6. Design and construction of the Hong Kong Creativity Index

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Abstract

This paper looks at the process of constructing the Hong Kong cultural index (Home Affairs Bureau HKSARG 2004). The process had three main elements: the conceptual framework, data availability and statistical methodology. It was predicated from the requirements that:

- *the overall framework should follow the agreed conceptual framework as far as possible;*
- *the required data must either already be available or easily collected, possibly after interpolation to cover missing data;*
- *the sub-index structure should be validated using principal component analysis, to ensure that each sub-index is reliable.*

We discuss the practical difficulties in implementing this process and the lessons learned that may be useful for other jurisdictions that wish to implement a similar process. We also discuss what has happened since creation of the index

Conceptual Framework

The overall framework has five elements: Creativity Outcomes, Structural Capital, Human Capital, Social Capital and Cultural Capital. This starts from Florida (Florida 2003; Florida 2004)'s three Ts — Technology, Talent, Tolerance — which he argues drive technological innovation and economic output. However, our concept was broader than economic and technological outputs, so we incorporated ideas from the Silicon Valley Creativity Community Index (Cultural Initiatives Silicon Valley, 2005) to include cultural infrastructure, social connectedness, cultural participation and cultural policies. We also expanded the scope to cover other creativity and competitiveness elements taken from the World Values Survey of Inglehart (Inglehart and Baker, 2000) and the Global competitiveness report of Porter (Porter, Schwab et al., 2004).

Technology, Talent and Tolerance

From Florida's technology items, we used innovation (as measured by patents) while high-tech-related industry was replaced by R & D expenditure, which addresses the point that in Hong Kong most technology is related to financial services rather than hardware development. In other words, a hardware perspective of technology may be too narrow for Hong Kong and needs to be expanded.

From Florida's talent items, we used educational attainment and specific occupational categories that relate to creative activity (which were split into creative and scientific talent classes).

From Florida's tolerance items, we used the Gay Index (in terms of the coupled gay population), the Bohemian Index (in terms of the artistically creative population) and melting pot (foreign-born population), although this is arguable for Hong Kong as a Special Administrative Region of China, because it raises the question of whether mainland-born people should be treated as foreign-born. From the Florida and Tinagli (Florida, Tinagli et al., 2004) European study, we added Attitudes, Values, and Self-expression (which are arguably strengths of Europe compared to US), as assessed by the World Values Study of Inglehart (Inglehart and Baker, 2000)

Social and cultural capital

Social capital as defined by Putnam (Putnam, 2000) and others has been criticised by Florida because it traditionally provides opportunities to insiders and is this a barrier to creativity. However, social capital can be defined in terms of relationships across groups and civic participation, which facilitates creation, rather than creating barriers.

Cultural capital is defined here as cultural assets that provide basis for public participation as argued in the Silicon Valley (Cultural Initiatives Silicon Valley, 2005) study and increased connectedness, which facilitates creative activities.

Asian additions

Asian values have been controversial but there are differences in the social and cultural environment in Asia for which we need to account. One key element of economic development for the Asian Dragons is entrepreneurship, which is closely linked to the large number of small and medium-sized enterprises (SMEs) in Asia in contrast to the importance of large corporations in Europe and the US, so this element needs to be incorporated in a Hong Kong index. The aim was to ensure that the index was relevant to Asia, not just to western economies in Europe and North America.

The Creativity Index

(The full list of items that comprise the Honk Kong creativity index can be found in the Appendix.)

Creative outputs

Creative outputs are public goods that may stimulate further creative activity, so this is both an output and a potential input for creative activity. Elements included in the index were economic contribution, percentage of GDP, percentage of the workforce, percentage of the export trade, percentage of the import trade and percentage of e-commerce trade in relation to creative outputs. In terms of inventive activity, we included the ability to sell local brands internationally, the ability to obtain new technology, the number of patents per capita and the percentage of local patents filed by local applicants. Other indicators included were newspaper circulation per capita, new books and periodicals per capita, music titles per capita, lyrics per capita, film per capita, film shows per capita, performances per capita, and the floor area of new buildings per capita.

Structural/institutional capital

Structural and institutional capital are key issues in determining the willingness of investors to invest money in a particular location, especially within Asia. For institutional capital, the elements included in the index are independent legal system as assessed by an enumeration of independence, corruption perceptions as assessed by the world percentile on a corruption perception index, freedom of expression as assessed by the scoring of freedom of press, and freedom of speech.

Information and communications infrastructure indicates access to technology for both businesses and the general public. This was assessed by measuring the percentage of businesses with personal computers, with Internet access, with websites, the percentage of households with personal computers, with Internet access and the number of mobile phone accounts per capita.

Social and cultural infrastructure illustrates access to culture provided by government and NGOs. The indicators used were the number of community halls and centres per capita and the number of civic centres per capita, while for community facilities, the indicators used were the number of non-government organisations (NGOs) per capita, the number of public library users per capita, the number of books in libraries per capita, the number of seats in cultural venues per capita, the number of monuments per city, the number of museums per city.

Financial infrastructure illustrates the ability to grow companies and businesses. The indicators used were the number of listed companies per capita, the stock market capitalisation relative to GDP, the amount of venture capital relative to GDP.

Lastly, for entrepreneurship, which illustrates the ability to create new businesses, the indicators used were the number of SMEs relative to the number of companies and the percentile labour productivity index.

Human capital

Expenditure on R & D and education are key elements of human capital, especially for home-grown talents. The indicators included were R & D expenditure relative to GDP by businesses, on higher education, and by the public as well as expenditure on public education relative to GDP.

Florida's work shows the importance specifically of knowledge workers, which were measured in terms of the proportion of the population aged 15 years and above who have tertiary education (with and without degrees) and the proportion of the labour force doing R & D work.

Mobility is a key element of openness, which itself is important for creativity. For Hong Kong, we included the number of visitor arrivals, the number of resident departures, the number of emigrants and the number of working visas all relative to the total population.

Social capital

The development of Social Capital indicates support for the community as assessed through charitable donations relative to GDP made personally and by companies.

Norms and values for social capital that are inclusive were assessed through the World Values Survey (WVS) and included generalised trust, institutional trust, reciprocity, sense of efficacy, cooperation, attitude towards, acceptance of diversity, attitude towards human rights, towards immigrants, towards foreigners' lifestyles, modern versus traditional values, and self-expression versus survival.
Social participation also used the WVS to assess interest in public affairs, participation in social organisations, social contact with acquaintances, with community, sense of efficacy, and number of volunteers per capita.

Cultural capital

Cultural expenditure indicates how important culture is to the public. This was measured using the proportion of public expenditure on the arts and culture, and the percentage of household expenditure on designated cultural goods and services.

Network quality also relates to the importance placed on culture through norms and values, for which elements of the WVS were used to assess the value placed on creative activity, on children's creative activity, on arts and cultural activities, on children's arts and cultural activities, and whether people were strong advocates for the arts and culture.

Environmental factors relate to the support for creativity in general and use the WVS to assess the encouragement for creative and for cultural participation and the moral values relating to the purchase of pirated goods.

Lastly, cultural participation was assessed via the number of books borrowed per year per capita, the amount of royalties paid per capita, the time spent per week for personal Internet use, the number of museum visits per year per capita, the number of cultural attendances per year per capita and the number of film attendances per year per capita.

Data availability problems

One of the key issues in constructing any index is the availability of relevant data. In this case, we could not obtain reliable data on the protection of intellectual property rights in Hong Kong, which is now much improved from the days when illegal CDs and DVDs could be found on any street corner. Other areas that had to be excluded for lack of data include social innovation (i.e. the application of entrepreneurship skills to social problems) which is an area where Hong Kong was genuinely innovative in the past and has been focusing attention on in recent years. Disposable personal income spent on the arts and culture had to be replaced by household expenditure on selected items and the arts and culture participation had to be restricted to government-sponsored shows, given the lack of any private sector data. There was also no historical data on tolerance, forcing the assumption that change over recent history is limited.

Statistical reliability and validity

In order to ensure that the index is both reliable and valid, statistical analysis was applied in two ways. Firstly, for the tolerance data from the World Values Survey (where we had cross-sectional data from all the survey respondents), item reliability was evaluated to ensure that in a cross-sectional analysis, all items included together in an index were reliable. Secondly for items within an index where longitudinal data was available, principal components analysis was applied to the log transformed item measurements see whether the multiplicative changes in the items over time were correlated. Both cross-sectional and longitudinal analyses facilitate reflection over which items belong in the same or separate sub-scales and were critical in structuring the sub-scales within the five major scales.

Ideally, both forms of analysis would be undertaken, but for many of the items only aggregate data was available, allowing only longitudinal analysis, while for the WVS items, data was only available for one time point, allowing only cross-sectional analysis.

Nearly all items are ratios even before indexing process, so analysing log-transformed data (which changes ratios into differences) is sensible, and has the advantage of giving the same results regardless of which time point is the reference point (i.e. when the index is 100).

One major weakness with the longitudinal analysis was that there were only resources provided to cover six time points, which is barely enough.

Outcomes, use and value of the Index

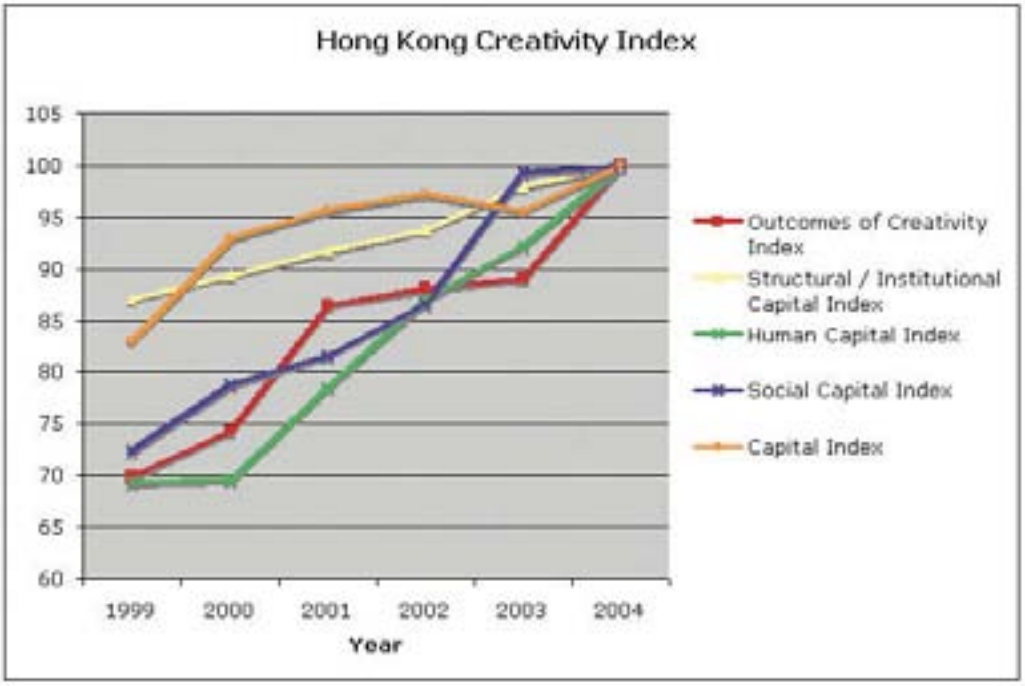

Figure 1: The Hong Kong Creativity Index using 2004 as the base year

As seen in Figure 1, the index shows significant increases in all five major indices over the five-year period.

In terms of the use and value of the index, the most positive outcome was that it stimulated invaluable debate about the changes and their importance. The increases in Structural and Cultural Capital are less than those for Human and Social Capital and Cultural Outcomes. Unfortunately, the Hong Kong government has not yet funded any updates to the Index, but the Index continues to be referenced by politicians in debates about the government's grand plans for cultural developments. This suggests that the government will need to update the study in order to be able to show that the new investments are paying off in terms of improved outcomes.

Other relevant points

In hindsight, the index raises some other important questions, which are particularly relevant for a small territory like Hong Kong that has always relied so heavily on human capital. Firstly, how to balance the strategies of importing talents versus develop-

ing home-grown talents? With mainland China next door, and a timetable for integration, it is tempting to rely on imports from the Mainland, which is usually cheaper and easier than local development. Secondly, Hong Kong is not a centre for technological innovation, if that means hardware products. However, social and cultural innovation seem much more attractive given the openness relative to the mainland and most Asian countries. Lastly, does education increase creativity or does it sometimes stifle it? Human capital and educational reforms may need to address this question before we expand our education system to require high levels of education for everyone.

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Appendix 1
Components of the Hong Kong Creativity Index

Outcomes of Creativity Index

Economic contribution of creativity
Value added of Hong Kong's creative industries as % of GDP
Persons engaged in creative industries as % of total employment
Share of cultural goods relative to total export trade in goods
Share of cultural goods relative to total import trade in goods
Percentage of business receipts from selling goods, services or information through electronic means

Inventive activity of economic sector
The ability of local enterprises to sell branded products in international market
The ability of local enterprises to acquire new technologies
Patent applications per capita
Percentage of patent applications originated from local applicants relative to all patent applications

Other outcomes of creative activity
Daily circulation of newspaper per capita
Book and periodical titles newly registered per capita
Music titles composed per capita
Lyrics written per capita
Films produced per capita
Film shows presented by government cultural services per capita
Performances by government cultural services per capita
Gross floor area of new buildings per capita

Structural/Institutional Capital Index

Independence of the legal system
Enumerated data about independence of the legal system
Corruption perceptions in Hong Kong
Percentile scoring in Corruption Perceptions Index

Freedom of expression
Percentile scoring on freedom of press
Percentile scoring on freedom of speech
Infrastructural conditions of ICT
Percentage of establishments using personal computers
Percentage of establishments with Internet connection
Percentage of establishments with web page/website
Percentage of households using personal computers
Percentage of households with Internet connection
Mobile phone subscribers per capita

Robustness of social and cultural infrastructure
NGOs per capita
Registered public library users per capita
Books in public libraries per capita
Seats in all government cultural services' performance venues per capita
Declared monuments per city
Museums per city

Availability of community facilities
Community halls and community centres per capita
Civic centres per capita

Financial infrastructure of Hong Kong
Listed companies per capita
Capitalisation of stock market (in local currency) per GDP
Venture capital under the place's management (in local currency) per GDP

Robustness of entrepreneurship
Share of SMEs to establishments
Percentile scoring in Labour Productivity Index (Whole Economy)

Human Capital Index

R & D expenditure & educational expenditure
R & D expenditure (business sector) as % of GDP
R & D expenditure (higher education) as % of GDP
R & D expenditure (public) as % of GDP
Public expenditure in education as % of GDP

Population of knowledge workers
Share of population aged 15 and above with educational attainment at tertiary level (non-degree)
Share of population aged 15 and above with educational attainment at tertiary level (degree and above)
R & D personnel as percentage of total working population

Transience/mobility of human capital
Visitor arrivals per capita
Residents' departures per capita
Estimated emigrants per capita
Working visas per working population

Social Capital Index

Development of social capital
Approved charitable donations allowed under Salaries Tax as % of GDP
Approved charitable donations allowed under Profits Tax as % of GDP
Expenditure on social welfare as % of total public expenditure

Network quality: norms & values from World Value Survey
Indicators on generalised trust
Indicators on institutional trust
Indicators on reciprocity
Indicators on sense of efficacy (on control)
Indicators on cooperation
Indicators on attitude towards diversity
Indicators on acceptance of diversity
Indicators on attitude towards human rights
Attitude towards rights and wrongs of foreign immigrants
Attitude towards foreigners' lifestyle
Indicators on modern v traditional values

Indicators on self-expression v survival

Network quality: social participation from World Value Survey
Interest in public affairs
Participation in social organisation
Social contact with acquaintance
Social contact with community
Indicators on sense of efficacy (on what you did)
Volunteers per capita

Cultural Capital Index

Cultural expenditure
Expenditure on arts & culture as % of total public expenditure
Household expenses on designated cultural goods & services as % of total household expenses

Attitude towards arts, cultural and creative activities
Value placed on creative activity
Value placed on school-aged children's creative activity
Value placed on arts and cultural activities
Value placed on school-aged children's arts and cultural activities
Community leader to be a strong advocate for advancing the arts and culture of the place

Environmental factors for cultural and creative activities
Evaluation on milieu that encourages creative activities
Evaluation of milieu that encourages cultural participation
Value placed on the morality to buy pirated or counterfeit goods

Network quality: cultural participation
Library books borrowed per year per capita
Royalty fees paid to copyright fees collecting agents (excluding revenue from overseas) (in local currency) per capita
Average % of week spent on Internet for personal use
Visits to government museums per capita
Attendances to performances presented by government per capita
Attendances to film and video shows presented by government per capita