

OPEN FINANCIAL ECOSYSTEM INDEX LAUNCH (OFEX)

The new financial centre index

PART 1

OFEX CONTEXT AND OBJECTIVES

THE INSTITUT LOUIS BACHELIER AND THE CENTER FOR FINANCIAL STUDIES HAVE WORKED TOGETHER TO DEVELOP A NEW TOOL TO ANALYSE FINANCIAL CENTRES ATTRACTIVENESS

INSTITUT LOUIS BACHELIER



- The Institut Louis Bachelier (ILB) is an independent French research network in Economics and Finance founded in 2008
- The ILB amplifies research and modelling impact in Economics and Finance through its network of 500+ researchers
- The ILB builds a research ecosystem that brings together academics, companies and public authorities

CENTER FOR FINANCIAL STUDIES



- The Center for Financial Studies (CFS) is an independent research institute affiliated to the Goethe University in Frankfurt, conducting research in Finance on several topics (Monetary Policy, Green Finance, Asset Management...)
- The CFS has been established in 1967 and is working with a global network of more than 90 renowned Fellows in Economics and Finance
- The CFS serves as a forum for dialogue between academia, policy-making institutions and the financial industry

INSTITUT LOUIS BACHELIER (ILB) IS THE FRENCH SPONSORED RESEARCH NETWORK IN ECONOMICS AND FINANCE

LOUIS BACHELIER NETWORK

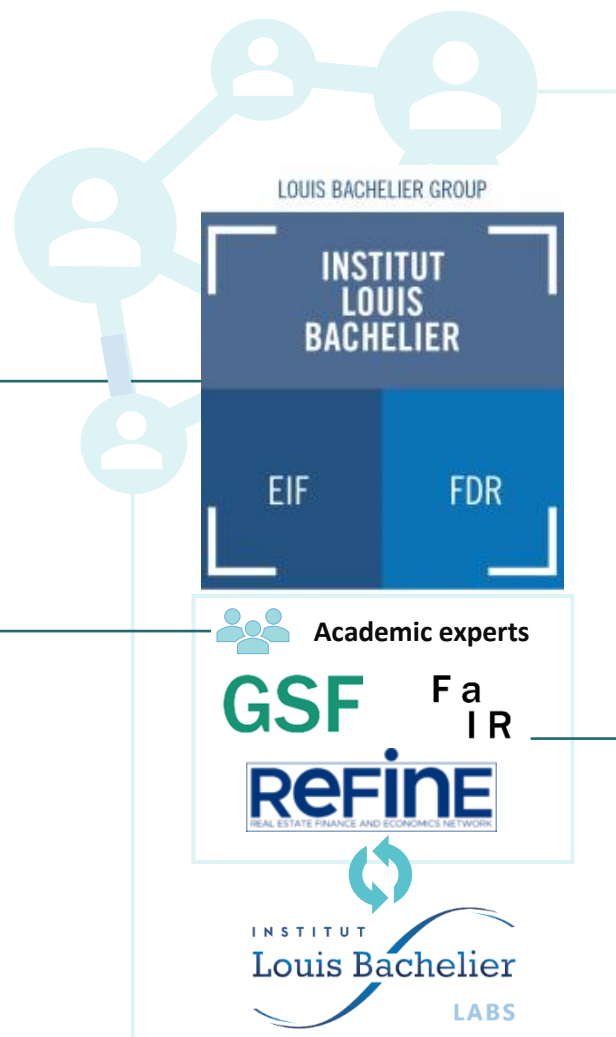
Gathering of **ILB** created in **2008** by the French Treasury and the *Caisse des Dépôts et Consignations*, and two collaborative **research foundations** (EIF, FDR)

Goal: Amplify research and modelling impact in economics and finance

EXPERTS NETWORK

Access to **500+** internationally renowned **researchers**

Support ILB Labs' teams on their projects and validate their **scientific relevance**



TRANSDISCIPLINARY PROGRAMS

GREEN AND SUSTAINABLE FINANCE

Boost the research about green and sustainable finance:

1. Impact (impact measure, additionality...)
2. Scenarios (alignment, stress tests...)
3. ESG data

ILB Labs work closely with the researchers of GSF. Together, we have built **Pladifes**, a platform dedicated to rendering **ESG data more accessible** to researchers and practitioners*

Example of concrete outcome: [ESG data provider cartography](#).

FINANCE AND INSURANCE RELOADED

Focus on the development and impact of new technologies on the financial sector: blockchain, data science...

REFINE

Stimulate scientific research on the area of commercial real estate and providing data to the network's researchers

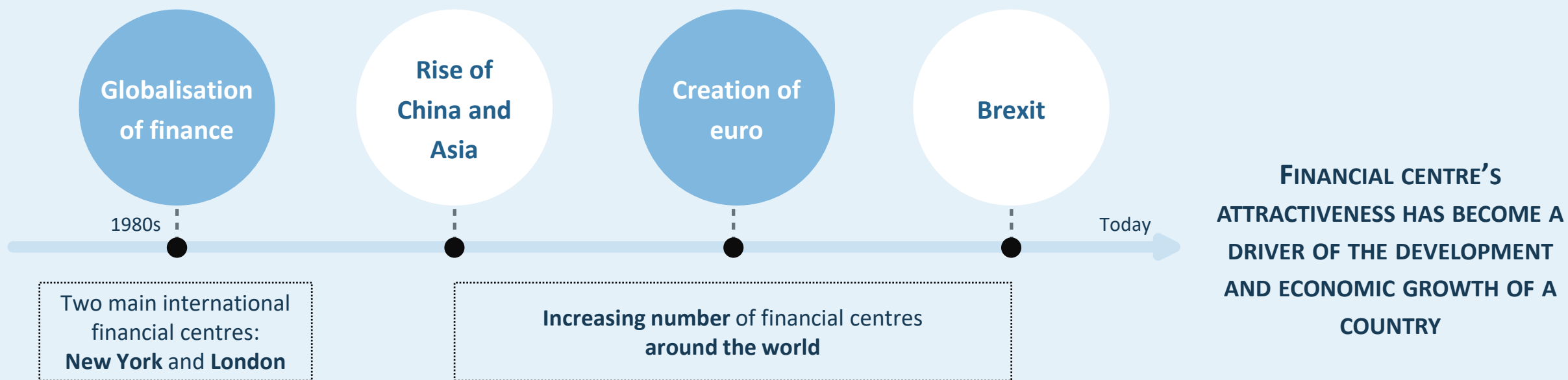
FINANCIAL CENTRE ATTRACTIVENESS IS A KEY PARAMETER DRIVING DECISION MAKING WITHIN THE FINANCIAL ECOSYSTEM

FINANCIAL CENTRE

A place that ensures the meeting of **multiple actors** who contribute to the proper functioning of **financial markets within ecosystems** that generate important **synergies**

FINANCIAL CENTRE ATTRACTIVENESS

The **set of parameters** that overall **influence choices of financial decision makers** about where to do business



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

OFEX starting point

- Need to analyse the impact of **Brexit** and understand the movement of **companies, people, capital** and **markets**
- How to **analyse the attractiveness** of financial centres?



Limitations of reliable tools assessing financial centres attractiveness

- **Few tools focus** on the **attractiveness** of financial centres, each with specific drawbacks:
 - **No longer updated**
 - **Non-open methodologies**
 - Potentially **subjective** (public surveys)



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

OFEX HAS BEEN DESIGNED IN INTERACTION WITH SEVERAL INTERNATIONAL INSTITUTIONS WHO GAVE POSITIVE FEEDBACKS



PART 2

SCHEMATIC PRESENTATION OF OFEX CATEGORIES

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

FINANCIAL & ECONOMIC
SECTOR DEVELOPMENT*

-

22 INDICATORS



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

BUSINESS
ENVIRONMENT

-

15 INDICATORS



Ease to create, develop and
maintain a profitable
business

WORKING ENVIRONMENT

HUMAN
CAPITAL

-

14 INDICATORS



Human capital availability
and capacity to attract it

INFRASTRUCTURE

-

4 INDICATORS



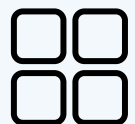
Development and quality
level of transport and
telecommunication
infrastructure



PART 3

OVERVIEW OF THE RANKING PROCESS

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**

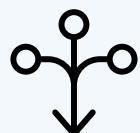


Indicators



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**



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**



Perimeter

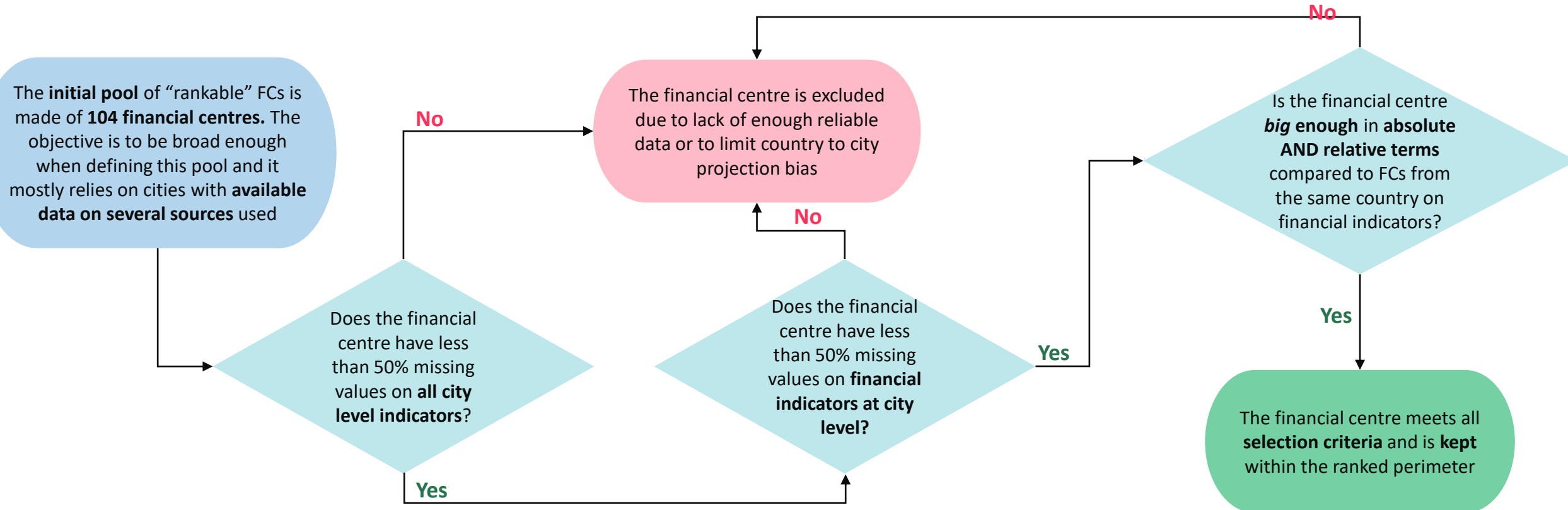


Choice was made to rank international financial centres only, when enough data was available to create a robust ranking. For each country, only the leading FC was kept based on its international relevance (except for US and CN).

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

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

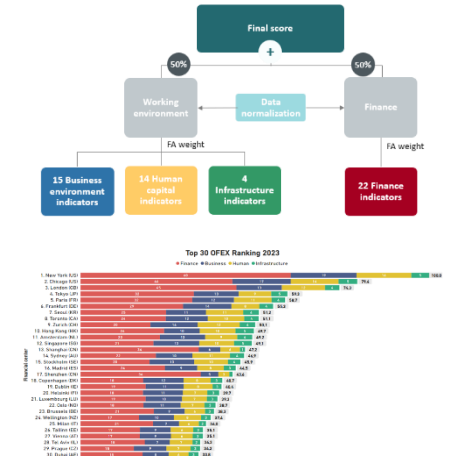
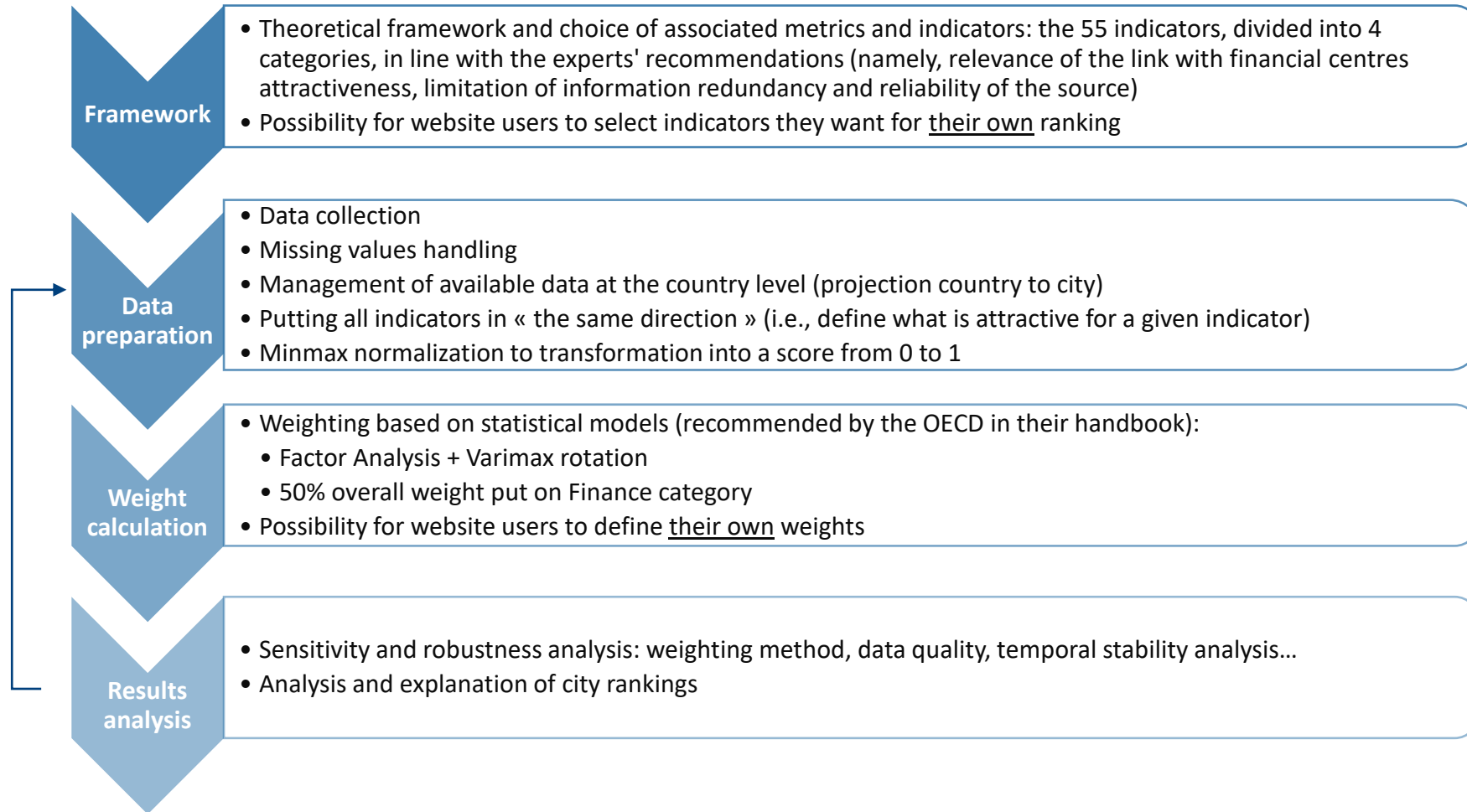
The methodology to define the perimeter of financial centres that are ranked was developed to **ensure that we have sufficient data for all ranked FCs and to limit the effect of country to city projections.**



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



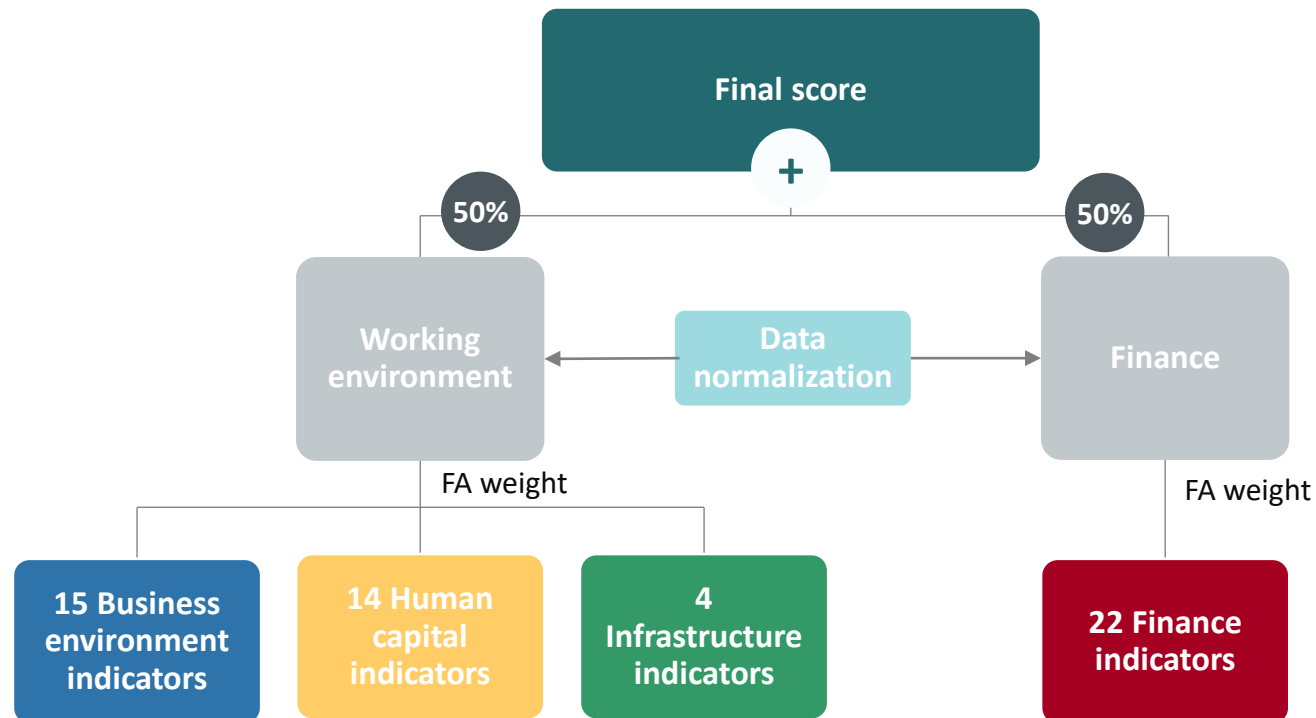
THE PROCESS IS MADE OF 4 MAIN STEPS AND IS INSPIRED FROM A METHOD DESIGNED BY THE OECD*



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

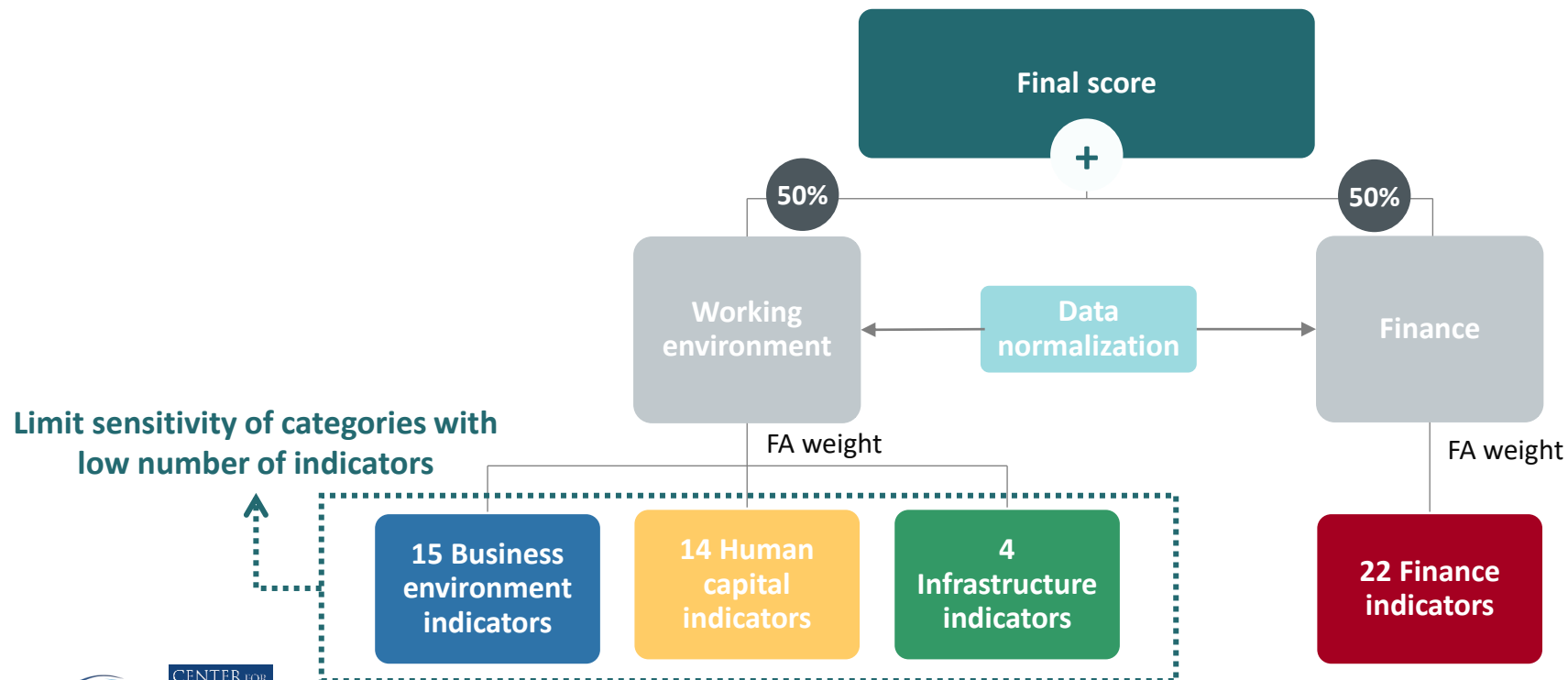
- Factor Analysis (FA) aggregation has been chosen to **summarize information** while dealing with data correlations & information redundancy, meaning that the **model and the approach are agnostic and have no prior** on which indicators used in the FA may most influence attractiveness.

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



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

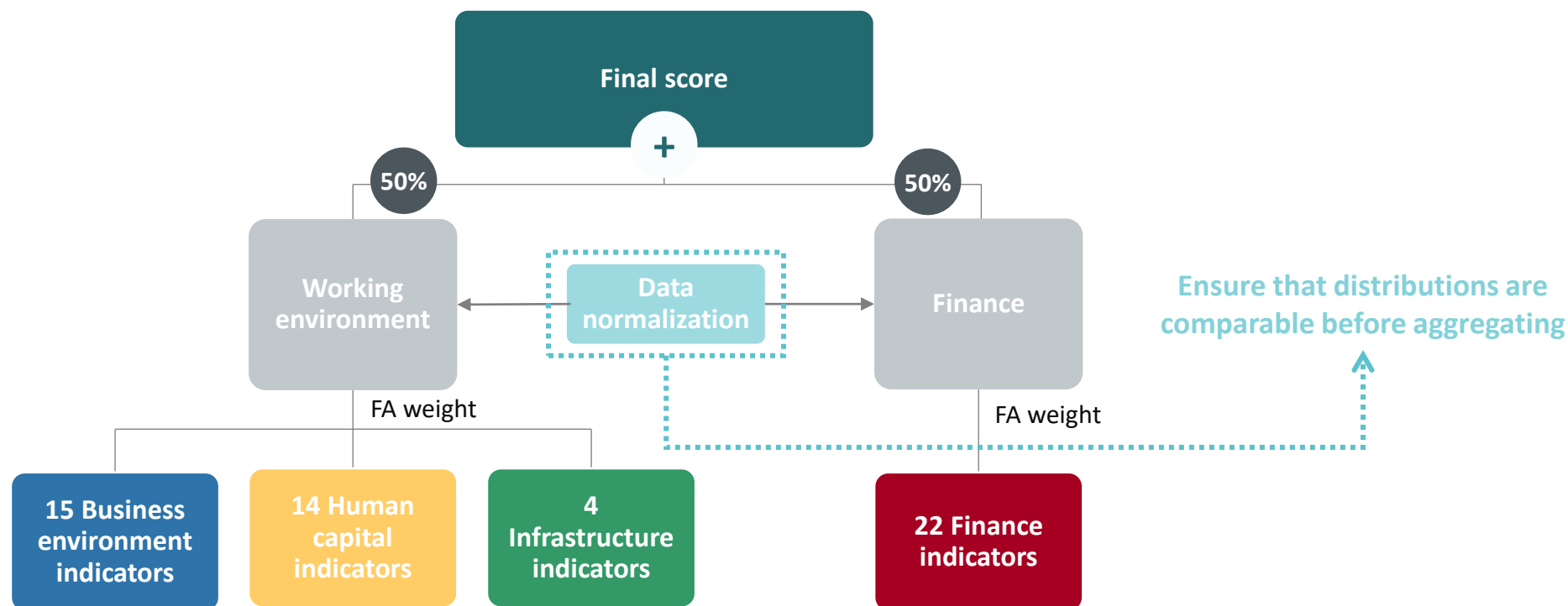
- A first FA is applied on the 3 categories (namely: Human capital, Business environment and Infrastructure) that ease financial and economic sector development.
- **The objective is to limit final score sensitivity to categories with low number of indicators** and to create a sub-score measuring the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

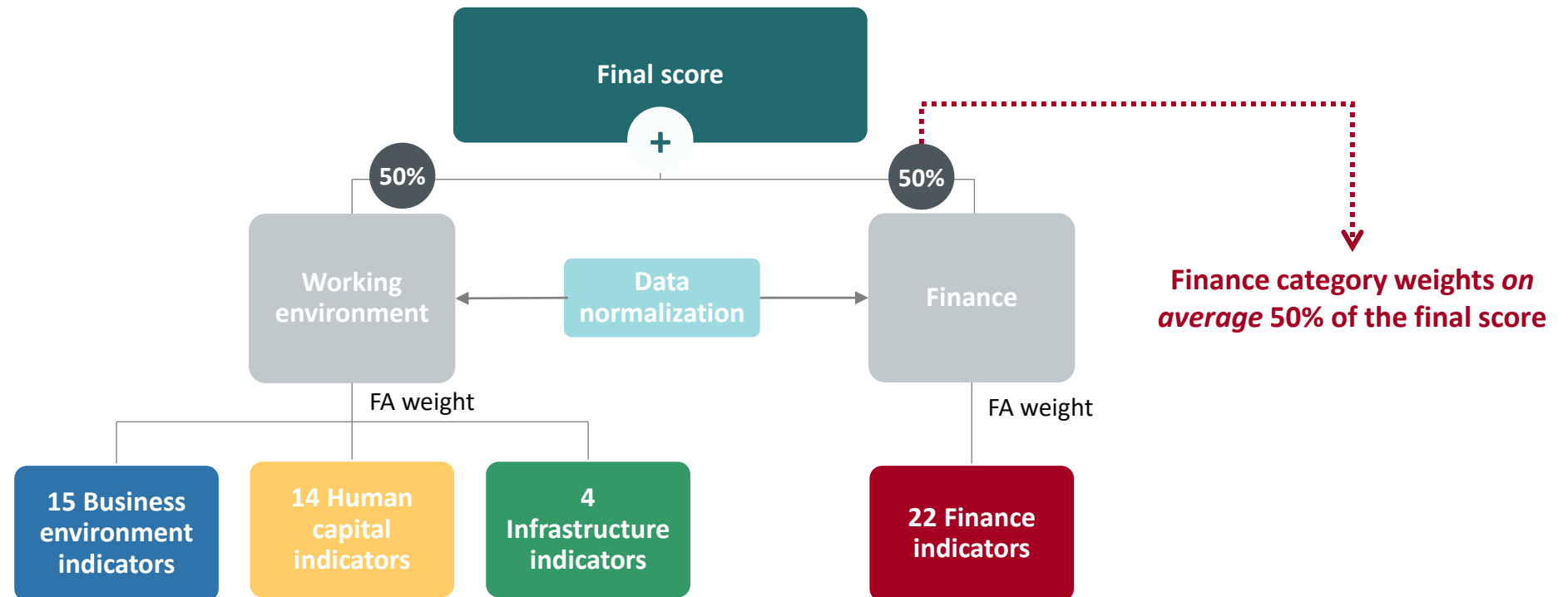
THE DATA IS NORMALIZED TO MAKE SURE THAT THE TWO SUB-SCORES ARE COMPARABLE BEFORE THE FINAL AGGREGATION

- *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.



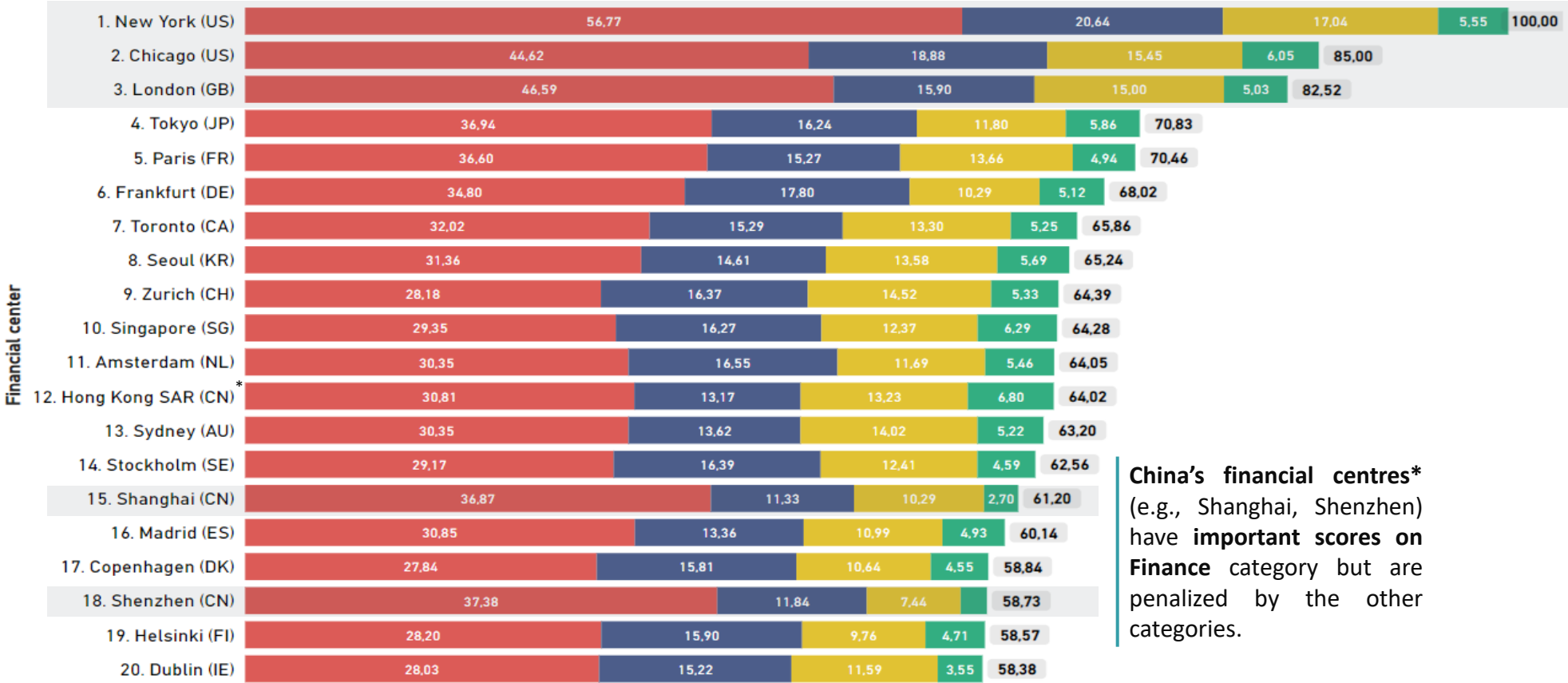
PART 4

RESULTS

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



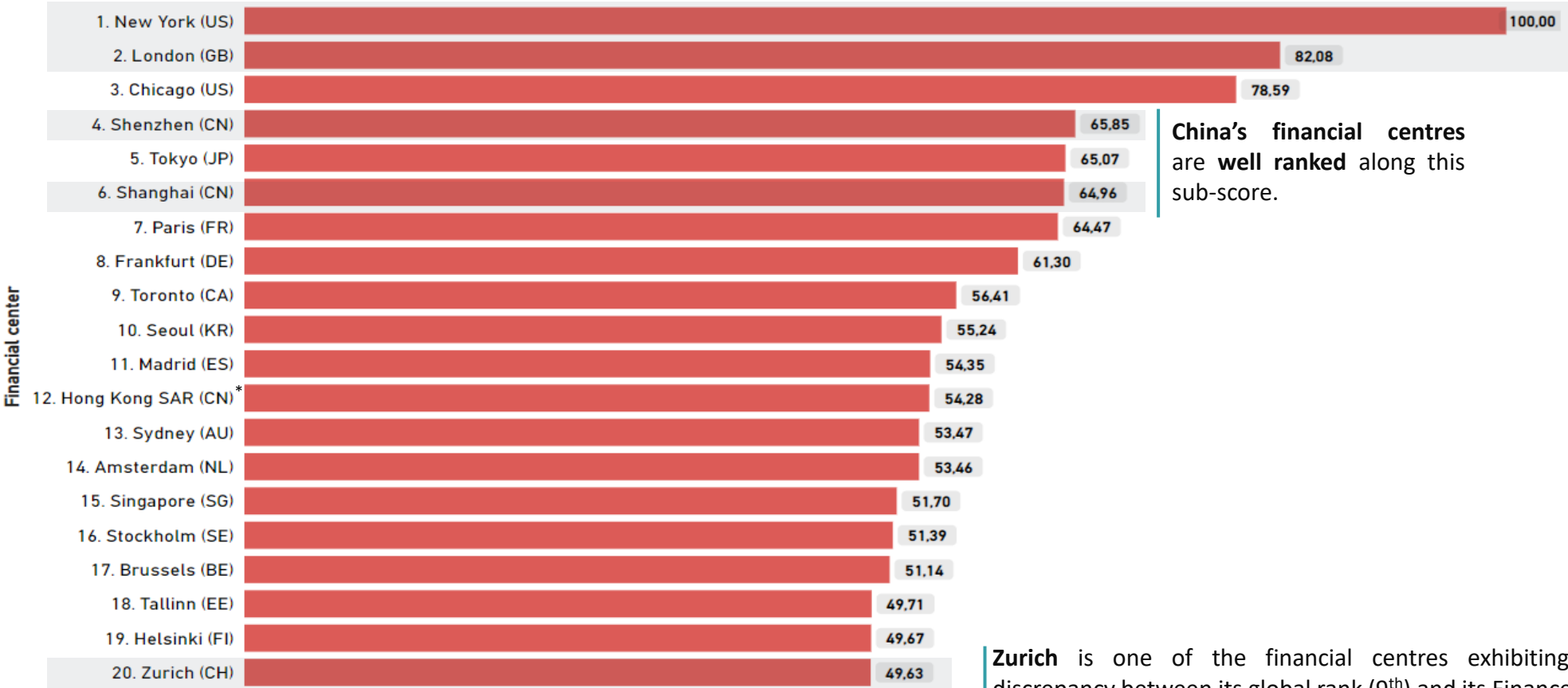
Top 3 is ranked well above the others: New York, Chicago and London. This is consistent with experts' expectations.

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**.

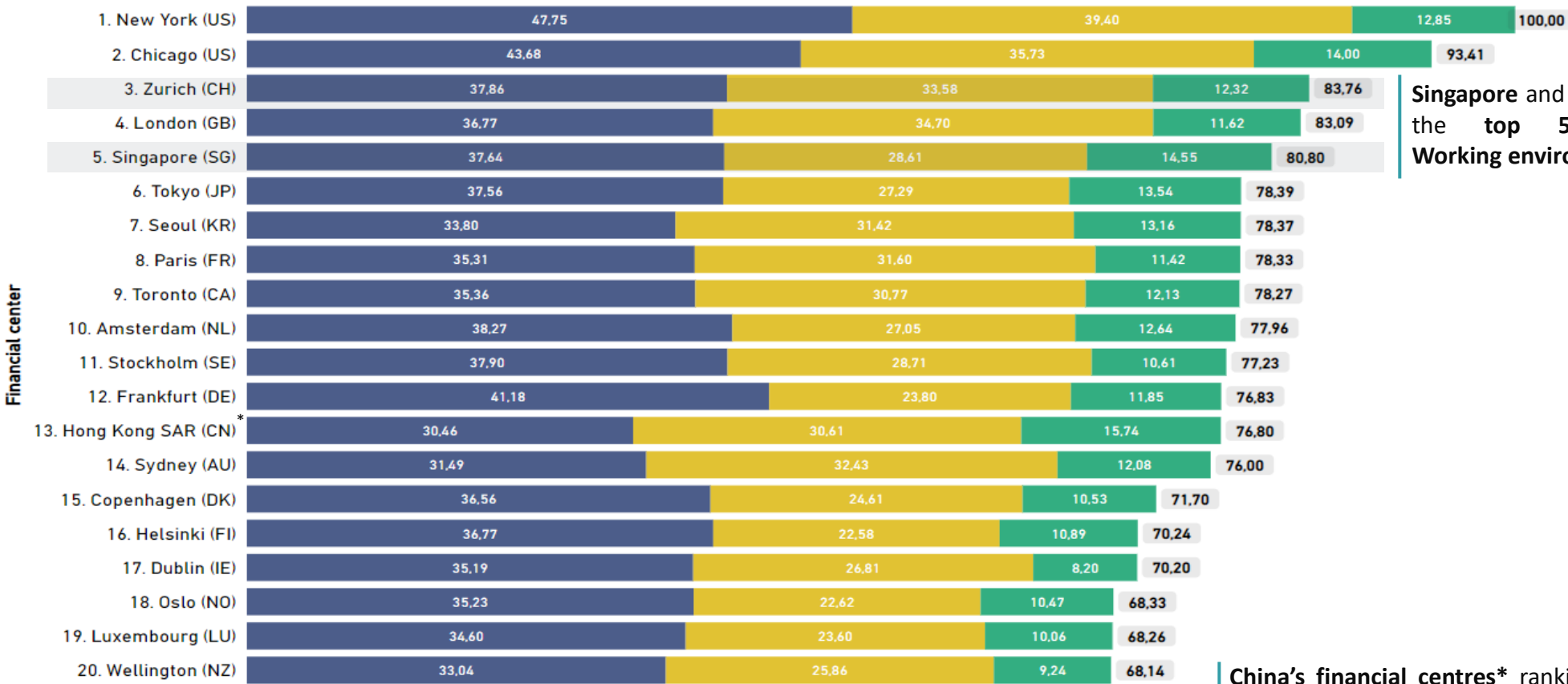
China's financial centres are **well ranked** along this sub-score.

Zurich is one of the financial centres exhibiting important discrepancy between its global rank (9th) and its Finance one (19th).

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.

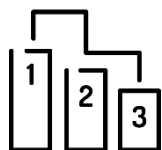
China's financial centres* rankings in this sub-category are ranked significantly lower than in the 'Finance' sub-category and are even outside the top 30.

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

PART 5

CONCLUSION

THIS OFEX RANKING IS A FIRST VERSION WHOSE PURPOSE IS TO BE OBJECTIVE TO ENLIGHTEN AS RELIABLY AS POSSIBLE THE PUBLIC AUTHORITIES AND DECISION-MAKERS



A NEW ATTRACTIVENESS RANKING

- **Open, transparent and flexible ranking**
- **47 financial centres from 44 countries**
- Indicators separated into 2 main categories **Financial & economic sector development** and **Working environment**



AN OBJECTIVE RANKING

Complement the existing tools by being

- **objective, relying on data from reliable and known sources**
- **transparent on the methodology**



PROVIDING INFORMATION FOR PUBLIC AUTHORITIES AND DECISION-MAKERS

This ranking aims to **enlighten and guide public authorities and decision-makers** on where to do financial business or how to develop financial centre's attractiveness

WHAT'S NEXT?

- ✓ It is an ongoing project with the objective of updating the ranking once or twice a year
- ✓ The methodology and indicators used will evolve over time
- ✓ In-depth analysis of the ranking will be made
- ✓ This is a first step, as teams are working on other projects, especially in green finance

**THE OFEX WEBSITE CONTAINING THE RANKING AND LIST OF INDICATORS USED IS NOW AVAILABLE!
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)



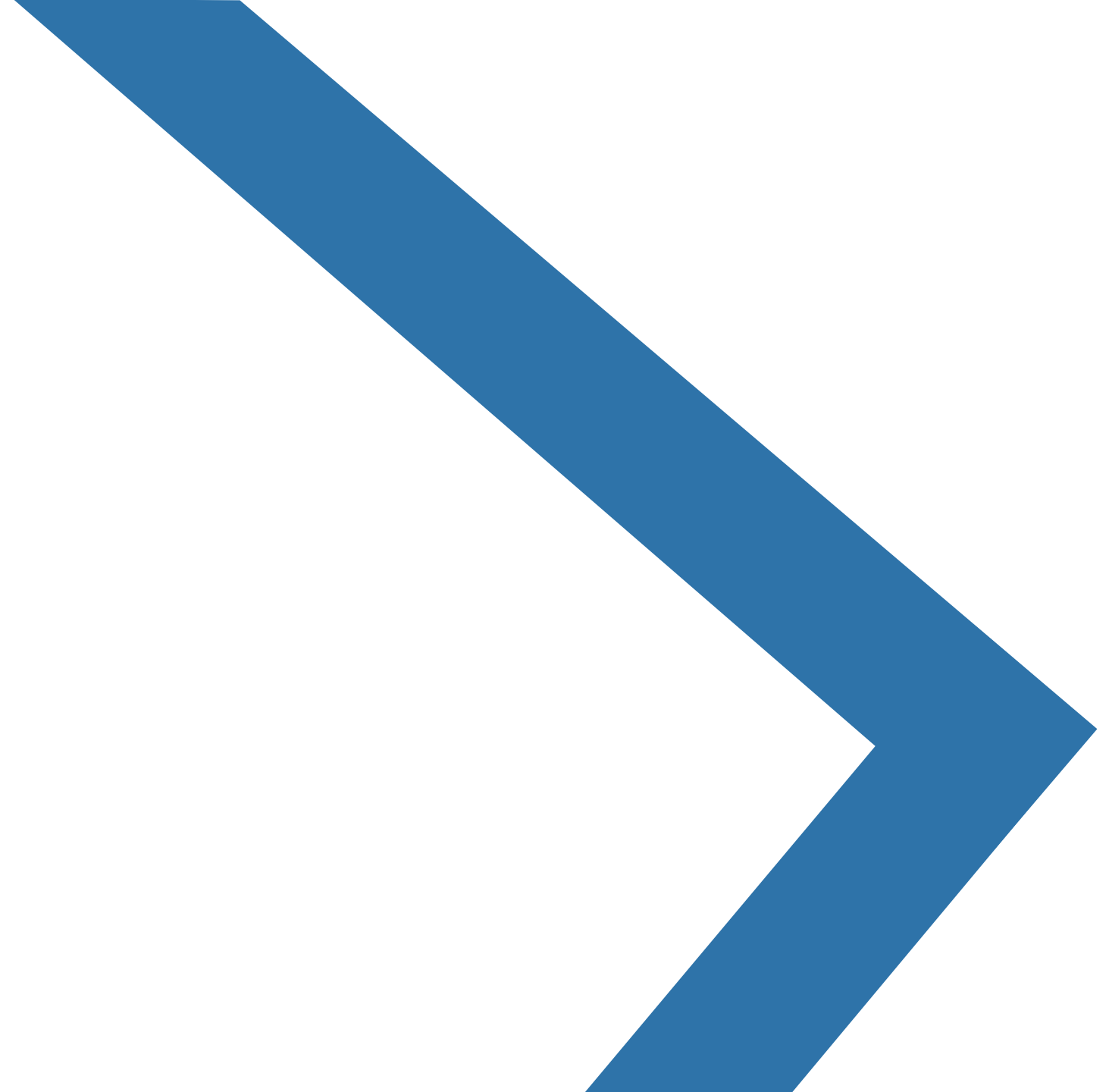
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APPENDICES



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