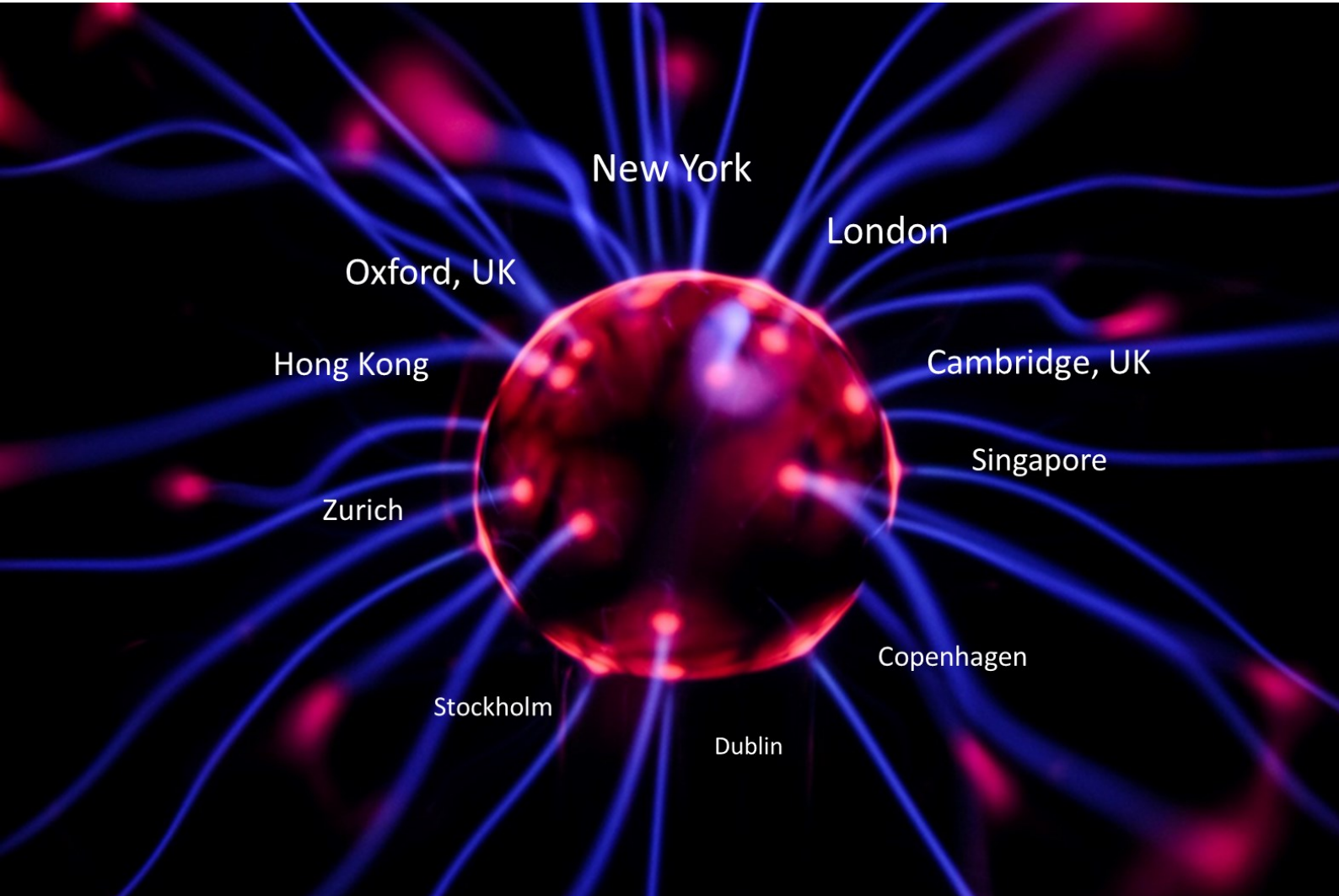




# The Smart Centres Index 4

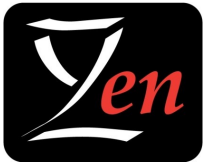


November 2021



Distributed Futures





We are pleased to present the fourth edition of the Smart Centres Index (SCI 4).

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 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.

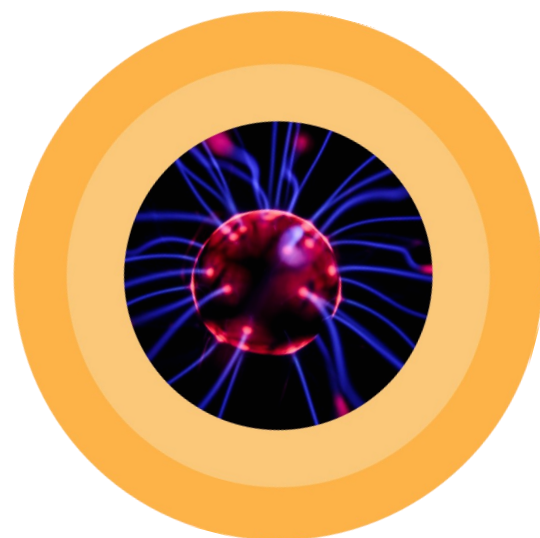
The SCI tracks three dimensions related to innovation and technology in the cities that we rank:

- 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 and the rest of the Z/Yen team for their contributions with research, modelling, and ideas.



Cover Photo by Ramón Salinero on Unsplash

## Foreword

### Smart Centres Index – Improving Our Understanding Of Science & Technology Policy

Science and technology advance how we engage with the world. The pace of innovation surges as connectivity keeps increasing. Yet, we remain rather ignorant about how to connect the physical communities in which we live with the advancement we seek, to meet such desirable targets as the UN Sustainable Development Goals. US scientist Carl Sagan (1934-1996) said, “We live in a society exquisitely dependent on science and technology, in which hardly anyone knows anything about science and technology.”

Z/Yen created the Smart Centres Index (SCI) in order to increase our knowledge of how science and technology relate to physical place, communities, and policies. SCI tracks how innovation clusters and cities are performing in fostering technology and science, bringing new ideas, new benefits, new products, and new ways of managing business to our lives. These smart centres seem to be clustering in four areas, an exceptionally strong UK, North America, Europe, and southeast Asia. We anticipate the emergence of much stronger Chinese clusters soon. These clusters invest in a range of areas that support the innovation, deploying:

- education and research, with high-performing university sectors;
- strong regulatory systems that optimise innovation, while protecting the consumer and the environment;
- excellent infrastructure, both physical and digital;
- connectivity with other parts of the world to enable collaboration; access to investment opportunities to support and accelerate start-ups and R&D.

We need constant innovation to manage the challenges we face as a global community, whether addressing the challenges of covid-19 through medical and life sciences, or the challenge of climate change. Policy makers are realising that narrow policy initiatives, e.g. greentech, medtech, fintech, or free trade zones, are not sufficient and they need to rethink how they build a truly smart, rounded, knowledge economy that improves the lives of all. This means thinking in an integrated and holistic manner (such a cliché, but true). It is tough to overestimate the scale of change ahead, yet small policy decisions, say robots in kindergartens or free online life-long learning, can make outsized differences, particularly if done in conjunction with one another.

US scientist Alan Kay (1940-) noted, “Technology is anything that wasn't around when you were born”. We have a lot to live for. This fourth edition of the Smart Centres Index tries to provide insights for everyone into those centres that are leading the way in the creation of new opportunities and new ways of engaging with the world. We have a lot to learn.



Professor Michael Mainelli  
Executive Chairman, Z/Yen Group



## Summary And Headlines

### Overview

- We researched 131 commercial and financial centres for this fourth edition of the Smart Centres Index (SCI 4). The number of centres in the index has increased from 67 to 72.
- The average rating for all centres fell just over 1%.
- Western European centres feature strongly, with seven centres in the top 10, alongside New York in first place, and Hong Kong and Singapore from Asia/Pacific.
- US and Chinese centres do not feature as highly in the index as might be expected given the extent of their development in technology, as shown by their leading position in the filing of patents and with China leading the US on this measure.
- Looking at the dimensions that make up the SCI, US centres generally rank lower for Creative Intensity than their overall rank; and Chinese and other Asia/Pacific centres score lower for Innovation Support, including regulation, than they do for the other dimensions.

### SCI 4 Results

- New York regained its first position in the index, remaining the only US centre in the top 10.
- London took second place, with Oxford, Cambridge, Hong Kong, and Singapore taking the next places.
- Copenhagen joins the index in 8th place, replacing Geneva in the top 10.
- Only three centres rose 10 or more places in the rankings in SCI 4, while six centres fell 10 or more places.

### North America

- 11 North American centres feature in SCI 4 and eight of these centres improved their rating in SCI4, with seven equalling or improving their ranking.
- Six US centres are in the top 20 centres overall.

### Asia/Pacific

- 20 Asia/Pacific centres now feature in the SCI, with Taipei joining the index for the first time.
- Hong Kong and Singapore feature in the top 10 centres.
- 16 centres fell in the ratings, while 11 centres maintained or improved their ranking, with South Korean centres in particular performing well.

### Western Europe

- 27 Western European centres feature in SCI 4, with seven centres ranking in the top 10, including new entrant, Copenhagen.
- 17 centres in the region fell in the rankings as other centres improved their position.

### Middle East & Africa

- Tel Aviv leads this region, maintaining its 18th position.
- All other centres in the region fell in both the ratings and rankings.

### Eastern Europe & Central Asia

- Prague entered the SCI for the first time, leading the region in 24th position.
- The other centres in the region all fell in the SCI ratings.

### Latin America & The Caribbean

- Mexico City and the Cayman Islands are the only two centres in the region to feature in the SCI.
- Both centres lost ground in this edition of the index.

### Commentary

The Smart Centres Index focuses 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, and Fintech, along with other applications.

The SCI takes into account the three dimensions of Innovation Support, Creative Intensity and Delivery Capability. In broad terms, centres in North America and Western Europe score well for innovation Support and Delivery Capability but vary in terms of their Creative Intensity. Centres in Asia/Pacific score lower for Innovation Support.

Leading centres in the SCI are based in places which combine a high performing university sector across STEM subjects, with well-developed regulatory, commercial and financial services.

### SCI 4

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 in major commercial and financial centres:

- 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.

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

SCI 4 was compiled using 130 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 2,157 assessments provided by respondents to the [SCI online questionnaire](#). Details of the 302 respondents are shown in Appendix 2. Further details of the methodology behind SCI 4 are in Appendix 3.

The 72 centres listed in SCI 4 are those which received an adequate number of assessments from survey respondents or which had appeared in SCI 3. Assessments of respondents' home centres were excluded from the data, in order to avoid home centre bias.

## SCI 4 Ranks And Ratings

Table 1 | Smart Centres Index 4: Ranks And Ratings

Centre	SCI 4		SCI 3		Change in Rank	Change in Rating
	Rank	Rating	Rank	Rating		
New York	1	731	2	716	▲1	▲15
London	2	730	1	729	▼1	▲1
Oxford, UK	3	710	3	709	0	▲1
Cambridge, UK	4	707	6	703	▲2	▲4
Hong Kong	5	702	5	704	0	▼2
Singapore	6	700	7	701	▲1	▼1
Zurich	7	696	9	694	▲2	▲2
Copenhagen	8	695	New	New	New	New
Stockholm	9	694	4	705	▼5	▼11
Dublin	10	693	8	699	▼2	▼6
Chicago	11	692	14	682	▲3	▲10
Lugano	12	691	13	683	▲1	▲8
Los Angeles	13	690	12	684	▼1	▲6
Seattle	14	689	16	678	▲2	▲11
Geneva	15	688	10	689	▼5	▼1
Boston	16	687	15	681	▼1	▲6
San Francisco	17	686	17	676	0	▲10
Tel Aviv	18	685	18	675	0	▲10
Amsterdam	19	684	11	688	▼8	▼4
Malta	20	683	22	668	▲2	▲15
Glasgow	21	669	19	671	▼2	▼2
Berlin	22	666	29	661	▲7	▲5
Beijing	23	664	23	667	0	▼3
Prague	24	663	New	New	New	New
Seoul	25	662	32	658	▲7	▲4
Dubai	26	661	20	670	▼6	▼9
Toronto	27	660	25	665	▼2	▼5
Shanghai	28	659	30	660	▲2	▼1
Washington DC	29	658	40	650	▲11	▲8
Luxembourg	30	657	27	663	▼3	▼6
Paris	31	656	24	666	▼7	▼10
Abu Dhabi	32	655	26	664	▼6	▼9
Dallas / Fort Worth	33	654	38	652	▲5	▲2
Bangkok	34	653	33	657	▼1	▼4
Vancouver	35	652	31	659	▼4	▼7
Vienna	36	650	35	655	▼1	▼5



Smart Centres Index 4

Table 1 (continued) | Smart Centres Index 4: Ranks And Ratings

Centre	SCI 4		SCI 3		Change in Rank	Change in Rating
	Rank	Rating	Rank	Rating		
Edinburgh	37	648	21	669	▼ 16	▼ 21
Sydney	38	646	34	656	▼ 4	▼ 10
Austin	39	645	43	646	▲ 4	▼ 1
Brussels	40	644	45	644	▲ 5	0
Busan	41	643	62	608	▲ 21	▲ 35
Melbourne	42	642	46	643	▲ 4	▼ 1
Guernsey	43	641	36	654	▼ 7	▼ 13
GIFT City-Gujarat	44	638	49	640	▲ 5	▼ 2
Frankfurt	45	637	39	651	▼ 6	▼ 14
Sofia	46	636	28	662	▼ 18	▼ 26
Tokyo	47	633	37	653	▼ 10	▼ 20
Shenzhen	48	628	48	641	0	▼ 13
Cayman Islands	49	624	42	647	▼ 7	▼ 23
Osaka	50	623	61	613	▲ 11	▲ 10
Hamburg	51	620	New	New	New	New
Munich	52	619	41	648	▼ 11	▼ 29
Guangzhou	53	618	54	623	▲ 1	▼ 5
Mexico City	54	617	52	636	▼ 2	▼ 19
Isle of Man	55	616	47	642	▼ 8	▼ 26
Budapest	56	613	51	637	▼ 5	▼ 24
Tianjin	57	612	53	629	▼ 4	▼ 17
Moscow	58	611	57	618	▼ 1	▼ 7
Cape Town	59	610	50	639	▼ 9	▼ 29
Madrid	60	604	55	622	▼ 5	▼ 18
Warsaw	61	603	56	619	▼ 5	▼ 16
Milan	62	602	59	615	▼ 3	▼ 13
Johannesburg	63	597	44	645	▼ 19	▼ 48
Istanbul	64	589	65	595	▲ 1	▼ 6
Kuala Lumpur	65	587	63	604	▼ 2	▼ 17
Stuttgart	66	580	New	New	New	New
Riyadh	67	579	64	598	▼ 3	▼ 19
Manila	68	573	60	614	▼ 8	▼ 41
Rome	69	561	58	617	▼ 11	▼ 56
Taipei	70	546	New	New	New	New
Mumbai	71	458	66	470	▼ 5	▼ 12
New Delhi	72	446	67	462	▼ 5	▼ 16

## 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 dimension, which are ranked equally in creating the SCI. Full details of the separate ratings for each dimension are at Appendix 1. Table 2 shows the rating details for each dimension for the top 20 centres in SCI 4.

**Table 2 | Rating Details For SCI 4 Dimensions: Top 20 Centres in SCI 4**

SCI 4 Ranking	Centre	SCI Dimensions					
		Innovation Support		Creative Intensity		Delivery Capability	
		Rank	Rating	Rank	Rating	Rank	Rating
1	New York	2	245	1	242	1	243
2	London	1	246	2	241	1	243
3	Oxford, UK	3	244	13	229	4	237
4	Cambridge, UK	4	239	13	229	3	239
5	Hong Kong	17	231	3	240	7	231
6	Singapore	5	238	9	230	6	232
7	Zurich	6	237	6	232	18	226
8	Copenhagen	20	228	4	238	10	229
9	Stockholm	12	233	5	233	15	228
10	Dublin	6	237	20	226	8	230
11	Chicago	11	233	11	230	11	229
12	Lugano	20	228	9	230	5	233
13	Los Angeles	9	234	20	226	8	230
14	Seattle	20	228	6	232	11	229
15	Geneva	8	236	8	231	24	222
16	Boston	14	231	17	228	15	228
17	San Francisco	14	231	18	227	14	228
18	Tel Aviv	25	227	13	229	11	229
19	Amsterdam	14	231	12	229	19	224
20	Malta	9	234	22	226	20	223

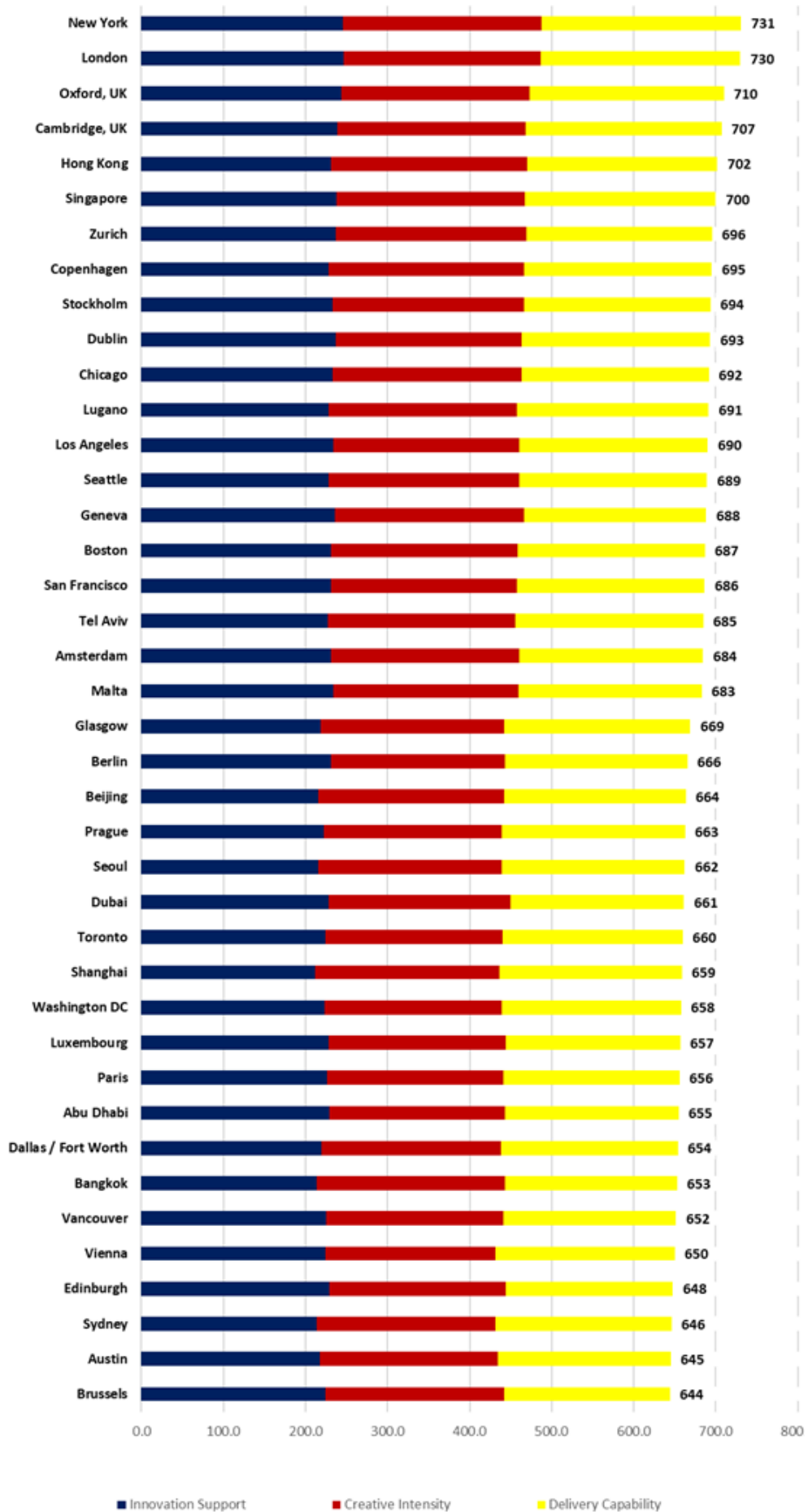
This analysis shows the effect that particular dimensions have on the placing of centres in the SCI. In particular:

- Leading centres have a spread of strengths across the dimensions.
- Individual centres have differing areas of strength, with Singapore and Hong Kong, for example, closely matched in their overall rank, but with different profiles in the dimensions.

The SCI 4 results showing the contribution of each dimension for the top 40 centres are shown in Chart 1.



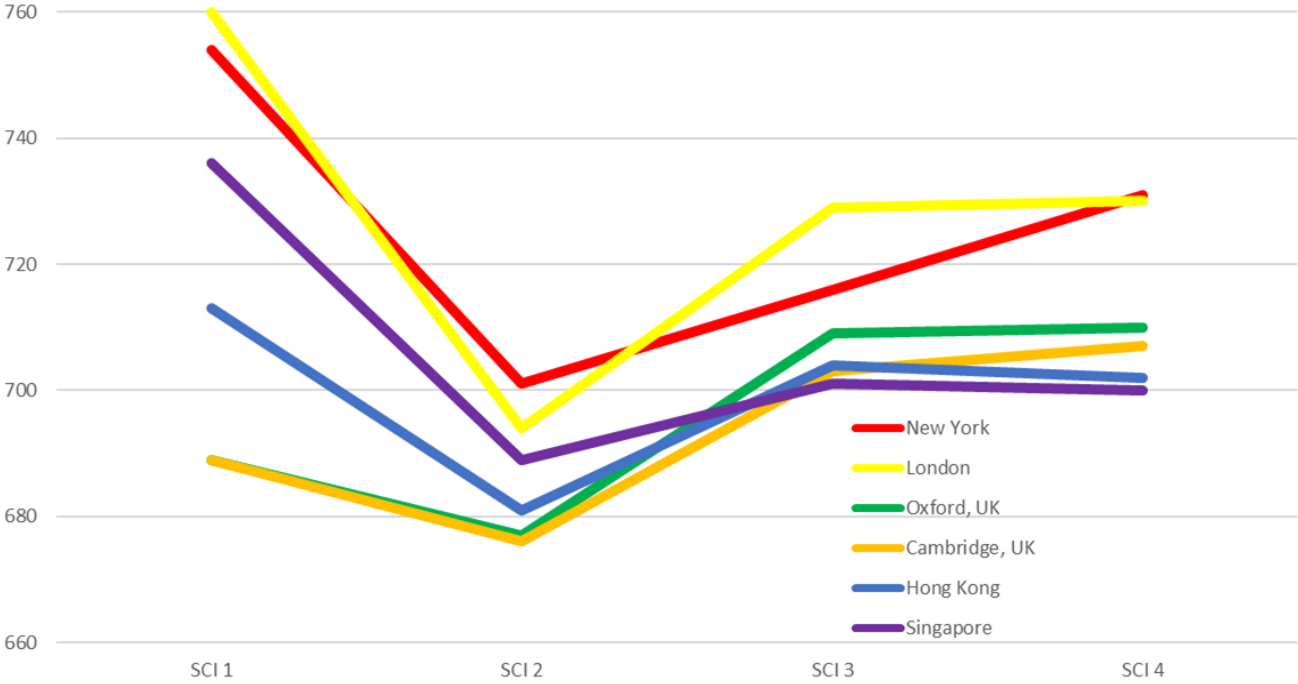
Chart 1 | SCI 4: Contribution Of The Dimensions To Overall Ratings: Top 40 Centres



# Top Six Centres

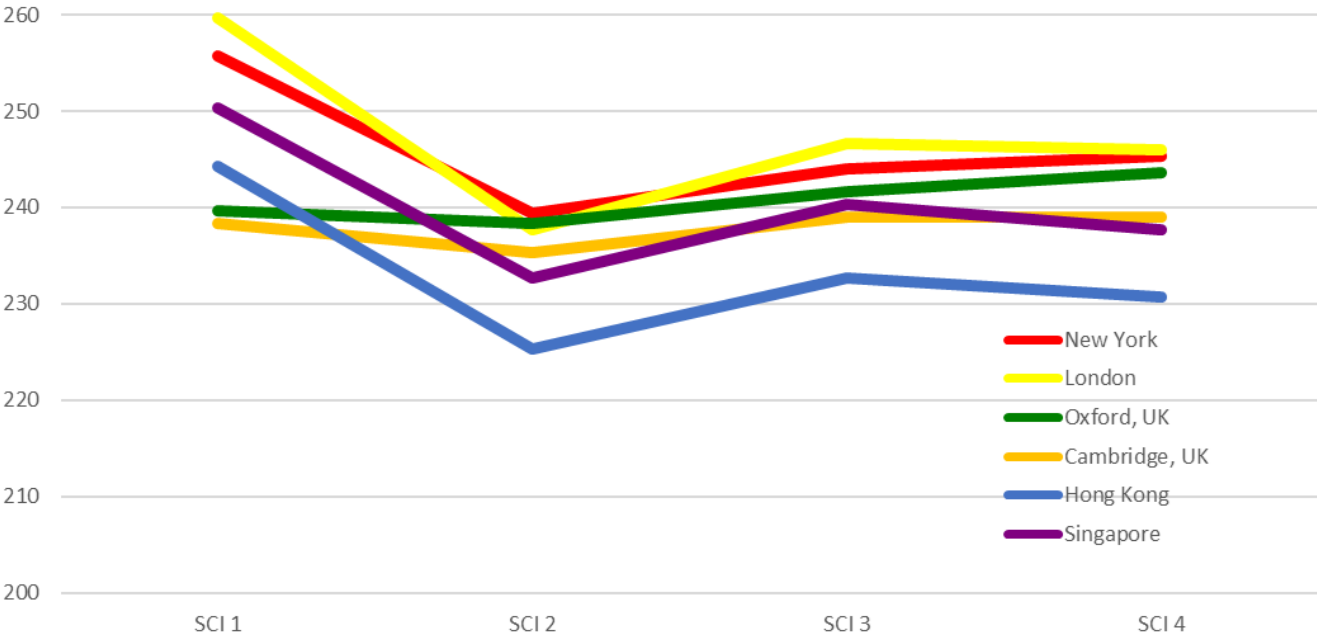
Among the top six centres in the SCI, New York has performed particularly well in SCI 4, overtaking London, with other centres in the group broadly level or slightly down in the ratings.

Chart 2 | The Top Six Centres Over Time



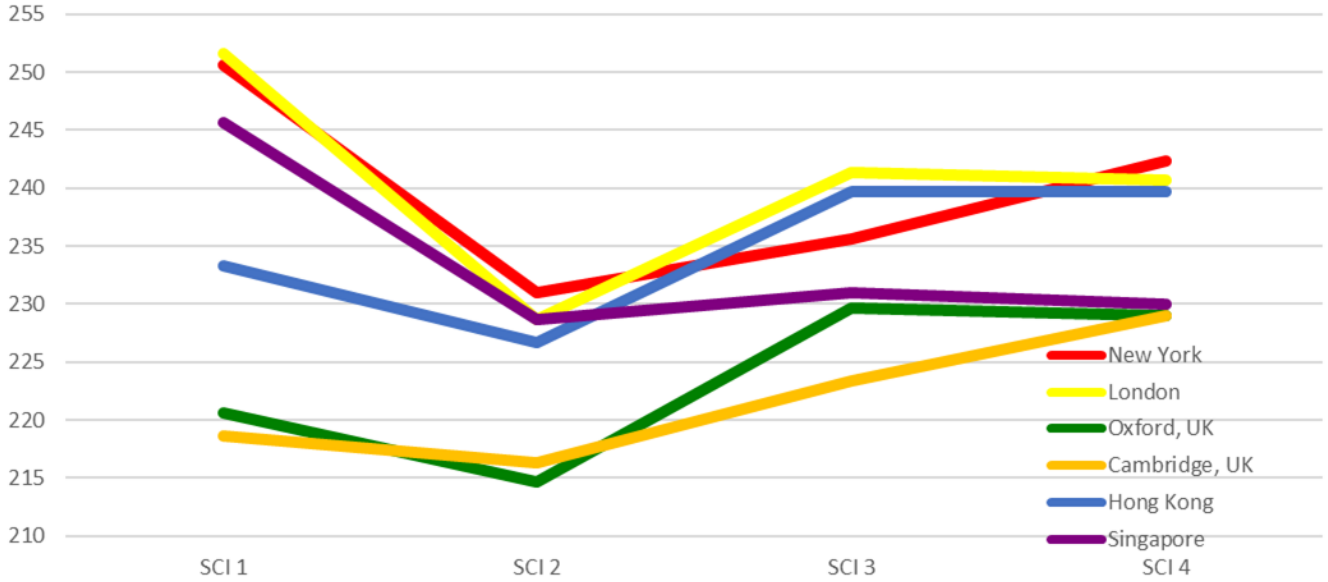
Hong Kong performs less well than other leading centres for Innovation Support.

Chart 3 | Top Six Centres Innovation Support - Ratings Over Time



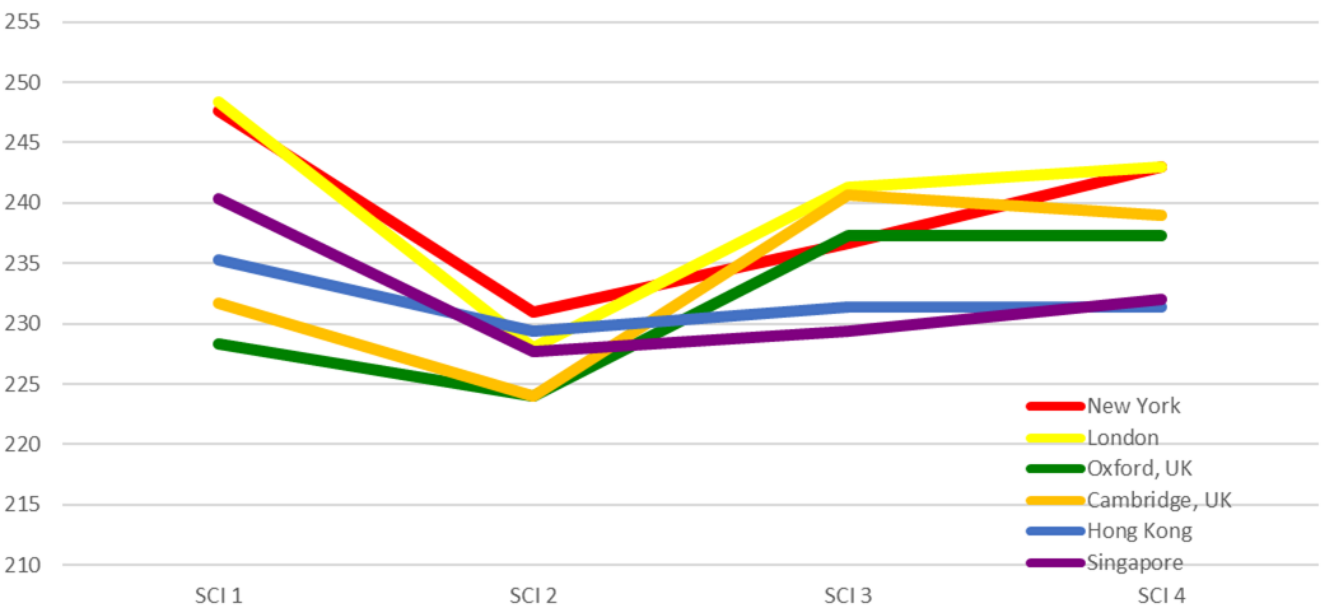
In the Creative Intensity dimension Hong Kong scores significantly better, close to New York and London’s performance. Cambridge has made up ground.

**Chart 4 | Top Six Centres - Creative Intensity Ratings Over Time**



For Delivery Capability, as in other areas, New York has risen in the ratings in the last two editions of the SCI. Oxford and Cambridge have fallen back while Singapore has risen steadily.

**Chart 5 | Top Six Centres - Delivery Capability - Ratings Over Time**

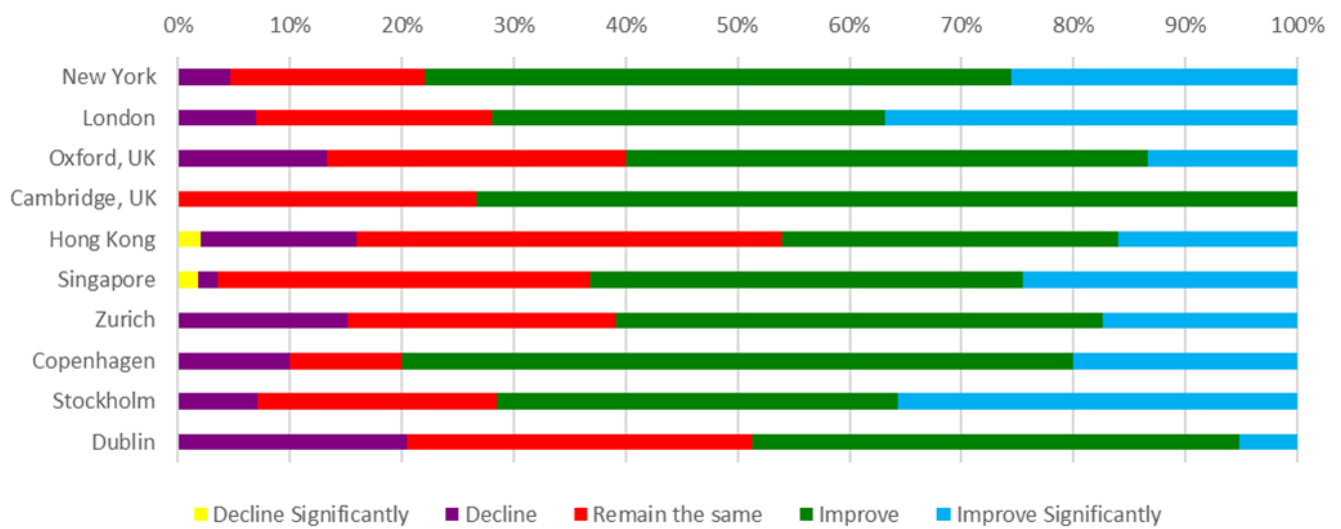


## SCI 4: Further Analysis

### Future Performance

We asked respondents to the SCI survey to assess whether the centres they rated were likely to improve, decline or stay the same in relation to their innovation and technology offering over the next two to three years. The results for the top 10 centres are shown in Chart 6. For all centres in this group other than Hong Kong and Dublin, the majority of respondents thought that the centre would improve over this period.

**Chart 6 | Future Performance - Top 10 Centres**



*“The German government could impose new taxes hindering technological development in Germany.”*

**Senior Vice President, Professional Services Firm, Frankfurt**

## Areas Of Competitiveness

SCI 4 is created using 130 instrumental factors which relate to a range of aspects of competitiveness, including measures relating to technology development. These factors are grouped into six broad areas of competitiveness:

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

These areas and the instrumental factor themes which comprise each area are shown in Chart 7.

Chart 7 | SCI Areas Of Competitiveness



Table 3 shows the top 10 instrumental factors in terms of their correlation with the SCI ranking. This shows the impact of general measures of infrastructure, competitiveness, and trade on developing an innovation ecosystem.

Table 3 | Top 10 Instrumental Factors By R Squared Correlation

Instrumental Factor	R Squared
Domestic Credit Provided By Banking Sector (% Of GDP)	0.690
Telecommunication Infrastructure Index	0.504
E-Participation Index	0.482
Global Innovation Index	0.450
Safe Cities	0.441
Adjusted Net National Income Per Capita	0.438
ICT Development Index	0.433
World Competitiveness Scoreboard	0.408
Legatum Prosperity Index	0.406
Global Enabling Trade Report	0.405

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 4.

**Table 4 | Top 10 Technology Instrumental Factors By R Squared Correlation**

Technology Factors	R Squared
E-Participation Index	0.482
ICT Development Index	0.433
FinTech Index	0.139
Global AI Index	0.136
Use Of Blockchain In Healthcare	0.095
Use Of Blockchain In Land Registration	0.086
The Global Fintech Index	0.079
ISO TC307 Participation	0.047
Internet Censorship Rank	0.039
Use Of Blockchain For Trade Finance	0.033

To assess centres’ technology and innovation offerings against each of these areas, the SCI model is run for each area separately. The top ranked 15 centres in each sub-index are shown in Table 5.

The leading centres in the index have a balance of strengths across all six areas of competitiveness. Outside the leading group, some centres have distinct areas of strength, for example, technology, human capital and infrastructure for US centres.

**Table 5 | Top 15 Centres By Areas Of Competitiveness**

Rank	Technology	Business Environment	Human Capital	Infrastructure	Financial Services	Reputational
1	New York	New York	New York	New York	New York	Oxford, UK
2	London	London	Boston	London	London	New York
3	Los Angeles	Singapore	Los Angeles	Singapore	San Francisco	London
4	San Francisco	Hong Kong	San Francisco	Zurich	Chicago	Cambridge, UK
5	Hong Kong	San Francisco	Chicago	Hong Kong	Los Angeles	Zurich
6	Singapore	Chicago	London	Geneva	Boston	Hong Kong
7	Boston	Boston	Singapore	San Francisco	Zurich	Geneva
8	Chicago	Amsterdam	Washington DC	Chicago	Dublin	Stockholm
9	Amsterdam	Los Angeles	Luxembourg	Boston	Hong Kong	Singapore
10	Zurich	Seattle	Hong Kong	Amsterdam	Geneva	Los Angeles
11	Washington DC	Zurich	Seattle	Oxford, UK	Washington DC	Boston
12	Stockholm	Oxford, UK	Tel Aviv	Los Angeles	Oxford, UK	San Francisco
13	Geneva	Tel Aviv	Cambridge, UK	Tel Aviv	Singapore	Lugano
14	Toronto	Lugano	Zurich	Luxembourg	Vienna	Chicago
15	Vancouver	Stockholm	Oxford, UK	Paris	Luxembourg	Tel Aviv



**Index Ranking For Technology**

As shown in Table 5, we have conducted an analysis of the assessments provided by respondents using only the instrumental factors that have a direct relationship to technology. We compare this analysis with the main index in Table 6. 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 some centres. However, in the technology rankings, North American centres, including Los Angeles, San Francisco, Boston, Chicago, Washington DC, Toronto, and Vancouver, gain a significant advantage.

**Table 6 | Top 15 Centres Using All Factors And Only Technology Factors**

SCI 4		
Rank	All Factors	Technology Factors
1	New York	New York
2	London	London
3	Oxford, UK	Los Angeles (+10)
4	Cambridge, UK	San Francisco (+13)
5	Hong Kong	Hong Kong
6	Singapore	Singapore
7	Zurich	Boston (+9)
8	Copenhagen	Chicago (+3)
9	Stockholm	Amsterdam (+10)
10	Dublin	Zurich (-3)
11	Chicago	Washington DC (+18)
12	Lugano	Stockholm (-3)
13	Los Angeles	Geneva (+2)
14	Seattle	Toronto (+13)
15	Geneva	Vancouver (+13)

*“Digital-only banks will tear down the physical boundaries of traditional bank branches, giving more access to existing and new B2C customers with more attractive incentives (e.g. competitive rates).”*

**Deputy Manager, Pension Fund, Busan**

## 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 7.

**Table 7 | Commentary On Areas Of Competitiveness**

Area Of Competitiveness	Number Of Mentions	Main Themes
Regulatory Environment	52	<ul style="list-style-type: none"> <li>E-Government helped to promote an innovative environment.</li> <li>Government action, such as support for research &amp; development promotion and the attraction of talent could assist.</li> <li>The designation of blockchain regulatory-free zones, such as that in Busan attract young and talented entrepreneurs.</li> </ul>
Taxation	43	<ul style="list-style-type: none"> <li>Fairness and stability in tax regimes seen as important in driving technology investment.</li> <li>Tax was not a major driver in location decisions.</li> <li>Some centres, such as Tel Aviv, were seen to have competitive tax exemptions and incentives.</li> </ul>
The Availability Of Skills	50	<ul style="list-style-type: none"> <li>Skills availability is seen as critical for growth.</li> <li>Continuing Professional Development will become more important.</li> <li>Mobility of labour was key, with strong centres able to bring in talent.</li> <li>This may mean offering 'talent visas' or considering new ways to import skills.</li> <li>It is helpful to have a University system tightly integrated with the local business and VC community.</li> </ul>

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

- Guidance and regulation for Decentralised Finance (deFi).
- Cybersecurity.
- Mobility Initiatives.
- Digital-Only Banks and Insuretech.
- AI applications in freight and shipping.
- Central Bank Digital Currencies (CBDC).
- Ethics development in technology services.

## Reputation

We can analyse the reputational advantage of centres by comparing the average assessment given in the survey to the overall SCI 4 rating. Centres with a high reputational advantage are perceived by respondents to the survey to be performing better than the underlying data may suggest and may need to pay attention to the strength of their underlying ecosystem. Those with a negative reputational advantage may need to market their strengths better to achieve a truer perception of their performance. The top 10 and lowest 10 centres on this measure are shown in Tables 8 and 9.

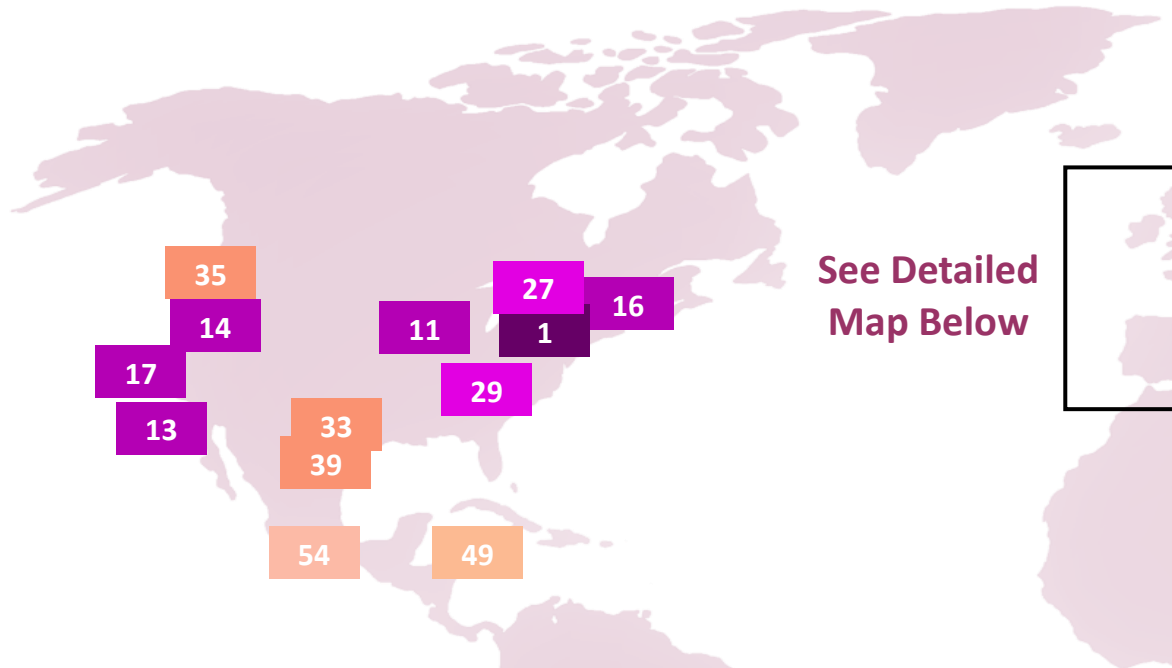
**Table 8 | Top 15 Centres By Reputational Advantage**

Centre - Top 15	Weighted Average Assessment	SCI4 Rating	SCI4 Reputational Advantage
GIFT City-Gujarat	792	638	154
San Francisco	818	686	132
Tel Aviv	814	685	129
Boston	812	687	125
Los Angeles	794	690	104
New York	832	731	101
Lugano	790	691	99
Copenhagen	792	695	97
London	819	730	89
Singapore	789	700	89

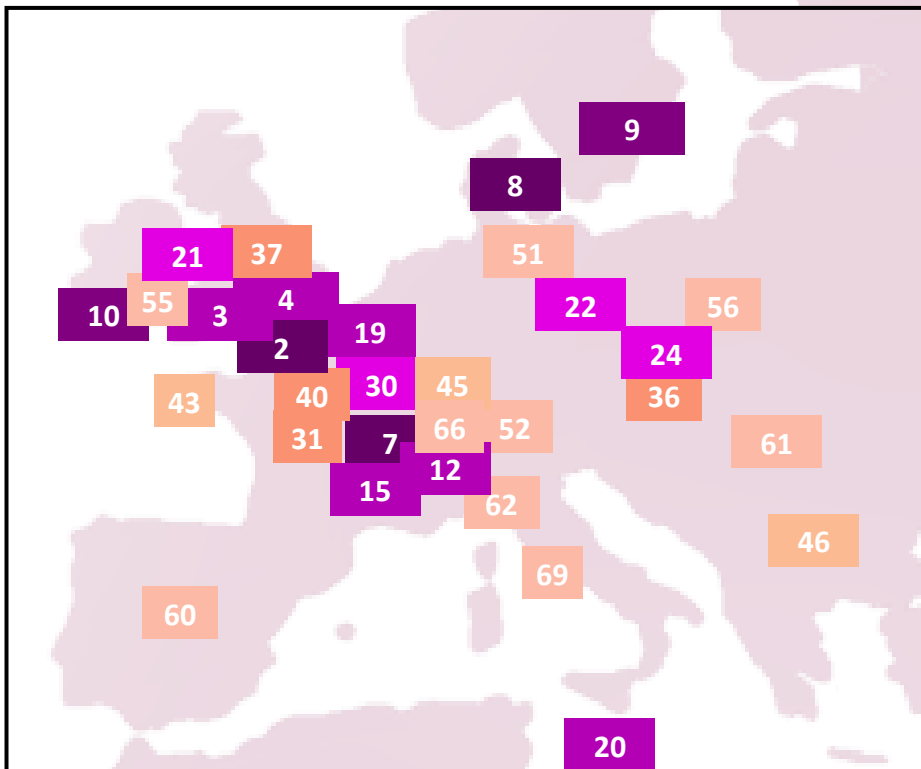
**Table 9 | Lowest 15 Centres By Reputational Advantage**

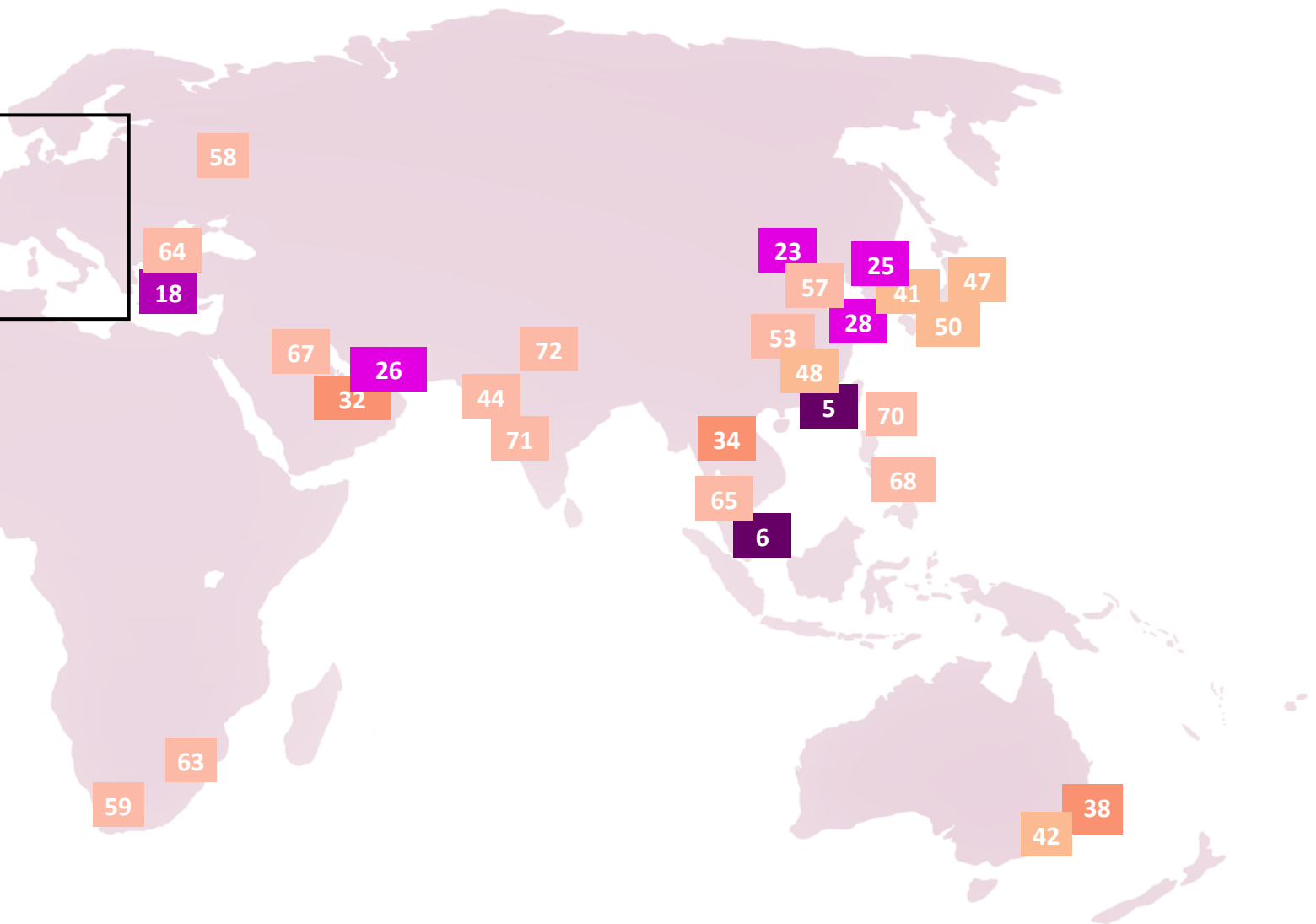
Centre - Lowest 15	Weighted Average Assessment	SCI4 Rating	SCI4 Reputational Advantage
Osaka	511	623	-112
Austin	525	645	-120
Melbourne	522	642	-120
Mexico City	495	617	-122
Guangzhou	495	618	-123
Tianjin	484	612	-128
Bangkok	522	653	-131
Taipei	384	546	-162
New Delhi	203	446	-243
Mumbai	205	458	-253

## The SCI 4 World - Centres In The Index



See Detailed Map Below





The numbers indicate the rank of each centre in SCI 4.

An interactive map showing the data for each centre is at <https://www.longfinance.net/programmes/financial-centre-futures/smart-centres-index/sci-4-explore-data/sci-4-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.

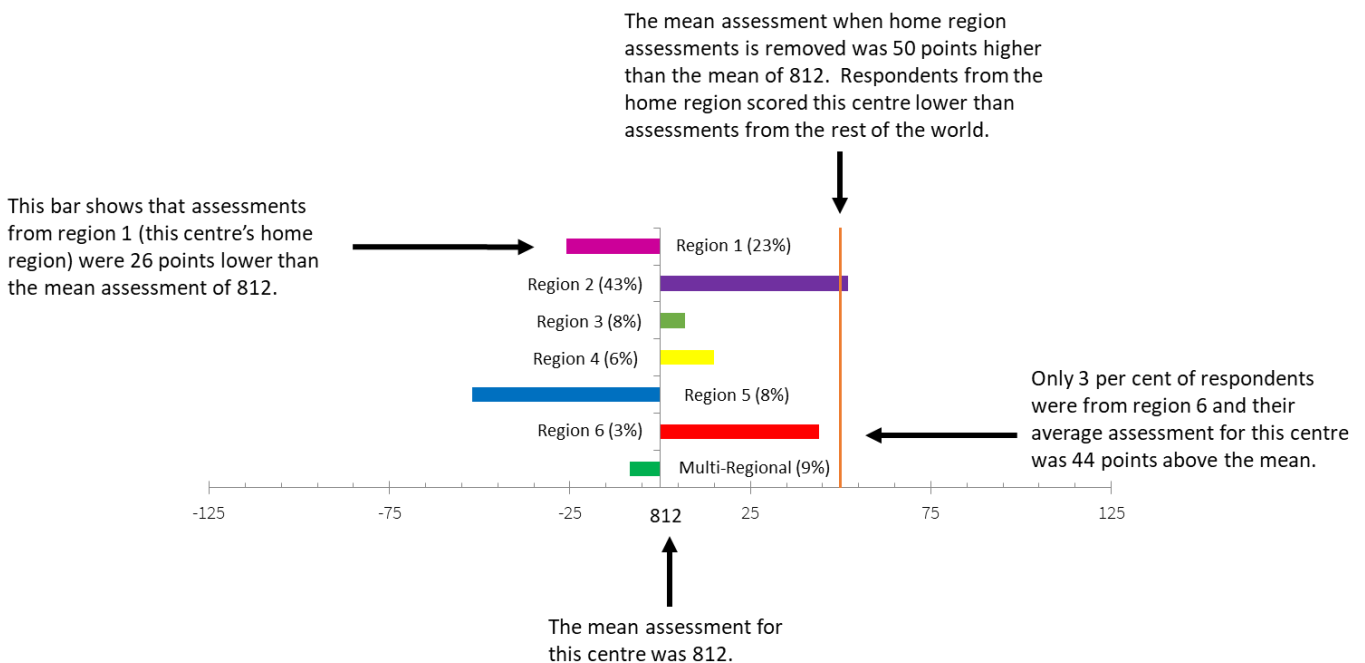
Alongside the ranks and ratings of centres, we investigate the average assessments received by regions and centres in more detail. We display this analysis in charts, which show:

- 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.
- The proportion of assessments provided by each region.

Chart 8 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 8 | Example: Assessments Compared With The Mean For A Centre**





## North America

- Innovation Support scores higher than the other dimensions among US centres.
- Seattle joins the index for the first time.

**Table 10 | North American Centres In SCI 4: Ranks And Ratings**

Centre	SCI 4		SCI 3		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
New York	1	731	2	716	▲1	▲15
Chicago	11	692	14	682	▲3	▲10
Los Angeles	13	690	12	684	▼1	▲6
Seattle	14	689	16	678	▲2	▲11
Boston	16	687	15	681	▼1	▲6
San Francisco	17	686	17	676	0	▲10
Toronto	27	660	25	665	▼2	▼5
Washington DC	29	658	40	650	▲11	▲8
Dallas / Fort Worth	33	654	38	652	▲5	▲2
Vancouver	35	652	31	659	▼4	▼7
Austin	39	645	43	646	▲4	▼1

**Table 11 | North American Centres In SCI 4: SCI Dimensions**

Centre	SCI 4 Dimensions					
	Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating
New York	2	245	1	242	1	243
Chicago	11	233	11	230	11	229
Los Angeles	9	234	20	226	8	230
Seattle	20	228	6	232	11	229
Boston	14	231	17	228	15	228
San Francisco	14	231	18	227	14	228
Toronto	28	224	35	216	27	220
Washington DC	31	223	35	216	28	219
Dallas / Fort Worth	35	219	28	219	31	216
Vancouver	27	225	34	216	43	210
Austin	41	217	33	217	40	211

Chart 9 | New York Average Assessments – Difference From The Mean

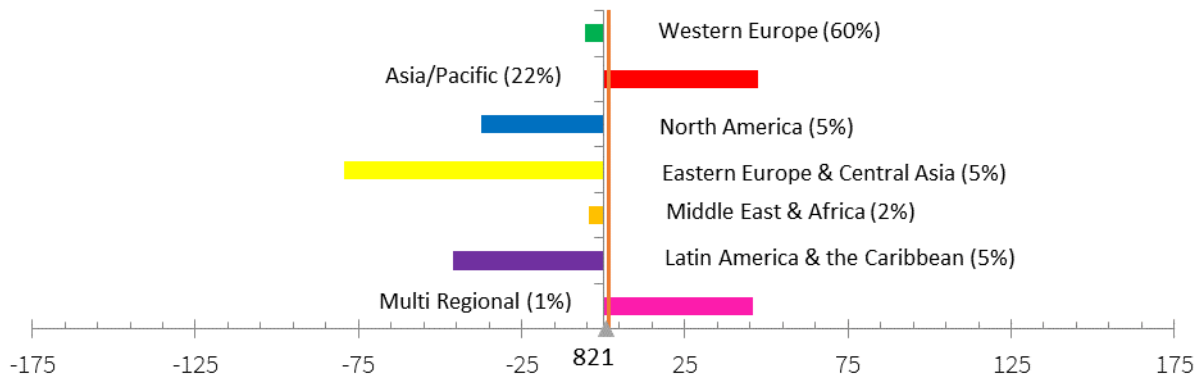
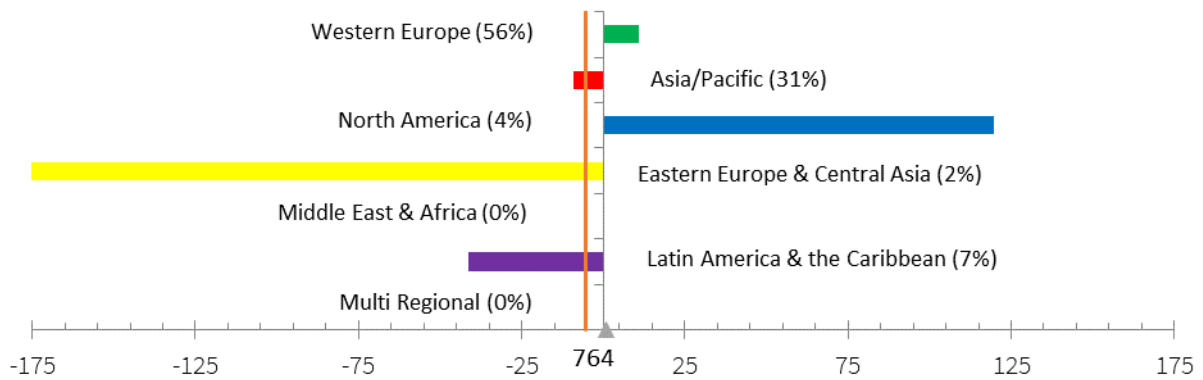


Chart 10 | Chicago Average Assessments – Difference From The Mean



*“Government subsidy for research & development and the promotion and attraction of talent assist the development of a technology ecosystem.”*

**Director, Insurance Brokers, Hong Kong**

## Asia/Pacific

- Hong Kong and Singapore retain their place in the top 10 centres.
- Busan rose 21 ranking places and Taipei joined the index in 70th position.
- The majority of Asia/Pacific centres scored lower for Innovation Support, including regulation, than their overall ranking in the SCI.

**Table 12 | Top 15 Asia/Pacific Centres In SCI 4: Ranks And Ratings**

Centre	SCI 4		SCI 3		Change In	
	Rank	Rating	Rank	Rating	Rank	Rating
Hong Kong	5	702	5	704	0	▼2
Singapore	6	700	7	701	▲1	▼1
Beijing	23	664	23	667	0	▼3
Seoul	25	662	32	658	▲7	▲4
Shanghai	28	659	30	660	▲2	▼1
Bangkok	34	653	33	657	▼1	▼4
Sydney	38	646	34	656	▼4	▼10
Busan	41	643	62	608	▲21	▲35
Melbourne	42	642	46	643	▲4	▼1
GIFT City-Gujarat	44	638	49	640	▲5	▼2
Tokyo	47	633	37	653	▼10	▼20
Shenzhen	48	628	48	641	0	▼13
Osaka	50	623	61	613	▲11	▲10
Guangzhou	53	618	54	623	▲1	▼5
Tianjin	57	612	53	629	▼4	▼17

**Table 13 | Top 15 Asia/Pacific Centres In SCI 4: SCI Dimensions**

Centre	SCI 4 Dimensions					
	Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating
Hong Kong	17	231	3	240	7	231
Singapore	5	238	9	230	6	232
Beijing	47	215	19	227	26	222
Seoul	45	216	24	223	22	223
Shanghai	55	212	23	225	24	222
Bangkok	49	214	13	229	45	210
Sydney	52	213	29	218	34	215
Busan	55	212	35	216	32	215
Melbourne	54	212	31	218	36	212
GIFT City-Gujarat	53	213	40	215	45	210
Tokyo	35	219	50	207	49	208
Shenzhen	67	203	42	215	41	211
Osaka	40	217	53	202	54	204
Guangzhou	65	203	51	206	48	209
Tianjin	62	205	48	207	58	200

Chart 11 | Hong Kong Average Assessments – Difference From The Mean

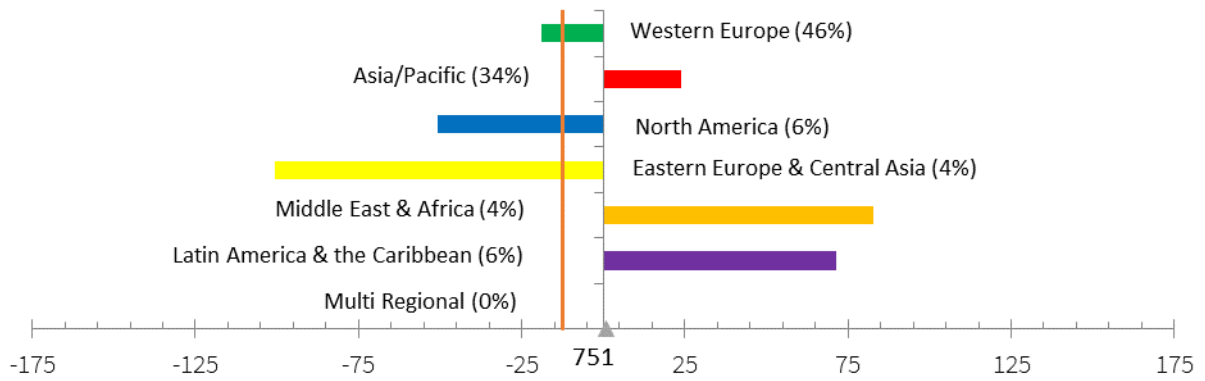
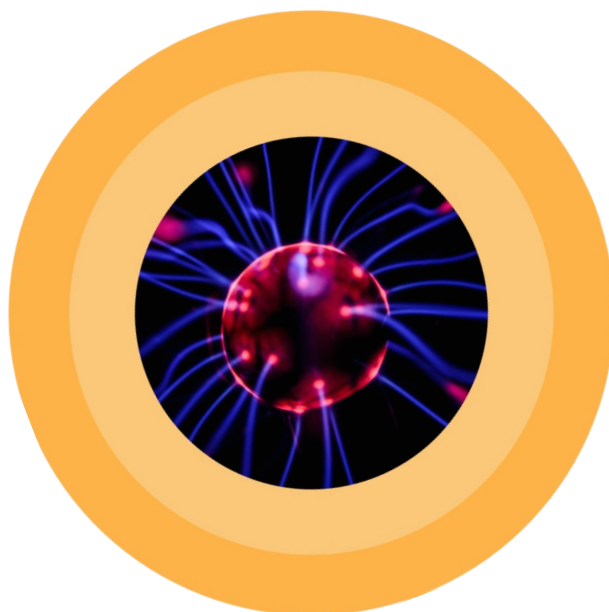
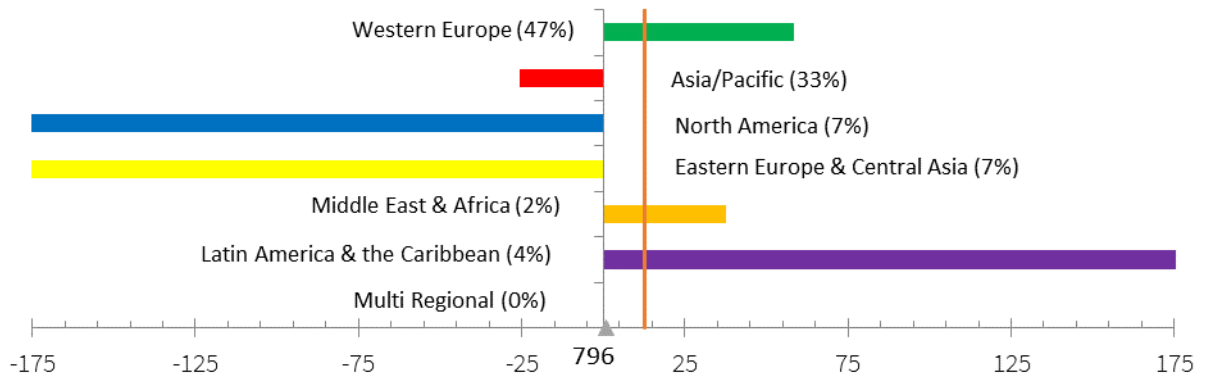


Chart 12 | Singapore Average Assessments – Difference From The Mean



## Western Europe

- Seven Western European centres feature in the world top 10, with London taking the top position in the region, and Copenhagen joining the index in 8th position.
- Hamburg and Stuttgart also joined the index for the first time.
- 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 comparatively strong.

**Table 14 | Top 15 Western European Centres In SCI 4: Ranks And Ratings**

Centre	SCI 4		SCI 3		Change In	
	Rank	Rating	Rank	Rating	Rank	Rating
London	2	730	1	729	▼1	▲1
Oxford, UK	3	710	3	709	0	▲1
Cambridge, UK	4	707	6	703	▲2	▲4
Zurich	7	696	9	694	▲2	▲2
Copenhagen	8	695	New	New	New	New
Stockholm	9	694	4	705	▼5	▼11
Dublin	10	693	8	699	▼2	▼6
Lugano	12	691	13	683	▲1	▲8
Geneva	15	688	10	689	▼5	▼1
Amsterdam	19	684	11	688	▼8	▼4
Malta	20	683	22	668	▲2	▲15
Glasgow	21	669	19	671	▼2	▼2
Berlin	22	666	29	661	▲7	▲5
Luxembourg	30	657	27	663	▼3	▼6
Paris	31	656	24	666	▼7	▼10

**Table 15 | Top 15 Western European Centres In SCI 4: SCI Dimensions**

Centre	SCI 4 Dimensions					
	Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating
London	1	246	2	241	1	243
Oxford, UK	3	244	13	229	4	237
Cambridge, UK	4	239	13	229	3	239
Zurich	6	237	6	232	18	226
Copenhagen	20	228	4	238	10	229
Stockholm	12	233	5	233	15	228
Dublin	6	237	20	226	8	230
Lugano	20	228	9	230	5	233
Geneva	8	236	8	231	24	222
Amsterdam	14	231	12	229	19	224
Malta	9	234	22	226	20	223
Glasgow	37	219	24	223	17	227
Berlin	13	231	45	212	23	223
Luxembourg	20	228	35	216	35	213
Paris	26	226	40	215	32	215

Chart 13 | London Average Assessments – Difference From The Mean

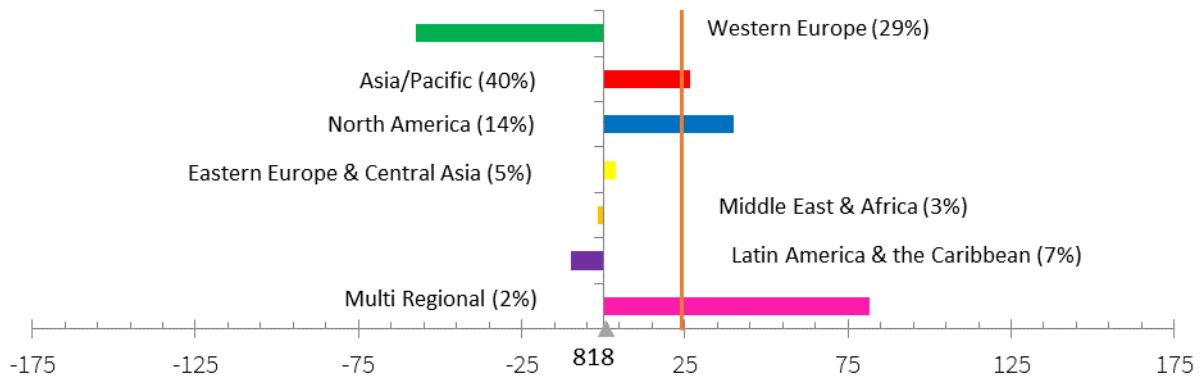
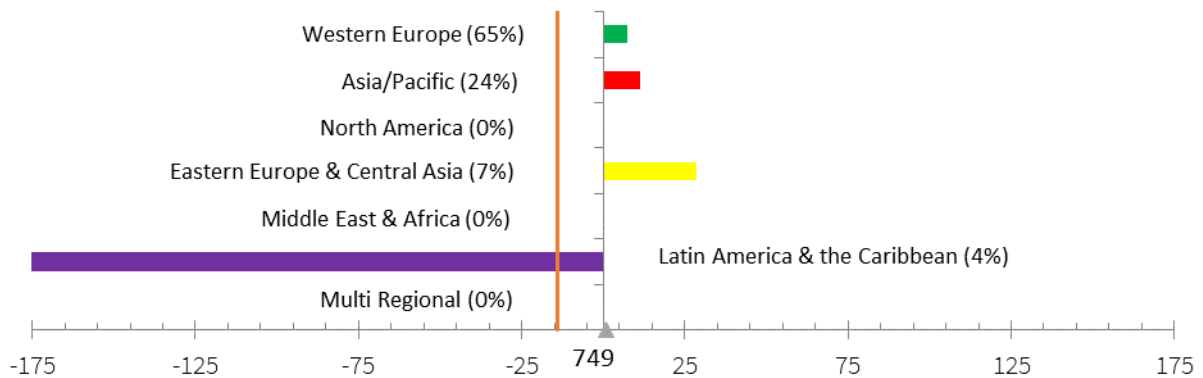


Chart 14 | Zurich Average Assessments – Difference From The Mean



Note: All the assessments for Oxford, UK came from respondents in Western Europe, and the equivalent chart is not available.

*“Having a University system tightly integrated with the local business and VC community is important, for example, Stanford and Berkeley with Silicon Valley firms and Palo Alto VCs.”*

**CEO & Co-Founder, AI Development Business, London**



## Middle East & Africa

- Tel Aviv continues to lead the region, but ranks lower for Innovation Support than Dubai and Abu Dhabi.
- Dubai ranks second in the region, but along with other centres fell in the ratings and rankings in SCI 4.

**Table 16 | Middle Eastern & African Centres In SCI 4: Ranks And Ratings**

Centre	SCI 4		SCI 3		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Tel Aviv	18	685	18	675	0	▲ 10
Dubai	26	661	20	670	▼ 6	▼ 9
Abu Dhabi	32	655	26	664	▼ 6	▼ 9
Cape Town	59	610	50	639	▼ 9	▼ 29
Johannesburg	63	597	44	645	▼ 19	▼ 48
Riyadh	67	579	64	598	▼ 3	▼ 19

**Table 17 | Middle Eastern & African Centres In SCI 4: SCI Dimensions**

Centre	SCI 4 Dimensions					
	Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating
Tel Aviv	25	227	13	229	11	229
Dubai	20	228	27	222	39	211
Abu Dhabi	19	229	44	214	36	212
Cape Town	51	214	67	187	47	209
Johannesburg	57	211	66	187	60	199
Riyadh	48	215	69	184	66	181

**Chart 15 | Tel Aviv Average Assessments – Difference From The Mean**

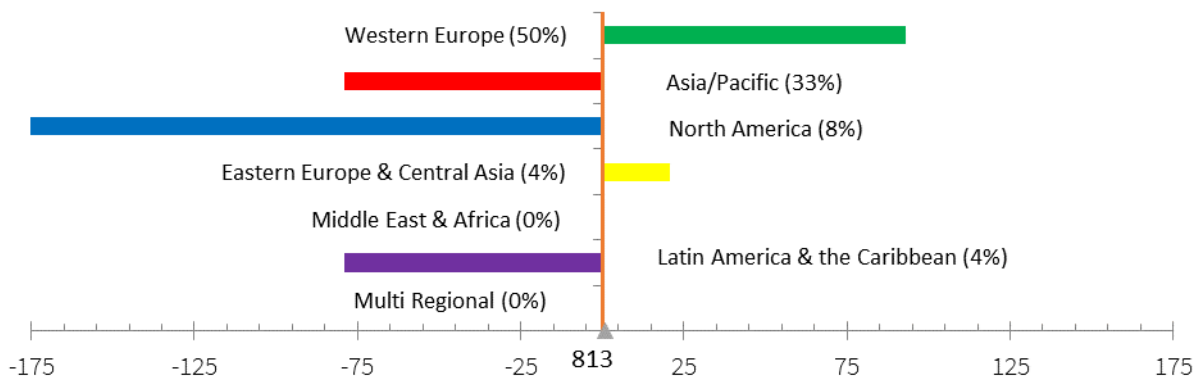
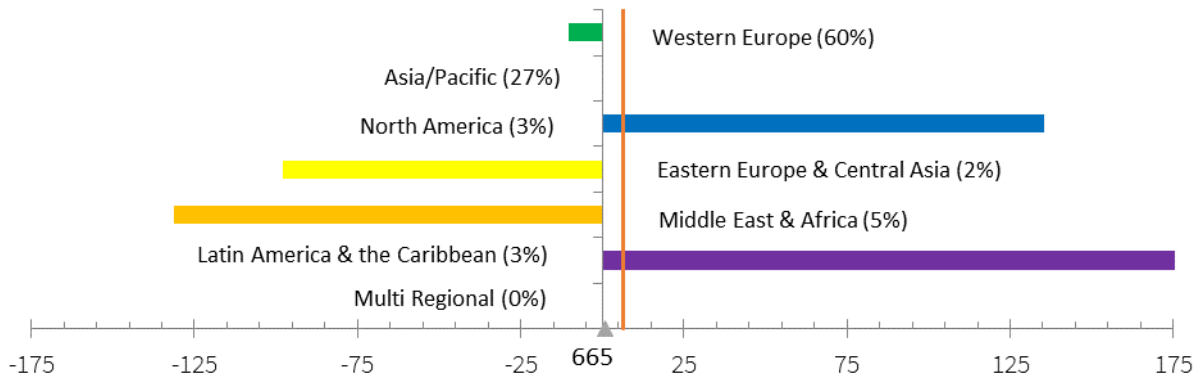


Chart 16 | Dubai Average Assessments – Difference From The Mean



## Eastern Europe & Central Asia

- New entrant Prague took the leading place in the region from Sofia.
- All other centres fell in the ratings in SCI 4.

Table 18 | Eastern European & Central Asian Centres In SCI 4: Ranks And Ratings

Centre	SCI 4		SCI 3		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Prague	24	663	New	New	New	New
Sofia	46	636	28	662	▼ 18	▼ 26
Budapest	56	613	51	637	▼ 5	▼ 24
Moscow	58	611	57	618	▼ 1	▼ 7
Warsaw	61	603	56	619	▼ 5	▼ 16
Istanbul	64	589	65	595	▲ 1	▼ 6

Table 19 | Eastern European & Central Asian Centres In SCI 4: SCI Dimensions

Centre	SCI 4 Dimensions					
	Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating
Prague	34	222	32	217	20	223
Sofia	59	209	46	208	28	219
Budapest	64	203	56	199	43	210
Moscow	69	195	52	204	38	212
Warsaw	49	214	62	189	57	200
Istanbul	60	208	65	188	63	194

Chart 17 | Prague Average Assessments – Difference From The Mean

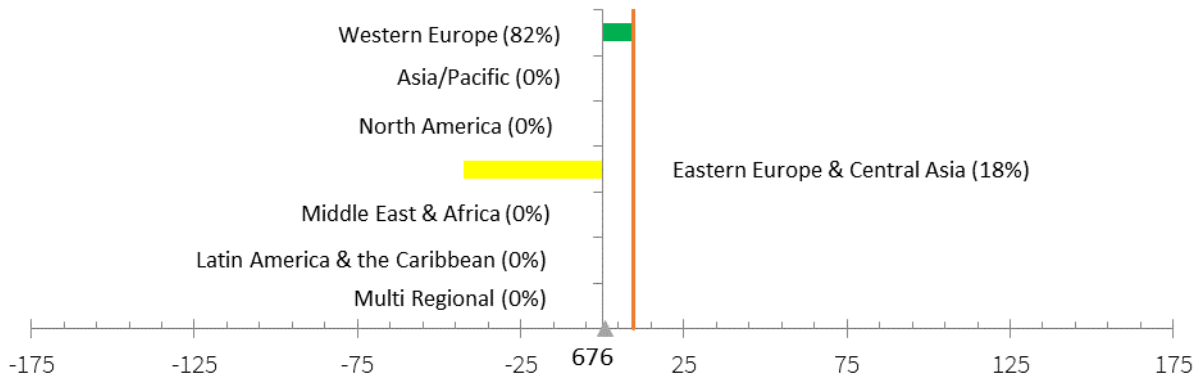
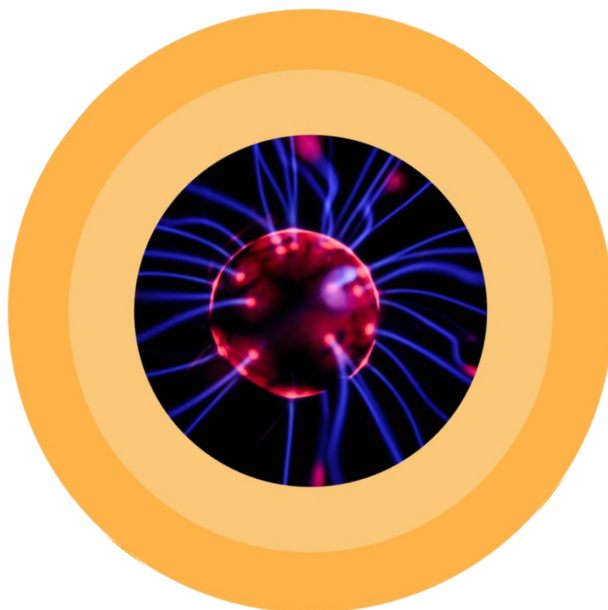
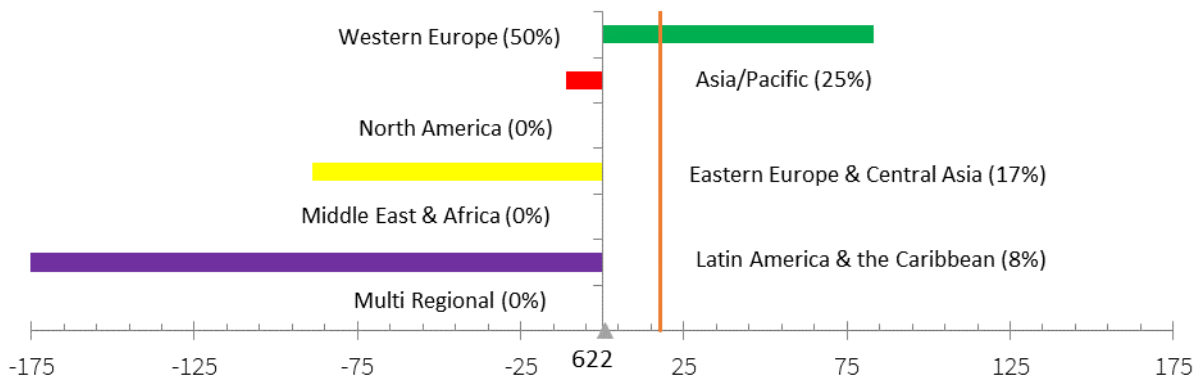


Chart 18 | Sofia Average Assessments – Difference From The Mean



## Latin America & The Caribbean

- Both centres in the region fell in the index in SCI 4.
- Cayman Islands was rated highly by North American respondents and Mexico City was rated highly by respondents from Asia/Pacific.

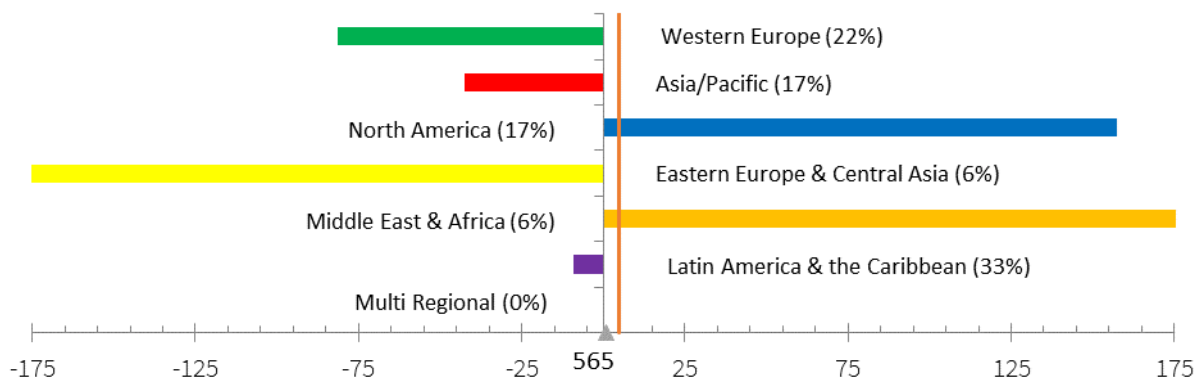
**Table 20 | Latin America & The Caribbean Centres In SCI 4: Ranks And Ratings**

Centre	SCI 4		SCI 3		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Cayman Islands	49	624	42	647	▼7	▼23
Mexico City	54	617	52	636	▼2	▼19

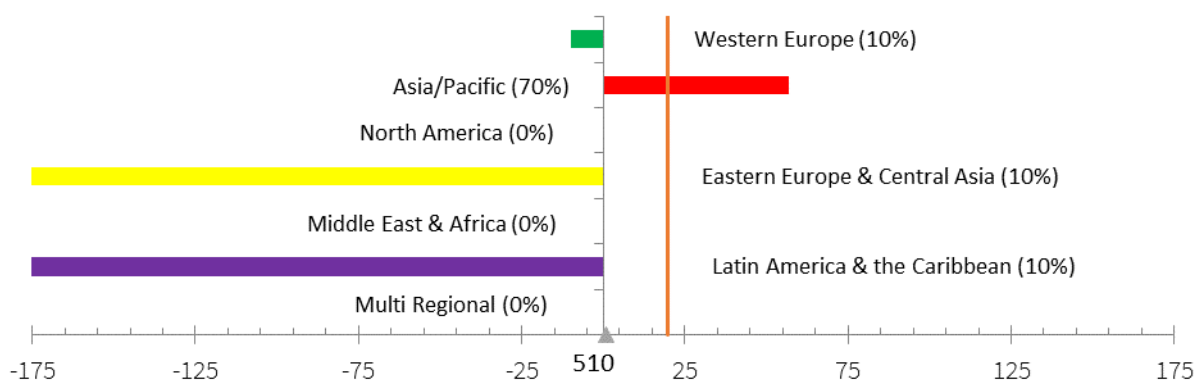
**Table 21 | Latin America & The Caribbean Centres In SCI 4: SCI Dimensions**

Centre	SCI 4 Dimensions					
	Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating
Cayman Islands	39	218	55	200	51	206
Mexico City	41	217	62	189	41	211

**Chart 19 | Cayman Islands Average Assessments – Difference From The Mean**



**Chart 20 | Mexico City Average Assessments – Difference From The Mean**



## Appendix 1: Assessment Details

Table 22 | Details Of SCI Assessments By Centre

Centre	SCI 4 Rank	SCI 4 Rating	Assessments			Centre	SCI 4 Rank	SCI 4 Rating	Assessments		
			Number	Average	St. Dev				Number	Average	St. Dev
New York	1	731	86	821	149	Edinburgh	37	648	35	660	112
London	2	730	58	818	143	Sydney	38	646	18	643	252
Oxford, UK	3	710	15	762	133	Austin	39	645	8	558	207
Cambridge, UK	4	707	15	711	157	Brussels	40	644	21	602	162
Hong Kong	5	702	50	751	179	Busan	41	643	15	658	202
Singapore	6	700	57	796	203	Melbourne	42	642	14	562	314
Zurich	7	696	46	749	171	Guernsey	43	641	11	639	166
Copenhagen	8	695	10	787	142	GIFT City-	44	638	137	792	134
Stockholm	9	694	14	767	170	Frankfurt	45	637	46	686	143
Dublin	10	693	39	682	126	Sofia	46	636	12	622	189
Chicago	11	692	45	764	122	Tokyo	47	633	23	659	268
Lugano	12	691	10	790	230	Shenzhen	48	628	14	612	296
Los Angeles	13	690	19	788	144	Cayman Islands	49	624	18	565	192
Seattle	14	689	13	679	254	Osaka	50	623	15	531	302
Geneva	15	688	23	725	199	Hamburg	51	620	11	594	176
Boston	16	687	30	796	145	Munich	52	619	19	626	182
San Francisco	17	686	33	809	172	Guangzhou	53	618	13	526	255
Tel Aviv	18	685	24	813	214	Mexico City	54	617	10	510	122
Amsterdam	19	684	41	714	144	Isle of Man	55	616	11	594	187
Malta	20	683	10	647	201	Budapest	56	613	15	602	142
Glasgow	21	669	13	667	119	Tianjin	57	612	13	510	266
Berlin	22	666	19	723	185	Moscow	58	611	22	564	219
Beijing	23	664	36	676	229	Cape Town	59	610	14	545	231
Prague	24	663	11	676	138	Madrid	60	604	21	571	196
Seoul	25	662	16	667	302	Warsaw	61	603	14	607	200
Dubai	26	661	63	665	187	Milan	62	602	16	581	213
Toronto	27	660	18	706	177	Johannesburg	63	597	14	557	155
Shanghai	28	659	33	669	251	Istanbul	64	589	13	559	192
Washington	29	658	18	643	214	Kuala Lumpur	65	587	14	555	243
Luxembourg	30	657	20	700	166	Stuttgart	66	580	10	513	268
Paris	31	656	43	626	145	Riyadh	67	579	12	547	220
Abu Dhabi	32	655	17	616	232	Manila	68	573	12	547	262
Dallas / Fort	33	654	10	703	161	Rome	69	561	12	533	215
Bangkok	34	653	13	536	206	Taipei	70	546	11	455	329
Vancouver	35	652	20	680	197	Mumbai	71	458	90	230	259
Vienna	36	650	12	683	153	New Delhi	72	446	91	232	259

Table 23 | Details Of Assessments Of SCI Dimensions By Centre

Centre	SCI Dimensions						Centre	SCI Dimensions					
	Innovation Support		Creative Intensity		Delivery Capability			Innovation Support		Creative Intensity		Delivery Capability	
	Rank	Rating	Rank	Rating	Rank	Rating		Rank	Rating	Rank	Rating	Rank	Rating
New York	2	245	1	242	1	243	Edinburgh	18	229	43	214	53	204
London	1	246	2	241	1	243	Sydney	52	213	29	218	34	215
Oxford, UK	3	244	13	229	4	237	Austin	41	217	33	217	40	211
Cambridge, UK	4	239	13	229	3	239	Brussels	28	224	29	218	56	202
Hong Kong	17	231	3	240	7	231	Busan	55	212	35	216	32	215
Singapore	5	238	9	230	6	232	Melbourne	54	212	31	218	36	212
Zurich	6	237	6	232	18	226	Guernsey	37	219	26	222	58	200
Copenhagen	20	228	4	238	10	229	GIFT City-Gujarat	53	213	40	215	45	210
Stockholm	12	233	5	233	15	228	Frankfurt	31	223	47	208	52	206
Dublin	6	237	20	226	8	230	Sofia	59	209	46	208	28	219
Chicago	11	233	11	230	11	229	Tokyo	35	219	50	207	49	208
Lugano	20	228	9	230	5	233	Shenzhen	67	203	42	215	41	211
Los Angeles	9	234	20	226	8	230	Cayman Islands	39	218	55	200	51	206
Seattle	20	228	6	232	11	229	Osaka	40	217	53	202	54	204
Geneva	8	236	8	231	24	222	Hamburg	44	217	57	197	50	207
Boston	14	231	17	228	15	228	Munich	45	216	54	201	55	202
San Francisco	14	231	18	227	14	228	Guangzhou	65	203	51	206	48	209
Tel Aviv	25	227	13	229	11	229	Mexico City	41	217	62	189	41	211
Amsterdam	14	231	12	229	19	224	Isle of Man	33	222	39	216	70	178
Malta	9	234	22	226	20	223	Budapest	64	203	56	199	43	210
Glasgow	37	219	24	223	17	227	Tianjin	62	205	48	207	58	200
Berlin	13	231	45	212	23	223	Moscow	69	195	52	204	38	212
Beijing	47	215	19	227	26	222	Cape Town	51	214	67	187	47	209
Prague	34	222	32	217	20	223	Madrid	41	217	60	191	61	196
Seoul	45	216	24	223	22	223	Warsaw	49	214	62	189	57	200
Dubai	20	228	27	222	39	211	Milan	58	210	58	196	62	195
Toronto	28	224	35	216	27	220	Johannesburg	57	211	66	187	60	199
Shanghai	55	212	23	225	24	222	Istanbul	60	208	65	188	63	194
Washington DC	31	223	35	216	28	219	Kuala Lumpur	62	205	59	196	64	186
Luxembourg	20	228	35	216	35	213	Stuttgart	61	207	64	189	65	185
Paris	26	226	40	215	32	215	Riyadh	48	215	69	184	66	181
Abu Dhabi	19	229	44	214	36	212	Manila	65	203	61	190	67	180
Dallas / Fort	35	219	28	219	31	216	Rome	68	197	68	184	68	180
Bangkok	49	214	13	229	45	210	Taipei	70	189	70	178	69	178
Vancouver	27	225	34	216	43	210	Mumbai	71	147	71	159	71	152
Vienna	28	224	48	207	28	219	New Delhi	71	147	72	155	72	145



## Appendix 2: Respondents' Details

**Table 24 | Respondents By Industry Sector**

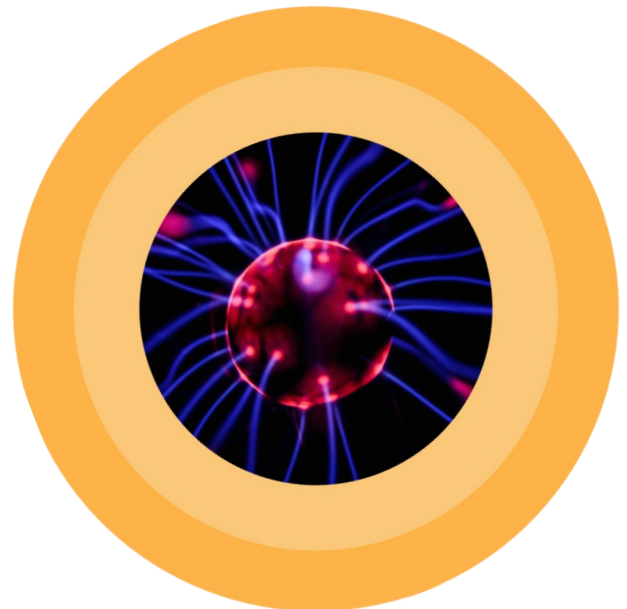
Industry Sector	Number Of Respondents	Percentage Of Respondents
Banking	14	5%
Debt Capital Markets	7	2%
Equity Capital Markets	4	1%
Insurance	20	7%
Investment Management	31	10%
Knowledge	29	10%
Policy and Public Finance	21	7%
Professional Services	59	20%
Technology	88	29%
Trading	23	8%
Not Specified	6	2%
<b>Total</b>	<b>302</b>	<b>100%</b>

**Table 25 | Respondents By Region**

Region	Number Of Respondents	Percentage Of Respondents
Western Europe	134	44%
Asia/Pacific	65	22%
North America	30	10%
Middle East & Africa	22	7%
Eastern Europe & Central Asia	28	9%
Latin America & the Caribbean	23	8%
Multi-Regional	0	0%
<b>Total</b>	<b>302</b>	<b>100%</b>

**Table 26 | Respondents By Size Of Organisation**

Size Of Organisation	Number Of Respondents	Percentage Of Respondents
Fewer than 50	173	57%
50 to 100	38	13%
100 to 500	21	7%
500 to 1,000	15	5%
1,000 to 2,000	12	4%
2,000 to 5,000	9	3%
More than 5,000	34	11%
Not Specified	0	0%
<b>Total</b>	<b>302</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 10 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 130 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 131 commercial and financial centres which can be rated by respondents. The questionnaire asks whether there are financial centres not 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 repeatedly 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 10 in SCI 4. This means that not all 131 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.

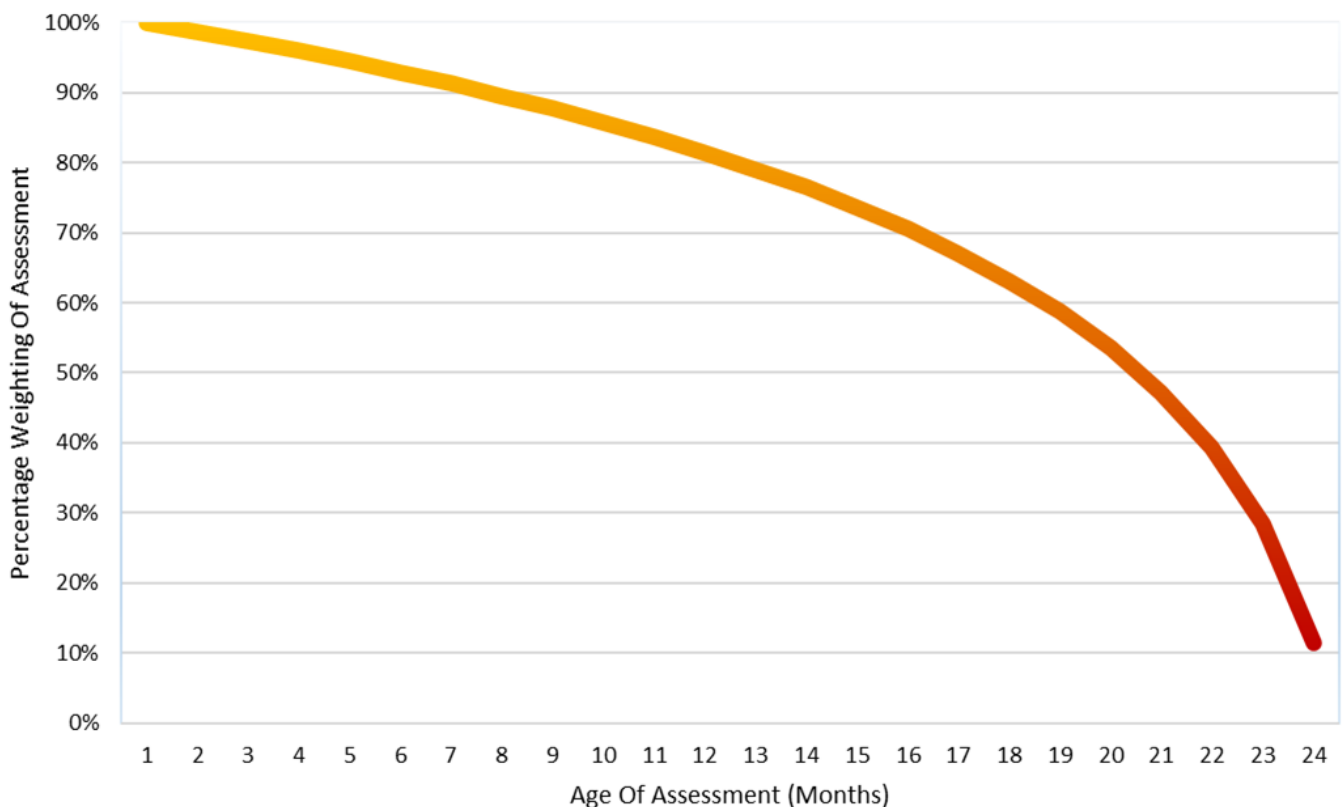
## Centre Assessments

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 are given full weighting with earlier responses given a reduced weighting on a logarithmic scale as shown in Chart 21 - this recognises that older ratings, while still valid, are less likely to be up-to-date.

**Chart 21 | Reduction In Weighting As Assessments Become 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

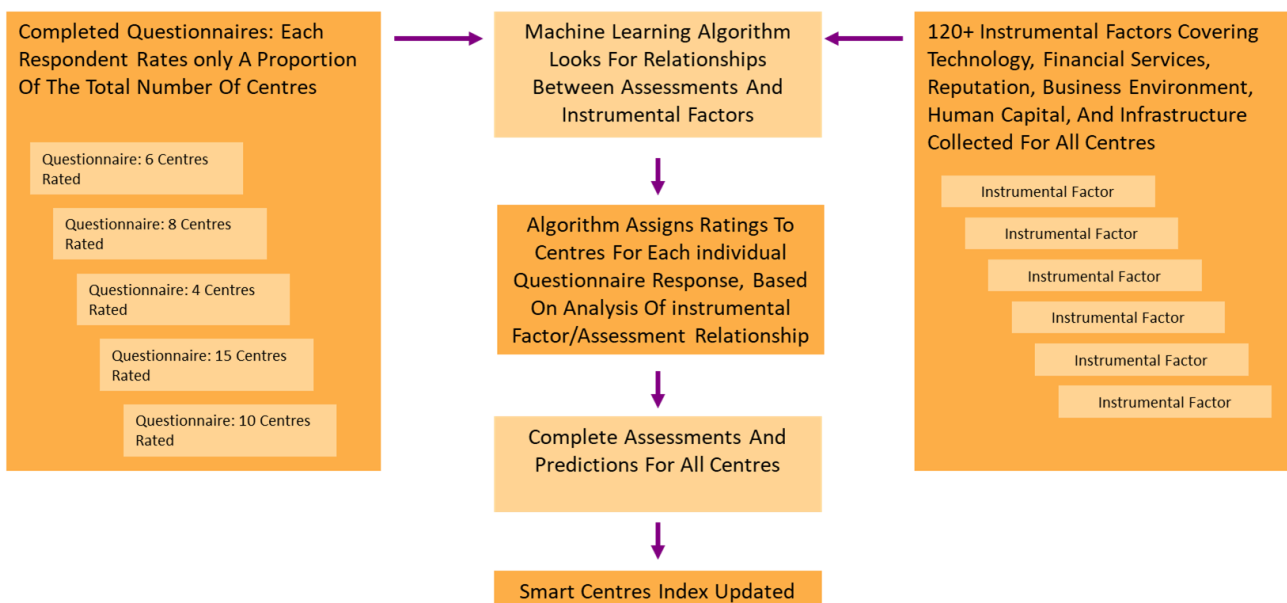
Neither the financial centre assessments nor the instrumental factors on their own can provide a basis for the construction of the SCI.

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 process of creating the SCI is outlined in Chart 22.

**Chart 22 | The SCI Process**



## Appendix 4: Instrumental Factors

**Table 27 | Instrumental Factor Correlation With SCI Ratings - Highest 30 Factors**

Instrumental Factors	R-squared
Domestic Credit Provided By Banking Sector (% Of GDP)	0.690
Telecommunication Infrastructure Index	0.504
E-Participation Index	0.482
Global Innovation Index	0.450
Safe Cities	0.441
Adjusted Net National Income Per Capita	0.438
ICT Development Index	0.433
World Competitiveness Scoreboard	0.408
Legatum Prosperity Index	0.406
Global Enabling Trade Report	0.405
Educational Attainment, At Least Bachelor's Or Equivalent, Population 25+, Total (%)	0.402
Human Development Index	0.395
Global Power City Index	0.386
Business Environment Rankings	0.384
Networked Readiness Index	0.374
Best Countries For Business	0.372
Government Effectiveness	0.372
Global Competitiveness Index	0.369
Sustainable Economic Development	0.368
Economic Freedom	0.360
World Talent Rankings	0.349
Energy Transition Index	0.340
Smart City Index	0.336
Energy Sustainability Index	0.335
Environmental Performance Index	0.329
Rule Of Law	0.324
Operational Risk Rating	0.308
International IP Index	0.303
The Global Green Finance Index (Quality)	0.302
Global Business Complexity Index	0.302

Table 28 | Technology Factors

Instrumental Factor	Source	Website	Updated Since SCI 3 Y/N
E-Participation Index	United Nations	<a href="https://publicadministration.un.org/egovkb/Data-Center">https://publicadministration.un.org/egovkb/Data-Center</a>	N
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>	N
ISO TC307 Participation	International Organisation For Standardisation	<a href="https://www.iso.org/committee/6266604.html">https://www.iso.org/committee/6266604.html</a>	Y
Internet Censorship Rank	comparitech	<a href="https://www.comparitech.com/blog/vpn-privacy/internet-censorship-map/">https://www.comparitech.com/blog/vpn-privacy/internet-censorship-map/</a>	Y
Volume Of Bitcoin Trades	Coin Dance	<a href="https://coin.dance/volume/localbitcoins">https://coin.dance/volume/localbitcoins</a>	Y
Legal Status Of Bitcoin	Coin Dance	<a href="https://coin.dance/poli/legality">https://coin.dance/poli/legality</a>	Y
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>	N
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>	N
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>	N
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>	N
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>	N
Global AI Index	Tortoise Intelligence	<a href="https://www.tortoisemedia.com/intelligence/ai">https://www.tortoisemedia.com/intelligence/ai</a>	Y
FinTech Index	Z/Yen	<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>	Y
The Global Fintech Index	Findexable	<a href="https://findexable.com/">https://findexable.com/</a>	N
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>	Y
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>	N
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>	N
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>	N
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>	N
Smart City Index	IMD	<a href="https://www.imd.org/smart-city-observatory/smart-city-index/">https://www.imd.org/smart-city-observatory/smart-city-index/</a>	N

Table 29 | Financial Sector Development Factors

Instrumental Factor	Source	Website	Updated Since SCI 3 Y/N
Capitalisation Of Stock Exchanges	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/august-2021/market-statistics">https://focus.world-exchanges.org/issue/august-2021/market-statistics</a>	Y
Value Of Share Trading	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/august-2021/market-statistics">https://focus.world-exchanges.org/issue/august-2021/market-statistics</a>	Y
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>	Y
Broad Stock Index Levels	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/august-2021/market-statistics">https://focus.world-exchanges.org/issue/august-2021/market-statistics</a>	Y
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>	Y
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>	Y
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>	Y
Total Net Assets Of Regulated Open-End Funds	Investment Company Institute	<a href="http://www.icifactbook.org/">http://www.icifactbook.org/</a>	Y
Islamic Finance Country Index	Islamic Banks and Financial Institutions	<a href="http://www.gifr.net/publications">http://www.gifr.net/publications</a>	Y
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>	Y
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>	Y
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>	N
Global Connectedness Index	DHL	<a href="https://www.dhl.com/global-en/spotlight/globalization/global-connectedness-index.html">https://www.dhl.com/global-en/spotlight/globalization/global-connectedness-index.html</a>	N
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>	N
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>	N
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>	N
Climate-Aligned Bonds Outstanding By Country Of Issuer	CBI	<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>	N
Sustainable Stock Exchanges (Y/N)	UN Sustainable Stock Exchange Initiative	<a href="https://sseinitiative.org/members/">https://sseinitiative.org/members/</a>	Y
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>	Y
The Global Green Finance Index (Depth)	Z/Yen	<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>	Y
The Global Green Finance Index (Quality)	Z/Yen	<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>	Y
The Global Financial Centres Index	Z/Yen	<a href="https://www.longfinance.net/programmes/financial-centre-">https://www.longfinance.net/programmes/financial-centre-</a>	Y

Table 30 | Reputational Factors

Instrumental Factor	Source	Website	Updated Since SCI 3 Y/N
World Competitiveness Scoreboard	IMD	<a href="https://www.imd.org/wcc/world-competitiveness-center-rankings/world-competitiveness-ranking-2020/">https://www.imd.org/wcc/world-competitiveness-center-rankings/world-competitiveness-ranking-2020/</a>	Y
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>	N
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>	N
GDP Per Person Employed (constant 2017 PPP \$)	The World Bank	<a href="https://databank.worldbank.org/reports.aspx?source=world-development-indicators&amp;series=SL.GDP.PCAP.EM.KD">https://databank.worldbank.org/reports.aspx?source=world-development-indicators&amp;series=SL.GDP.PCAP.EM.KD</a>	Y
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>	N
International IP Index	GIPC	<a href="https://www.theglobalipcenter.com/ipindex2020/">https://www.theglobalipcenter.com/ipindex2020/</a>	N
CPI (% Change On Year Ago)	The Economist	<a href="https://www.economist.com/economic-and-financial-indicators/2021/07/24/economic-data-commodities-and-">https://www.economist.com/economic-and-financial-indicators/2021/07/24/economic-data-commodities-and-</a>	Y
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>	N
Innovation Cities Global Index	2ThinkNow Innovation Cities	<a href="https://www.innovation-cities.com/city-rankings-2021/">https://www.innovation-cities.com/city-rankings-2021/</a>	N
Big Mac Index	The Economist	<a href="https://www.economist.com/news/2020/07/15/the-big-mac-index">https://www.economist.com/news/2020/07/15/the-big-mac-index</a>	N
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>	N
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>	N
Good Country Index	Good Country Party	<a href="https://www.goodcountry.org/index/results">https://www.goodcountry.org/index/results</a>	N
Legatum Prosperity Index	Legatum Institute	<a href="http://www.prosperity.com/#!/ranking">http://www.prosperity.com/#!/ranking</a>	N
FDI Inward Stock (In Million Dollars)	UNCTAD	<a href="https://unctad.org/webflyer/world-investment-report-2021">https://unctad.org/webflyer/world-investment-report-2021</a>	Y
Quality Of Nationality Index	Henley Partners	<a href="https://nationalityindex.com/#">https://nationalityindex.com/#</a>	N
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>	N
Economic Freedom	The Heritage Foundation	<a href="https://www.heritage.org/index/ranking">https://www.heritage.org/index/ranking</a>	New
Safe Cities Index	Economist	<a href="https://safecities.economist.com/safe-cities-index-2019/">https://safecities.economist.com/safe-cities-index-2019/</a>	New



**Table 31 | Business Environment Factors**

Instrumental Factor	Source	Website	Updated Since SCI 3 Y/N
Business Environment Rankings	EIU	<a href="http://country.eiu.com/All">http://country.eiu.com/All</a>	Y
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>	N
Operational Risk Rating	EIU	<a href="http://www.eiu.com/site_info.asp?info_name=VW2_RISK_nib&amp;page=rk&amp;page_title=Risk%20table">http://www.eiu.com/site_info.asp?info_name=VW2_RISK_nib&amp;page=rk&amp;page_title=Risk%20table</a>	Y
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>	Y
Global Services Location	AT Kearney	<a href="https://www.kearney.com/digital/article/?a/the-2021-kearney-global-services-location-index">https://www.kearney.com/digital/article/?a/the-2021-kearney-global-services-location-index</a>	Y
Corruption Perception Index	Transparency International	<a href="https://www.transparency.org/en/cpi/2020/">https://www.transparency.org/en/cpi/2020/</a>	Y
Corporate Tax Rates	PWC	<a href="https://www.pwc.com/payingtaxes">https://www.pwc.com/payingtaxes</a>	N
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>	Y
Tax Revenue As Percentage Of GDP	The World Bank	<a href="https://databank.worldbank.org/reports.aspx?source=2&amp;series=GC.TAX.TOTL.GD.ZS&amp;country=#">https://databank.worldbank.org/reports.aspx?source=2&amp;series=GC.TAX.TOTL.GD.ZS&amp;country=#</a>	Y
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>	N
Economic Freedom Of the World	Fraser Institute	<a href="https://www.fraserinstitute.org/economic-freedom/map?geozone=world&amp;page=map&amp;year=2018">https://www.fraserinstitute.org/economic-freedom/map?geozone=world&amp;page=map&amp;year=2018</a>	N
Government Debt As % Of GDP	CIA	<a href="https://www.cia.gov/the-world-factbook/field/public-debt/country-comparison">https://www.cia.gov/the-world-factbook/field/public-debt/country-comparison</a>	Y
OECD Country Risk Classification	OECD	<a href="http://www.oecd.org/trade/topics/export-credits/documents/crc-current-english.pdf">http://www.oecd.org/trade/topics/export-credits/documents/crc-current-english.pdf</a>	Y
Global Peace Index	Institute for Economics & Peace	<a href="https://www.visionofhumanity.org/maps/#/">https://www.visionofhumanity.org/maps/#/</a>	Y
Financial Secrecy Index	Tax Justice Network	<a href="http://www.financialsecrecyindex.com/">http://www.financialsecrecyindex.com/</a>	N
Government Effectiveness	The World Bank	<a href="http://info.worldbank.org/governance/wgi/">http://info.worldbank.org/governance/wgi/</a>	N
Open Government	World Justice Project	<a href="http://worldjusticeproject.org/rule-of-law-index">http://worldjusticeproject.org/rule-of-law-index</a>	N
Regulatory Enforcement	World Justice Project	<a href="http://worldjusticeproject.org/rule-of-law-index">http://worldjusticeproject.org/rule-of-law-index</a>	N
Press Freedom Index	Reporters Without Borders (RSF)	<a href="https://rsf.org/en/ranking/2021">https://rsf.org/en/ranking/2021</a>	Y
Currencies	Swiss Association for Standardization (SNV)	<a href="https://www.six-group.com/en/products-services/financial-information/data-standards.html#scrollTo=current-historical-lists">https://www.six-group.com/en/products-services/financial-information/data-standards.html#scrollTo=current-historical-lists</a>	N
Commonwealth Countries	The Commonwealth	<a href="http://thecommonwealth.org/member-countries">http://thecommonwealth.org/member-countries</a>	N
Common Law Countries	CIA	<a href="https://www.cia.gov/the-world-factbook/countries/">https://www.cia.gov/the-world-factbook/countries/</a>	N
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>	Y
Rule of Law	The World Bank	<a href="http://info.worldbank.org/governance/wgi/">http://info.worldbank.org/governance/wgi/</a>	N
Political Stability And Absence Of Violence/Terrorism	The World Bank	<a href="http://info.worldbank.org/governance/wgi/">http://info.worldbank.org/governance/wgi/</a>	N
Regulatory Quality	The World Bank	<a href="http://info.worldbank.org/governance/wgi/">http://info.worldbank.org/governance/wgi/</a>	N
Control of Corruption	The World Bank	<a href="http://info.worldbank.org/governance/wgi/">http://info.worldbank.org/governance/wgi/</a>	N
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>	N

**Table 31 | (Continued) Business Environment Factors**

Instrumental Factor	Source	Website	Updated Since SCI 3 Y/N
Open Budget Survey	International Budget Partnership	<a href="http://survey.internationalbudget.org/#download">http://survey.internationalbudget.org/#download</a>	N
Refined Oil Products Production	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>	Y
Global Business Complexity Index	TMF Group	<a href="https://www.tmf-group.com/en/news-insights/publications/2021/global-business-complexity-index/">https://www.tmf-group.com/en/news-insights/publications/2021/global-business-complexity-index/</a>	New

**Table 32 | Human Capital Factors**

Instrumental Factor	Source	Website	Updated Since SCI 3 Y/N
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>	N
Gross Tertiary Graduation Ratio	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?">http://databank.worldbank.org/data/reports.aspx?</a>	Y
Henley Passport Index	Henley Partners	<a href="https://www.henleypassportindex.com/passport">https://www.henleypassportindex.com/passport</a>	Y
Human Development Index	UN Development Programme	<a href="http://hdr.undp.org/en/2020-report/download">http://hdr.undp.org/en/2020-report/download</a>	N
Purchasing Power Index	Numbeo	<a href="https://www.numbeo.com/quality-of-life/rankings.jsp?title=2021-mid&amp;displayColumn=1">https://www.numbeo.com/quality-of-life/rankings.jsp?title=2021-mid&amp;displayColumn=1</a>	Y
Number of High Net Worth Individuals	Capgemini	<a href="https://www.worldwealthreport.com/">https://www.worldwealthreport.com/</a>	Y
Homicide Rates	UN Office of Drugs & Crime	<a href="https://dataunodc.un.org/content/data/homicide/homicide-rate">https://dataunodc.un.org/content/data/homicide/homicide-rate</a>	N
Average Precipitation In Depth (mm Per Year)	The World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=AG.LND.PRCP.MM">http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=AG.LND.PRCP.MM</a>	N
Global Skills Index	Hays	<a href="https://www.hays.co.uk/global-skills-index">https://www.hays.co.uk/global-skills-index</a>	N
Linguistic Diversity	Ethnologue	<a href="https://www.ethnologue.com/guides/countries-most-languages">https://www.ethnologue.com/guides/countries-most-languages</a>	N
Global Terrorism Index	Institute for Economics & Peace	<a href="https://www.visionofhumanity.org/wp-content/uploads/2020/11/GTI-2020-web-2.pdf">https://www.visionofhumanity.org/wp-content/uploads/2020/11/GTI-2020-web-2.pdf</a>	N
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>	N
Adjusted Net National Income Per Capita	The World Bank	<a href="https://data.worldbank.org/indicator/NY.ADJ.NNTY.PC.CD">https://data.worldbank.org/indicator/NY.ADJ.NNTY.PC.CD</a>	New
Household Net Financial Wealth	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>	N
Educational Attainment, At Least Bachelor's Or Equivalent, Population 25+, Total (%)	The World Bank	<a href="https://data.worldbank.org/indicator/SE.TER.CUAT.BA.ZS">https://data.worldbank.org/indicator/SE.TER.CUAT.BA.ZS</a>	New
Life Expectancy At Birth, Total	The World Bank	<a href="https://data.worldbank.org/indicator/SP.DYN.LE00.IN">https://data.worldbank.org/indicator/SP.DYN.LE00.IN</a>	New
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>	N
Human Freedom Index	Cato Institute	<a href="https://www.cato.org/human-freedom-index">https://www.cato.org/human-freedom-index</a>	Y

Table 33 | Infrastructure Factors

Instrumental Factor	Source	Website	Updated Since SCI 3 Y/N
JLL Real Estate Transparency Index	Jones Lang LaSalle	<a href="https://www.jll.co.uk/en/trends-and-insights/research/global-real-estate-transparency-index">https://www.jll.co.uk/en/trends-and-insights/research/global-real-estate-transparency-index</a>	N
Quality of Domestic Transport Network	World Economic Forum	<a href="http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=TRSPEFFICY">http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=TRSPEFFICY</a>	N
Quality Of Roads	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>	N
Roadways Per Land Area	CIA	<a href="https://www.cia.gov/the-world-factbook/field/roadways/country-">https://www.cia.gov/the-world-factbook/field/roadways/country-</a>	Y
Railways Per Land Area	CIA	<a href="https://www.cia.gov/the-world-factbook/field/railways/country-">https://www.cia.gov/the-world-factbook/field/railways/country-</a>	Y
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>	N
Energy Sustainability Index	World Energy Council	<a href="https://trilemma.worldenergy.org/">https://trilemma.worldenergy.org/</a>	N
Environmental Performance Index	Yale University	<a href="https://epi.yale.edu/epi-results/2020/component/epi">https://epi.yale.edu/epi-results/2020/component/epi</a>	N
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>	N
Logistics Performance Index	The World Bank	<a href="http://lpi.worldbank.org/international/global">http://lpi.worldbank.org/international/global</a>	N
Proportion Of Population Using Safely-Managed Drinking-Water Services (%)	WHO	<a href="https://www.who.int/data/gho/publications/world-health-statistics">https://www.who.int/data/gho/publications/world-health-statistics</a>	New
INRIX Traffic Scorecard	INRIX	<a href="http://inrix.com/scorecard/">http://inrix.com/scorecard/</a>	Y
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>	N
Forestry Area	World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?">http://databank.worldbank.org/data/reports.aspx?</a>	Y
CO2 Emissions Per Capita	World Bank	<a href="https://databank.worldbank.org/reports.aspx?">https://databank.worldbank.org/reports.aspx?</a>	Y
4G Availability	Open Signal	<a href="https://www.opensignal.com/reports/2020/05/global-state-of-the">https://www.opensignal.com/reports/2020/05/global-state-of-the</a>	N
Share Of Wind And Solar In Electricity Production	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/">https://yearbook.enerdata.net/</a>	Y
Energy Intensity Of GDP	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/">https://yearbook.enerdata.net/</a>	Y
Share Of Renewables In Electricity Production	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/">https://yearbook.enerdata.net/</a>	Y
Energy Transition Index	World Economic Forum	<a href="https://www.weforum.org/reports/1edb4488-deb4-4151-9d4f-ff355eec499a/in-full/rankings">https://www.weforum.org/reports/1edb4488-deb4-4151-9d4f-ff355eec499a/in-full/rankings</a>	New

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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.



Since 2009 Busan Metropolitan City has been developing a financial hub specialising 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. Busan Finance Center (BFC) will continue to develop and implement measures to promote Busan as a financial hub and bolster the local financial industry, while working together with various local economic players to pursue sustainable growth of the financial sector including FinTech. These efforts will enable BFC to play a leading role in taking Busan to the next level and become the international financial center and maritime capital of Northeast Asia.

BFC offers an attractive incentive package to global financial leaders and cooperation network of Busan Metropolitan City, and Busan Finance Center will support you to identify opportunities in Busan, one of the fastest developing cities in Asia.

[info@kbfc.or.kr](mailto:info@kbfc.or.kr)  
[www.kbfc.or.kr/eng/](http://www.kbfc.or.kr/eng/)



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.

[iff@lff.lu](mailto:iff@lff.lu)  
[luxembourgforfinance.com](http://luxembourgforfinance.com)



**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) region, 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 2,300 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)

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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.

[info@finance-montreal.com](mailto:info@finance-montreal.com)  
[www.finance-montreal.com/en](http://www.finance-montreal.com/en)



ABU DHABI GLOBAL MARKET  
 سوق أبوظبي العالمي

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 English Common 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)



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.

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Daniyar Kelbetov at [d.kelbetov@aifc.kz](mailto:d.kelbetov@aifc.kz)  
[www.aifc.kz](http://www.aifc.kz)



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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.

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Daniel Wang at [danielwang@globaltimes.com.cn](mailto:danielwang@globaltimes.com.cn)  
[www.globaltimes.com.cn](http://www.globaltimes.com.cn)

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Carol Feng at [carolf@cdi.org.cn](mailto:carolf@cdi.org.cn) [www.cdi.org.cn](http://www.cdi.org.cn)



Supported by the industry, the Financial Services Development Council (FSDC) is a high-level, cross-sectoral advisory body to the Hong Kong Special Administrative Region Government.

FSDC formulates proposals to promote the further development of Hong Kong's financial services industry and to map out the strategic direction for the development. As of March 2020, 110 of the 137 policy recommendations had been adopted by the Government and relevant regulators since FSDC's inception in 2013. On top of research, FSDC also carries out market promotion and human capital development functions.

Among others, FSDC focuses on topics including Mainland and international connectivity, green and sustainable finance, FinTech, as well as asset and wealth management.

[enquiry@fsdc.org.hk](mailto:enquiry@fsdc.org.hk)  
<https://www.fsdc.org.hk/en>



THE GOVERNMENT OF MOSCOW  
The Department for External Economic and International Relations of Moscow

**Moscow International Financial Centre (MIFC)** is a community effort launched in 2008 by business, the market mega-regulator and all branches of state power – including the President, the Government and the Government of Moscow.

Effective regulatory regime, high level of financial innovation, vibrant urban environment and talent pool give MIFC very strong competitive advantage across Eurasia and beyond. MIFC plays a key role in creating the necessary conditions for making effective access to the neighboring markets with over 280 million consumers.

MIFC is evolving and assuming a greater role as the centre of excellence with a strong current focus on financial technologies and ESGs. Moscow has always been paying a lot of attention to international cooperation. Therefore, the World Alliance of International Financial Centers (WAIFC) was formed under the initiative of Moscow in July 2018.

Astahova Ekaterina, [AstahovaEA@mos.ru](mailto:AstahovaEA@mos.ru)  
Sapronova Ekaterina, [SapronovaEG@mos.ru](mailto:SapronovaEG@mos.ru)

<https://www.mos.ru/en/>



SEOUL METROPOLITAN GOVERNMENT

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 believes 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 pre-emptively gain a foothold in the Seoul financial hub. Seoul is the gateway to Northeast Asia and the world.

Han Dong-Uk, [gtddd@seoul.go.kr](mailto:gtddd@seoul.go.kr)  
[www.seoul.go.kr/main/index.jsp](http://www.seoul.go.kr/main/index.jsp)



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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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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.



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

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