



The Global Financial Centres Index 23

MARCH 2018



Financial Centre Futures





We are pleased to present the twenty-third edition of the Global Financial Centres Index (GFCI 23).

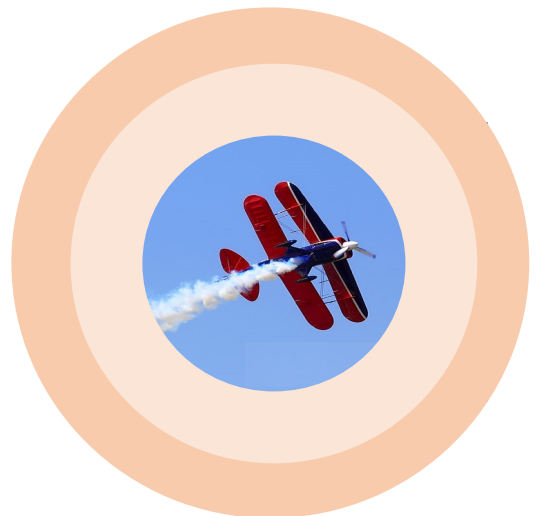
In March 2007, Z/Yen released the first edition of the GFCI, which continues to provide evaluations of competitiveness and rankings for the major financial centres around the world.

In July 2016 the China Development Institute (CDI) in Shenzhen and Z/Yen Partners in London established a strategic partnership for research into financial centres. We continue our collaboration in producing the GFCI.

The GFCI is updated every March and September and receives considerable attention from the global financial community. The index serves as a valuable reference for policy and investment decisions.

Z/Yen is the City of London's leading commercial think-tank. Z/Yen was founded in 1994 to promote societal advance through better finance and technology. Z/Yen has built its practice around a core of high-powered project managers, supported by experienced technical specialists so that clients get expertise they need, rather than just resources available. The firm is headquartered in London, but Z/Yen is committed to the 'virtual office' concept and is an intense user of technology in order to improve flexibility and benefit staff.

The CDI is a leading national think-tank that develops solutions to public policy challenges through broad-scope and in-depth research to help advance China's reform and opening-up to world markets. The CDI has been working on the promotion and development of China's financial system since its establishment 29 years ago. Based on rigorous research and objective analysis, CDI is committed to providing innovative and pragmatic reports for governments at different levels in China and corporations at home and abroad.



The author of this report, Mark Yeandle, would like to thank Mike Wardle, Bikash Kharel, Shevangee Gupta, Michael Mainelli, Carol Feng, Peng Yu, and the rest of the GFCI team for their contributions with research, modelling, and ideas.

Foreword

2018 is set to be a year of change in Kazakhstan's financial landscape as the fully-fledged launch of the Astana International Financial Centre (AIFC) undoubtedly unveils a new chapter of reform and modernisation in the country's financial sector.

Kazakhstan has always been in the forefront of innovations and structural reforms. Within just a quarter of the century, Kazakhstan has asserted a reputation of a regional leader deservedly achieved through years of political stability and a strong commitment to economic liberalisation in combination with the immense stocks of natural resources. Since its independence, Kazakhstan has succeeded in increasing its economy five times with total country wealth exceeding \$110 billion. The achievements of the past years laid out a firm and solid foundation to face the current global economic challenges with confidence and focus on further aspirations to achieve long-term sustainable growth and maintain its leading positions on the regional and global stage.

AIFC is the unrivalled financial centre aimed at creating uncontested market space for the region of more than 300 million consumers. It is the first and sole financial centre among entire CIS countries who pioneered in introducing a common-law framework designed to bring the favourable environment for business growth. To earn global community's confidence in AIFC, the most trusted, influential and well-recognised judges were nominated to the AIFC Court. This is clear evidence of Kazakhstan and AIFC's highest commitment to the rule of law, transparency and accountability.

Since inception, we have invested a significant amount of time and effort to create best in the class financial centre with a most compelling ecosystem. AIFC's fundamentals lie within a top-notch legal and regulatory regime, no corporate tax regime, depth and breadth in financial services and instruments' offering, highly supportive and flexible environment fostering the long-term growth and innovative development of its participants. AIFC is aimed to become a home for the best talents and experts by supporting their career development and promoting the best working environment, not to mention a city that offers the very high standards of living.

Astana is a young and fast-growing city that has made its mark on the world map. Astana is often referred as a city of the future. Modern infrastructure and logistics developed based on smart city concept, futuristic city architecture representing a miracle of urban construction, variety of housing, education and

healthcare facilities as well as lifestyle options bring the most comfortable conditions and serve the needs and tastes of different people reallocating to Astana from around the globe.

In a short span of 20 years, Astana has already been recognised as a political and cultural centre and now, it is also placed as a new destination in the map of global financial centres. It is a very important moment for Astana, as today, for the first time, it is featuring in the Global Financial Centre Index, globally recognised benchmark assessing the competitiveness of international financial hubs. This milestone is an acknowledgment of our efforts by global financial players.

In fact, AIFC has been gaining tremendous response over the last three years when His Excellency, President Nazarbayev has first introduced his vision of building an international financial centre. AIFC has become an enabling partner to the variety of financial hubs, international organisations, development institutes, financial corporations and companies of different scale. Among our most honoured relationships are the strategic partnership with the largest world stock exchanges, Nasdaq Inc. and Shanghai Stock Exchange. They view AIX, AIFC's stock exchange, as the main platform for financing the "Belt and Road" projects in the all Central Asian region. AIX is also missioned to host the large scaled privatization program of the country's major national companies. The trust and support of our global partners give us confidence that we will continue in our mission to develop the world-class financial centre for the whole region of Central Asia, the Caucasus, Eurasian Economic Union, the Middle East, West China, Mongolia and Europe.

Commemorating a successful launch of AIFC coinciding with the 20th anniversary of Astana this year, we are honoured to host AIFC's Grand Opening Ceremony on July 5th, 2018. It is a historical event for us and will allow sharing our plans and long-term vision, demonstrate our credentials and comparative advantages as well as engage global industry specialists in the most trending topics' discussions. I welcome the readers of GFCI 23 to share this historical day with us.

Kairat Kelimbetov
Governor of AIFC



GFCI 23 Summary and Headlines

GLOBAL FINANCIAL CENTRES INDEX 23

- We researched 110 centres for this edition of the Global Financial Centres Index (GFCI 23). The number of financial centres in the main index has increased from 92 to 96 with the addition of Astana, Baku, New Delhi and Tianjin from the associate centres list. There are 14 associate centres awaiting potential inclusion in the main index.
- GFCI 23 was compiled using 103 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 28,599 financial centre assessments provided by respondents to the GFCI online questionnaire (www.globalfinancialcentres.net). Details of the 2,340 respondents are shown opposite. Further details of the methodology behind GFCI 23 can be found in Appendix 3.

THE RESULTS

- **There is an overall increase in confidence for the leading centres.** Signs of a bias towards stronger and more established centres are evident with the top 25 centres all rising in the ratings. Ratings fell for all of the lowest 50 centres.
- **London and New York remain at the top of the rankings and the gap between them in ratings closed to one point on a scale of 1,000.** Hong Kong retains third place. London's rating rose less than the other four top centres. There is now less than 50 points between the top five centres. San Francisco and Boston moved into the top ten, replacing Beijing and Zurich.
- **Western European financial centres remain volatile.** The top five centres rose in the ratings. Most of the lower placed centres lost ground. Hamburg, Munich, Monaco, and Madrid, rose strongly in the ranks, with other improvements for Paris, Jersey, Edinburgh and Lisbon. Hamburg in particular rose 38 places in the ranks.
- **In the Asia/Pacific region, the leading centres improved their ratings.** There were significant rises in the ranks for Qingdao, Bangkok, Kuala Lumpur and Busan. Tianjin and New Delhi are new entrants to the GFCI.
- **North American centres generally achieved improved ratings and improved their ranks accordingly.** This was a reversal from GFCI 22. The exception was Washington DC, which dropped 20 places in the rankings. Montreal also dropped by one place (although its rating was 22 higher than in GFCI 22).
- **All centres in the Eastern Europe and Central Asia suffered a fall in their ratings.** However, Cyprus, Istanbul and Moscow rose in the ranks. Tallinn and Riga both fell over 30 places in the ranks. Astana and Baku are new entrants to the GFCI.
- **In the Middle East and Africa, only Dubai and Abu Dhabi increased their ratings.** Mauritius, Riyadh, and Casablanca improved their ranking despite falls in their ratings.
- **All centres in Latin America and the Caribbean fell in the GFCI ratings except for the Cayman Islands.** Despite the fall in the ratings, six centres rose in the ranks with the Bahamas leading the way rising 22 places. The Cayman Islands are now the leading centre in the region.
- **European 'island' centres fell back after rising in GFCI 22.** The British Crown Dependencies of Jersey, Guernsey, and the Isle of Man all fell in the ratings.

Respondents

Chart 1 | GFCI 23 Respondents by Industry Sector

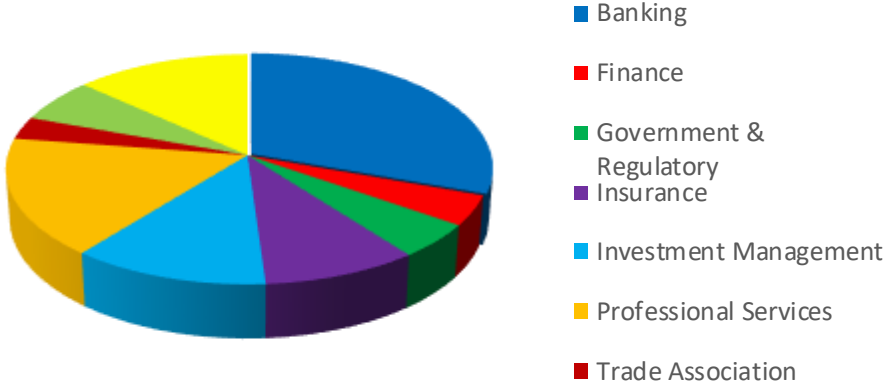


Chart 2 | GFCI 23 Respondents by Region

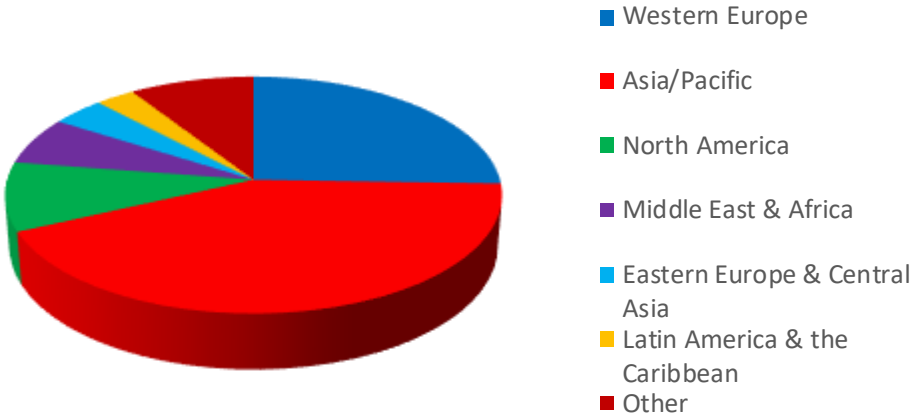


Chart 3 | GFCI 23 Respondents by Organisation Size (Number of Employees)

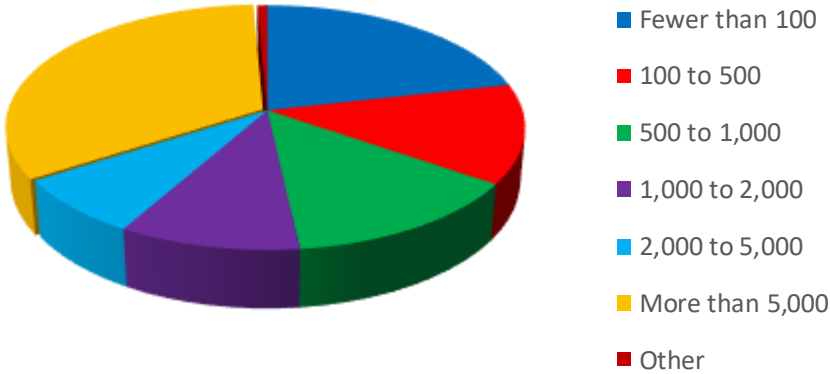


Table 1 | GFCI 23 Ranks and Ratings

Centre	GFCI 23		GFCI 22		Change in	
	Rank	Rating	Rank	Rating	Rank	Rating
London	1	794	1	780	0	▲14
New York	2	793	2	756	0	▲37
Hong Kong	3	781	3	744	0	▲37
Singapore	4	765	4	742	0	▲23
Tokyo	5	749	5	725	0	▲24
Shanghai	6	741	6	711	0	▲30
Toronto	7	728	7	710	0	▲18
San Francisco	8	726	17	693	▲9	▲33
Sydney	9	724	8	707	▼1	▲17
Boston	10	722	19	690	▲9	▲32
Beijing	11	721	10	703	▼1	▲18
Melbourne	12	720	13	696	▼1	▲24
Montreal	13	719	12	697	▼1	▲22
Chicago	14	718	24	683	▲10	▲35
Vancouver	15	717	18	692	▲3	▲25
Zurich	16	713	9	704	▼7	▲9
Los Angeles	17	712	23	683	▲6	▲29
Shenzhen	18	710	20	689	▲2	▲21
Dubai	19	709	18	691	▼1	▲18
Frankfurt	20	708	11	701	▼9	▲7
Luxembourg	21	701	14	695	▼7	▲6
Cayman Islands	22	700	31	671	▲9	▲29
Osaka	23	692	21	688	▼2	▲4
Paris	24	687	26	680	▲2	▲7
Abu Dhabi	25	683	25	682	0	▲1
Geneva	26	682	16	694	▼10	▼12
Seoul	27	679	22	686	▼5	▼7
Guangzhou	28	678	32	668	▲4	▲10
Hamburg	29	676	67	628	▲38	▲48
Taipei	30	673	27	677	▼3	▼4
Dublin	31	666	30	672	▼1	▼6
Casablanca	32	664	35	665	▲3	▼1
Qingdao	33	662	47	649	▲14	▲31
Tel Aviv	34	661	34	666	0	▼5
Munich	35	660	50	646	▲15	▲14
Bermuda	36	656	29	673	▼7	▼17
Bangkok	37	643	61	634	▲24	▲9
Calgary	38	642	71	624	▲33	▲18
Jersey	39	637	40	658	▲1	▼21
Kuala Lumpur	40	632	55	640	▲15	▼8
Madrid	41	631	59	636	▲18	▼5
Stockholm	42	629	39	660	▼3	▼31
Edinburgh	43	628	52	643	▲9	▼15
Wellington	44	621	38	661	▼6	▼40
Warsaw	45	620	36	664	▼9	▼44
Busan	46	618	70	625	▲24	▼7
Doha	47	617	45	651	▼2	▼34
Washington DC	48	616	28	676	▼20	▼60

Table 1 (continued) | GFCI 23 Ranks and Ratings

Centre	GFCI 23		GFCI 22		Change in	
	Rank	Rating	Rank	Rating	Rank	Rating
Glasgow	49	614	49	647	0	▼33
Amsterdam	50	613	33	667	▼17	▼54
Bahrain	51	612	51	645	0	▼33
Johannesburg	52	610	48	648	▼4	▼38
Guernsey	53	605	41	657	▼12	▼52
Monaco	54	604	68	627	▲14	▼23
Oslo	55	602	46	650	▼9	▼48
Mauritius	56	601	69	626	▲13	▼25
Isle of Man	57	600	56	639	▼1	▼39
Copenhagen	58	599	43	655	▼15	▼56
Bahamas	59	596	81	614	▲22	▼18
British Virgin Islands	60	594	37	663	▼23	▼69
Milan	61	593	54	641	▼7	▼48
Brussels	62	592	57	638	▼5	▼46
Tianjin	63	588	New	New	New	New
Vienna	64	583	42	656	▼22	▼73
Rome	65	579	74	621	▲9	▼42
Gibraltar	66	576	75	620	▲9	▼44
Sao Paulo	67	574	63	632	▼4	▼58
Riyadh	68	573	77	618	▲9	▼45
Liechtenstein	69	570	64	631	▼5	▼61
Mexico City	70	569	73	622	▲3	▼53
Prague	71	567	58	637	▼13	▼70
Cyprus	72	566	76	619	▲4	▼53
Mumbai	73	565	60	635	▼13	▼70
Lisbon	74	564	79	616	▲5	▼52
Buenos Aires	75	563	90	600	▲15	▼37
Istanbul	76	562	78	617	▲2	▼55
Malta	77	561	85	609	▲8	▼48
New Delhi	78	560	New	New	New	New
Tallinn	79	559	44	653	▼35	▼94
Panama	80	558	88	602	▲8	▼44
Rio de Janeiro	81	557	82	613	▲1	▼56
Chengdu	82	556	86	604	▲4	▼48
Moscow	83	555	89	601	▲6	▼46
Manila	84	554	66	629	▼18	▼75
Helsinki	85	553	83	612	▼2	▼59
Trinidad and Tobago	86	552	65	630	▼21	▼78
Riga	87	551	53	642	▼34	▼91
Astana	88	548	New	New	New	New
Budapest	89	547	72	623	▼17	▼76
Jakarta	90	546	62	633	▼28	▼87
St Petersburg	91	531	87	603	▼4	▼72
Athens	92	525	84	611	▼8	▼86
Reykjavik	93	521	91	598	▼2	▼77
Almaty	94	519	80	615	▼14	▼96
Baku	95	511	New	New	New	New
Dalian	96	501	92	595	▼4	▼94

Table 2 lists ‘Associate Centres’, which are included within the questionnaire but have yet to

acquire the number of assessments necessary to be included within the main index.

Table 2 | Associate Centres

Centre	Number of Assessments in the Last 24 months	Mean of Assessments
Cape Town	131	615
GIFT City-Gujarat	115	505
Hangzhou	105	706
Barbados	85	520
Sofia	79	443
Karachi	79	542
Tehran	74	453
Kuwait City	73	555
Nairobi	65	506
Santiago	60	618
Bratislava	54	467
Stuttgart	21	519
Andorra	16	450
San Diego	New	New

Chart 4 shows the average rating of the top five centres in each region. This demonstrates that the historical dominance of the leading centres in Western Europe and North America has been eroded over time. The average assessment of the top five financial centres in the Asia/Pacific region

is now ahead of the comparable figure for Western Europe and North America. The top centres in other regions, especially in Latin America and Eastern Europe and Central Asia have closed the gap on other regions but have fallen back in GFCI 23.

Chart 4 | GFCI 23 The Mean Rating of the Top Five Centres in Each Region

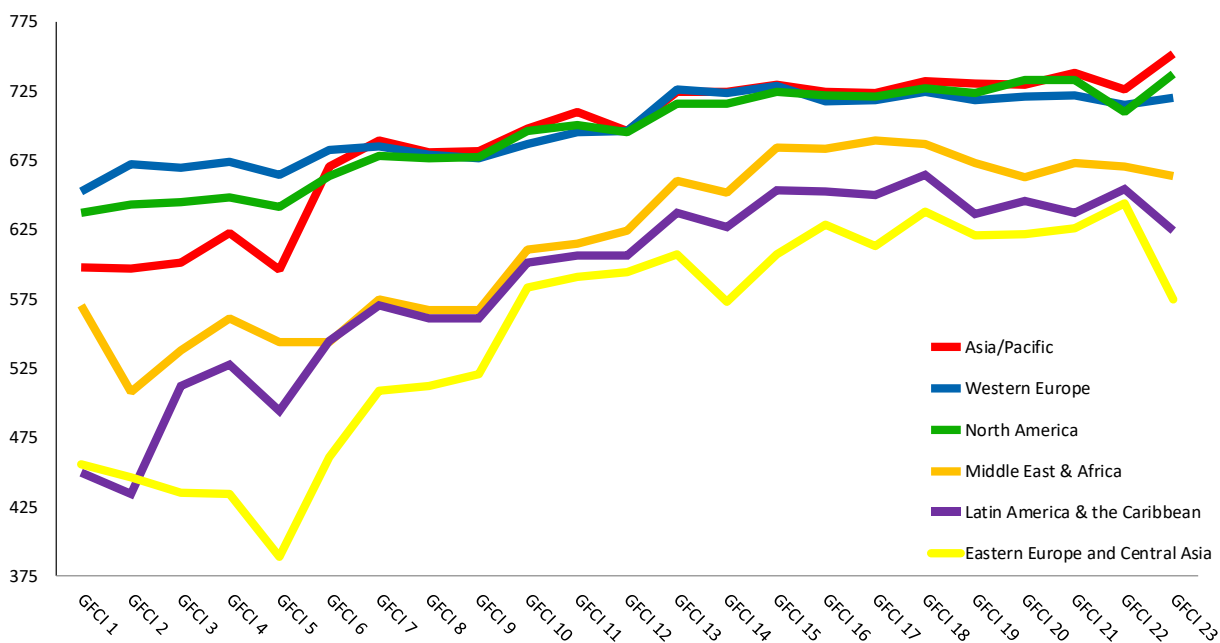
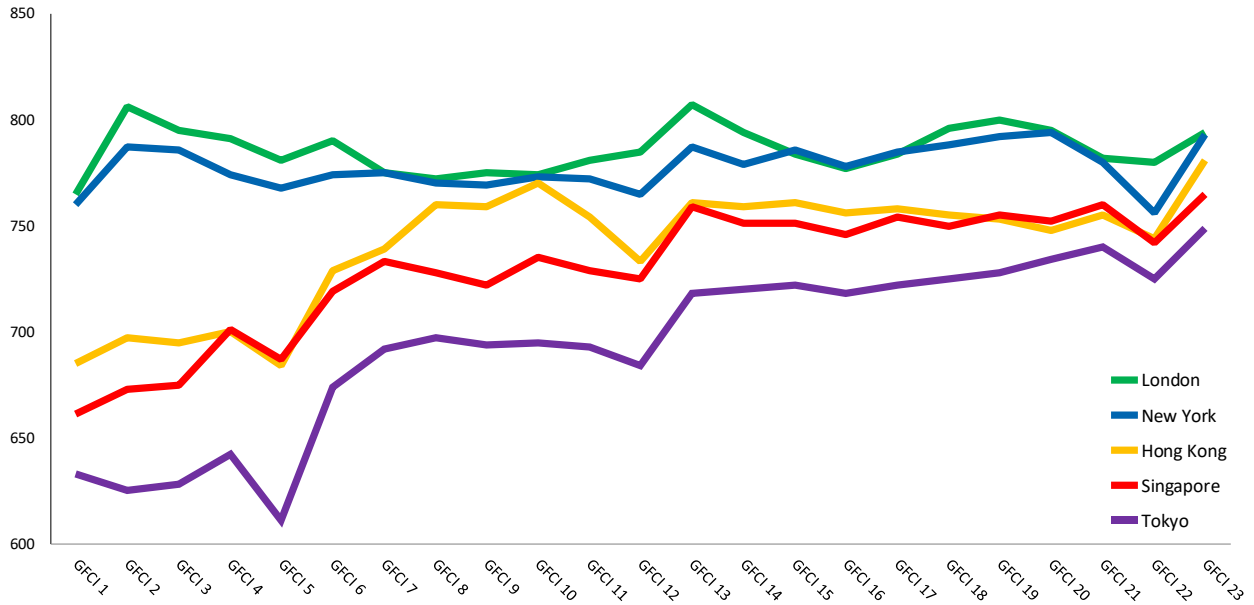


Chart 5 shows the performance of the top five financial centres over time. There has been no change in the top five positions. London and New

York remain in first and second places although there is now only one point (on a scale of 1,000) separating them.

Chart 5 | The Top Five Centres— GFCI Ratings Over Time



The GFCI questionnaire asks respondents which centres they think will become more significant in the next few years.

Table 3 shows the top 15 centres mentioned. Five of the top seven centres are Asian.

Table 3 | The 15 Centres Likely to Become More Significant

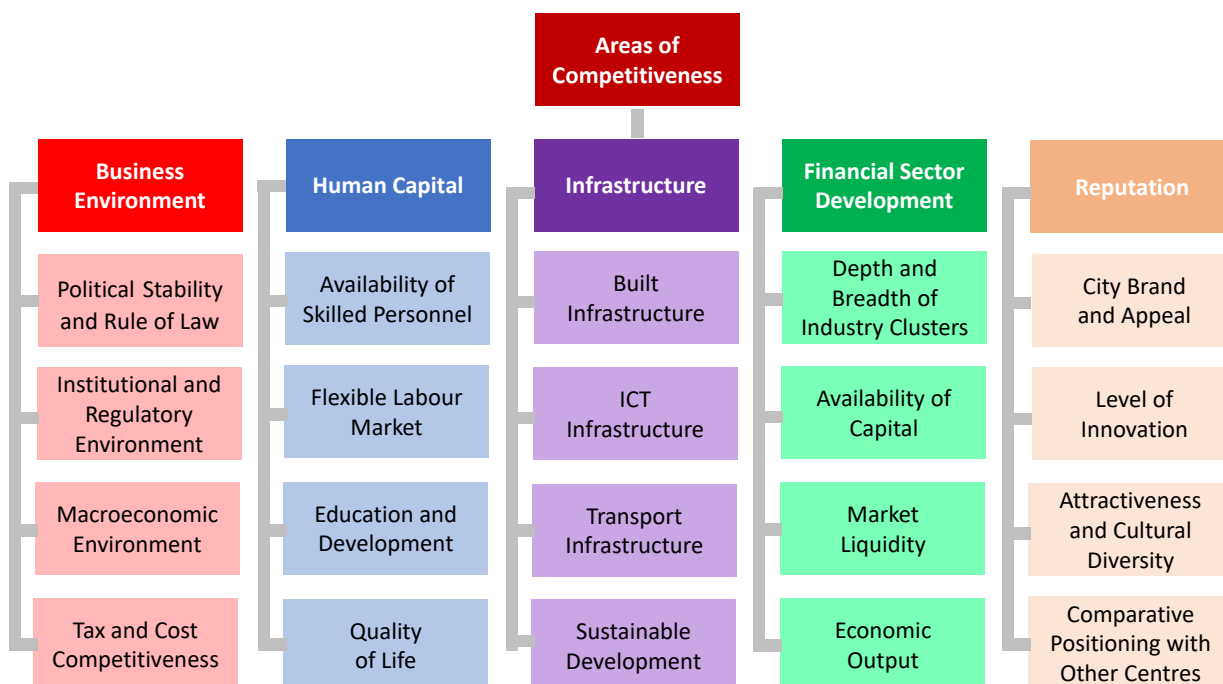
Centre	Mentions in last 24 months
Shanghai	126
Qingdao	110
Singapore	55
Frankfurt	42
Casablanca	35
Hong Kong	32
Beijing	31
Dublin	29
Astana	26
GIFT City - Gujarat	24
Luxembourg	23
Chengdu	22
Seoul	21
Dubai	18
Toronto	17

Areas of Competitiveness

The instrumental factors used in the GFCI model are grouped into five broad factors of competitiveness: Business Environment,

Human Capital, Infrastructure, Financial Sector Development, and Reputation. Chart 6 shows the GFCI taxonomy:

Chart 6 | GFCI 23 Areas of Competitiveness



To assess how financial centres perform in each of these areas, the GFCI factor assessment model is run separately for each of

the five groups of competitiveness at a time. The top 15 ranked centres in each sub-index are shown in Table 4:

Table 4 | GFCI 23 Top 15 by Area of Competitiveness

Rank	Business Environment	Human Capital	Infrastructure	Financial Sector Development	Reputational & General
1	London	Hong Kong	London	New York	London
2	New York	London	New York	London	New York
3	Hong Kong	New York	Hong Kong	Hong Kong	Hong Kong
4	Singapore	Singapore	Singapore	Washington DC	Singapore
5	Chicago	Tokyo	Shanghai	San Francisco	San Francisco
6	Los Angeles	Los Angeles	Tokyo	Boston	Boston
7	Washington DC	Washington DC	Sydney	Singapore	Chicago
8	San Francisco	Chicago	Washington DC	Chicago	Washington DC
9	Boston	San Francisco	San Francisco	Tokyo	Los Angeles
10	Zurich	Boston	Toronto	Frankfurt	Tokyo
11	Toronto	Dubai	Frankfurt	Shanghai	Qingdao
12	Frankfurt	Montreal	Boston	Los Angeles	Toronto
13	Montreal	Shanghai	Beijing	Beijing	Shanghai
14	Sydney	Osaka	Montreal	Edinburgh	Sydney
15	Geneva	Shenzhen	Zurich	Toronto	Montreal

The top financial centres of the world are well developed and strong in most areas. The top four financial centres overall hold the top four positions in four of the five sub-indices.

The GFCI questionnaire asks respondents to indicate which factors of competitiveness they consider the most important at the moment. The number of times that each area is mentioned is shown in Table 5 below:

Table 5 | GFCI 23 Main Areas of Competitiveness

Area of Competitiveness	Number of Mentions	Main Issues
Business Environment	645	Brexit is a major source of uncertainty for all centres - not just London Corruption and the rule of law remain major factors Protectionism and barriers to international trade are beginning to worry many
Human Capital	583	Terrorism, personal safety and human rights are becoming ever more important UK and USA respondents fear restrictions in movement of talented staff
Taxation	522	A crack-down on tax avoidance (through domicile arbitrage) is important A need for greater harmonisation of tax laws internationally
Reputation	518	More promotion of centres is needed for differentiation A reputation as a good and safe place to live grows in importance
Infrastructure	503	ICT links and FinTech advances are hot topics now Great need for increase air travel connectivity in some financial centres
Financial Sector Development	498	Will London lose its critical mass after Brexit? Fear of clustering being threatened by protectionism

“I wish that the Brexit negotiations would speed up. We seem to be in the same position of deep uncertainty as we were a year ago...”

INVESTMENT BANKER BASED IN LONDON



Regulatory Quality

Our research into the competitiveness of financial centres indicates that the quality of regulation in a centre, as well as overall government effectiveness are both significant factors in a financial centre’s competitiveness.

The quality of regulation, the rule of law and the implementation of regulation are arguably the most important factors for a financial centre.

Charts 7 and 8 map two factors that relate to the quality of government and regulation and demonstrate the correlation of these factors with the GFCI 23 rating (the size of the bubbles indicates the relative GDP of each centre).

Chart 7 | GFCI 23 Rating against Regulatory Quality (supplied by the World Bank)

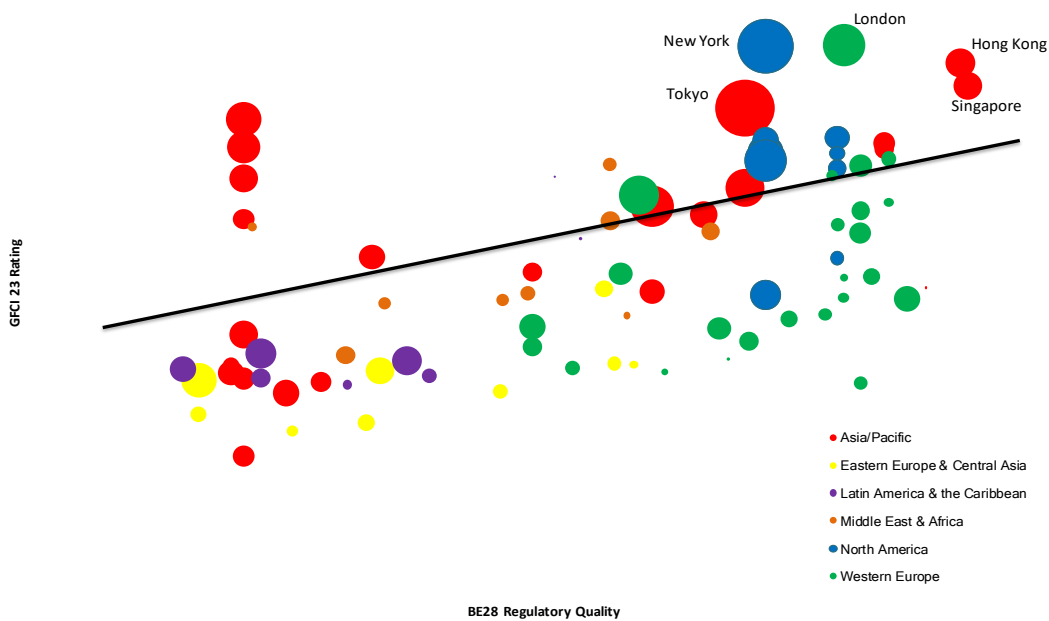
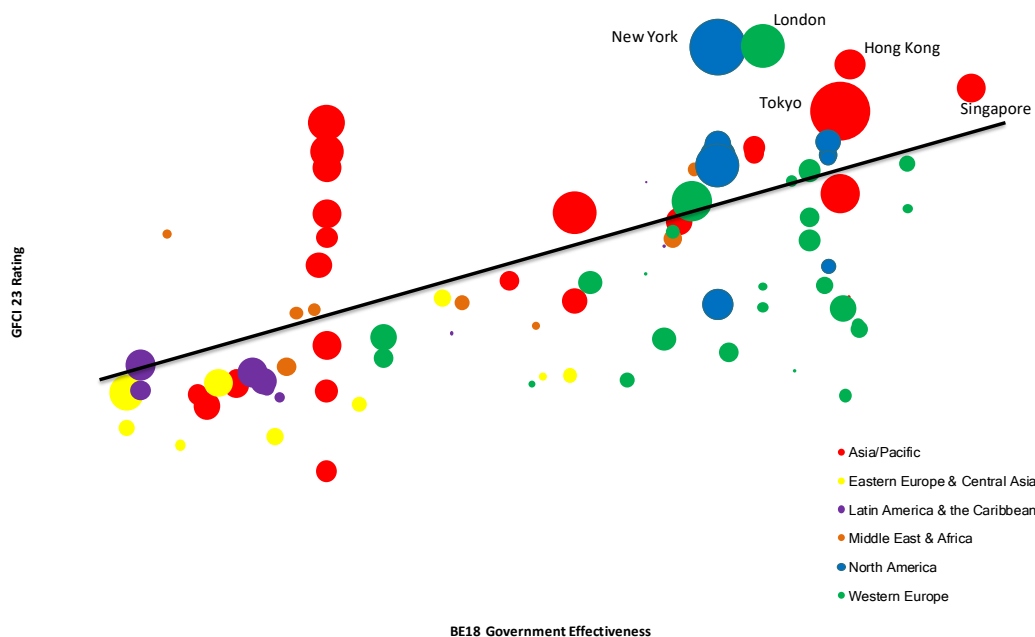


Chart 8 | GFCI 23 Rating against Government Effectiveness (supplied by the World Bank)



Connectivity

One of the most important benefits of hosting a thriving financial centre is connected to other financial centres. One way of measuring this connectivity is to look at the number of assessments given to and received from other financial centres.

Charts 9 and 10 use New York and Chicago as examples to contrast the different levels of connectivity that the two centres enjoy.

Chart 9 | GFCI 23 Connectivity — New York

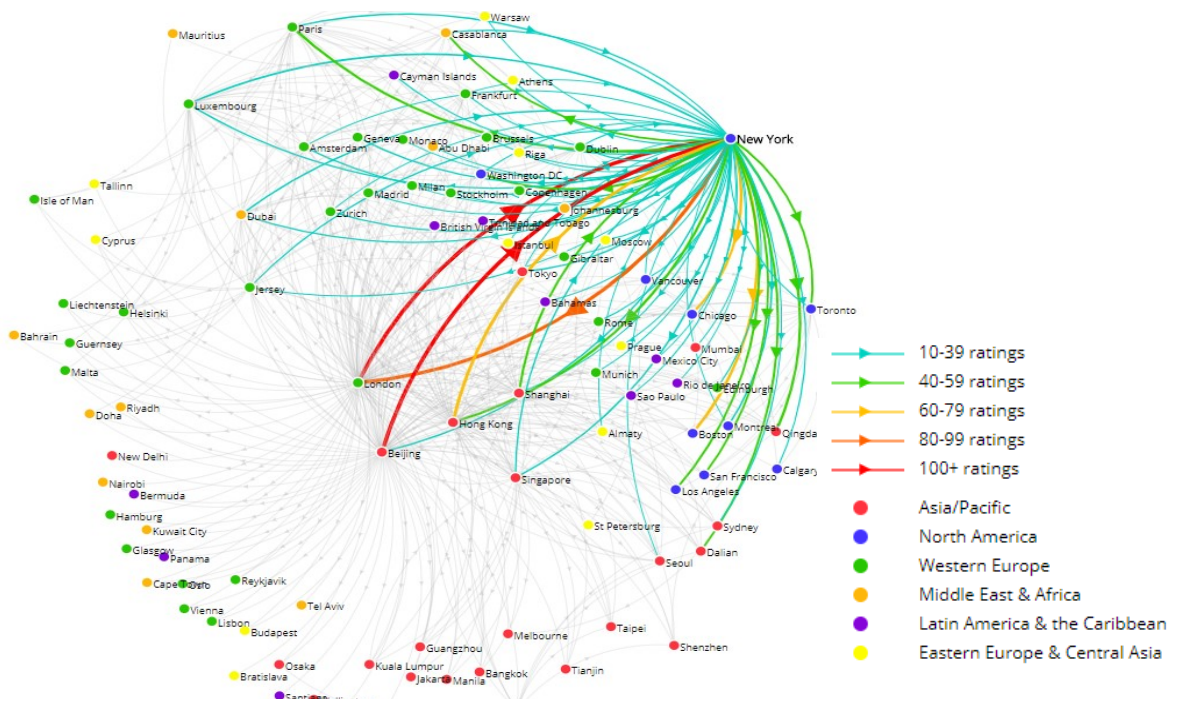
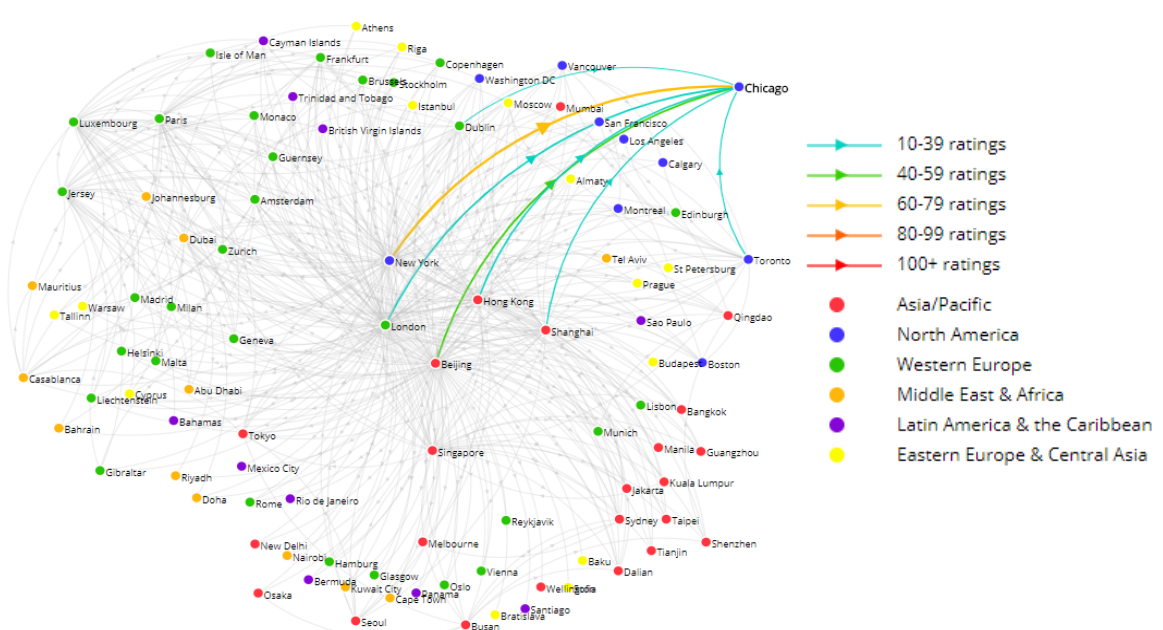


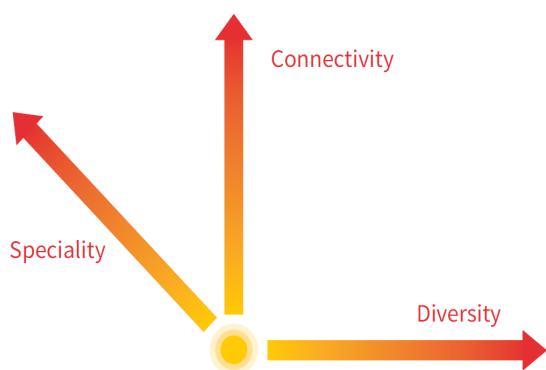
Chart 10 | GFCI 23 Connectivity — Chicago



Financial Centre Profiles

Using clustering and correlation analysis we have identified three measures (axes) that determine a financial centre's profile along different dimensions of competitiveness.

Chart 11 | GFCI 23 Profile Elements



'Connectivity' – the extent to which a centre is well known around the world, and how much non-resident professionals believe it is connected to other financial centres. Respondents are asked to assess only those centres with which they are personally familiar. A centre's connectivity is assessed using a combination of 'inbound' assessment locations (the number of locations from which a particular centre receives assessments) and 'outbound' assessment locations (the number of other centres assessed by respondents from a particular centre). If the weighted assessments for a centre are provided by over 50% of other centres, this centre is deemed to be 'Global'. If the ratings are provided by over 40% of other centres, this centre is deemed to be 'International'.

'Diversity' – the breadth of financial industry sectors that flourish in a financial centre. We consider this sector 'richness' to be measurable in a similar way to that of the natural environment. We therefore use a combination of biodiversity indices (calculated on the instrumental factors) to assess a centre's diversity. A high score means that a centre is well diversified; a low diversity score reflects a less rich business environment.

'Speciality' – the depth within a financial centre of the following industry sectors: investment management, banking, insurance, professional services, and the government and regulatory sector. A centre's 'speciality' performance is calculated from the difference between the GFCI rating and the industry sector ratings.

In Table 6 'Diversity' (Breadth) and 'Speciality' (Depth) are combined on one axis to create a two dimensional table of financial centre profiles. The 96 centres in GFCI 23 are assigned a profile on the basis of a set of rules for the three measures: how well connected a centre is, how broad its services are, and how specialised it is.

The 16 Global Leaders (in the top left of the table) have both broad and deep financial services activities and are connected with many other financial centres. This list includes the top seven global financial centres. Other leading centres are profiled as Established International Centres.

Significant changes in GFCI 23 include Dublin and Seoul becoming Global Leaders, Chicago becoming a Global Diversified Centre (previously an Established International Centre) and Milan becoming a Global Diversified Centre (previously an International Diversified Centre).

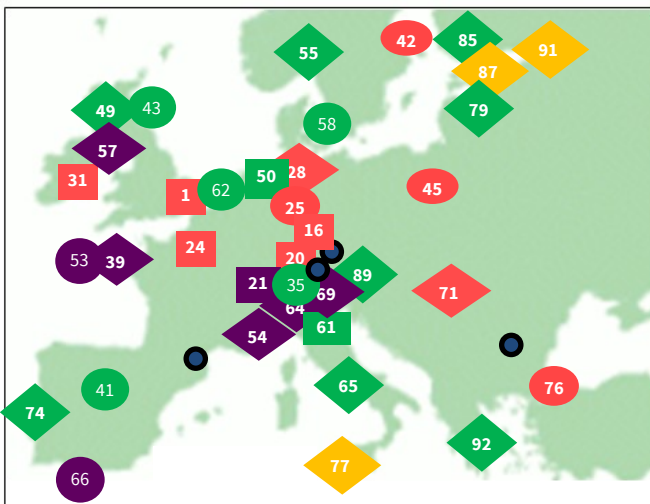
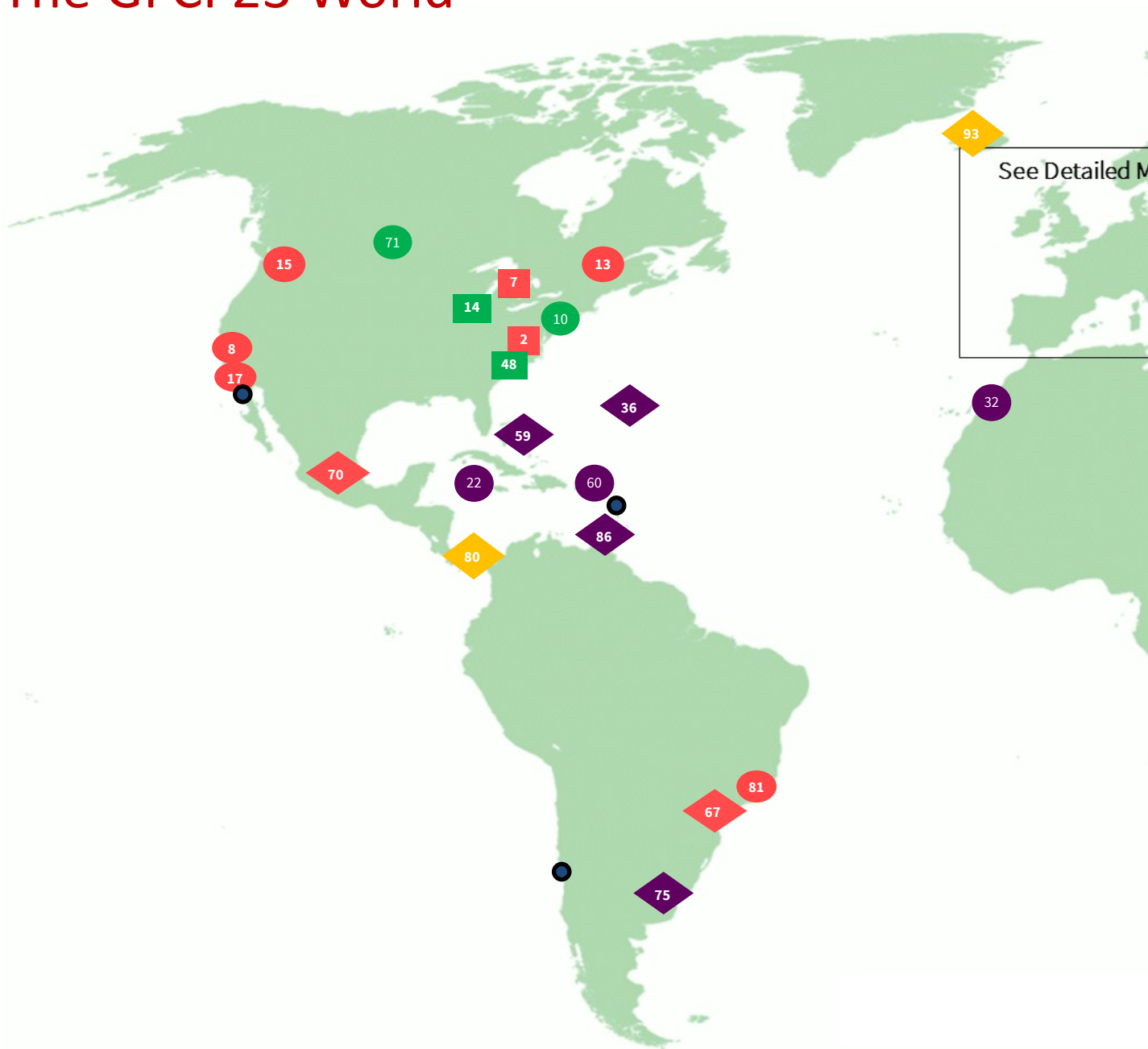
"It seems to me that more of the smaller centres would do better by specialising in one sector. Not everyone can be a London or a New York."

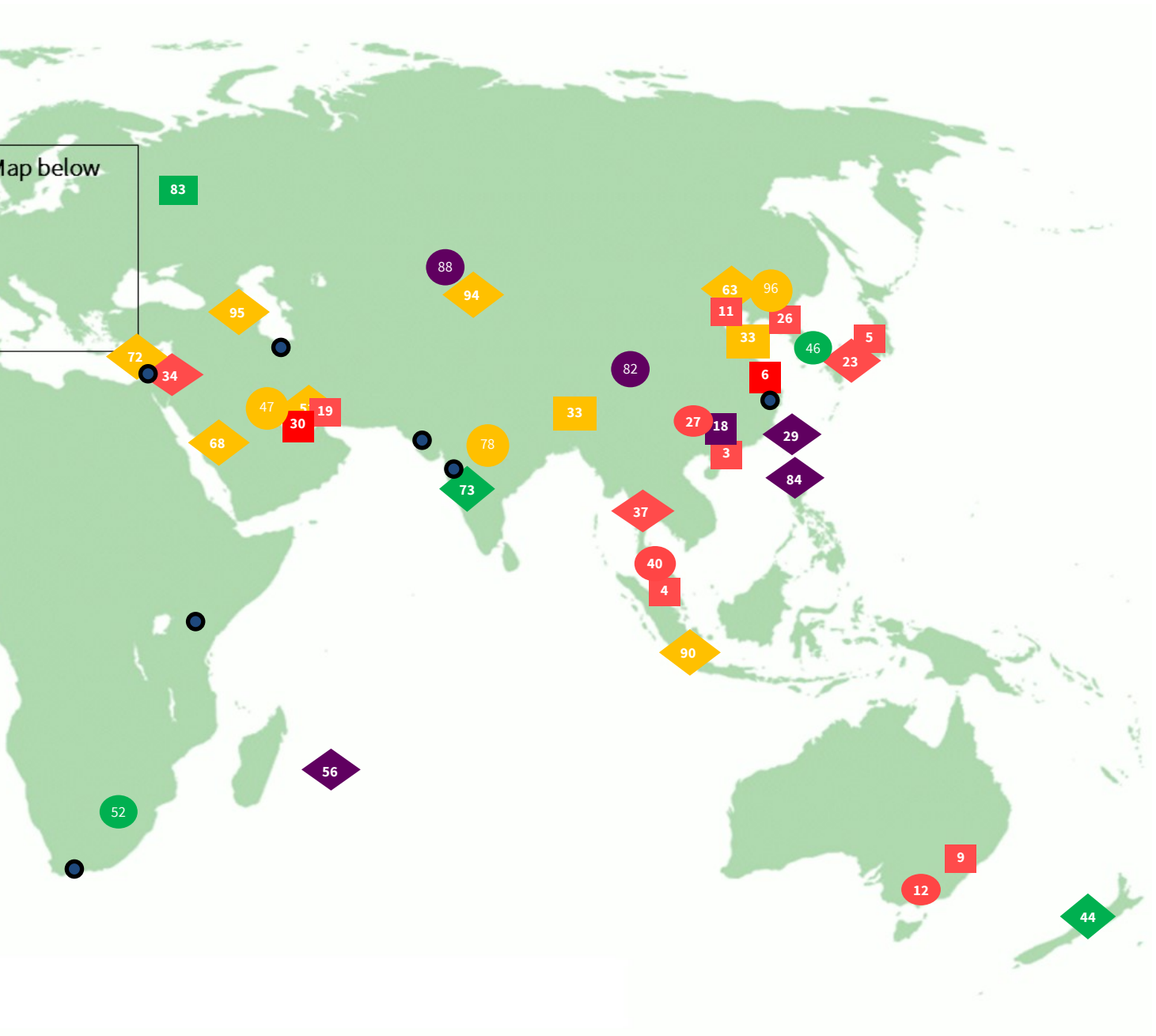
ASSET MANAGER BASED IN MONTREAL

Table 6 | GFCI 23 Financial Centre Profiles

	Broad & Deep	Relatively Broad	Relatively Deep	Emerging
Global	Global Leaders	Global Diversified	Global Specialists	Global Contenders
	Abu Dhabi	Amsterdam	Luxembourg	Qingdao
	Beijing	Chicago	Shenzhen	
	Dubai	Milan		
	Dublin	Moscow		
	Frankfurt	Washington DC		
	Hong Kong			
	London			
	New York			
	Paris			
	Seoul			
	Shanghai			
	Singapore			
	Sydney			
	Tokyo			
	Toronto			
Zurich				
International	Established International	International Diversified	International Specialists	International Contenders
	Geneva	Boston	Astana	Dalian
	Guangzhou	Brussels	British Virgin Islands	Doha
	Istanbul	Busan	Casablanca	New Delhi
	Kuala Lumpur	Calgary	Cayman Islands	
	Los Angeles	Copenhagen	Chengdu	
	Melbourne	Edinburgh	Gibraltar	
	Montreal	Johannesburg	Guernsey	
	Rio de Janeiro	Madrid		
	San Francisco	Munich		
	Stockholm	Vienna		
	Vancouver			
Warsaw				
Local	Established Players	Local Diversified	Local Specialists	Evolving Centres
	Bangkok	Athens	Bahamas	Almaty
	Hamburg	Budapest	Bermuda	Bahrain
	Mexico City	Glasgow	Buenos Aires	Baku
	Osaka	Helsinki	Isle of Man	Cyprus
	Prague	Lisbon	Jersey	Jakarta
	Sao Paulo	Mumbai	Liechtenstein	Malta
	Tel Aviv	Oslo	Manila	Panama
		Rome	Mauritius	Reykjavik
		Tallinn	Monaco	Riga
		Wellington	Taipei	Riyadh
			Trinidad and Tobago	St Petersburg
				Tianjin

The GFCI 23 World





The numbers on the map indicate the GFCI 23 rankings. Black dots denote Associate Centres:

Broad and Deep

Relatively Broad

Relatively Deep

Emerging

- | | | | |
|---------------------------|---------------------------|---------------------------|--------------------------|
| Global Leaders | Global Diversified | Global Specialists | Global Contenders |
| Established International | International Diversified | International Specialists | International Contenders |
| Established Players | Local Diversified | Local Specialists | Evolving Centres |

Western Europe

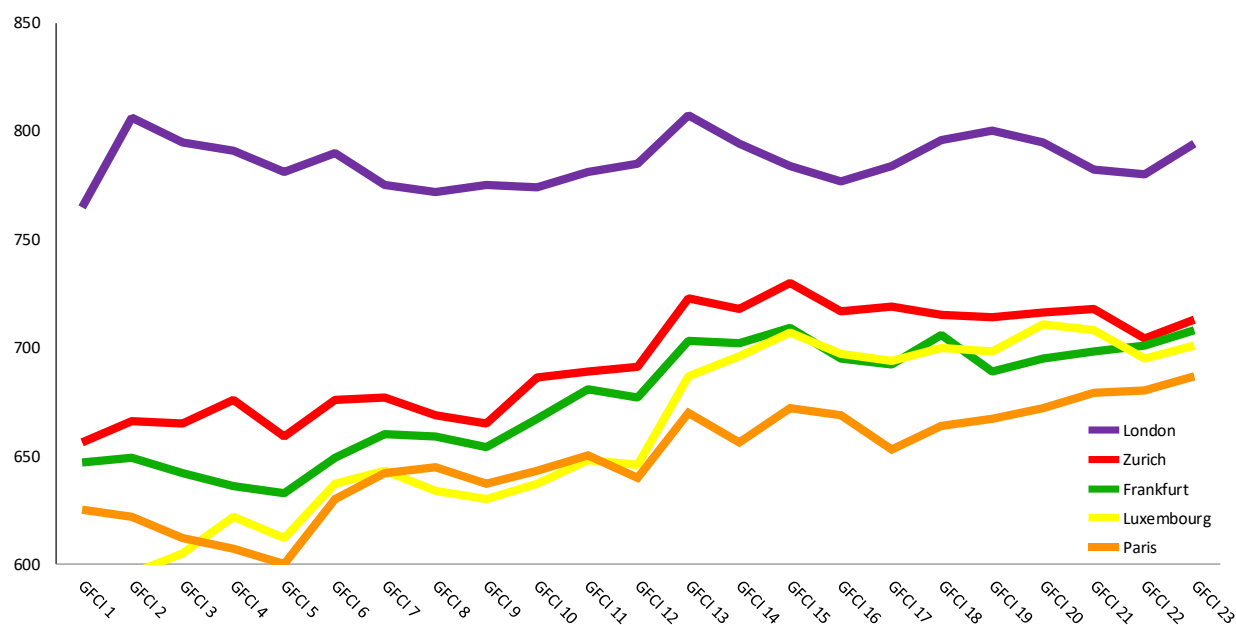
Table 7 shows the top 15 Western European centres in the GFCI. Overall assessments for the European centres continued to fluctuate as people speculate about which centres might benefit from London leaving the EU.

The top five European centres rose in the ratings. The German centres of Frankfurt, Hamburg and Munich showed strong gains. Other regional centres fell.

Table 7 | Western European Top 15 Centres in GFCI 23

Centre	GFCI 23		GFCI 21		Change in	
	Rank	Rating	Rank	Rating	Rank	Rating
London	1	794	1	780	0	▲14
Zurich	16	713	9	704	▼7	▲9
Frankfurt	20	708	11	701	▼9	▲7
Luxembourg	21	701	14	695	▼7	▲6
Paris	24	687	26	680	▲2	▲7
Geneva	26	682	16	694	▼10	▼12
Hamburg	29	676	67	628	▲38	▲48
Dublin	31	666	30	672	▼1	▼6
Munich	35	660	50	646	▲15	▲14
Jersey	39	637	40	658	▲1	▼21
Madrid	41	631	59	636	▲18	▼5
Stockholm	42	629	39	660	▼3	▼31
Edinburgh	43	628	52	643	▲9	▼15
Glasgow	49	614	49	647	0	▼33
Amsterdam	50	613	33	667	▼17	▼54

Chart 12 | GFCI 23 Top Five Western European Centres over Time



Charts 13 to 15 show the mean of assessments by region given to the leading three centres in Western Europe. 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. It is important to recognise that 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 13 | GFCI 23 Assessments by Region for London — Difference from the Overall Mean of 854

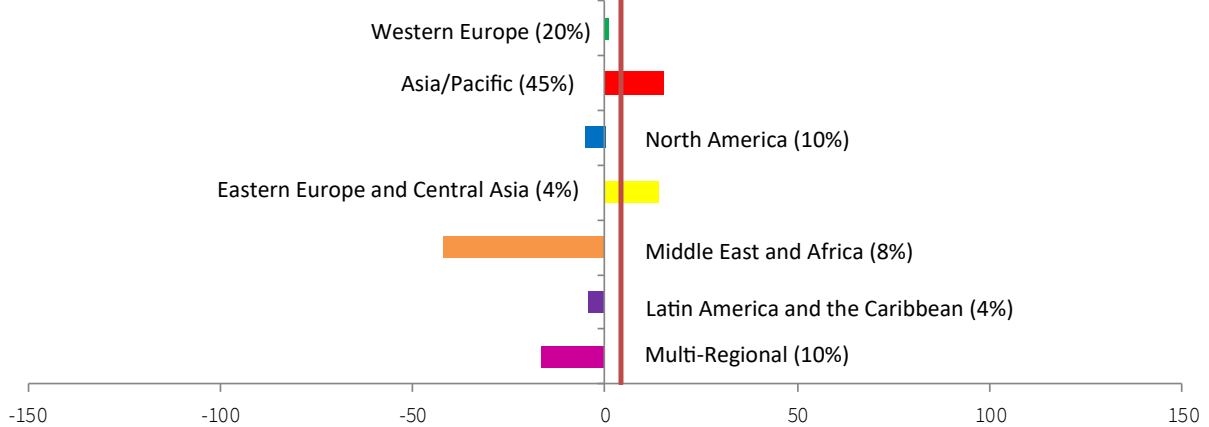


Chart 14 | GFCI 23 Assessments by Region for Zurich — Difference from the Overall Mean of 755

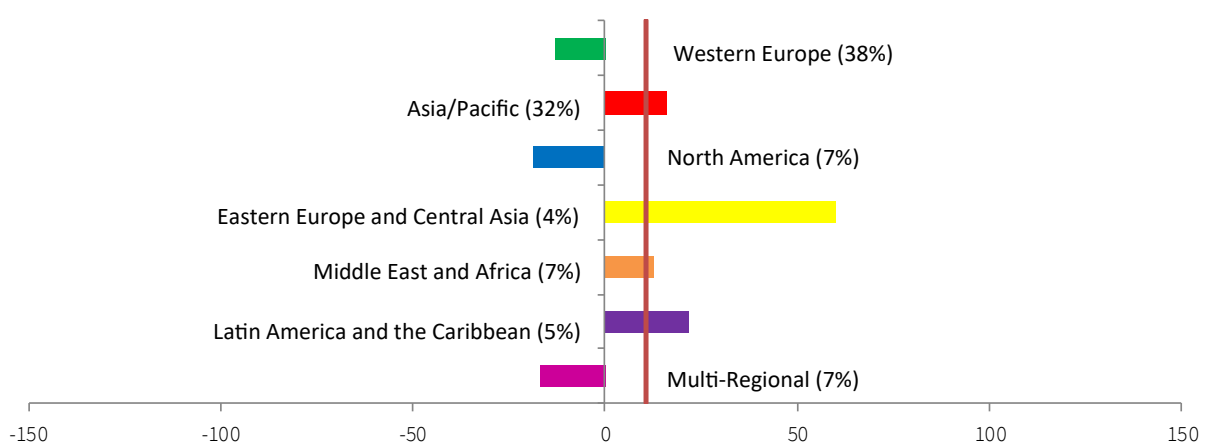
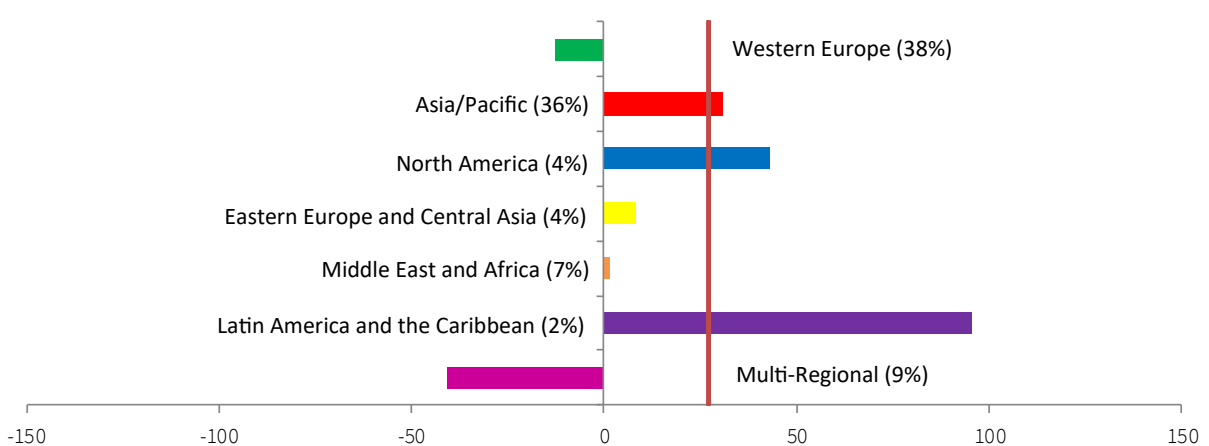


Chart 15 | GFCI 23 Assessments by Region for Frankfurt — Difference from the Overall Mean of 735



Asia/Pacific

Table 8 shows the Asia/Pacific Centres in GFCI 23. The top nine centres in the region rose in the ratings with Hong Kong and Shanghai both

showing marked rises. These are largely reverses of the losses they saw in GFCI 22.

Table 8 | Asia/Pacific Top 15 Centres in GFCI 23

Centre	GFCI 23		GFCI 22		Change in Rating	Change in Rating
	Rank	Rating	Rank	Rating		
Hong Kong	3	781	3	744	0	▲37
Singapore	4	765	4	742	0	▲23
Tokyo	5	749	5	725	0	▲24
Shanghai	6	741	6	711	0	▲30
Sydney	9	724	8	707	▼1	▲17
Beijing	11	721	10	703	▼1	▲18
Melbourne	12	720	13	696	▼1	▲24
Shenzhen	18	710	20	689	▲2	▲21
Osaka	23	692	21	688	▼2	▲4
Seoul	27	679	22	686	▼5	▼7
Guangzhou	28	678	32	668	▲4	▲10
Taipei	30	673	27	677	▼3	▼4
Qingdao	33	662	47	649	▲14	▲31
Bangkok	37	643	61	634	▲24	▲9
Kuala Lumpur	40	632	55	640	▲15	▼8

Chart 16 | GFCI 23 Top Five Asia/Pacific Centres over Time

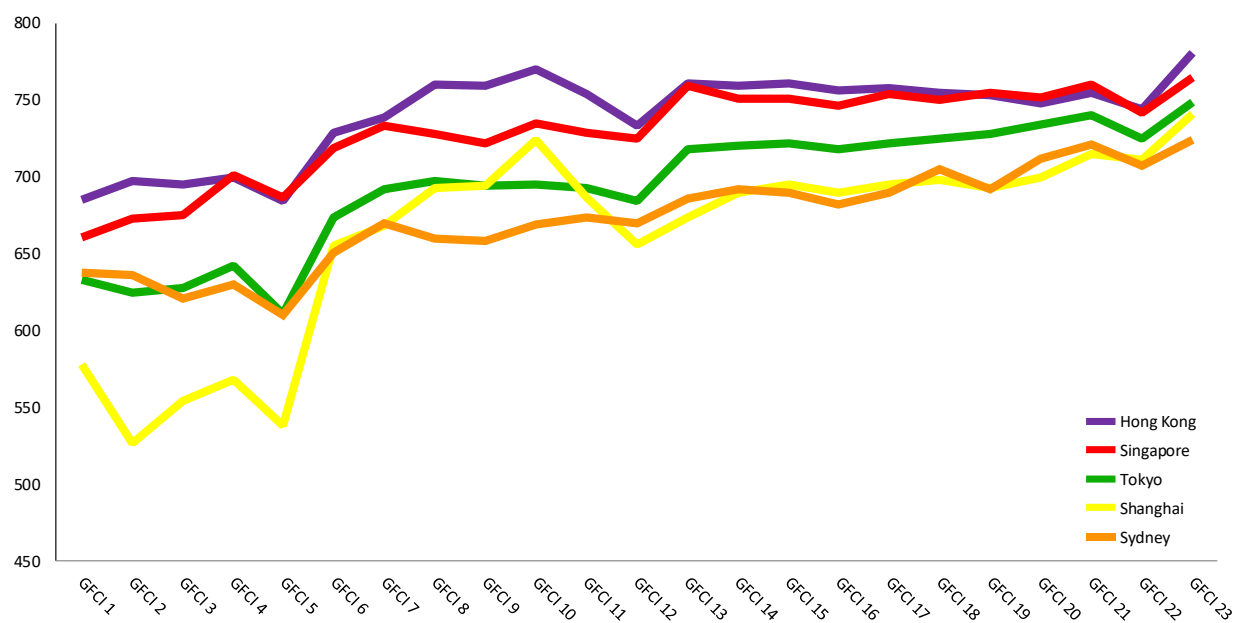


Chart 17 | GFCI 23 Assessments by Region for Hong Kong — Difference from the Overall Mean of 839

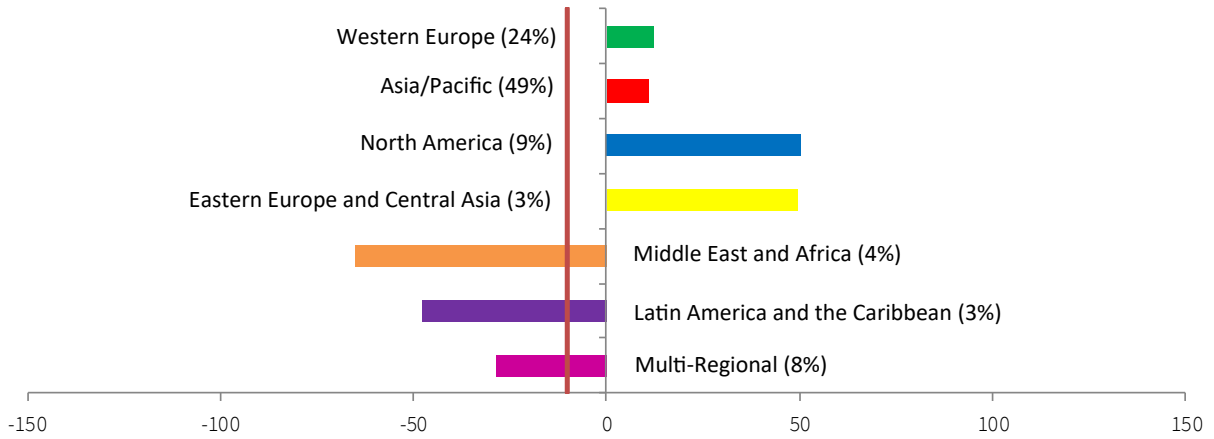


Chart 18 | GFCI 23 Assessments by Region for Singapore — Difference from the Overall Mean of 856

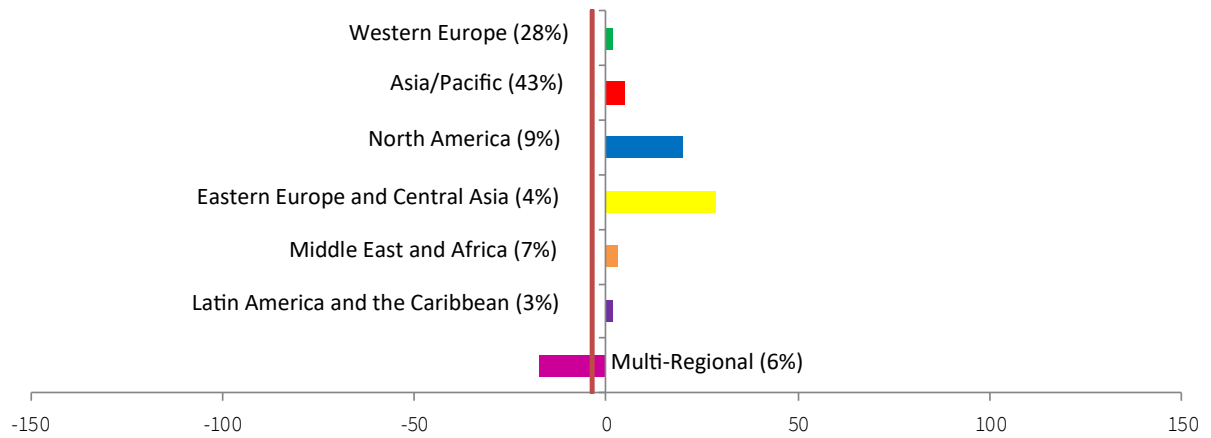
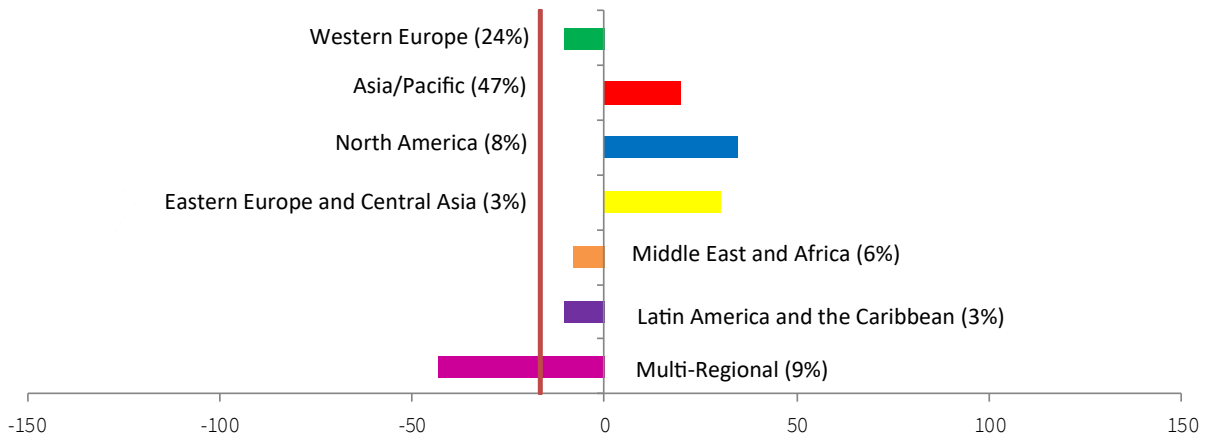


Chart 19 | GFCI 23 Assessments by Region for Tokyo — Difference from the Overall Mean of 803



North America

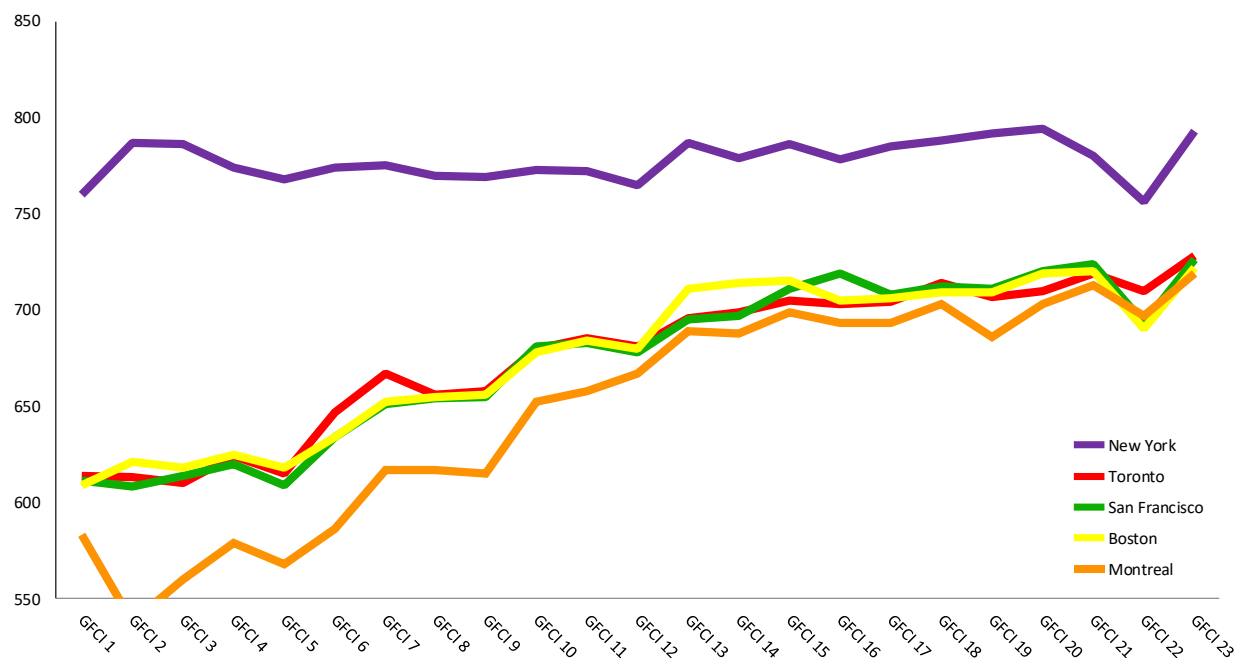
Table 9 shows that North American centres generally achieved improved ratings and improved their ranks accordingly. This was a reversal of the results in GFCI 22. The exceptions were Washington DC, which

dropped 20 places in the ranks, and Montreal which fell a single place (although its rating was higher than in GFCI 22).

Table 9 | North American Centres in GFCI 23

Centre	GFCI 23		GFCI 22		Change in Rank	Change in Rating
	Rank	Rating	Rank	Rating		
New York	2	793	2	756	0	▲37
Toronto	7	728	7	710	0	▲18
San Francisco	8	726	17	693	▲9	▲33
Boston	10	722	19	690	▲9	▲32
Montreal	13	719	12	697	▼1	▲22
Chicago	14	718	24	683	▲10	▲35
Vancouver	15	717	18	692	▲3	▲25
Los Angeles	17	712	23	683	▲6	▲29
Calgary	38	642	71	624	▲33	▲18
Washington DC	48	616	28	676	▼20	▼60

Chart 20 | GFCI 23 Top Five North American Centres over Time



“American centres fell back last year due to concerns over the Trump administration. There is a much more positive feeling right now.”

Chart 21 | GFCI 23 Assessments by Region for New York — Difference from the Overall Mean of 865

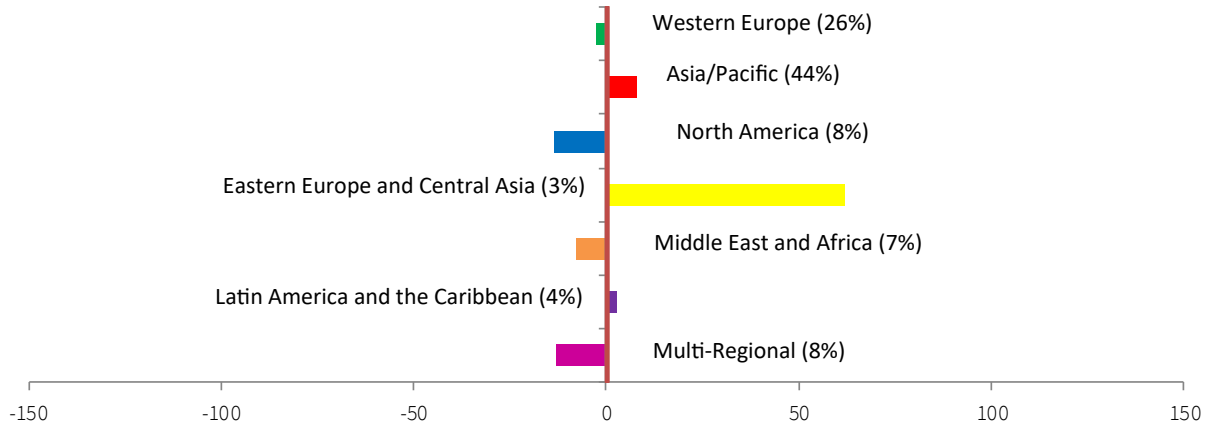


Chart 22 | GFCI 23 Assessments by Region for Toronto — Difference from the Overall Mean of 760

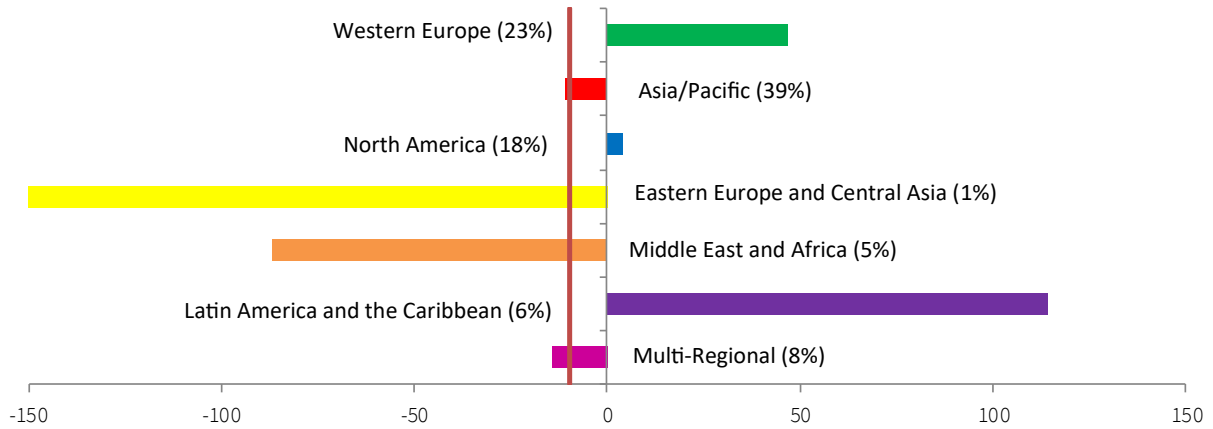
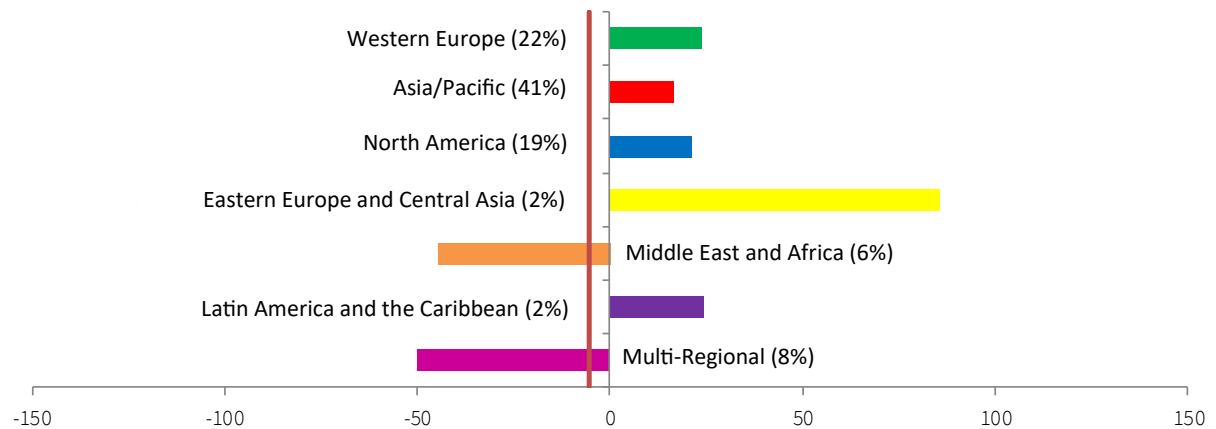


Chart 23 | GFCI 23 Assessments by Region for San Francisco — Difference from the Overall Mean of 766



Eastern Europe and Central Asia

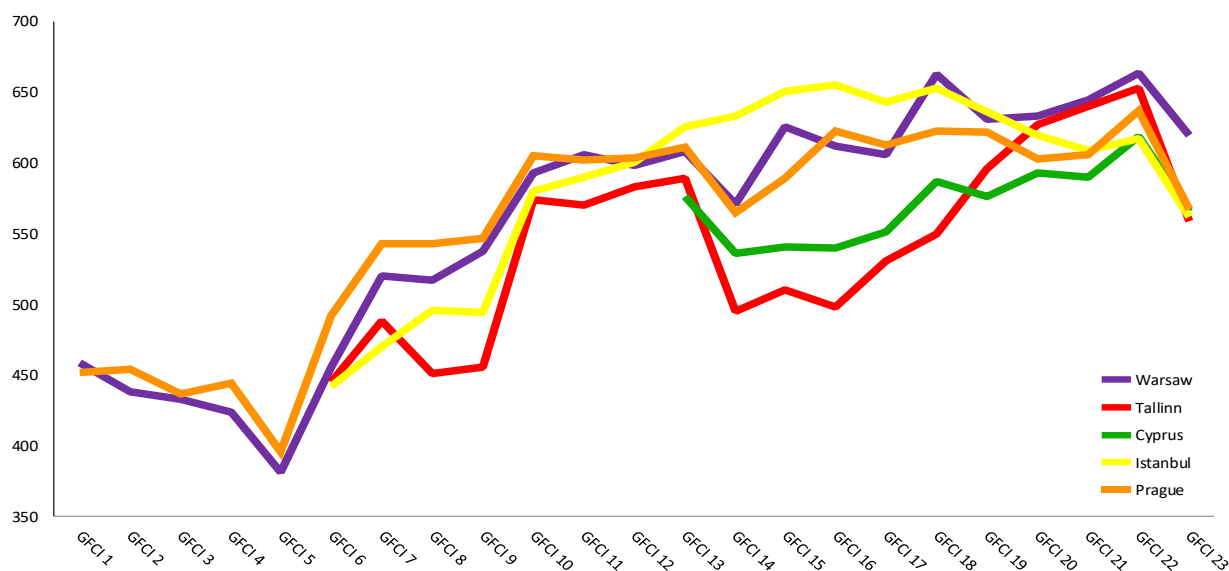
Table 10 shows the Eastern European and Central Asian Centres in GFCI 23. All centres in this region suffered a fall in their ratings. However, Cyprus, Istanbul and Moscow rose in the ranks.

Tallinn and Riga both fell over 30 places in the ranks. Baku was a new entrant to the GFCI. Astana was also a new entrant having only launched their financial centre in January 2018.

Table 10 | Eastern European and Central Asian Centres in GFCI 23

Centre	GFCI 23		GFCI 22		Change in	
	Rank	Rating	Rank	Rating	Rank	Rating
Warsaw	45	620	36	664	▼ 9	▼ 44
Prague	71	567	58	637	▼ 13	▼ 70
Cyprus	72	566	76	619	▲ 4	▼ 53
Istanbul	76	562	78	617	▲ 2	▼ 55
Tallinn	79	559	44	653	▼ 35	▼ 94
Moscow	83	555	89	601	▲ 6	▼ 46
Riga	87	551	53	642	▼ 34	▼ 91
Astana	88	548	New	New	New	New
Budapest	89	547	72	623	▼ 17	▼ 76
St Petersburg	91	531	87	603	▼ 4	▼ 72
Athens	92	525	84	611	▼ 8	▼ 86
Almaty	94	519	80	615	▼ 14	▼ 96
Baku	95	511	New	New	New	New

Chart 24 | GFCI 23 Top Five Eastern European and Central Asian Centres over Time



“Astana is set to become an important centre in the region. It needs to rapidly develop its international air transportation network”.

Chart 25 | GFCI 23 Assessments by Region for Warsaw — Difference from the Overall Mean of 538

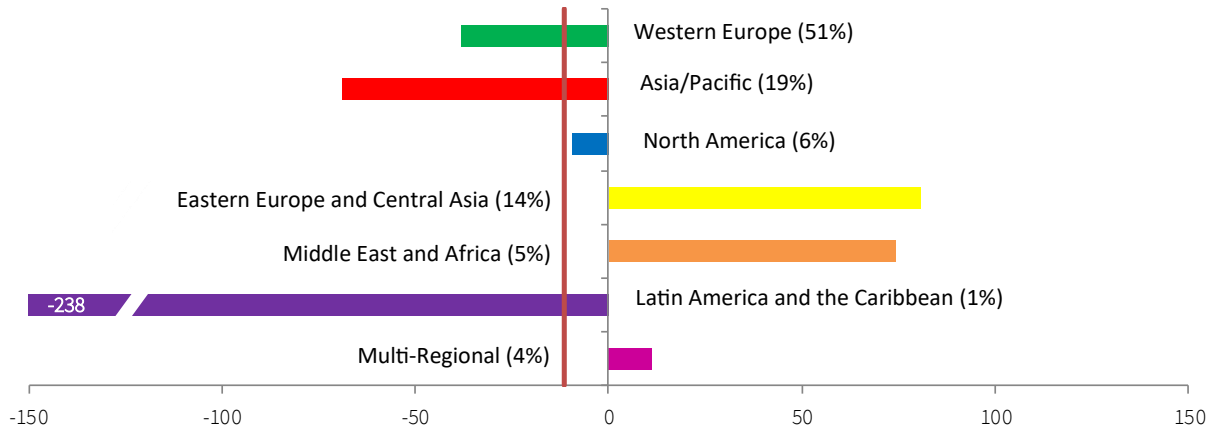


Chart 26 | GFCI 23 Assessments by Region for Prague — Difference from the Overall Mean of 569

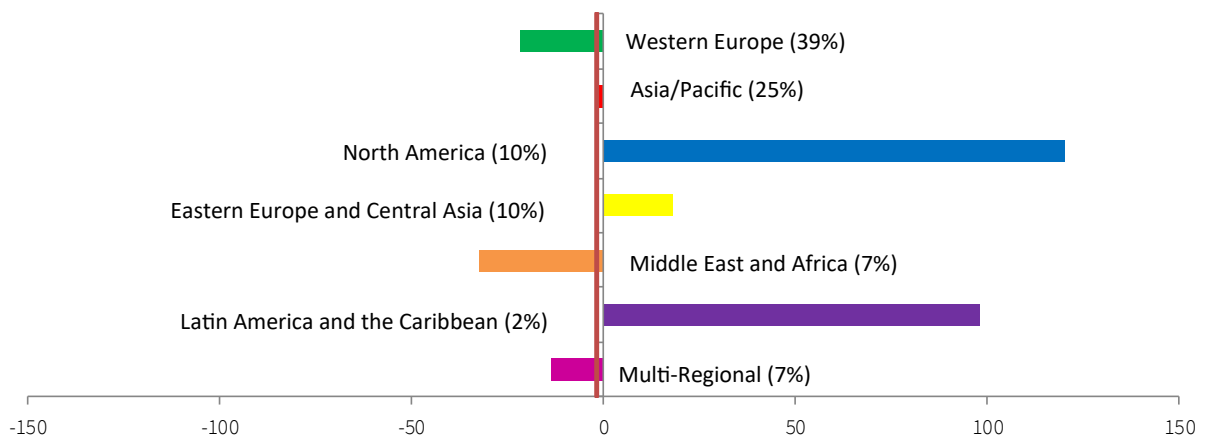
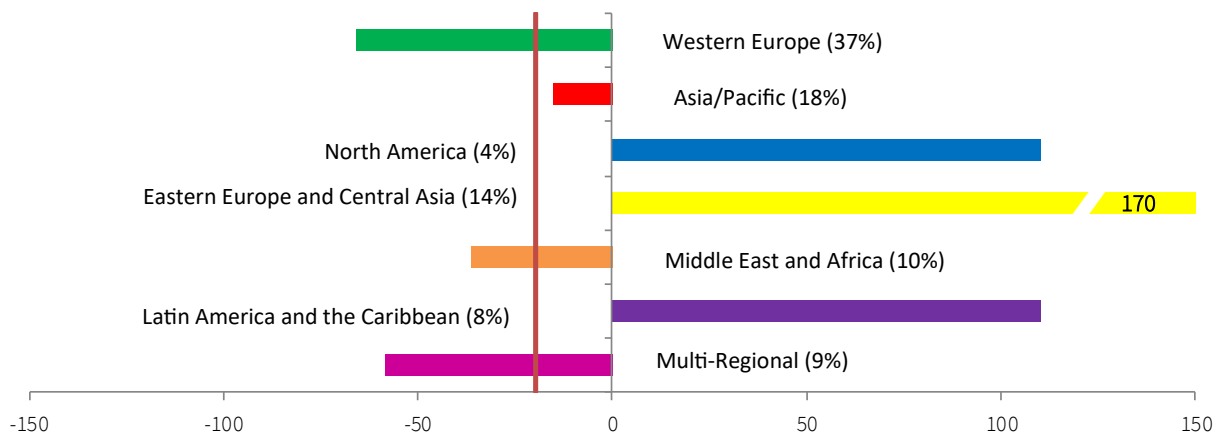


Chart 27 | GFCI 23 Assessments by Region for Cyprus — Difference from the Overall Mean of 523



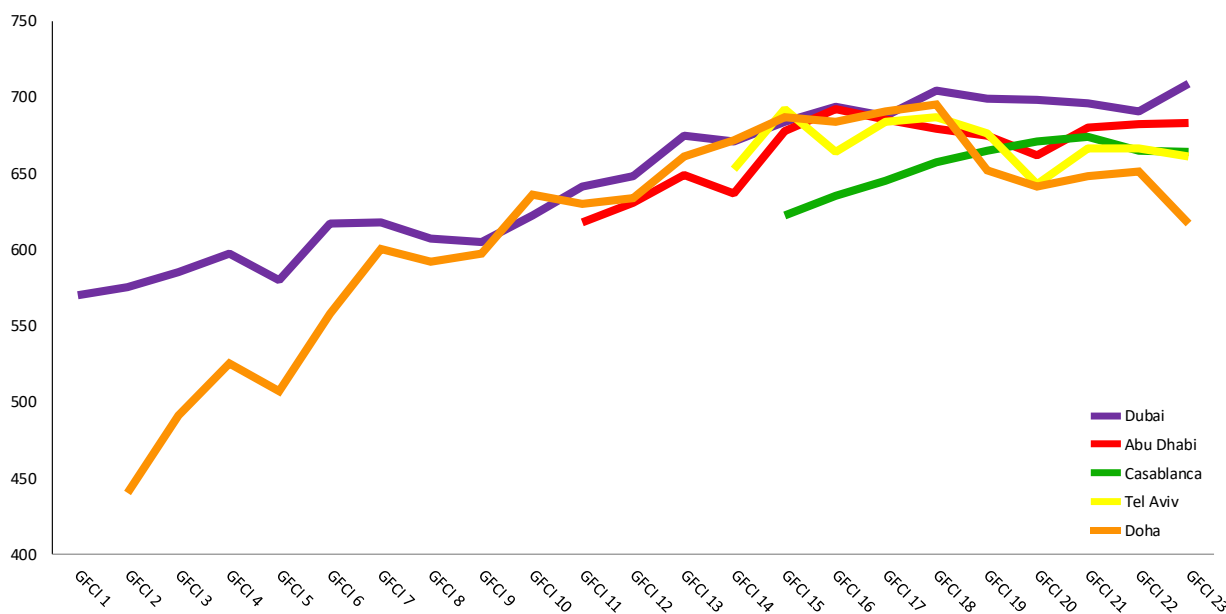
The Middle East and Africa

Table 11 shows the Middle East and African Centres in GFCI 23. In this region, only Dubai increased its rating although it fell one place in the ranks. Mauritius, Riyadh, and Casablanca improved their rankings despite falls in their ratings. Johannesburg and Doha suffered modest falls in the ranks.

Table 11 | Middle East and African Centres in GFCI 23

Centre	GFCI 23		GFCI 22		Change in Rank	Change in Rating
	Rank	Rating	Rank	Rating		
Dubai	19	709	18	691	▼1	▲18
Abu Dhabi	25	683	25	682	0	▲1
Casablanca	32	664	35	665	▲3	▼1
Tel Aviv	34	661	34	666	0	▼5
Doha	47	617	45	651	▼2	▼34
Bahrain	51	612	51	645	0	▼33
Johannesburg	52	610	48	648	▼4	▼38
Mauritius	56	601	69	626	▲13	▼25
Riyadh	68	573	77	618	▲9	▼45

Chart 28 | GFCI 23 Top Five Middle East and African Centres over Time



“Doha is now suffering from the falling out with the UAE and Saudi Arabia. We cannot do business here if the situation continues.”

Chart 29 | GFCI 23 Assessments by Region for Dubai — Difference from the Overall Mean of 721

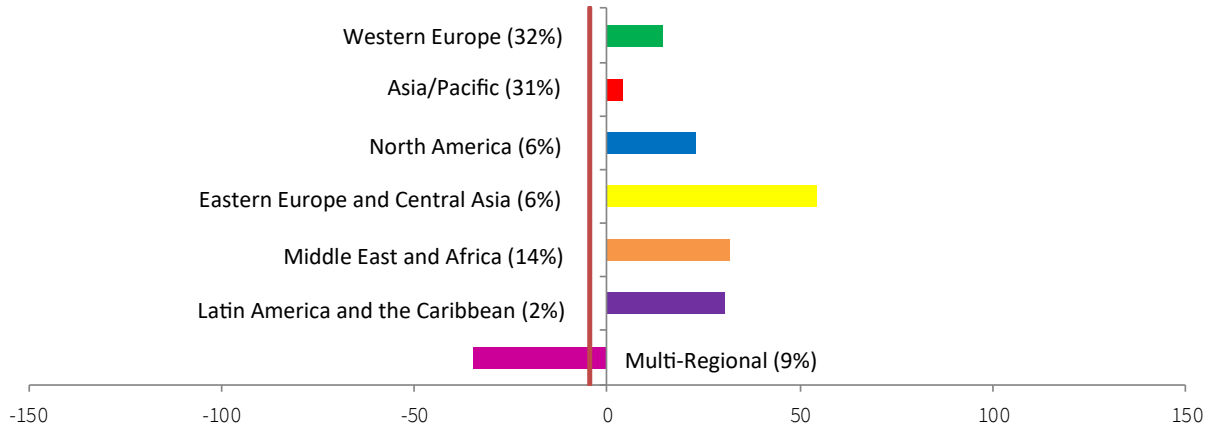


Chart 30 | GFCI 23 Assessments by Region for Abu Dhabi — Difference from the Overall Mean of 656

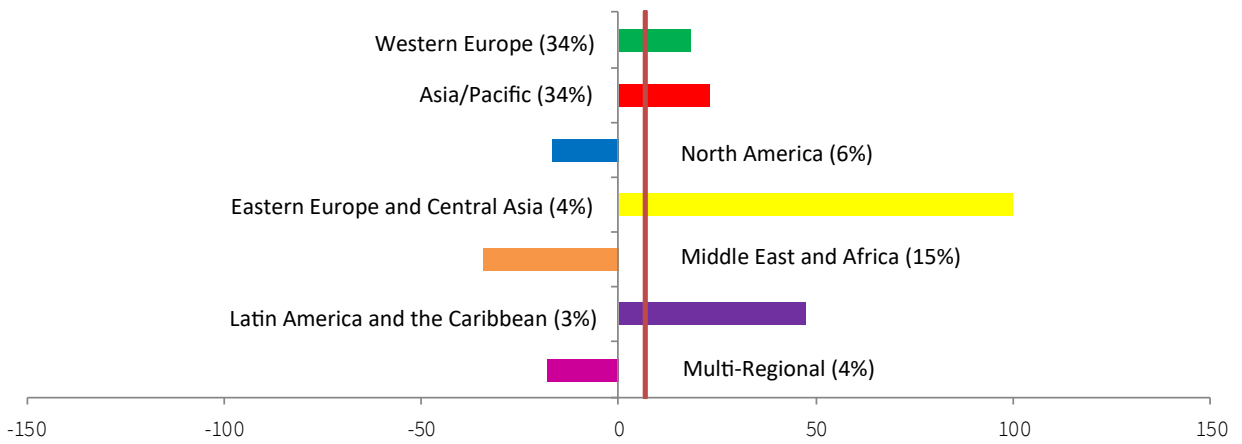
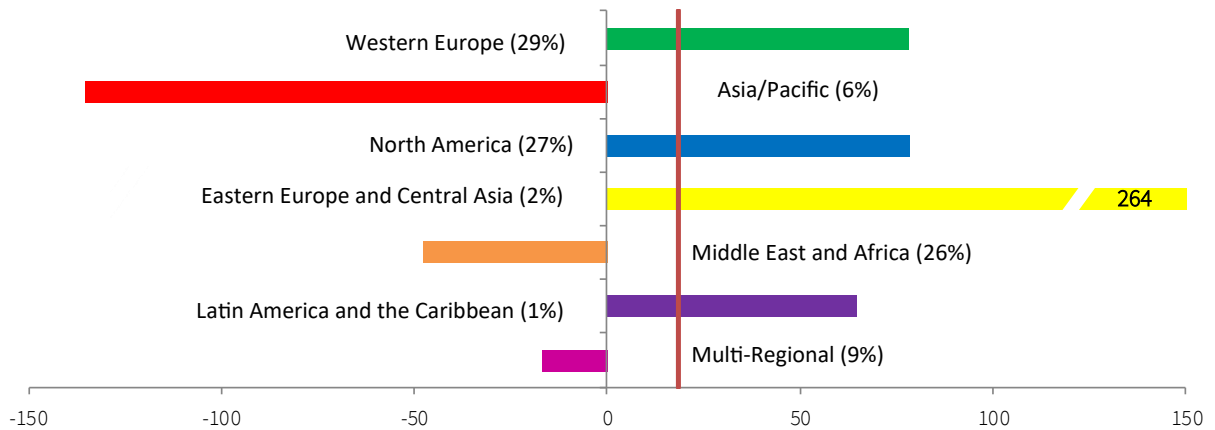


Chart 31 | GFCI 23 Assessments by Region for Casablanca — Difference from the Overall Mean of 766



Latin America and the Caribbean

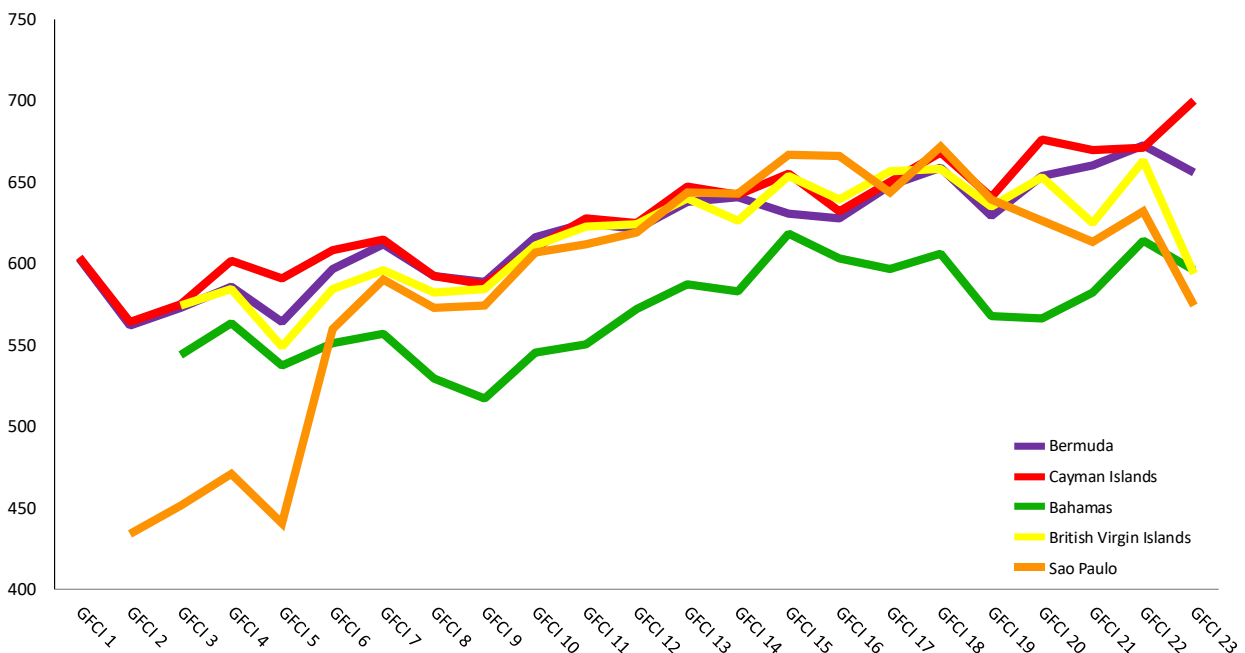
Table 12 shows the Latin American and Caribbean centres in GFCI 23. All centres in this region fell in the GFCI ratings except for the Cayman Islands. Despite the fall in the ratings, six centres rose in the ranks with

the Bahamas leading the way rising 22 places. The Cayman Islands are now the leading centre in the region.

Table 12 | Latin American and Caribbean Centres in GFCI 23

Centre	GFCI 23		GFCI 22		Change in Rank	Change in Rating
	Rank	Rating	Rank	Rating		
Cayman Islands	22	700	31	671	▲9	▲29
Bermuda	36	656	29	673	▼7	▼17
Bahamas	59	596	81	614	▲22	▼18
British Virgin Islands	60	594	37	663	▼23	▼69
Sao Paulo	67	574	63	632	▼4	▼58
Mexico City	70	569	73	622	▲3	▼53
Buenos Aires	75	563	90	600	▲15	▼37
Panama	80	558	88	602	▲8	▼44
Rio de Janeiro	81	557	82	613	▲1	▼56
Trinidad and Tobago	86	552	65	630	▼21	▼78

Chart 32 | GFCI 23 Top Five Latin American and Caribbean Centres over Time



“The Caribbean is not a great place to be at the moment. Hurricanes and now a loss in confidence.”

INVESTMENT FUND DIRECTOR BASED IN MIAMI

Chart 33 | GFCI 23 Assessments by Region for the Cayman Islands — Difference from the Overall Mean of 670

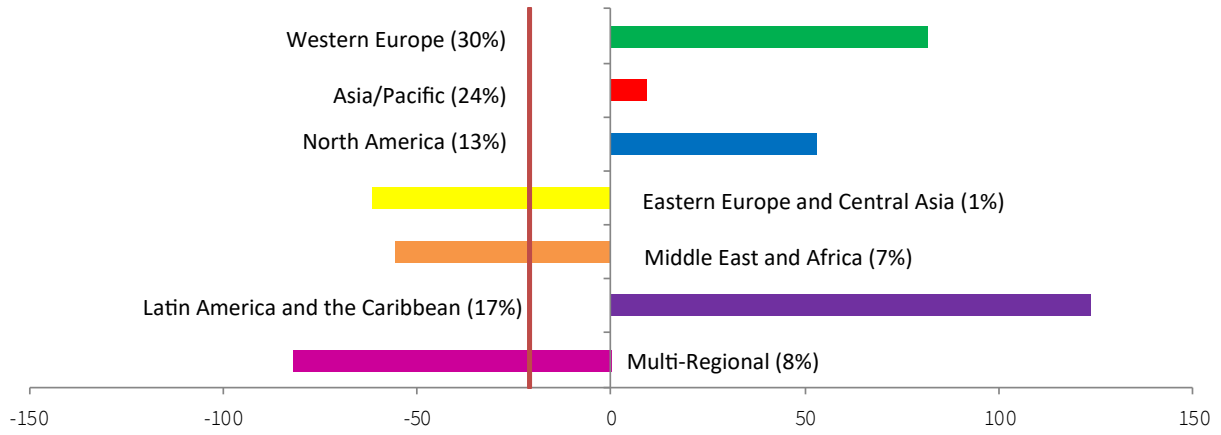


Chart 34 | GFCI 23 Assessments by Region for Bermuda — Difference from the Overall Mean of 661

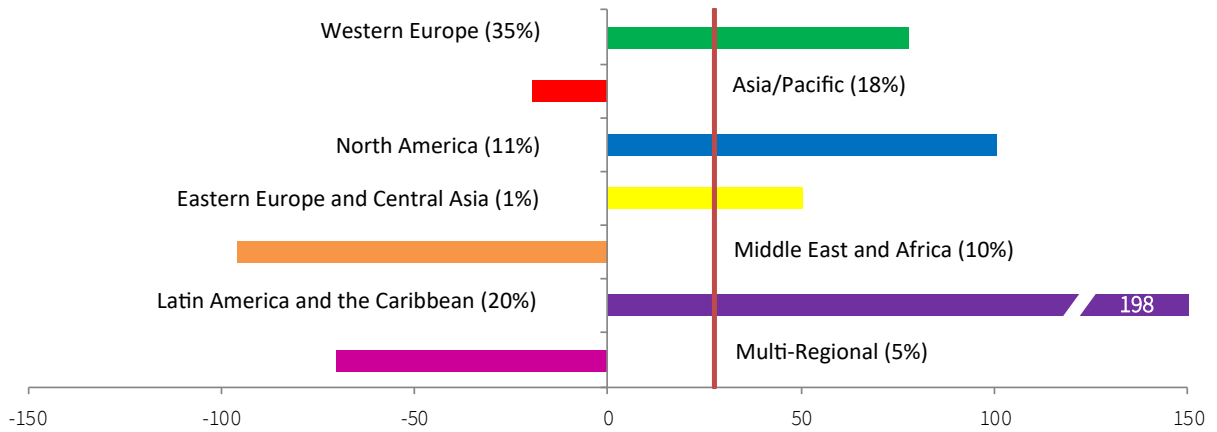
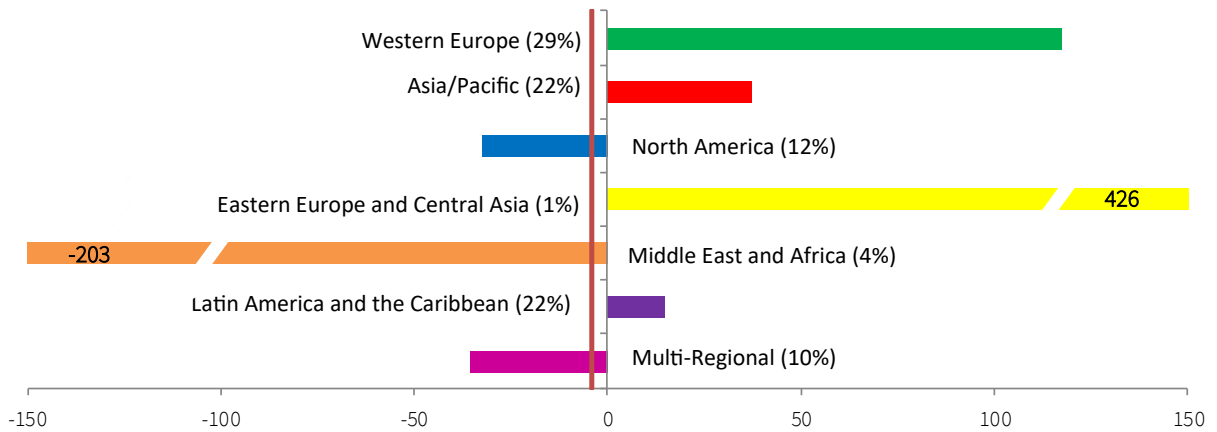


Chart 35 | GFCI 23 Assessments by Region for the Bahamas — Difference from the Overall Mean of 584



Home Centre Prospects

Whilst the GFCI is calculated using only foreign assessments, we ask professionals on their views about the prospects of the centre in which they work (specifically whether their ‘home’ centre will become more or less competitive).

However, the uncertainty created by Brexit has influenced London based respondents who are significantly less confident about London’s future than respondents from Paris and Frankfurt feel about their home centres.

In general, respondents are far more optimistic about the future of their home centres than people outside that centre.

Chart 36 | GFCI 23 Home Centre Prospects — London

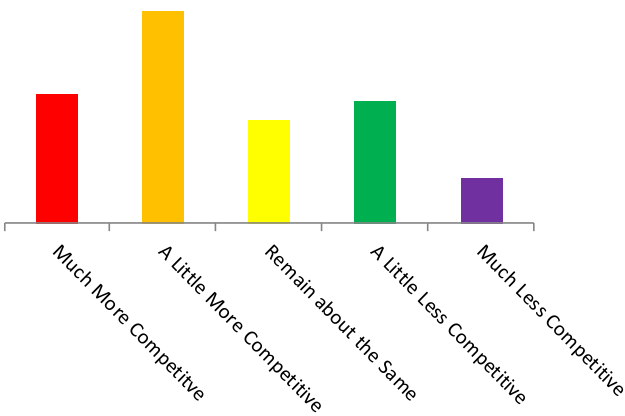


Chart 37 | GFCI 23 Home Centre Prospects — New York

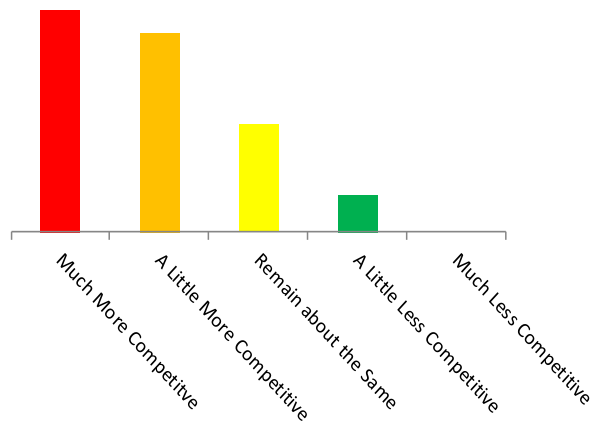


Chart 38 | GFCI 23 Home Centre Prospects — Frankfurt

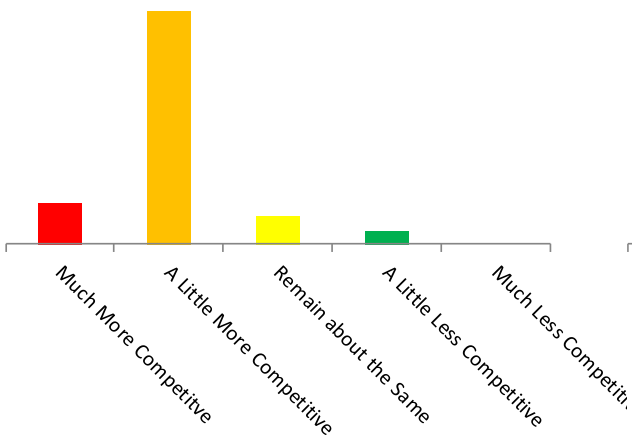
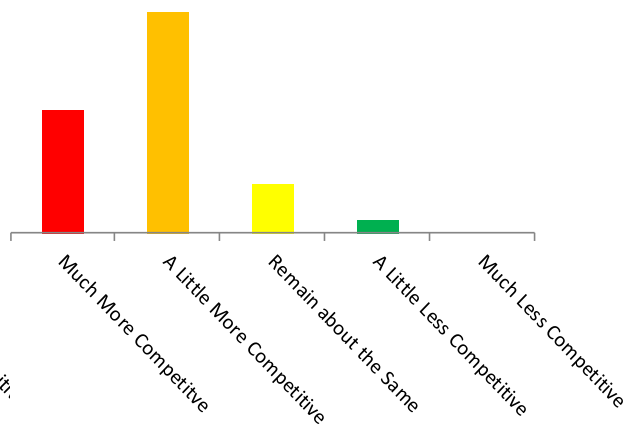


Chart 39 | GFCI 23 Home Centre Prospects — Paris



Stability

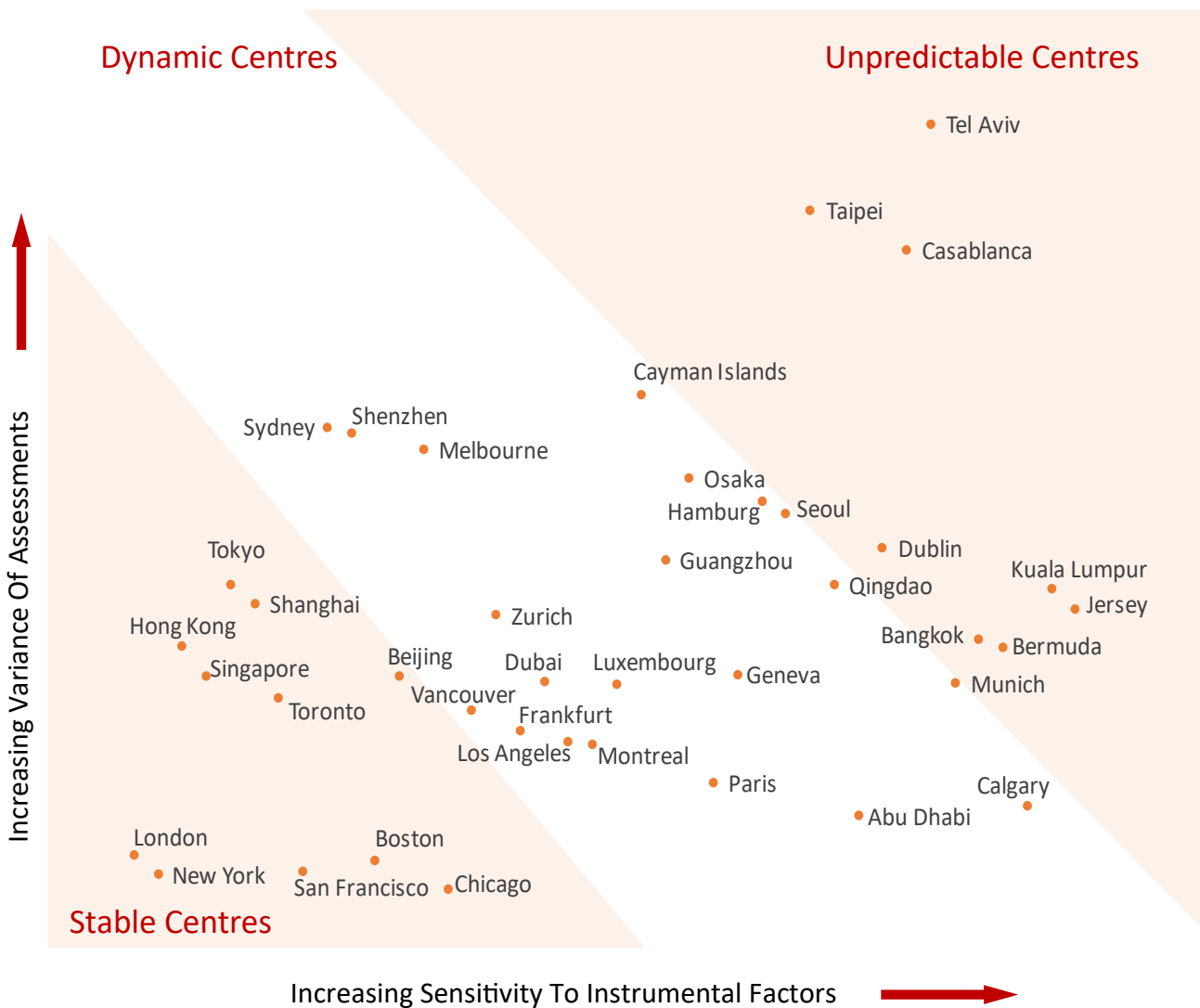
The GFCI model allows for an analysis of the financial centre volatility of competitiveness. Chart 38 contrasts the ‘spread’ or variance of the individual assessments given to each of the top 40 centres with the sensitivity to changes in the instrumental factors.

The chart shows three bands of financial centres. The unpredictable centres in the top right of the chart have a higher sensitivity to changes in the instrumental factors and a higher variance of assessments. These centres have the highest potential future movement.

The stable centres in the bottom left have a lower sensitivity to change and have shown consistency in their past GFCI ratings.

Chart 40 only plots the top 40 centres (for clarity) but it is worth noting that most of the centres lower in the index would be in the unpredictable area of the chart if plotted.

Chart 40 | GFCI 23 – The Stability of the Top 40 Centres



Reputation

In the GFCI 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, adjusted for time, with more recent assessments having more weight (see Appendix 3 for details).

The second measure is the GFCI score itself, which represents the average assessment adjusted to reflect the instrumental factors.

If a centre has a higher average assessment than its GFCI rating, this indicates that

respondents' perceptions of a centre are more favourable than the quantitative measures alone suggest.

Eight of the top 15 centres in terms of reputational advantage are in the Asia/Pacific region. Casablanca, New York, and London also show a strong reputational advantage. This may be due to strong marketing or general awareness. Table 14 shows the top 15 centres with the greatest positive difference between the average assessment and the GFCI rating.

Table 14 | GFCI 23 Top 15 Centres Assessments And Ratings — Reputational Advantage

Centre - Top 15	Weighted Average Assessment	GFCI 23 Rating	GFCI 23 Reputational Advantage
Washington DC	774	616	158
Qingdao	820	662	158
Singapore	851	765	86
Tianjin	671	588	83
Casablanca	737	664	73
New York	860	793	67
Wellington	685	621	64
London	851	794	57
Hong Kong	836	781	55
Sydney	779	724	55
Tokyo	798	749	49
Sao Paulo	620	574	46
Shanghai	786	741	45
Zurich	756	713	43
Milan	635	593	42

Table 15 shows the 15 centres with the greatest reputational disadvantage - an indication that respondents' perceptions of a

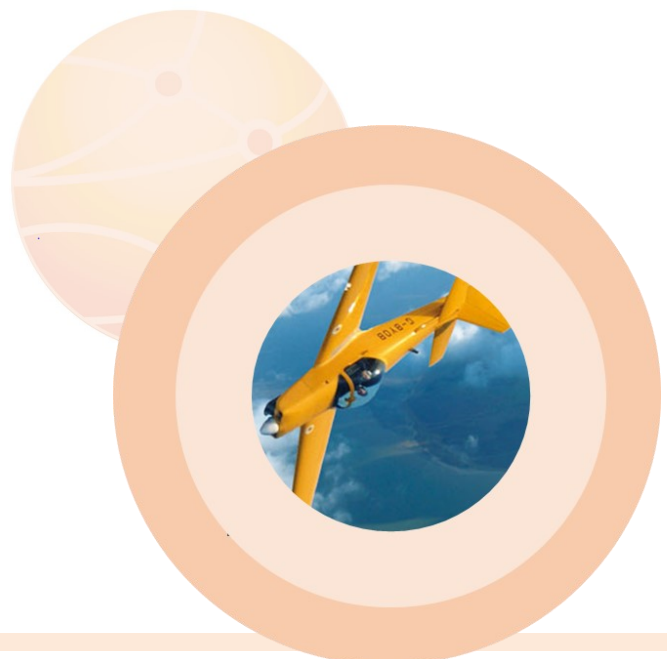
centre are less favourable than the quantitative measures alone would suggest.

Table 15 | GFCI 23 Bottom 15 Centres Assessments And Ratings — Reputational Disadvantage

Centre - Bottom 15	Weighted Average Assessment	GFCI 23 Rating	GFCI 23 Reputational Advantage
Hamburg	636	676	-40
Moscow	514	555	-41
Tel Aviv	617	661	-44
Bangkok	597	643	-46
Copenhagen	548	599	-51
Riga	481	551	-70
Jersey	566	637	-71
Astana	476	548	-72
Riyadh	499	573	-74
Stockholm	554	629	-75
Chengdu	477	556	-79
Warsaw	540	620	-80
Trinidad and Tobago	455	552	-97
Athens	412	525	-113
Dalian	333	501	-168

“Wellington is not often mentioned as a financial centre. They seem to be doing all the right things at the moment and we are doing more business there than ever.”

ASSET MANAGER BASED IN SINGAPORE



Industry Sectors

Industry sector sub-indices are created by building the GFCI statistical model using only the questionnaire assessments from respondents working in the relevant industry sectors. The GFCI 23 dataset has been used to calculate separate sub-indices for Banking,

Investment Management, Insurance, Professional Services, and Government & Regulatory sectors. Table 13 shows the top fifteen financial centres in these five industry sectors.

Table 13 | GFCI 23 Industry Sector Sub-Indices — Top Fifteen

Rank	Banking	Investment Management	Insurance	Professional Services	Government & Regulatory
1	London	New York	Hong Kong	London	London
2	New York	Hong Kong	Singapore	New York	New York
3	Hong Kong	London	London	Hong Kong	Hong Kong
4	Singapore	Singapore	New York	Singapore	Singapore
5	Shanghai	Tokyo	Tokyo	Zurich	Zurich
5	Tokyo	San Francisco	Shanghai	Washington DC	Washington DC
7	Beijing	Toronto	Washington DC	Tokyo	San Francisco
8	Boston	Washington DC	Boston	Boston	Toronto
9	Frankfurt	Shanghai	Zurich	Toronto	Frankfurt
10	San Francisco	Boston	Beijing	San Francisco	Boston
11	Sydney	Chicago	San Francisco	Chicago	Chicago
12	Chicago	Beijing	Los Angeles	Sydney	Sydney
13	Toronto	Vancouver	Shenzhen	Frankfurt	Geneva
14	Los Angeles	Zurich	Vancouver	Shanghai	Montreal
15	Shenzhen	Sydney	Toronto	Vancouver	Dublin

“Shanghai now has a much broader offer in financial services. It can now become a genuine rival to Hong Kong.”

HEDGE FUND MANAGER BASED IN HONG KONG

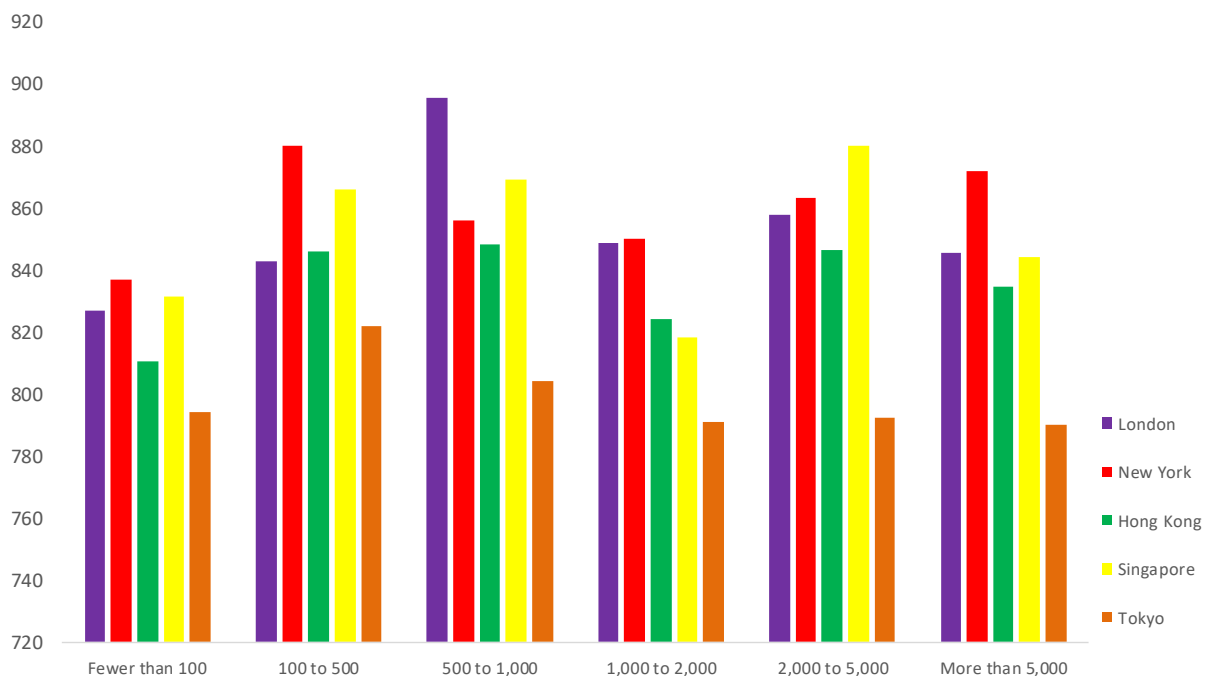


Size of Organisation

It is useful to look at how the leading centres are viewed by respondents working for different sizes of organisation. New York is favoured over London in five of the size categories we use. London has a strong lead from respondents in mid-sized organisations

but is significantly behind New York in the group of respondents from the largest organisations (this group is dominated by the largest global banks). Many of the largest global banks are headquartered in New York and favour it as their home centre.

Chart 41 | GFCI 23 Average Assessments by Respondents' Organisation Size (number of employees)



“It is obvious to me that an investment bank with global aspirations needs to have a presence in US, European and Asian time-zones.

New York, London and Singapore are all great locations.”

INVESTMENT BANKER BASED IN SINGAPORE

Appendix 1: Assessment Details

Table 16 | GFCI 23 Details of Assessments by Centre

Centre	GFCI	GFCI	Assessments		
	23	23	Number	Average	St. Dev
	Rank	Rating			
London	1	794	1,321	854	153
New York	2	793	1,143	865	128
Hong Kong	3	781	1,086	839	129
Singapore	4	765	716	856	136
Tokyo	5	749	488	803	149
Shanghai	6	741	830	801	157
Toronto	7	728	409	760	162
San Francisco	8	726	434	766	160
Sydney	9	724	352	784	153
Boston	10	722	480	753	146
Beijing	11	721	849	738	163
Melbourne	12	720	213	731	177
Montreal	13	719	221	695	174
Chicago	14	718	486	735	155
Vancouver	15	717	246	735	169
Zurich	16	713	514	755	176
Los Angeles	17	712	394	718	154
Shenzhen	18	710	542	758	157
Dubai	19	709	478	721	189
Frankfurt	20	708	663	735	196
Luxembourg	21	701	388	693	212
Cayman Islands	22	700	192	670	231
Osaka	23	692	157	683	187
Paris	24	687	608	689	190
Geneva	25	682	411	668	194
Seoul	26	679	342	715	169
Guangzhou	27	678	353	692	161
Hamburg	28	676	227	626	213
Taipei	29	673	213	689	168
Abu Dhabi	30	669	334	656	219
Dublin	31	666	467	663	199
Casablanca	32	664	130	766	212
Qingdao	33	662	1,055	826	141
Tel Aviv	34	661	104	622	265
Munich	35	660	239	666	209
Bermuda	36	656	114	661	244
Bangkok	37	643	222	598	179
Calgary	38	642	149	611	194
Jersey	39	637	252	573	213
Kuala Lumpur	40	632	232	623	178
Madrid	41	631	291	619	186
Stockholm	42	629	186	562	228
Edinburgh	43	628	376	639	193
Wellington	44	621	78	686	186
Warsaw	45	620	168	538	230
Busan	46	618	150	589	201
Doha	47	617	181	644	216
Washington DC	48	616	456	765	173

Centre	GFCI	GFCI	Assessments		
	23	23	Number	Average	St. Dev
	Rank	Rating			
Glasgow	49	614	198	552	219
Amsterdam	50	613	448	622	211
Bahrain	51	612	138	580	207
Johannesburg	52	610	158	604	211
Guernsey	53	605	223	565	220
Monaco	54	604	213	611	218
Oslo	55	602	151	562	216
Mauritius	56	601	89	557	250
Isle of Man	57	600	192	551	233
Copenhagen	58	599	245	548	211
Bahamas	59	596	129	584	234
British Virgin Islands	60	594	172	640	240
Milan	61	593	280	641	193
Brussels	62	592	378	595	205
Tianjin	63	588	146	661	209
Vienna	64	583	188	540	231
Rome	65	579	233	565	215
Gibraltar	66	576	176	524	249
Sao Paulo	67	574	131	617	206
Riyadh	68	573	81	506	242
Liechtenstein	69	570	170	567	248
Mexico City	70	569	131	556	214
Prague	71	567	156	569	208
Cyprus	72	566	143	523	225
Mumbai	73	565	220	534	210
Lisbon	74	564	210	553	228
Buenos Aires	75	563	76	517	247
Istanbul	76	562	165	541	222
Malta	77	561	190	545	217
New Delhi	78	560	193	504	217
Tallinn	79	559	78	531	263
Panama	80	558	122	545	256
Rio de Janeiro	81	557	92	547	229
Chengdu	82	556	530	492	234
Moscow	83	555	330	527	222
Manila	84	554	163	523	191
Helsinki	85	553	153	530	210
Trinidad and Tobago	86	552	48	492	240
Riga	87	551	97	498	236
Astana	88	548	153	482	255
Budapest	89	547	107	531	196
Jakarta	90	546	165	566	195
St Petersburg	91	531	152	527	241
Athens	92	525	120	407	221
Reykjavik	93	521	116	516	230
Almaty	94	519	121	518	239
Baku	95	511	107	461	217
Dalian	96	501	941	332	176

Appendix 2: Respondents' Details

Table 17 | GFCI 23 Respondents by Industry Sector

Industry Sector	Number of Respondents
Banking	714
Finance	99
Government & Regulatory	114
Insurance	218
Investment	276
Professional Services	390
Trade Association	74
Trading	145
Other	310
Total	2340

Table 18 | GFCI 23 Respondents by Region

Region	Number of Respondents
Western Europe	597
Asia/Pacific	995
North America	220
Middle East & Africa	153
Eastern Europe & Central Asia	92
Latin America & the Caribbean	68
Other	215
Total	2340

Table 19 | GFCI 23 Respondents by Size of Organisation

Size of Organisation	Number of Respondents
Fewer than 100	503
100 to 500	307
500 to 1,000	319
1,000 to 2,000	234
2,000 to 5,000	179
More than 5,000	781
Other	17
Total	2340

Appendix 3: Methodology

The GFCI provides ratings for financial centres calculated by a ‘factor assessment model’ that uses two distinct sets of input:

Instrumental factors: objective evidence of competitiveness was sought from a wide variety of comparable sources. For example, evidence about the telecommunications infrastructure competitiveness of a financial centre is drawn from the ICT Development Index (supplied by the United Nations), the Networked Readiness Index (supplied by the World Economic Forum), the Telecommunication Infrastructure Index (by the United Nations) and the Web Index (supplied by the World Wide Web Foundation). Evidence about a business-friendly regulatory environment is drawn from the Ease of Doing Business Index (supplied by the World Bank), the Government Effectiveness rating (supplied by the World Bank) and the Corruption Perceptions Index (supplied by Transparency International) amongst others.

A total of 103 instrumental factors are used in GFCI 23 of which 48 were updated since GFCI 22 and four are new to the GFCI). Not all financial centres are represented in all the external sources, and the statistical model takes account of these gaps.

Financial centre assessments: by means of an online questionnaire, running continuously since 2007, We received 3,353 responses to the questionnaire in the 24 months to June 2017. Of these, 2,340 respondents provided 28,599 valid assessments of financial centres. Financial centres are added to the GFCI questionnaire when they receive five or more mentions in the online questionnaire in response to the question: “Are there any financial centres that might become significantly more important over the next two to three years?”

A centre is only given a GFCI rating and ranking if it receives more than 150 assessments from other centres within the previous 24 months in the online survey. Centres in the GFCI that do not receive 50 assessments in a 24 month period are removed and added to the Associate list until the number of assessments increases.

At the beginning of our work on the GFCI, a number of guidelines were set out. Additional Instrumental Factors are added to the GFCI model when relevant and meaningful ones are discovered:

- indices should come from a reputable body and be derived by a sound methodology;
- indices should be readily available (ideally in the public domain) and be regularly updated;
- updates to the indices are collected and collated every six months;
- no weightings are applied to indices;
- Indices are entered into the GFCI 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 (and the method for judging relevance is noted);
- 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 city, a blank is entered against that centre (no average or mean is used).

Creating the GFCI does not involve totalling or averaging scores across instrumental factors. An approach involving totalling and averaging 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); 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.

The guidelines for financial centre assessments by respondents are:

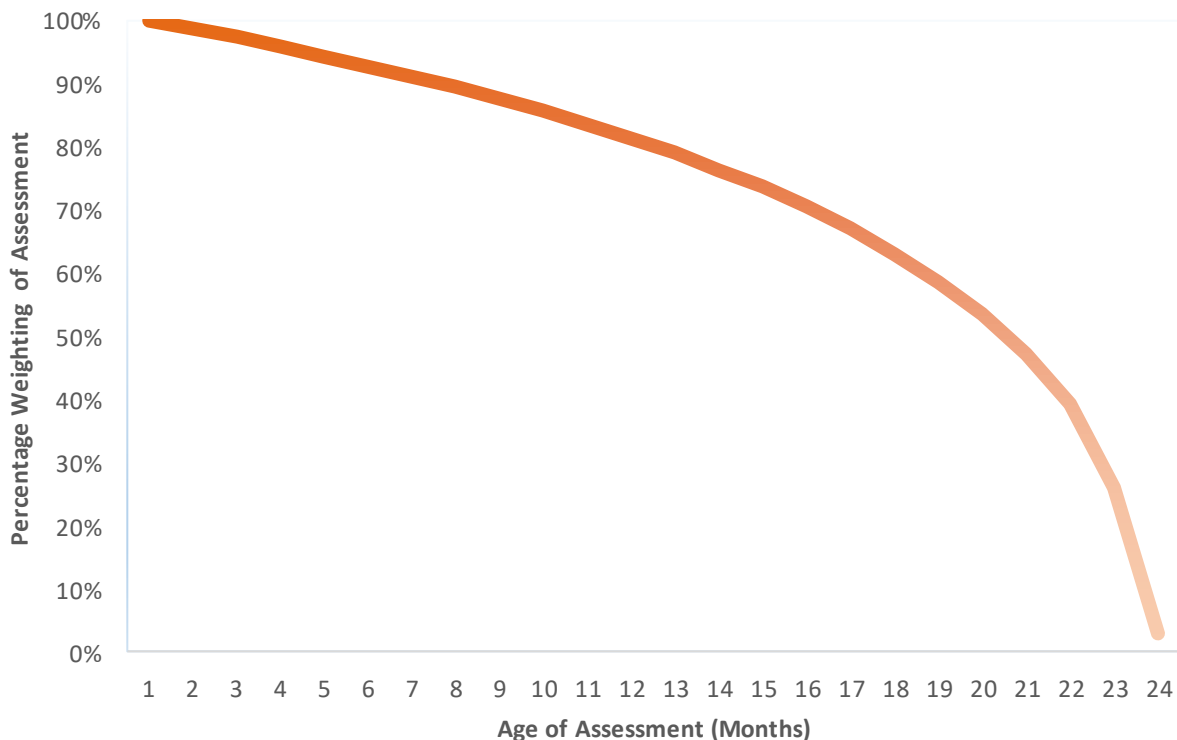
- responses are collected via an online questionnaire which runs continuously. A link to this questionnaire is emailed to the target list of respondents at regular intervals and other interested parties can fill this in by following the link given in the GFCI publications;
- financial centre assessments will be included in the GFCI model for 24 months after they have been received;
- respondents rating fewer than three or more than half of the centres are excluded from the model;
- respondents who do not say where they work are excluded;
- financial centre assessments from the month when the GFCI is created are given full weighting and earlier responses are given a reduced weighting on a log scale.

“Abu Dhabi continues to attract investment even though Dubai has a stronger reputation at the moment.”

PENSION FUND MANAGER



Chart 42 | Reduction In Weighting as Assessments Get Older



The financial centre assessments and instrumental factors are used to build a predictive model of centre competitiveness using a support vector machine (SVM). SVMs are based upon statistical techniques that classify and model complex historic data in order to make predictions of new data. SVMs work well on discrete, categorical data but also handle continuous numerical or time series data. The SVM used for the GFCI provides information about the confidence with which each specific classification is made and the likelihood of other possible classifications.

A factor assessment model is built using the centre assessments from responses to the online questionnaire. Assessments from respondents' home centres are excluded from the factor assessment model to remove home bias. The model then predicts how respondents would have assessed centres they are not familiar with, by answering questions such as:

- If an investment banker gives Singapore and Sydney certain assessments then, based on the relevant data for Singapore, Sydney and Paris, how would that person assess Paris?

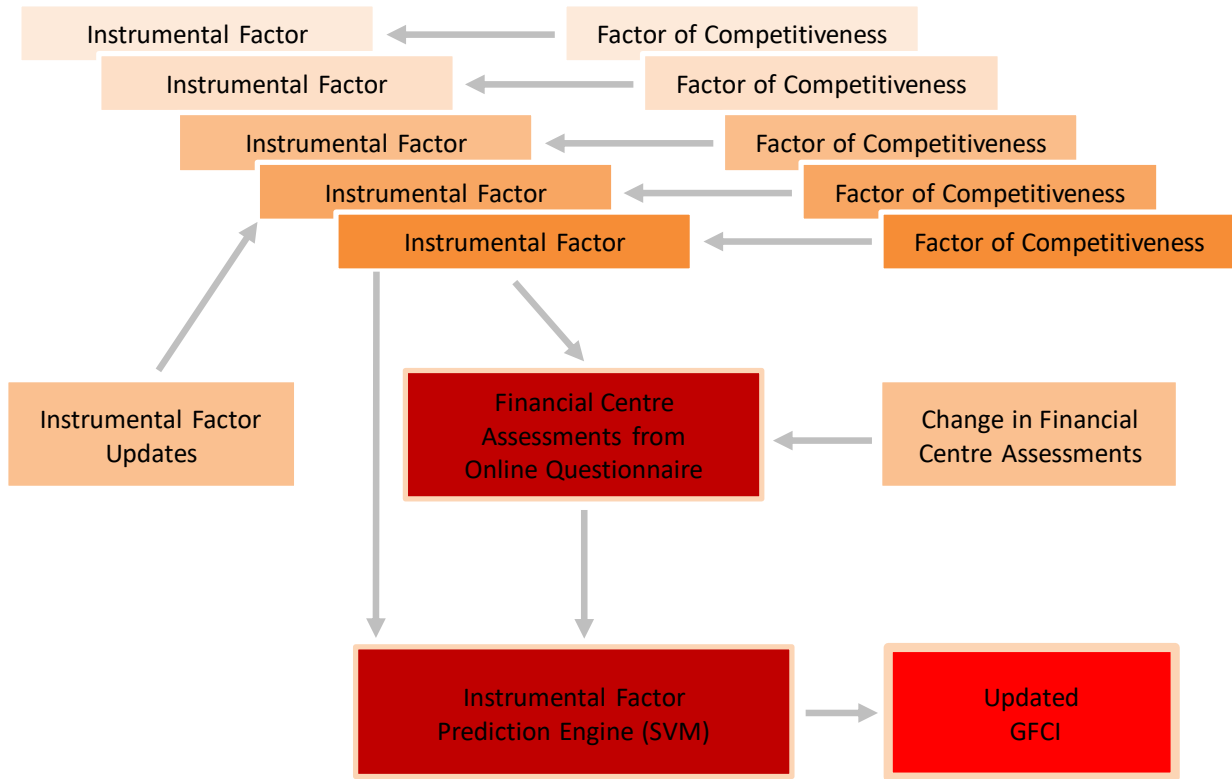
Or

- If a pension fund manager gives Edinburgh and Munich a certain assessment then, based on the relevant data for Edinburgh, Munich and Zurich, how would that person assess Zurich?

Financial centre predictions from the SVM are re-combined with actual financial centre assessments (except those from the respondents' home centres) to produce the GFCI – a set of financial centre ratings.

The GFCI is dynamically updated either by updating and adding to the instrumental factors or through new financial centre assessments. These updates permit, for instance, a recently changed index of rental costs to affect the competitiveness rating of the centres.

Chart 43 | The GFCI Process



It is worth drawing attention to a few consequences of basing the GFCI on instrumental factors and questionnaire responses:

- several indices can be used for each competitive factor;
- a strong international group of ‘raters’ has developed as the GFCI progresses;
- sector-specific ratings are available using the business sectors represented by questionnaire respondents. This makes it possible to rate Frankfurt as competitive in Banking (for example) while less competitive Insurance (for example);
- the factor assessment model can be queried in a ‘what if’ mode – “how much would London rental costs need to fall in order to increase London’s ranking against New York?”

Part of the process of building the GFCI is extensive sensitivity testing to changes in factors of competitiveness and financial centre assessments.

There are over ten million data points in the current GFCI model. The accuracy of predictions given by the SVM are regularly tested against actual assessments.



Appendix 4: Instrumental Factors

Table 20 | Top 30 Instrumental Factors by correlation with GFCI 23

Instrumental Factor	R-squared
BE01 Business Environment Rankings	0.369
BE02 Ease of Doing Business Index	0.143
BE03 Operational Risk Rating	0.255
BE04 Real Interest Rate	0.028
BE05 Global Services Location	0.071
BE06 Corruption Perception Index	0.227
BE07 Wage Comparison Index	0.280
BE08 Corporate Tax Rates	0.020
BE09 Individual Income Tax Rates	0.020
BE10 Personal Tax Rates	0.003
BE11 Tax as Percentage of GDP	0.039
BE12 Bilateral Tax Information Exchange Agreements	0.012
BE13 Economic Freedom of the World	0.180
BE14 Government Debt as % of GDP	0.028
BE15 OECD Country Risk Classification	0.395
BE16 Global Peace Index	0.040
BE17 Financial Secrecy Index	0.330
BE18 Government Effectiveness	0.327
BE19 Open Government	0.064
BE20 Regulatory Enforcement	0.207
BE21 Press Freedom Index	0.010
BE22 Currencies	0.062
BE23 Commonwealth Countries	0.010
BE24 Common Law Countries	0.122
BE25 Inflation, GDP Deflator	0.065
BE26 Rule of Law	0.243
BE27 Political Stability and Absence of Violence/Terrorism	0.098
BE28 Regulatory Quality	0.242
BE29 Control of Corruption	0.239

Table 21 | GFCI 23 Business Environment Factors

Instrumental Factor	Source	Website	Change Since GFCI 22
Business Environment Rankings	EIU	http://www.eiu.com/public/thankyou_download.aspx?activity=download&campaignid=bizenviro2014	
Ease of Doing Business Index	The World Bank	http://databank.worldbank.org/data/reports.aspx?source=doing-business	Updated
Operational Risk Rating	EIU	http://www.viewswire.com/index.asp?layout=homePubTypeRK	Updated
Real Interest Rate	The World Bank	http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators	Updated
Global Services Location	AT Kearney	https://www.atkearney.com/digital-transformation/gsli	Updated
Corruption Perception Index	Transparency International	http://www.transparency.org/policy_research/surveys_indices/cpi	Updated
Wage Comparison Index	UBS	http://www.ubs.com/1/e/wealthmanagement/wealth_management_research/prices_earnings.html	
Corporate Tax Rates	PWC	http://www.doingbusiness.org/reports/thematic-reports/paying-taxes/	Updated
Individual Income tax rates	KPMG	https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/individual-	New
Personal Tax Rates	OECD	http://www.oecd.org/tax/tax-policy/tax-database.htm	Updated
Tax as Percentage of GDP	The World Bank	http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators	Updated
Bilateral Tax Information Exchange Agreements	OECD	http://www.oecd.org/document/7/0,3343,en_2649_33767_38312839_1_1_1_1,00.html	
Economic Freedom of the World	Fraser Institute	http://www.freetheworld.com/release.html	Updated
Government Debt as % of GDP	CIA	https://www.cia.gov/library/publications/the-world-factbook/rankorder/2186rank.html	Updated
OECD Country Risk Classification	OECD	http://www.oecd.org/tad/xcred/crc.htm	Updated
Global Peace Index	Institute for Economics & Peace	http://www.visionofhumanity.org/	
Financial Secrecy Index	Tax Justice Network	http://www.financialsecrecyindex.com/	
Government Effectiveness	The World Bank	http://info.worldbank.org/governance/wgi/index.aspx#home	Updated
Open Government	World Justice Project	http://worldjusticeproject.org/rule-of-law-index	
Regulatory Enforcement	World Justice Project	http://worldjusticeproject.org/rule-of-law-index	
Press Freedom Index	Reporters Without Borders (RSF)	http://en.rsf.org/	
Currencies	Swiss Association for Standardization (S)	http://www.currency-iso.org/en/home/tables/table-a1.html	Updated
Commonwealth Countries	The Commonwealth	http://thecommonwealth.org/member-countries	
Common Law Countries	CIA	https://www.cia.gov/library/publications/the-world-factbook/fields/2100.html	
Inflation, GDP Deflator	The World Bank	http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators	Updated
Rule of Law	The World Bank	http://info.worldbank.org/governance/wgi/index.aspx#home	Updated
Political Stability and Absence of Violence/Terrori:	The World Bank	http://info.worldbank.org/governance/wgi/index.aspx#home	Updated
Regulatory Quality	The World Bank	http://info.worldbank.org/governance/wgi/index.aspx#home	Updated
Control of Corruption	The World Bank	http://info.worldbank.org/governance/wgi/index.aspx#home	Updated
Best Countries for Business	Forbes	http://www.forbes.com/best-countries-for-business/list/#tab:overall	Updated
Lloyd's City Risk Index 2015-2025	Lloyd's	http://www.lloyds.com/cityriskindex/locations	
Global Cybersecurity Index	ITU	http://www.itu.int/en/ITU-D/Cybersecurity/Pages/GC	Updated

Table 22 | GFCI 23 Human Capital Factors

Instrumental Factor	Source	Website	Change Since GFCI 22
Graduates in Social Science, Business and Law	The World Bank	http://databank.worldbank.org/data/reports.aspx?source=Education%20Statistics	Updated
Gross Tertiary Graduation Ratio	The World Bank	http://databank.worldbank.org/data/reports.aspx?source=Education%20Statistics	Updated
Visa Restrictions Index	Henley Partners	http://www.henleyglobal.com/citizenship/visa-restrictions/	
Human Development Index	UN Development Programme	http://hdr.undp.org	
Citizens Domestic Purchasing Power	UBS	http://www.ubs.com/1/e/wealthmanagement/wealth_management_research/prices_earnings.html	
Number of High Net Worth Individuals	Capgemini	https://www.worldwealthreport.com/	Updated
Homicide Rates	UN Office of Drugs & Crime	https://data.unodc.org/	
Top Tourism Destinations	Euromonitor	http://blog.euromonitor.com/2016/01/top-100-city-destinations-ranking-2016.html	
Average precipitation in depth	The World Bank	http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators	
Quality of Living City Rankings	Mercer	http://www.mercer.com	
Health Care Index	Numbeo	http://www.numbeo.com/health-care/rankings.jsp	
Global Skills Index	Hays	http://www.hays-index.com/	Updated
Linguistic Diversity	Ethnologue	http://www.ethnologue.com/statistics/country	
Global Terrorism Index	Institute for Economics & Peace	http://www.visionofhumanity.org/	Updated
World Talent Rankings	IMD	http://www.imd.org/wcc/news-talent-report/	Updated
Cost of Living City Rankings	Mercer	http://www.mercer.com	
Quality of Life Index	Numbeo	http://www.numbeo.com/quality-of-life/rankings.jsp	
Crime Index	Numbeo	http://www.numbeo.com/crime/rankings.jsp#	

Table 23 | GFCI 23 Infrastructure Factors

Instrumental Factor	Source	Website	Change Since GFCI 22
Office Occupancy Cost	CBRE Research	http://www.cbre.com/research-and-reports/Global-Prime-Office-Occupancy-Costs-2016	
Prime International Residential Index	Knight Frank	http://www.knightfrank.com/wealthreport	
JLL Real Estate Transparency Index	Jones Lang LaSalle	http://www.jll.com/greti/Pages/Rankings.aspx	
ICT Development Index	United Nations	http://www.itu.int/net4/ITU-D/idi/2017/index.html	Updated
Telecommunication Infrastructure Index	United Nations	http://unpan3.un.org/egovkb/Data-Center	
Quality of Domestic Transport Network	World Economic Forum	http://reports.weforum.org/travel-and-tourism-competitiveness-report-2015/	
Quality of Roads	World Economic Forum	http://reports.weforum.org/travel-and-tourism-competitiveness-report-2015/	
Roadways per Land Area	CIA	https://www.cia.gov/library/publications/the-world-factbook/rankorder/2085rank.html	
Railways per Land Area	CIA	https://www.cia.gov/library/publications/the-world-factbook/rankorder/2121rank.html	
Networked Readiness Index	World Economic Forum	http://reports.weforum.org/global-information-technology-report-2016/	
Energy Sustainability Index	World Energy Council	http://www.worldenergy.org/data/sustainability-index/	Updated
Metro Network Length	Metro Bits	http://mic-ro.com/metro/table.html	Updated
Open Data Barometer	The World Wide Web Foundation	http://opendatabarometer.org/?_year=2016&indicator=ODB	New
Environmental Performance	Yale University	http://epi.yale.edu/epi/country-rankings	
Global Sustainable Competitiveness Index	Solability	http://solability.com/the-global-sustainable-competitiveness-index/the-index	Updated
Logistics Performance Index	The World Bank	http://lpi.worldbank.org/international/global	
Networked Society City Index	Ericsson	https://www.ericsson.com/res/docs/2016/2016-networked-society-city-index.pdf	
TomTom Traffic Index	TomTom	https://www.tomtom.com/en_gb/trafficindex/list?citySize=LARGE&continent=ALL&country=ALL	
Sustainable Cities Mobility Index	Arcadis	https://www.arcadis.com/en/global/our-perspectives/sustainable-cities-mobility-index-	New

Table 24 | GFCI 23 Financial Sector Development Factors

Instrumental Factor	Source	Website	Change Since GFCI 22
Capitalisation of Stock Exchanges	The World Federation of Stock Exchange	http://www.world-exchanges.org/home/index.php/statistics/monthly-	Updated
Value of Share Trading	The World Federation of Stock Exchange	http://www.world-exchanges.org/home/index.php/statistics/monthly-	Updated
Volume of Share Trading	The World Federation of Stock Exchange	http://www.world-exchanges.org/home/index.php/statistics/monthly-	Updated
Broad Stock Index Levels	The World Federation of Stock Exchange	http://www.world-exchanges.org/home/index.php/statistics/monthly-	Updated
Value of Bond Trading	The World Federation of Stock Exchange	http://www.world-exchanges.org/home/index.php/statistics/monthly-	Updated
Domestic Credit Provided by Banking Sector (% of G	The World Bank	http://databank.worldbank.org/data/reports.aspx?s	Updated
Percentage of Firms Using Banks to Finance Invest	The World Bank	http://databank.worldbank.org/data/reports.aspx?s	Updated
Total Net Assets of Regulated Open-End Funds	Investment Company Institute	http://www.icifactbook.org/	
Islamic Finance Country Index	Islamic Banks and Financial Institution	http://www.gifr.net/publications	
Net External Positions of Banks	The Bank for International Settlements	http://www.bis.org/statistics/bankstats.htm	Updated
External Positions of Central Banks as a share of G	The Bank for International Settlements	http://www.bis.org/statistics/bankstats.htm	Updated
Liner Shipping Connectivity Index	The World Bank	http://databank.worldbank.org/data/reports.aspx?s	Updated
Global Connectedness Index	DHL	http://www.dhl.com/en/about_us/logistics_insights/studies_research/global_connectedness_index/glo	
City GDP composition (Business/Finance)	The Brookings Institution	http://www.brookings.edu/research/interactives/global-metro-monitor-3	
Business Process Outsourcing Location Index	Cushman & Wakefield	http://www.cushmanwakefield.com/en/research-and-insight/2015/business-process-outsourcing-location-index-2015/	

Table 25 | GFCI 23 Reputation Factors

Instrumental Factor	Source	Website	Change Since GFCI 22
Graduates in Social Science, Business and Law	The World Bank	http://databank.worldbank.org/data/reports.aspx?s	Updated
Gross Tertiary Graduation Ratio	The World Bank	http://databank.worldbank.org/data/reports.aspx?s	Updated
Visa Restrictions Index	Henley Partners	http://www.henleyglobal.com/citizenship/visa-restrictions/	
Human Development Index	UN Development Programme	http://hdr.undp.org	
Citizens Domestic Purchasing Power	UBS	http://www.ubs.com/1/e/wealthmanagement/wealth_management_research/prices_earnings.html	
Number of High Net Worth Individuals	Capgemini	https://www.worldwealthreport.com/	Updated
Homicide Rates	UN Office of Drugs & Crime	https://data.unodc.org/	
Top Tourism Destinations	Euromonitor	http://blog.euromonitor.com/2016/01/top-100-city-destinations-ranking-2016.html	
Average precipitation in depth	The World Bank	http://databank.worldbank.org/data/reports.aspx?s	
Quality of Living City Rankings	Mercer	http://www.mercer.com	
Health Care Index	Numbeo	http://www.numbeo.com/health-care/rankings.jsp	
Global Skills Index	Hays	http://www.hays-index.com/	Updated
Linguistic Diversity	Ethnologue	http://www.ethnologue.com/statistics/country	
Global Terrorism Index	Institute for Economics & Peace	http://www.visionofhumanity.org/	Updated
World Talent Rankings	IMD	http://www.imd.org/wcc/news-talent-report/	Updated
Cost of Living City Rankings	Mercer	http://www.mercer.com	
Quality of Life Index	Numbeo	http://www.numbeo.com/quality-of-life/rankings.jsp	
Crime Index	Numbeo	http://www.numbeo.com/crime/rankings.jsp#	

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Gujarat International Finance Tec-City (GIFT), Gujarat, India has set up International Financial Services Centre (IFSC) which is the only approved IFSC in India. The GIFT IFSC is a gateway for inbound and outbound business from India. Centre is fast emerging as a preferred destination for undertaking International Financial Services.

The GIFT IFSC covers Banking, Insurance, Capital Market and allied services covering law firms, accounting firms and professional services firms. It provides very competitive cost of operation with competitive tax regime, single window clearance, relaxed Company Law provisions, International Arbitration Centre with overall facilitation of doing business.

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AIFC was established in 2015 to further develop the non-banking financial sector in Kazakhstan – a very timely establishment coinciding with a new wave of privatisation and review of asset allocation strategy of government funds. Based on Astana EXPO-2017 infrastructure, it also aims to promote FinTech and drive the development of niche markets such as Islamic and green finance in the region.

Located at the heart of Eurasia, AIFC provides unprecedented conditions for participants and investors: a legal system based on English law, an independent regulatory framework consistent with internationally recognised standards, tax exemptions for 50 years, simplified visa and labour regimes, English as a working language. AIFC will be fully operational from the beginning of 2018. Kazakhstan's geography within the Eurasian Economic Union and its role in "One Belt, One Road" offer great potential for AIFC to be a successful regional financial centre.

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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.

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"When would we know our financial system is working?" is the question underlying 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.

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We cannot possibly cover the range of topics covered by the Long Finance initiative here— please visit the website to learn more.

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