEASA), which comprises 72 countries with an approximate population of 3 billion and a nominal GDP of US\$ 7.7 trillion.

DIFC is home to an internationally recognised, independent regulator and a proven judicial system with an English common law framework, as well as the region's largest financial ecosystem of more than 24,000 professionals working across over 2,200 active registered companies – making up the largest and most diverse pool of industry talent in the region. The Centre's vision is to drive the future of finance. Today, it offers one of the region's most comprehensive FinTech and venture capital environments, including cost-effective licensing solutions, fit-for-purpose regulation, innovative accelerator programmes, and funding for growth-stage start-ups.

Comprising a variety of world-renowned retail and dining venues, a dynamic art and culture scene, residential apartments, hotels and public spaces, DIFC continues to be one of Dubai's most sought-after business and lifestyle destinations.

**[www.difc.ae](http://www.difc.ae) Twitter @DIFC**



The Long Finance initiative grew out of the London Accord, a 2005 agreement among investment researchers to share environmental, social and governance research with policy-makers and the public. Long Finance was established more formally by Z/Yen Group and Gresham College from 2007 with the aim of exploring long-term thinking across a global network of people.

We work on researching innovative ways of building a more sustainable financial system. In so doing, we try to operate openly and emulate scientific ideals. At the same time, we are looking to create a supportive and caring community where people can truly question the accepted paradigms of risk and reward.

**[www.longfinance.net](http://www.longfinance.net)**



Finance

Montréal's mandate is to promote Montréal as a world-class financial hub and foster cooperation among its member institutions to accelerate the industry's growth. With renowned research capacities in artificial intelligence and a booming fintech sector, Montréal offers an experienced, diversified and innovative pool of talent as well as a stable, low cost and dynamic business environment.

For financial institutions searching for an ideal location to set up an intelligent service centre and operationalize their digital transformation, Finance Montréal can advise on the advantageous tax incentives aimed at facilitating the establishment and development of financial services corporations in the city.

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**Vantage****Financial Centres**

Vantage Financial Centres is an exclusive network of financial centres around the world looking for a deeper understanding of financial centre competitiveness. Members receive enhanced access to SCI, GFCI, and GGFI data, marketing opportunities, and training for centres seeking to enhance their profile and reputation.



AIFC is an all-around financial centre located in Nur-Sultan, the capital of Kazakhstan, which offers ample opportunities for businesses to grow. AIFC provides greater access to world-class capital markets and the asset management industry. It also promotes financial technology and drives the development of niche markets such as Islamic and green finance in the region.

AIFC provides unprecedented conditions and opportunities for its participants and investors: legal system based on the principles of English law, independent judicial system, regulatory framework consistent with internationally recognised standards, wide range of financial services and instruments, simplified visa and labour regimes, zero corporate tax rate, and English as a working language.

Located in the heart of Eurasia, AIFC is striving to become the gateway to the Eurasian Economic Union, Central Asia and Caucasus, and play a key role in the Belt and Road Initiative. AIFC is already gaining tremendous recognition as a leading financial hub in the region: recently, Asiamoney Awards recognised it as the best Belt and Road Initiative project of 2019.

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Approved by the China's State Council, China Development Institute (CDI) was founded in 1989 with one hundred and sixteen representatives from the government, academia and business in China. Being an independent think tank, CDI is committed to develop policy solutions via research and debates that help to advance China's reform and opening-up. After years of development, CDI has become one of the leading think tanks in China. CDI focuses on the studies of open economy and innovation-driven development, regional economy and regional development, industrial policies and industrial development, urbanization and urban development, business strategies and investment decision-making. Via conducting research, CDI provides policy recommendations for the Chinese governments at various levels and develops consultation for corporate sectors at home and abroad. CDI organizes events in different formats that evokes dialogue among scholars, government officials, business people and civil society members around the globe. Based in Shenzhen, Southern China, CDI has one hundred and sixty staff, with an affiliated network that consists of renowned experts from different fields.

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Distributed Futures is a Long Finance programme dedicated to exploring new technologies and finance. The programme looks as Smart Ledgers, but also wider technologies ranging from quantum computing to machine learning to biological finance.

Our research is structured around four themes:

- Society, Technology, Economics, and Politics

Directed at four outcomes:

- Expanding Frontiers, Changing Systems, Delivering Services, and Building Communities

<https://www.longfinance.net/programmes/distributed-futures/>  
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Luxembourg for Finance (LFF) is the Agency for the Development of the Financial Centre. It is a public-private partnership between the Luxembourg Government and the Luxembourg Financial Industry Federation (PROFIL). Founded in 2008, its objective is to develop Luxembourg's financial services industry and identify new business opportunities.

LFF connects international investors to the range of financial services provided in Luxembourg, such as investment funds, wealth management, capital market operations or advisory services. In addition to being the first port of call for foreign journalists, LFF cooperates with the various professional associations and monitors global trends in finance, providing the necessary material on products and services available in Luxembourg.

Furthermore, LFF manages multiple communication channels, organises seminars in international business locations, and takes part in selected world-class trade fairs and congresses.

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# Notes

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[www.zyen.com](http://www.zyen.com)

Z/Yen helps organisations make better choices - our clients consider us a commercial think-tank that spots, solves and acts. Our name combines Zen and Yen - 'a philosophical desire to succeed' - in a ratio, recognising that all decisions are trade-offs. One of Z/Yen's specialisms is the development and publication of research combining factor analysis and perception surveys.

### THE SMART CENTRES INDEX



[www.smartcentresindex.net](http://www.smartcentresindex.net)

The Smart Centres Index is designed to track the development of technology and financial centres across the world in their support for and readiness for new technology applications. It aims to measure how attuned centres and their regulatory systems are to attracting innovation and growth in Science, Technology, Energy Systems, Machine Learning, Distributed Ledgers, and Fintech.

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[www.longfinance.net](http://www.longfinance.net)

Long Finance is a Z/Yen initiative designed to address the question **"When would we know our financial system is working?"** This question underlies Long Finance's goal to improve society's understanding and use of finance over the long-term. In contrast to the short-termism that defines today's economic views the Long Finance timeframe is roughly 100 years.



<https://www.longfinance.net/programmes/distributed-futures/>

Distributed Futures is a Long Finance programme dedicated to exploring new technologies and finance. The programme looks at Smart Ledgers, but also wider technologies ranging from quantum computing to machine learning to biological finance.