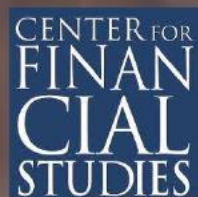


18th December at 1pm



Webinar OFEX: The attractiveness of financial centres

Technical session on the methodology

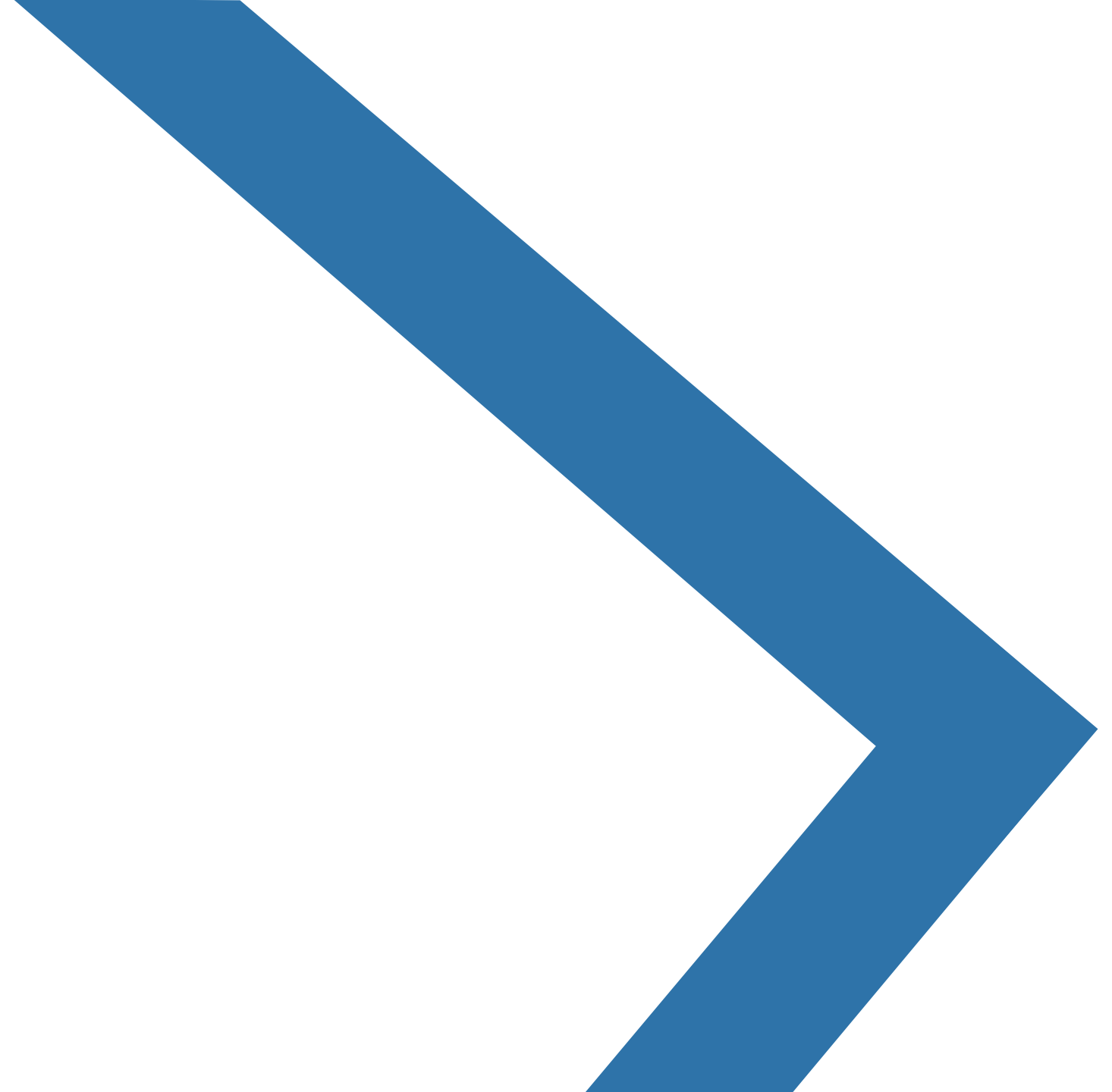


OPEN FINANCIAL ECOSYSTEM INDEX - OFEX

Technical session on the methodology

PART 1

OFEX OBJECTIVES



THE OFEX INDEX WAS CREATED TO ALLOW ANALYSIS AND COMPARISON OF FINANCIAL CENTRES, IN RESPONSE TO THE LIMITATIONS OF EXISTING TOOLS

What
is
OFEX
?

1. A **first version** of a **comprehensive** and **transparent** database from **publicly accessible and reliable sources** on the attractiveness of financial centres
2. A **new index** to synthetise this information. It aims at being **open, transparent, objective, and flexible** to measure the major facets of attractiveness

Launch event - 22/11/2023



- Definition of financial centres attractiveness
- OFEX context background
- Release of OFEX ranking and website

Technical session - Today

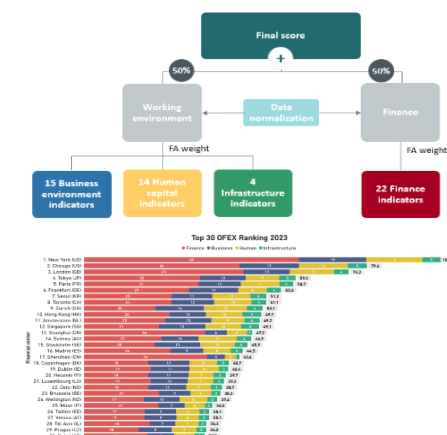
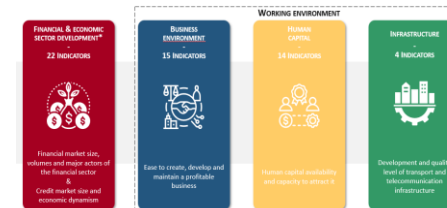
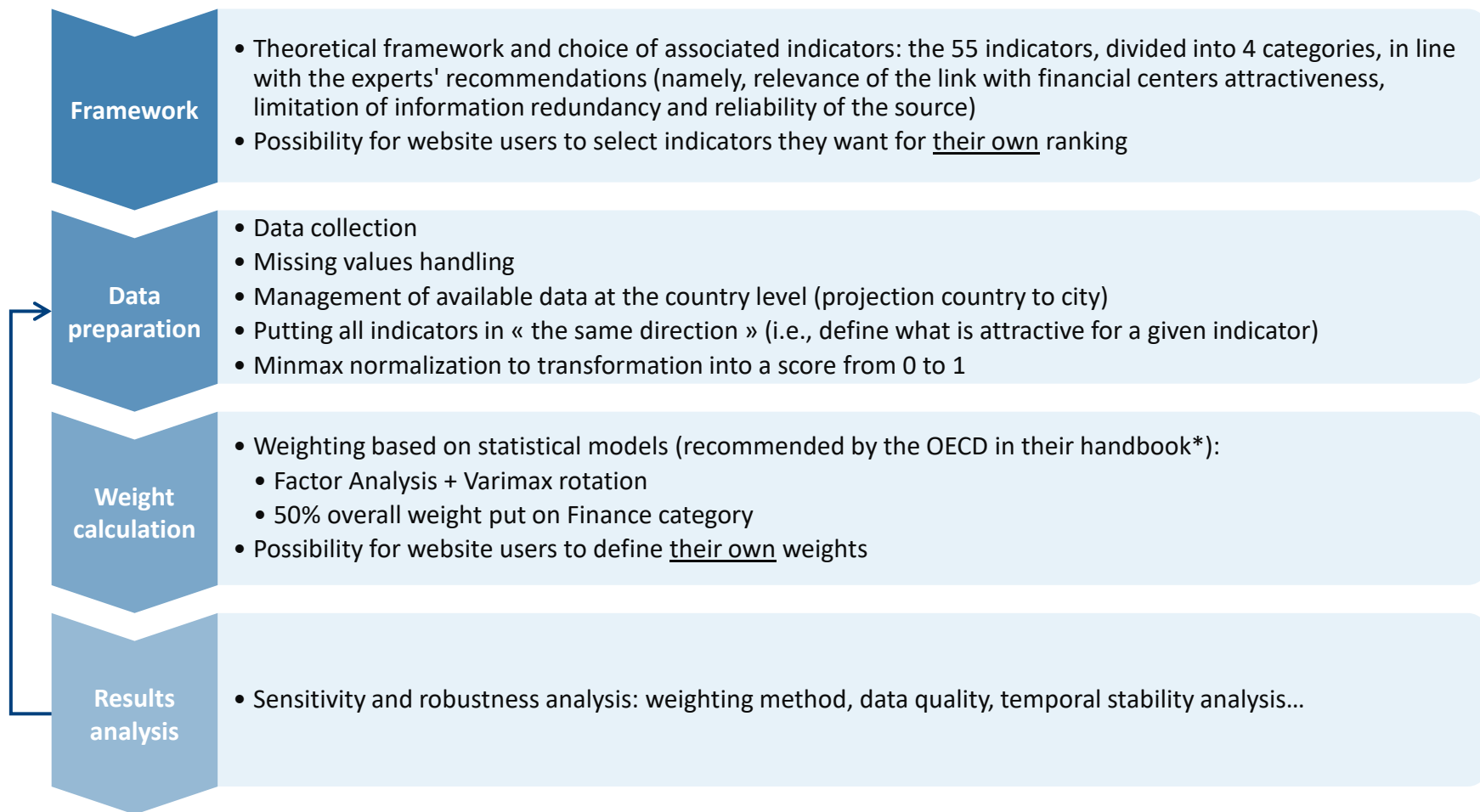


- In-depth review of methodology
- Global process and scoring approach
- Questions and answers

PART 2

GLOBAL METHODOLOGICAL PROCESS

THE PROCESS IS MADE OF 4 MAIN STEPS AND IS INSPIRED FROM A METHOD DESIGNED BY THE OECD



THE KEY METHODOLOGICAL STEPS OF THE PROJECT HAVE BEEN CAREFULLY DESIGNED, ANALYSED AND REVIEWED AS SCIENTIFICALLY AND OBJECTIVELY AS POSSIBLE WITH EXPERTS



Categories



Categories were defined after deep literature review, a student competition and long discussions of experts during a workshop. The objective was to cover most key parameters linked to attractiveness while restraining the number of categories.

→ **Based on a panel of European experts' work**



Indicators



The indicators in each category were selected based on their relevance to measure attractiveness within this category, the reliability of the source while at the same time limiting redundancy of information.

→ **Based on CFS and ILB iterative selection, discussions with experts and international institutions**

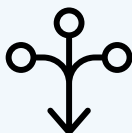


Perimeter

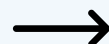


Choice was made to rank international financial centres only, when enough data was available to create a robust ranking. For each country, only the leading financial centre was kept based on its international relevance (except for US and CN).

→ **Based on data quality and relative importance within a given country**



Aggregation



The aggregation methodology aims at synthesising the variety of indicators to create an easy-to-understand score while following international best practices.

→ **Based on OECD Handbook on constructing composite indicators**



PART 3

DETAILED LOOK AT THE KEY METHODOLOGICAL STEPS

OFEX CATEGORIES HAVE BEEN CLEARLY DEFINED AND THE INDICATORS IN EACH CATEGORY CAREFULLY CHOSEN WITH EXPERTS

FINANCIAL & ECONOMIC
SECTOR DEVELOPMENT*


-
22 INDICATORS



Market size, volumes, major
actors of the financial sector
&
Credit market size and
economic dynamism


WORKING ENVIRONMENT

BUSINESS
ENVIRONMENT
-
15 INDICATORS




Ease to create, develop and
maintain a profitable
business

HUMAN
CAPITAL
-
14 INDICATORS



Human capital availability
and capacity to attract it

INFRASTRUCTURE
-
4 INDICATORS



Development, quality level
of transport and
telecommunication
infrastructure

OFEX'S INTENTION IS TO COLLECT THE MOST RELIABLE INDICATORS POSSIBLE, EVEN THOUGH SOMETIMES THEY HAVE TO BE PROJECTED FROM COUNTRY TO FINANCIAL CENTRES DUE TO A LACK OF GRANULARITY

Indicator selection process

When an indicator topic is identified, the decision to add it to our process follows a specific procedure:

1



When **one or more sources are available** for an indicator, the **most reliable source** is chosen.

2



For **some important topic** as fintech, ESG that do not have strongly reliable sources, **some constraints may have been released on data source.**

3



If **no source is available** or it is **not considered reliable enough**, the indicator will **not be taken into account** in the ranking.

Country to city indicator projection

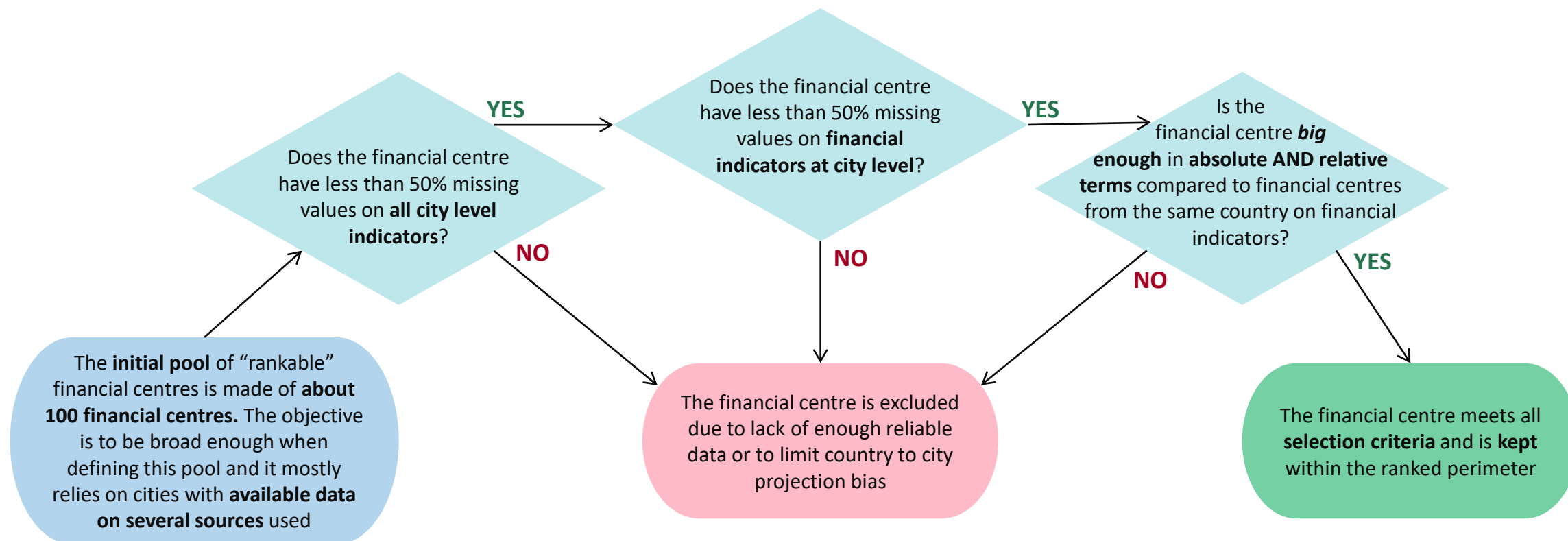
Ideally, we only want indicators at **financial centre level**, but some indicators are **only available at country level**. In this case, these **indicators are projected**:

- using a ratio based on the GDP of each city for the more 'economic' indicators
- using a financial score based on the average score on finance city indicators over several years
- using a ratio based on GDP per capita

These methods, although not perfect, were considered the best considering available data.

THE PERIMETER OF RANKED FINANCIAL CENTRES AIMS AT ENSURING THAT ENOUGH DATA IS AVAILABLE TO PRECISELY RANK

The methodology to define the perimeter of financial centres that are ranked was developed to **ensure that we have sufficient data for all ranked financial centres and to limit the effect of country to city projections.**

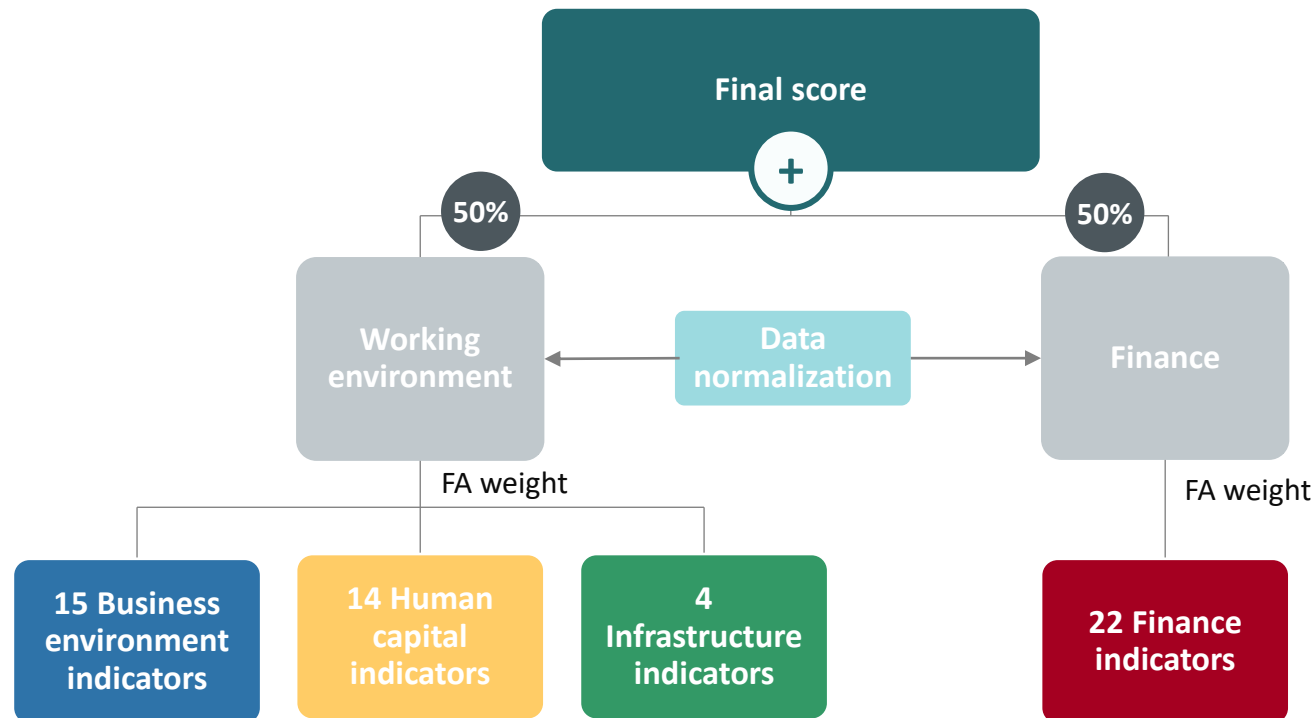


This process leads to ranking **47 financial centres** that are big enough and for which we deem to have sufficient data.

THE GLOBAL SCORING APPROACH MOSTLY AIMS AT SYNTHETISING THE DATA WHILE GIVING MORE WEIGHT TO THE FINANCE CATEGORY AND OVERCOME OTHER MINOR ISSUES

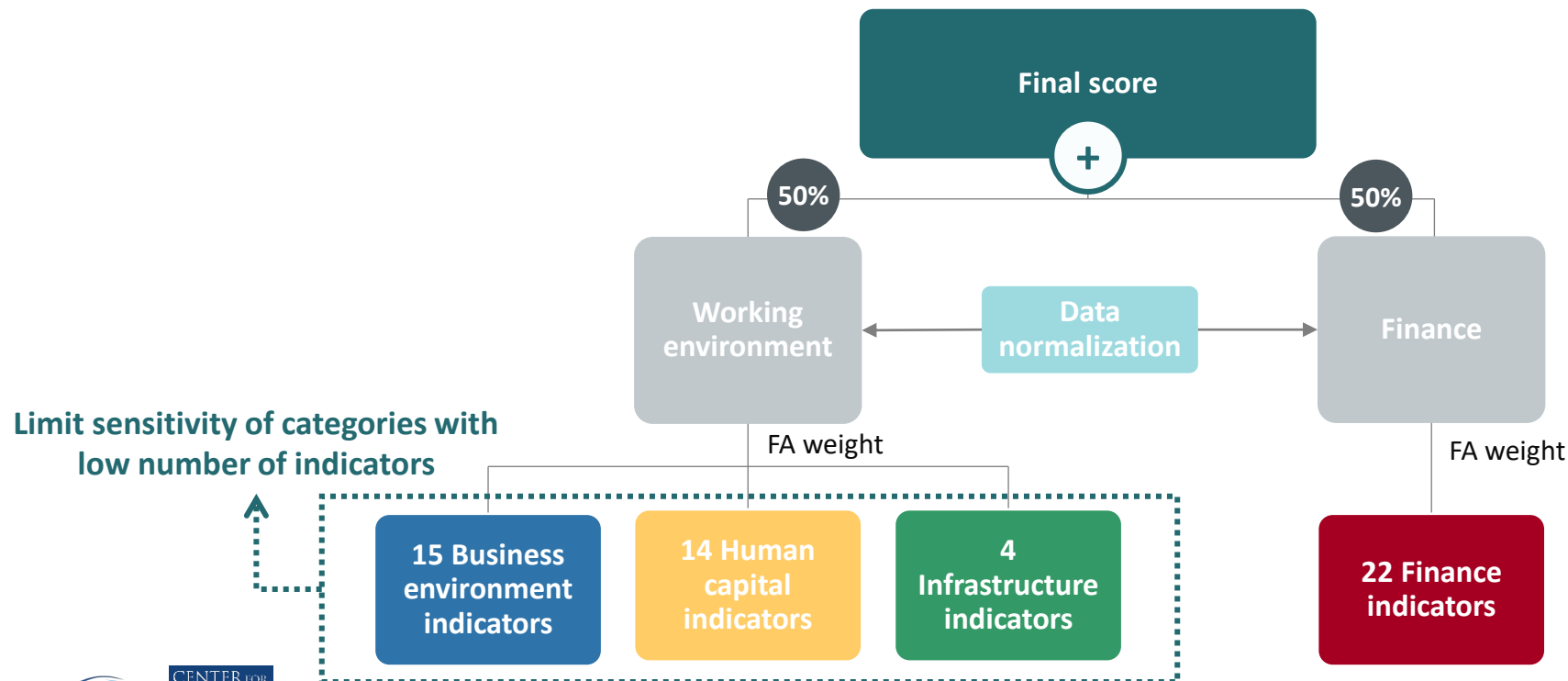
- Factor Analysis (FA) aggregation has been chosen to **summarize information** while dealing with data correlations & information redundancy, meaning that the **model and the approach are agnostic and have no prior** on which indicators used in the FA may most influence attractiveness.

$$\rightarrow \text{Final score} = 50\% \times \text{FA(Working environment)} + 50\% \times \text{FA(Finance)}$$



THE HUMAN CAPITAL, BUSINESS ENVIRONMENT AND INFRASTRUCTURE CATEGORIES HAVE BEEN GATHERED TO LIMIT THE FINAL SCORE SENSITIVITY TO CATEGORIES WITH LOW NUMBER OF INDICATORS

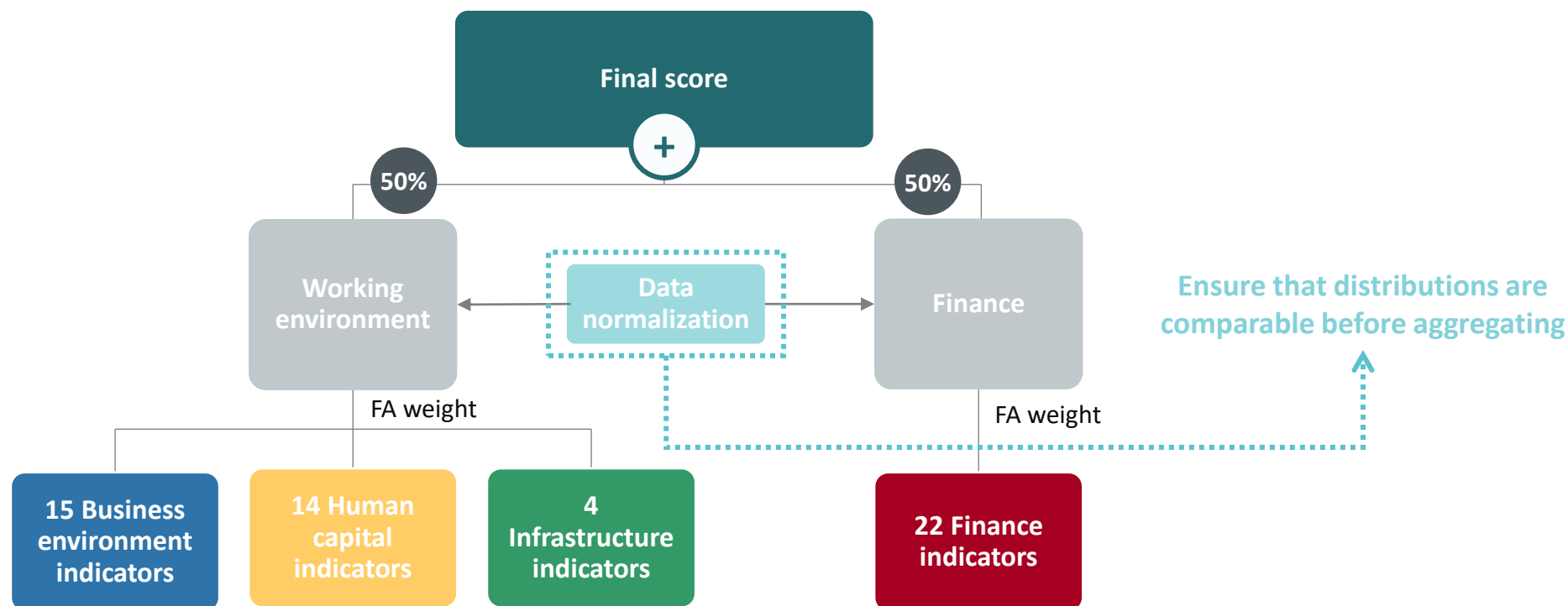
- A first FA is applied on the 3 categories (namely: Human capital, Business environment and Infrastructure) that ease financial and economic sector development.
- **The objective is to limit final score sensitivity to categories with low number of indicators** and to create a sub-score measuring the Working environment easing financial activity.
- Another FA is applied on indicators from Financial and economic sector development to build its specific sub-score.



*Handbook on Constructing Composite Indicators: Methodology and User Guide.

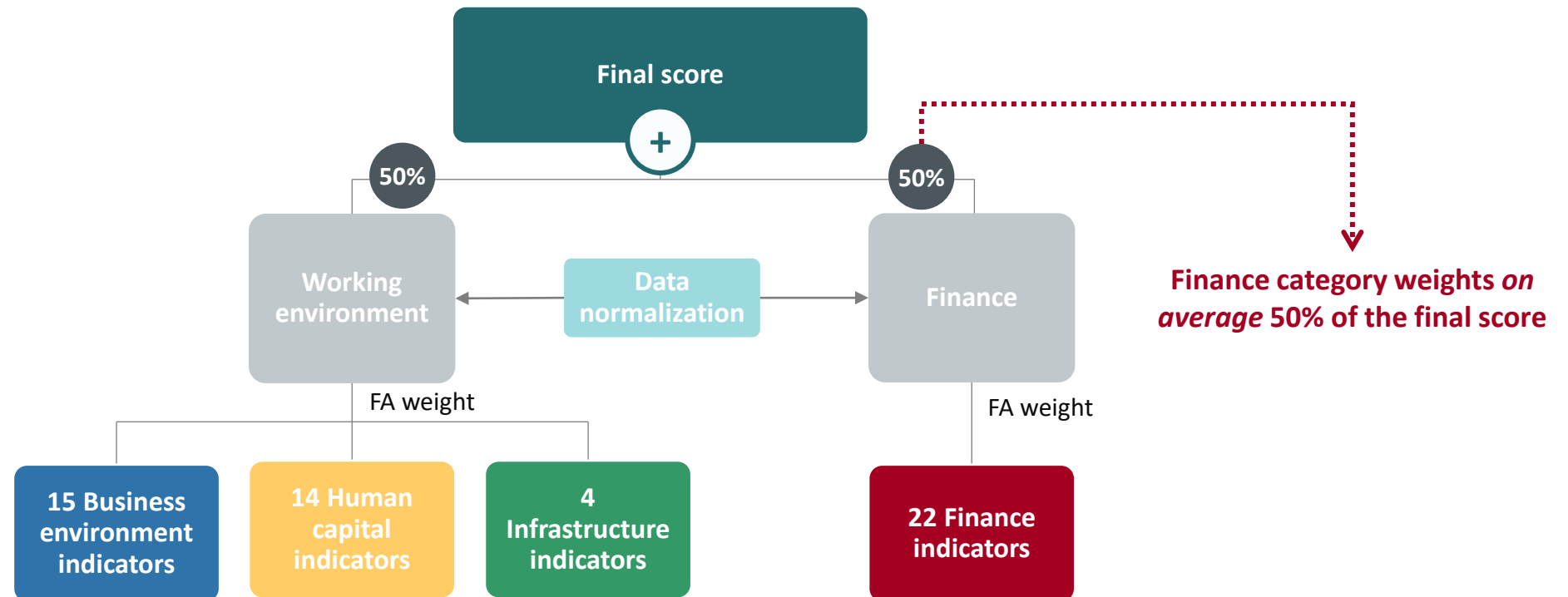
THE DATA IS NORMALIZED TO MAKE SURE THAT THE TWO SUB-SCORES ARE COMPARABLE BEFORE THE FINAL AGGREGATION

- *The two sub-scores may have very different distributions.*
- *To ensure that the sensitivity of the final score to each sub-score is similar, a data normalization process is applied to make sub-scores distributions look alike.*



THE FINAL SCORE IS OBTAINED BY SUMMING UP THE TWO SUB-SCORES WITH A WEIGHT OF 50% FOR EACH

- Experts deemed that the Finance category is the most crucial factor of attractiveness.
- A 50% weight is thus chosen for each category, giving the finance category much higher importance than the business environment, human capital and infrastructure sub-categories.
- The website will let users chose the category's weights and the indicators used to create their own ranking as one may have a different view on this.



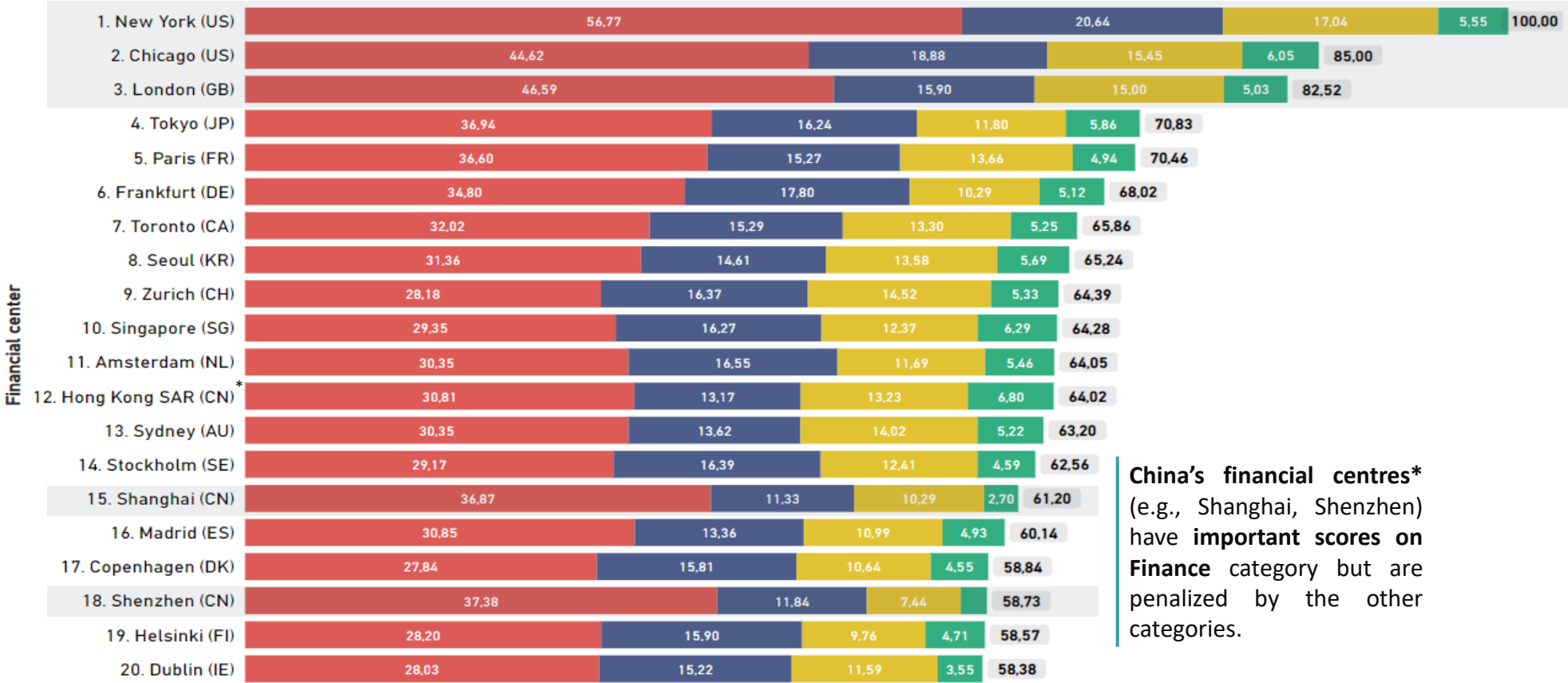
PART 4

RESULTS OF THE RANKING

THIS METHODOLOGY LEADS TO A TRANSPARENT AND EXPLAINABLE RANKING, ALLOWING THE IDENTIFICATION OF THE CONTRIBUTION OF EACH CATEGORY TO THE FINAL SCORE AND RANKING

Top 20 OFEX Ranking 2023

● Finance ● Business ● Human ● Infrastructure



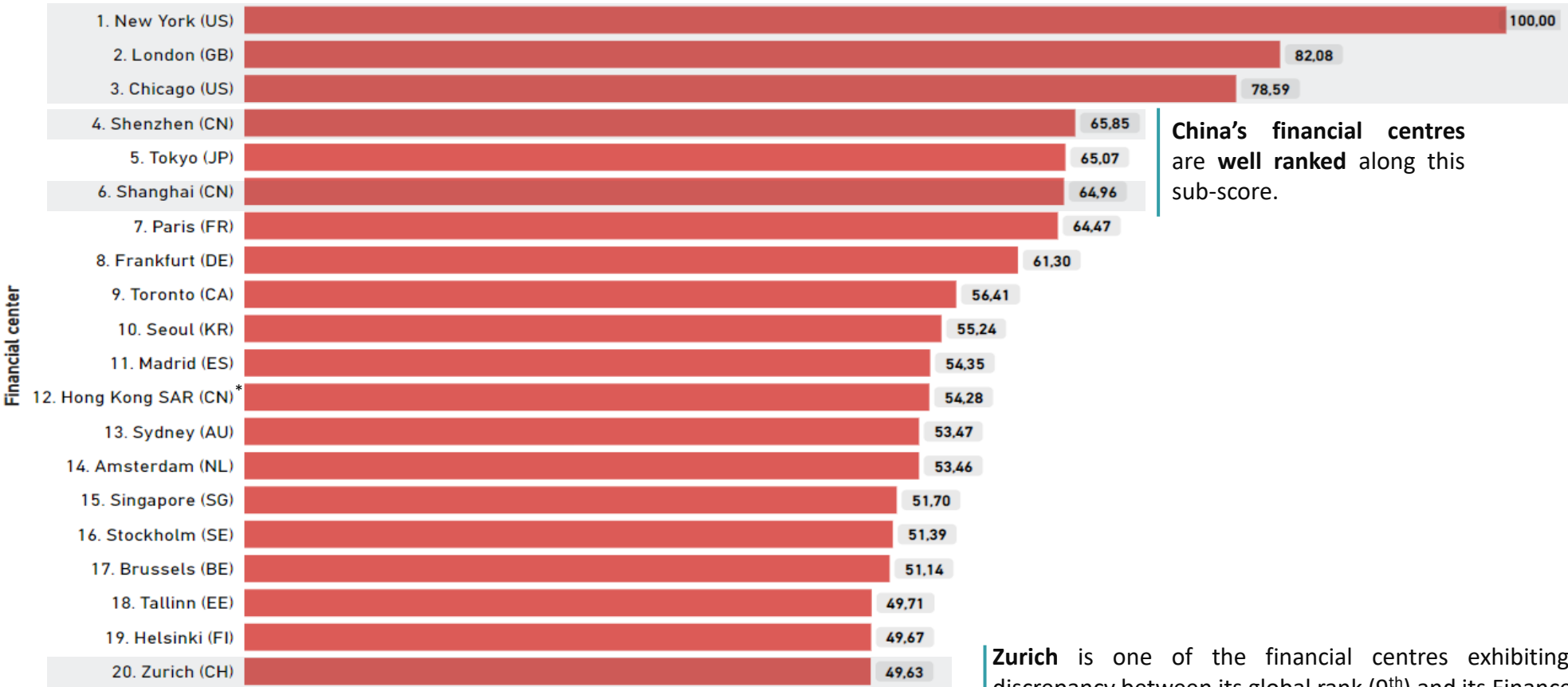
Top 3 is ranked well above the others: New York, Chicago and London. This is consistent with experts' expectations.

China's financial centres* (e.g., Shanghai, Shenzhen) have important scores on Finance category but are penalized by the other categories.

THE APPROACH ALLOWS A SPECIFIC ANALYSIS ON THE FINANCE SUB-SCORE, HIGHLIGHTING FINANCIAL CENTRES WITH MOST DEVELOPED FINANCIAL ECOSYSTEM

Top 20 OFEX Financial Ranking 2023

● Finance



The Finance category exhibits the **same top 3**, even if **London** goes ahead of **Chicago**.

China's financial centres are **well ranked** along this sub-score.

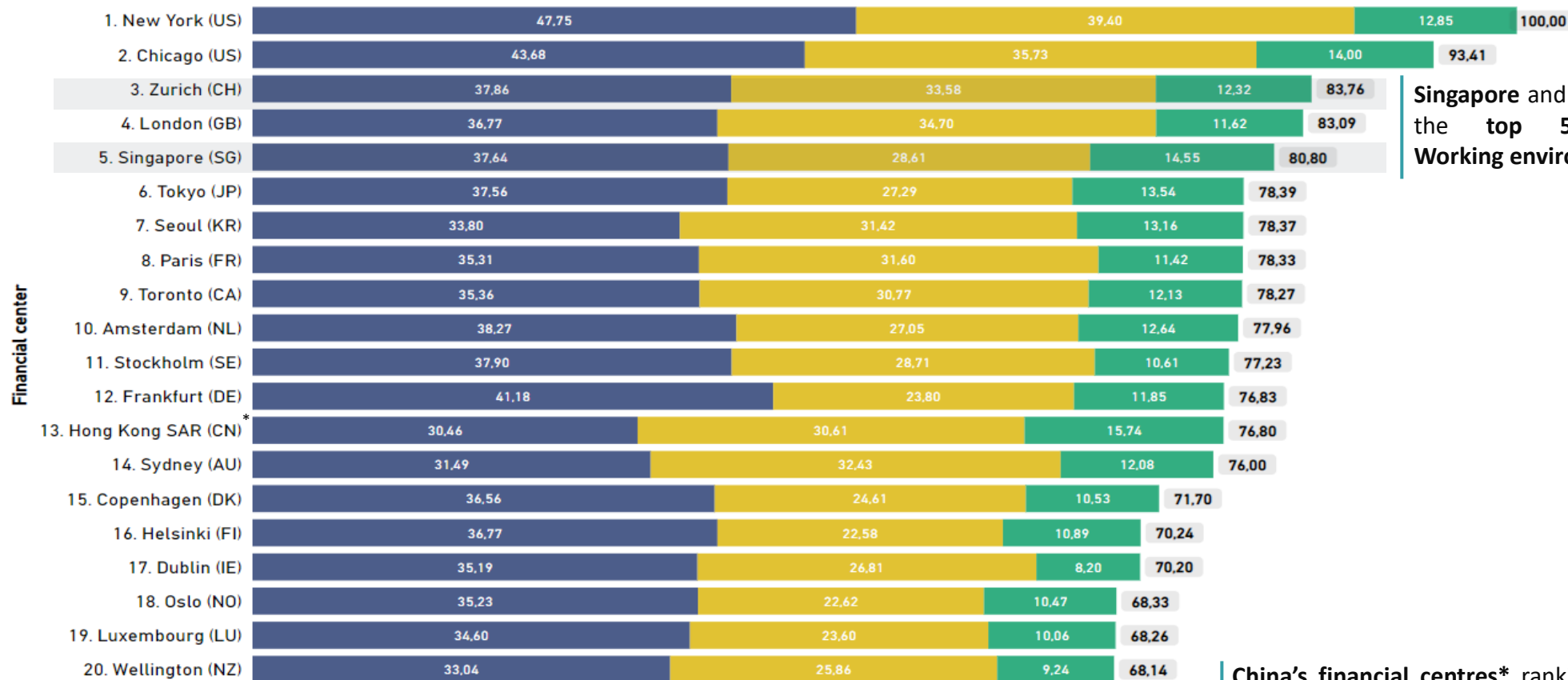
Zurich is one of the financial centres exhibiting important discrepancy between its global rank (9th) and its Finance one (20th).

*Hong Kong is treated independently in our calculations because data is specifically available for it in most of the used data sources.

THE WORKING ENVIRONMENT SUB-SCORE SHOWS THE BEST PLACES WHERE TO DEVELOP FINANCIAL ACTIVITY, INDEPENDENTLY FROM THE ACTUAL FINANCIAL SECTOR SIZE

Top 20 OFEX Working environment Ranking 2023

● Business ● Human ● Infrastructure



Singapore and Zurich are in the top 5 regarding Working environment.

China's financial centres* rankings in this sub-category are ranked significantly lower than in the 'Finance' sub-category and are even outside the top 30.

WITH THIS METHODOLOGY, OFEX RANKING IS VERY ROBUST OVER TIME AND OVERCOMES ONE OF THE CRITICISMS MADE BY EXPERTS TO SOME RANKINGS, THE HIGH VOLATILITY

City	Country	Ranking 2019 Score 2019	Ranking 2020 Score 2020	Ranking 2021 Score 2021	Ranking 2022 Score 2022	Ranking 2023 Score 2023
New York	US	1:100.0	1:100.0	1:100.0	1:100.0	1:100.0
Chicago	US	2:82.432	2:82.282	2:83.282	2:83.63	2:85.0
London	GB	3:82.265	3:81.626	3:81.167	3:81.3	3:82.516
Tokyo	JP	4:71.522	4:70.819	4:71.011	4:69.857	4:70.827
Paris	FR	5:67.689	5:67.884	5:68.951	5:68.979	5:70.462
Frankfurt	DE	6:66.059	6:66.299	6:67.62	6:67.041	6:68.015
Hong Kong	HK	7:64.684	9:63.016	9:64.252	9:64.143	12:64.014
Amsterdam	NL	8:64.277	7:63.711	11:63.491	11:63.475	11:64.052
Toronto	CA	9:63.018	8:63.351	7:64.92	7:65.38	7:65.862
Zurich	CH	10:62.801	10:62.535	10:63.751	10:63.849	9:64.388
Seoul	KR	11:62.748	11:61.805	8:64.899	8:64.513	8:65.242
Sydney	AU	12:61.6	13:60.786	13:62.291	13:62.23	13:63.205
Singapore	SG	13:60.073	12:61.063	12:63.423	12:62.839	10:64.282
Stockholm	SE	14:59.676	14:59.813	14:61.583	14:61.76	14:62.561
Madrid	ES	15:58.566	15:57.879	15:58.838	15:59.38	16:60.137
Helsinki	FI	16:56.566	16:56.377	16:58.622	17:58.682	19:58.566
Dublin	IE	17:56.495	19:55.204	19:57.81	19:57.464	20:58.376
Copenhagen	DK	18:56.356	17:55.849	18:57.874	18:58.071	17:58.835
Shanghai	CN	19:56.343	18:55.836	17:58.502	16:58.92	15:61.202
Luxembourg	LU	20:55.764	20:54.736	21:57.026	22:56.426	21:57.09
Brussels	BE	21:55.655	23:53.753	22:56.953	23:56.074	24:56.165
Wellington	NZ	22:54.591	22:53.925	24:55.956	24:55.497	23:56.484
Oslo	NO	23:54.527	21:54.43	20:57.193	21:56.663	22:56.831
Shenzhen	CN	24:53.98	24:52.961	23:56.716	20:56.846	18:58.726
Tallinn	EE	25:52.793	25:52.294	25:54.502	25:54.802	25:55.891
Tel Aviv	IL	26:52.181	26:51.497	26:53.903	27:53.362	27:53.822
Vienna	AT	27:51.508	27:51.19	27:53.888	26:53.516	26:53.93
Prague	CZ	28:50.925	29:49.968	29:52.594	29:53.068	29:53.419
Milan	IT	29:50.565	28:50.253	28:52.978	28:53.162	28:53.746
Dubai	AE	30:49.714	30:49.962	30:52.465	30:51.559	30:52.335

PART 5

QUESTIONS AND ANSWERS

DO NOT HESITATE TO CONTACT US FOR FEEDBACK/QUESTIONS OR IF YOU NEED A SPECIFIC PRESENTATION

DISCOVER THE FULL OFEX RANKING!



[OFEX.INSTITUTLOUISBACHELIER.ORG](https://ofex.institutlouisbachelier.org)



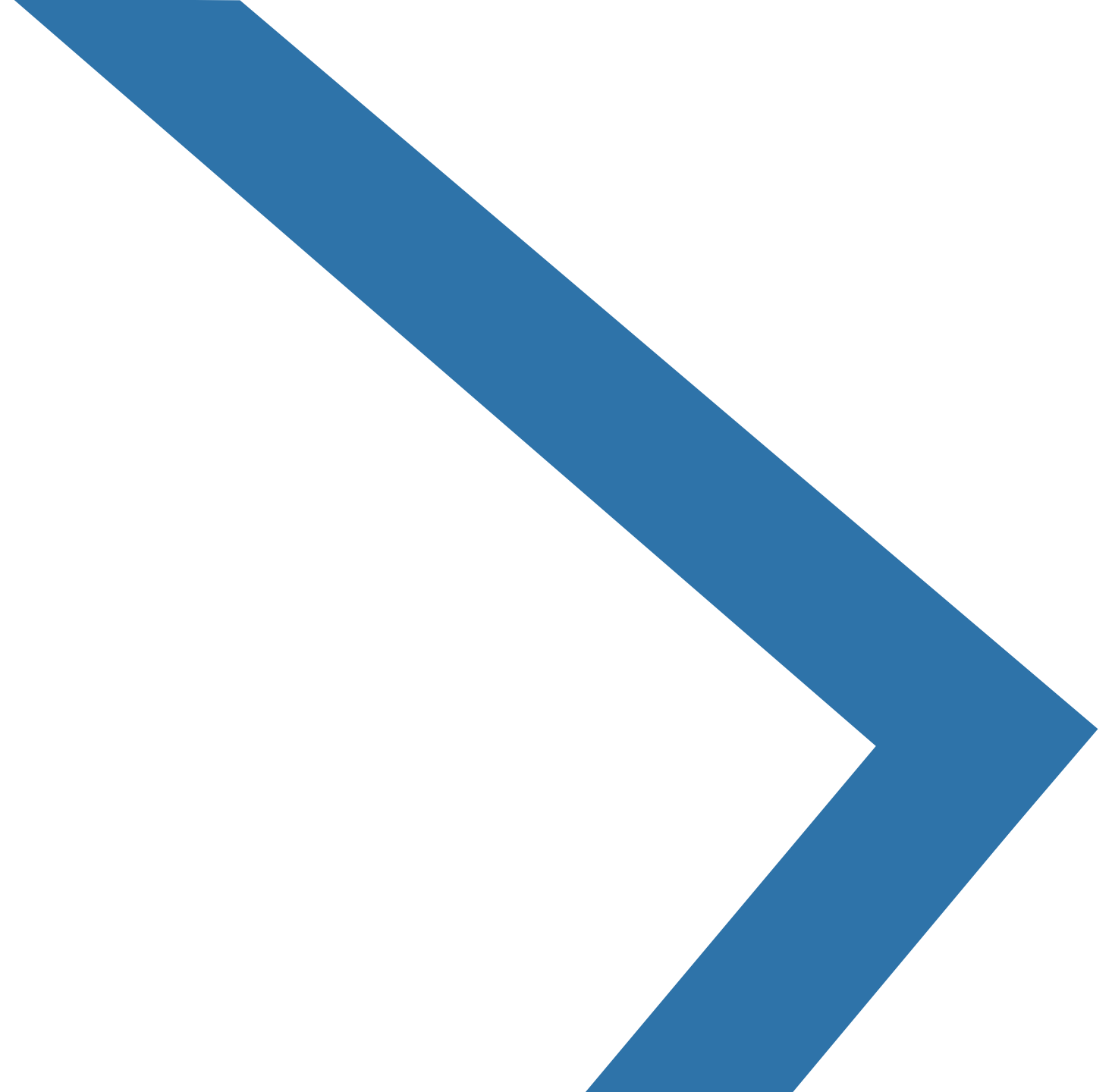
CONTACT US!



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APPENDICES



THE FINANCIAL AND ECONOMIC SECTOR DEVELOPMENT IS COMPOSED OF 22 INDICATORS

Financial and economic sector development



15 Country level indicators

- OTC FX derivatives turnover - BIS
- OTC IR derivatives turnover - BIS
- Gross insurance premiums - OECD
- Listed bond value - BIS
- Market capitalization on stock market – World bank
- Number of listed companies – World bank
- Total credit to households - BIS
- Total credit to non-financial corporations - BIS
- Total issuance of ESG bonds - CBI
- Basel AML index – Basel Institute on Governance
- Fintech activity index – World bank
- Bank Assets - BIS
- Clearing House transactions - BIS
- Central Securities Depositories transactions – BIS
- Asset under management value - EFAMA

7 City level indicators

- Value of bond trading – World federation of exchanges
- Value of share trading – World federation of exchanges
- Volume of share trading – World federation of exchanges
- Capital raised through IPO - World federation of exchanges
- Global fintech ecosystem rankings - Findexable
- Sustainable stock exchange assessment – SSE initiative
- Cross border financial institutions (regulator & standard setter) – created by ILB

The highlighted indicators are not raw data but have been pre-processed or created.

THE BUSINESS ENVIRONMENT IS COMPOSED OF 15 INDICATORS

Business environment



13 Country level indicators

- Current GDP of country – World bank
- GDP growth (over 5 years) – World bank
- Exports – World bank
- Foreign direct investment inflows – World bank
- Global innovation index - INSEAD
- Political stability – World bank
- World press freedom - RSF
- Regulatory quality – World bank
- Product market regulation - OECD
- Strictness of employment protection - OECD
- Corporate income tax rates - OECD
- Global competitiveness index – World Economic Forum
- Rule of law – World bank

2 City level indicators

- Current GDP of city - OECD
- Global office market occupancy cost - CBRE

The highlighted indicators are not raw data but have been pre-processed or created.

THE HUMAN CAPITAL IS COMPOSED OF 14 INDICATORS

Human capital



9 Country level indicators

- Personal tax rates (single no child) - OECD
- Personal tax rates (married 2 children) - OECD
- Population with tertiary degree for 25 to 34 y.o. - OECD
- Global expenditure on R&D as % of GDP - OECD
- Health index - OECD
- Life satisfaction index - OECD
- Gross value added per hour worked - OECD
- Visa restriction index - Henley Partners
- Person in finance - ILO

5 City level indicators

- Cost of living city rankings - Mercer
- Number of universities in the top 100 in economics - THE
- Number of universities in the top 100 in maths/stats - THE
- Number of universities in the top 500 Shanghai – Shanghai ranking
- Safe cities index - EIU

THE INFRASTRUCTURE IS COMPOSED OF 4 INDICATORS

Infrastructure



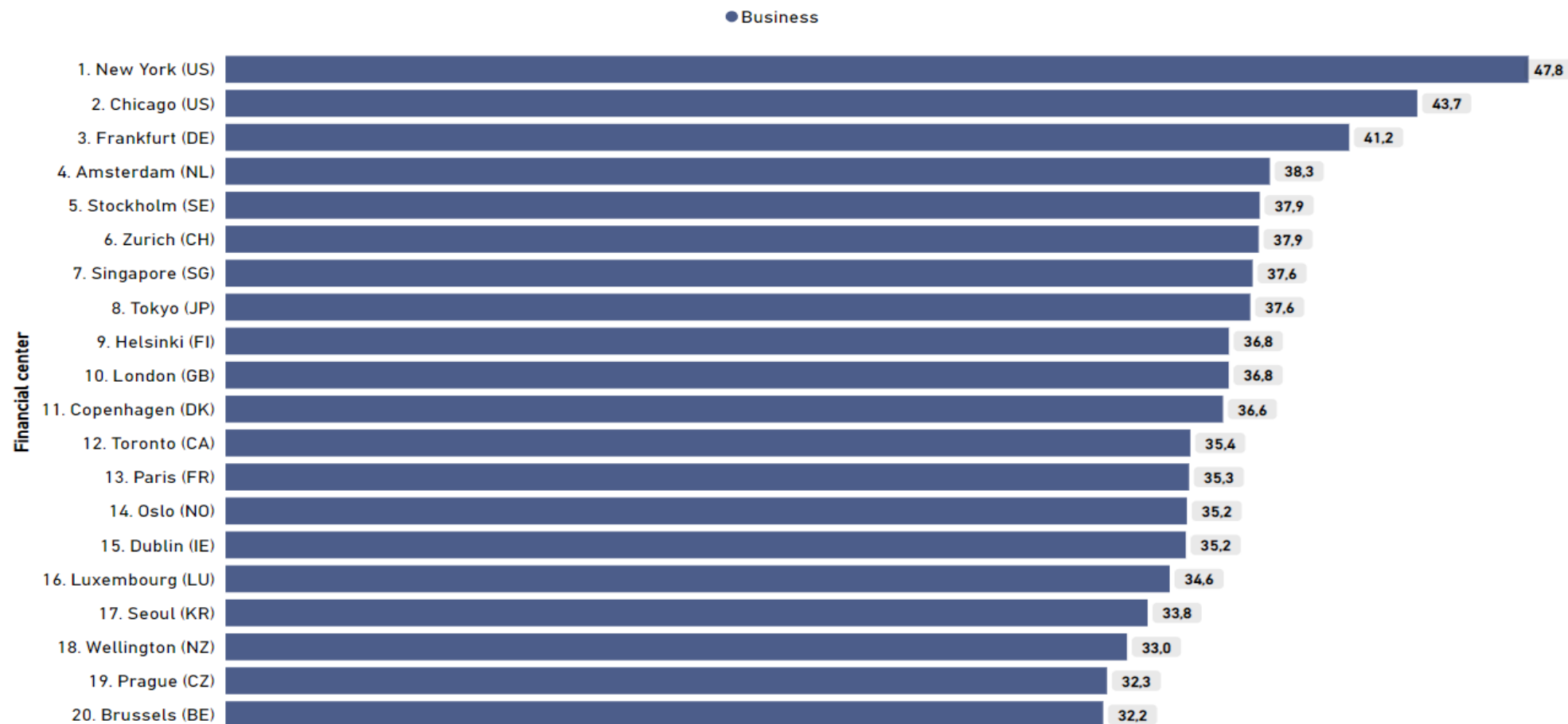
3 Country level indicators

- Internet availability - OpenSignal
- ICT development index – International Telecommunication Union
- Ground and port infrastructure – World Economic Forum

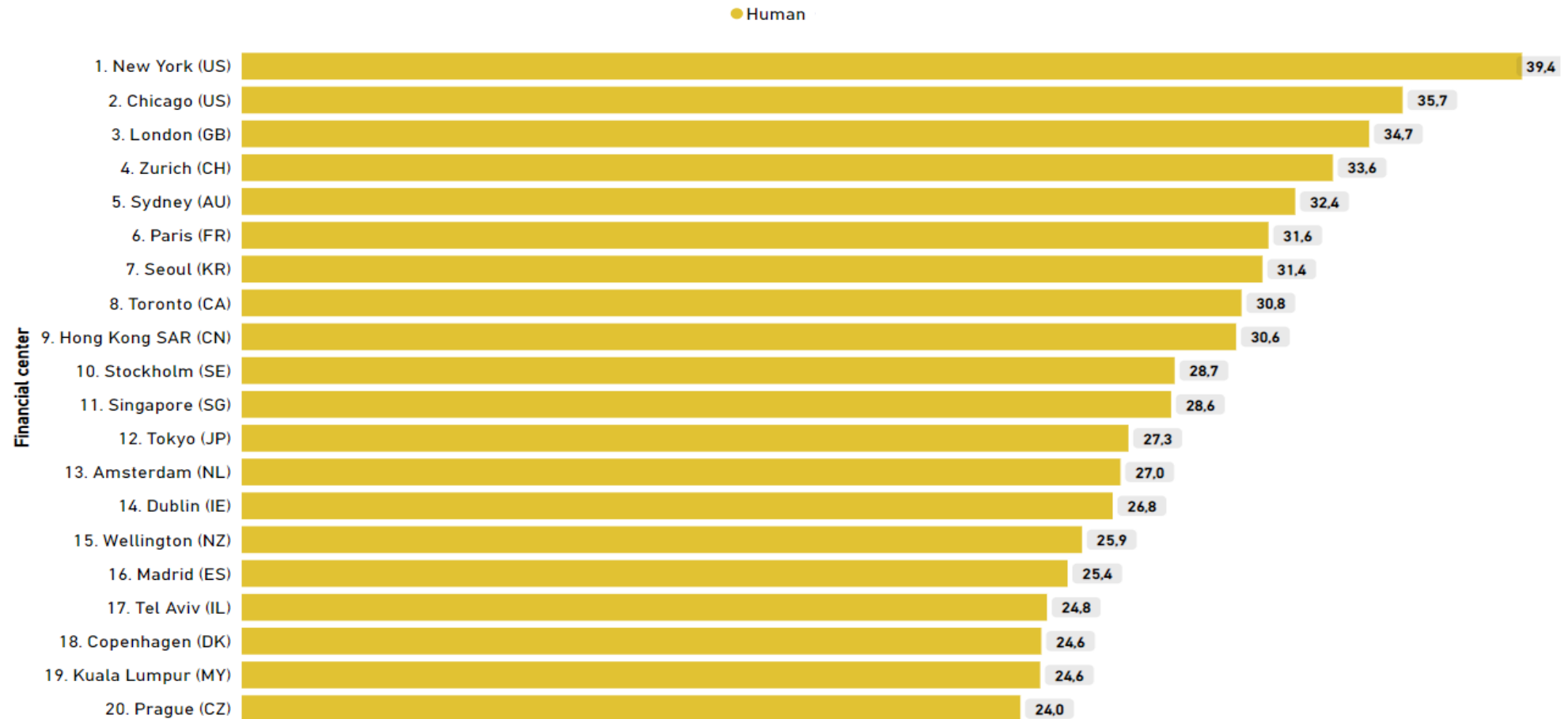
1 City level indicators

- Airport passenger traffic – Port Authority New York New Jersey

TOP 20 OFEX BUSINESS RANKING 2023



TOP 20 OFEX HUMAN RANKING 2023



TOP 20 OFEX INFRASTRUCTURE RANKING 2023

