

ECONOMIC CONTRIBUTIONS OF SINGAPORE'S CREATIVE INDUSTRIES

OUTLINE

This paper is organised in four parts. The first charts the scope of the creative cluster, comprising both 'upstream' arts and 'downstream' applications.

The second part of the paper assesses the economic impact of the creative cluster, outlining both its tangible and intangible contributions to the economy.

The third part benchmarks Singapore's creative industries against those of leading countries, to give an idea of Singapore's current position and scope for advancement.

The final part discusses policy implications for Singapore arising from this study.

(1) THE SCOPE OF THE CREATIVE CLUSTER

The creative cluster can be defined as "those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property"¹. This cluster is fuelled by ideas at the intersection of the arts, business and technology. It leverages on the multi-dimensional creativity of individuals – artistic creativity, entrepreneurship and technological innovation – to create new economic value.

Contributed by:

**Assoc Prof Toh Mun Heng,
Consultant**

Adrian Choo, Economist

Terence Ho, Economist

**Economics Division
Ministry of
Trade and Industry**

With inputs from:

**Creative Industries Strategy
Group
Ministry of Information,
Communications and the
Arts**

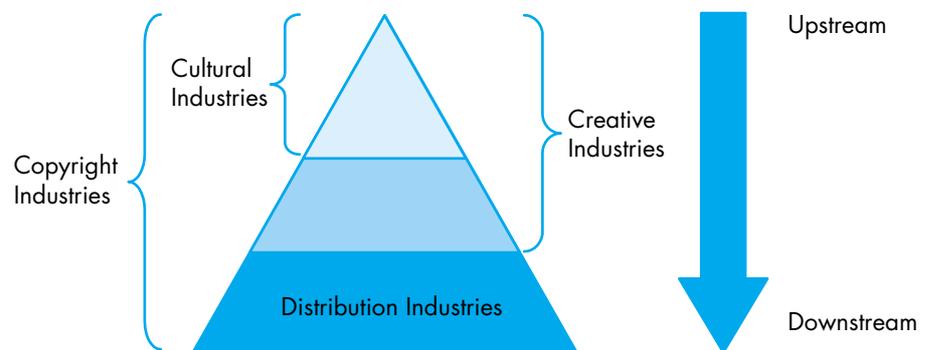
The creative industries leverage on multi-dimensional creativity of individuals to create new economic value.

The views expressed in this paper are solely those of the authors and do not necessarily reflect those of the Ministry of Trade and Industry, Government of Singapore.

¹ ERC Report, 'Creative Industries Development Strategy'. This definition is borrowed from the UK Creative Industries Taskforce, *Creative Industries Mapping Document*, November 1998.

There are three common approaches² to defining the scope of the creative cluster: the 'cultural industries' approach; the 'creative industries' approach; and the 'copyright industries' approach. The various definitions are illustrated in *Exhibit 1*. The 'cultural industries' can be taken as a subset of the 'creative industries', while the broader 'copyright industries' consist of both the 'creative industries' and the associated 'distribution industries'³. For a comprehensive study, this paper will analyse the creative cluster as the collection of 'copyright industries'. However, more emphasis will be placed on the creative industries as they are the primary drivers of the cluster. A breakdown of the creative industries and related distribution industries by Singapore Standard Industry Classification (SSIC) codes is attached in *Annex A*.

COMPOSITION OF THE CREATIVE CLUSTER [Exhibit 1]



One can think of the creative industries as comprising basic and applied arts industries. Basic or 'upstream' arts refer to traditional arts such as the performing, literary and visual arts, whereas 'downstream' arts refer to the applied arts such as advertising, design, publishing and media-related activities. While 'upstream' art activities may have commercial value in themselves, 'downstream' art activities derive their commercial value principally from their applications in other economic activities. Part 2 of this paper suggests the existence of a mutual relationship between upstream and downstream arts, so that each is an essential component of the arts 'ecosystem'.

² See <http://www.joetsang.net/creative/define.html>

³ Includes wholesale, retail and distribution of creative industry products.

(2) ECONOMIC CONTRIBUTION OF THE CREATIVE CLUSTER

The creative cluster contributes to the economy directly and indirectly. Harry Hillman Chartrand, the former Research Director of the Canada Council for the Arts, suggests that the economic impact of the fine arts can be felt at four levels⁴:

- a. The Primary Economic Impact of the fine arts concerns their direct and quantifiable contribution to the national economy. This includes how much the arts contribute to Gross Domestic Product (GDP) and employment.
- b. The Secondary Economic Impact of the fine arts concerns their indirect but quantifiable contribution to the national economy. This contribution involves the 'multiplier effect' of spending in the fine arts.
- c. The Tertiary Economic Impact of the fine arts concerns their direct but less tangible contribution to the national economy. This includes the contribution of the arts to industrial invention, innovation and differentiation, and ultimately economic competitiveness.
- d. The Quaternary Economic Impact of the fine arts concerns their indirect and non-quantifiable contribution to the national economy. This impact involves the fine arts' contribution to the quality of life, cultural identity and pluralism.

Using a similar framework, this paper will study the primary, secondary and tertiary economic impact of the creative industries. For a good qualitative discussion of the quaternary economic impact of Singapore's creative industries, see the study by Ooi Giok Leng (2002)⁵.

Economic impact of creative industries felt at four levels: primary, secondary, tertiary and quaternary...

⁴ Chartrand, H. H. (undated), Cultural Economics – Economic Impact Assessment, <http://www.cultural.economics.atfreeweb.com/eia.htm>.

⁵ Ooi Giok Leng (2002), "Economics of the Arts", Arts, Media and Infocomm in Singapore 2002, Singapore Ministry of Information, Communications and the Arts.

Primary Economic Impact

The primary economic impact of the creative industries is reflected in their direct contribution to GDP as well as employment, as shown in *Exhibit 2*.

DIRECT ECONOMIC CONTRIBUTIONS OF CREATIVE INDUSTRIES, 2000
[Exhibit 2]

Creative Industry	Receipts (S\$ Million)	VA (S\$ Million)	Employment (Number)	VA/Worker (S\$)	Exports (S\$ Million)
IT and Software Services	2,892	1,137	14,290	79,661	312
Advertising	2,010	510	5,584	91,332	85
Broadcasting Media	1,212	229	3,747	61,116	25*
Publishing Industries	925	283	4,972	56,919	68
Interior, Graphics and Fashion Design	653	187	4,863	38,865	NA
Architectural Services	616	433	7,185	60,264	45
Art/Antiques Trade, Crafts	192	36	1,945	18,509	0.5
Performing Arts	125	71	2,003	35,447	NA
Cinema Services	121	53	938	56,503	NA*
Photography	80	27	1,137	23,747	NA
Industrial Design	28	12	186	64,516	NA
All Creative Industries	8,853	2,977	46,850	63,543	536
All Distribution Industries	8,803	2,022	31,868	59,264	3,129
Total	17,656	4,999	78,718	61,740	3,665

* Exports for cinema services are subsumed under figures for broadcasting media in Singapore's Trade Classification.

Source: Singapore Department of Statistics

Creative industries contribute 1.9 per cent to GDP and 2.2 per cent to employment...

For 2000 (latest data available), the creative industries contributed a **total value-added (VA) of S\$2.98 billion**, or about **1.9 per cent of GDP**. Distribution industries associated with these core creative industries added a further S\$2.02 billion, bringing the total VA of the copyright industries to S\$5.00 billion, or 3.2 per cent of GDP.

In 2000, **employment** in the creative industries was **47,000 (2.2 per cent of nation-wide employment)**, with an additional 32,000 persons employed in distribution industries. The total number employed in the creative cluster was 79,000 or 3.8 per cent of total employment in 2000. The sector with the highest VA and employment was the IT sector, which accounted for 38 per cent of the creative industries' VA and 31 per cent of employment in 2000.

The **labour productivity** of the creative industries, at **S\$63,543 per worker**, was close to the average services labour productivity (estimated to be S\$68,850 per worker⁶) in 2000. The VA per worker of the distribution industries was lower at S\$63,452. The average VA per worker in the creative cluster amounted to about S\$63,500.

⁶ Estimated from DOS and Census data. Manufacturing labour productivity is much higher – over S\$96,750 – due to the greater capital intensity in manufacturing sectors.

Two sectors – advertising and IT – had particularly high VA per worker: over S\$90,000 for advertising, and nearly S\$80,000 for IT. This could partly be attributed to high capital intensity, but also to the high value generated by ideas and innovation.

Exports of the creative industries, at S\$536 million in 2000, are modest as many of these industries produce services catering to Singapore residents. However, the downstream distribution industries have a relatively high export content, totalling S\$3.13 billion in 2000. The total exports of the creative cluster in 2000 were S\$3.67 billion.

From 1986 to 2000, the creative industries grew by an average of 17.2 per cent per annum, as compared to average annual GDP growth of 10.5 per cent. Growth of the creative cluster during this period was 14.0 per cent per annum. The creative industries had consistently grown faster than Singapore's overall GDP in the periods 1986–1990, 1990–1995 and 1995–2000 (*Exhibit 3*). Growth in the creative industries had maintained a relatively high rate of around 12.9 per cent per annum between 1995 to 2000, as compared to 5.8 per cent for the overall economy. If the distribution industries, which have grown more weakly in recent years, are taken into account, the growth of the creative cluster, at 8.6 per cent per annum, still exceeded GDP growth during the period 1995–2000.

Creative industries grew by 17.2 per cent per annum from 1986 to 2000...

COMPOUNDED ANNUAL GROWTH RATES OF THE CREATIVE INDUSTRIES
[Exhibit 3]

Creative Industry	1995–2000	1990–1995	1986–1990
IT and Software Services	24.33	26.78	29.58
Advertising	12.73	11.50	23.71
Broadcasting Media	3.52	2.16	15.42
Publishing Industries*	7.26	21.34	–
Interior, Graphics and Fashion Design	6.45	31.65	16.12
Architectural Services	6.32	21.64	19.84
Art/Antiques Trade, Crafts	4.94	0.18	16.74
Performing Arts	13.85	23.14	5.66
Cinema Services*	13.47	13.76	–
Industrial Design^	–	–	–
Photography	3.96	8.47	13.54
All Creative Industries	12.86	16.64	23.65
All Distribution Industries	3.76	10.57	21.10
Total	8.61	13.31	22.15
Singapore GDP	5.80	12.21	14.36

* Data for numerous segments is not available in year 1986.

^ Industry data is only available for year 2000.

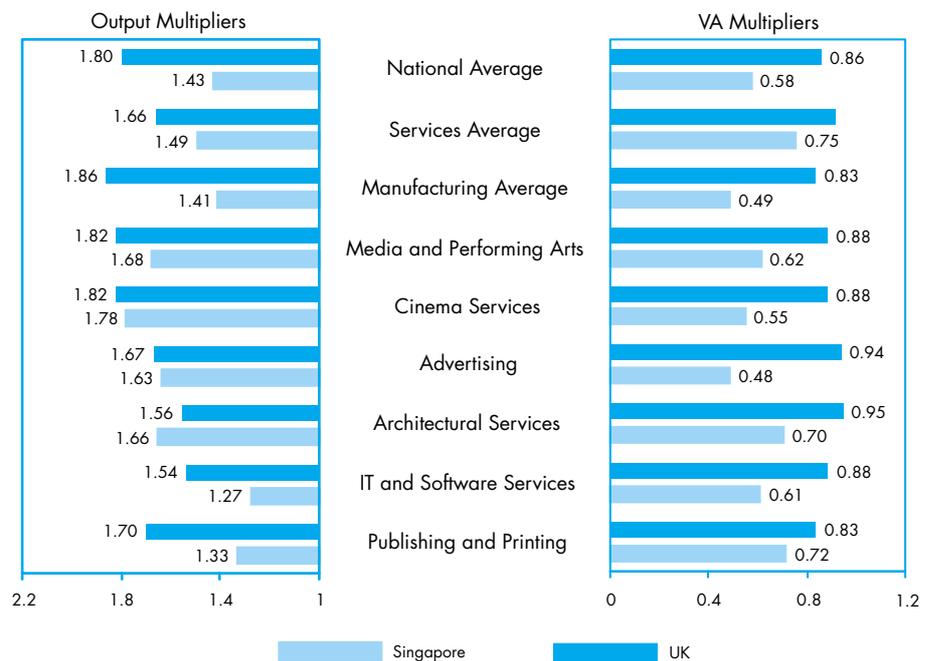
Source: Ministry of Trade and Industry, Singapore Department of Statistics

The fastest-growing creative industries are IT, performing arts, cinema services and advertising. Interior/graphics/fashion design and architectural services have also exhibited strong growth of over 6 per cent. Among these high-growth industries, advertising was the only industry that grew faster in 1995–2000 than in 1990–1995.

Secondary Economic Impact

The secondary economic impact refers to spin-offs resulting from expenditure on creative industries. This is because the creative industries induce production in other industries as they purchase goods and services for their own production. Such multiplier effects can be traced through input-output (I-O) tables. The multipliers for the creative industries are tabulated in *Exhibit 4*. The multipliers for creative industries in the UK are included to give a sense of the full potential of these industries. The UK's creative industries are considered to be among the most developed in the world, with its government playing a very active role in nurturing these industries.

CREATIVE INDUSTRIES MULTIPLIERS [Exhibit 4]



Note: Multipliers for the art/antiques trade and crafts, design as well as photography industries cannot be computed as they are highly aggregated with other industries in the 1995 I-O table. Media and performing arts are grouped in the same I-O segment.

An industry's output/VA multiplier measures the total production/VA in the economy induced by one additional unit of final demand in the industry. For instance, one additional dollar of expenditure in the publishing and printing industry will result in S\$1.33 worth of production output and S\$0.72 of VA in the entire economy.

The publishing as well as the IT and software services industries are characterised by relatively low output multipliers of 1.33 and 1.27 respectively as most of their inputs are sourced from within the industry. However, their respective VA multipliers of 0.72 and 0.61 are above the national average of 0.58. This is due to the high VA created within the industry, in line with the high commercial and mass-market value associated with media and IT products.

The advertising industry has a high output multiplier of 1.63 due to its usage of various media for its campaigns. The cinema services has the highest output multiplier of 1.78 among all the creative industries due to the extensive outsourcing of production needs, i.e. existing media products, accommodation and transport. However, margins are low in these two industries, resulting in low VA multipliers of 0.48 for advertising and 0.55 for cinema services. For the advertising sector, one possible explanation is the intense competition in the highly saturated local market.

In contrast, the architectural services as well as the broadcasting media and performing arts industries possess both high output (1.66 and 1.68 respectively) and VA (0.70 and 0.62 respectively) multipliers. The architectural services industry has strong demand for other services such as communications, financial services, real estate and consultancies, resulting in a high output multiplier. The industry also has a high VA multiplier due to the high knowledge content of the sector. The broadcasting media and performing arts industries outsource much of their production needs, similar to the cinema services industry. While the margins in broadcasting media and performing arts are only slightly higher compared with margins in the cinema services industry, inputs from other sectors have a higher VA content, resulting in a higher VA multiplier of 0.62.

Expenditure in architectural services and publishing has greatest spin-offs for the rest of the economy.

Comparison with UK's multipliers. The output multipliers of the UK are generally higher than those of Singapore across all industries (*Exhibit 4*). The gap between UK's and Singapore's VA multipliers is even wider. This could be attributed to the fact that the UK's creative and supporting industries have more well-developed VA-chains. The difference in each industry's overall productivity between the two countries is computed to isolate the VA-chain effect (*Exhibit 5*). An industry's overall productivity is the VA content of the economy-wide output induced by one unit of final demand in the industry, and is computed as the ratio of the VA multiplier to the output multiplier.

COMPARISON OF OVERALL PRODUCTIVITY [Exhibit 5]

Industry	A Overall Productivity for Singapore	B Overall Productivity for UK	A – B Difference in Overall Productivity*
Publishing	0.54	0.49	0.05
Information Technology	0.48	0.57	-0.09
Broadcasting Media and Performing Arts	0.37	0.48	-0.12
Cinema Services	0.31	0.48	-0.17
Architectural Services	0.42	0.61	-0.19
Advertising	0.30	0.56	-0.27
Manufacturing Average	0.35	0.45	-0.10
Services Average	0.50	0.55	-0.05
National Average	0.40	0.48	-0.07

* A positive coefficient shows that the Singapore industry is higher up in the VA chain than its counterpart in the UK.

Source: Ministry of Trade and Industry, Singapore I-O Table (1995), UK I-O Table (1995)

The publishing industry is the only creative industry to have higher overall productivity in Singapore than in the UK. The IT and software services as well as the broadcasting media and performing arts are considered to have fairly well-developed VA chains, although there is room for further upgrading. The overall productivity of advertising is notably lower in Singapore than in the UK.

Tertiary Economic Impact

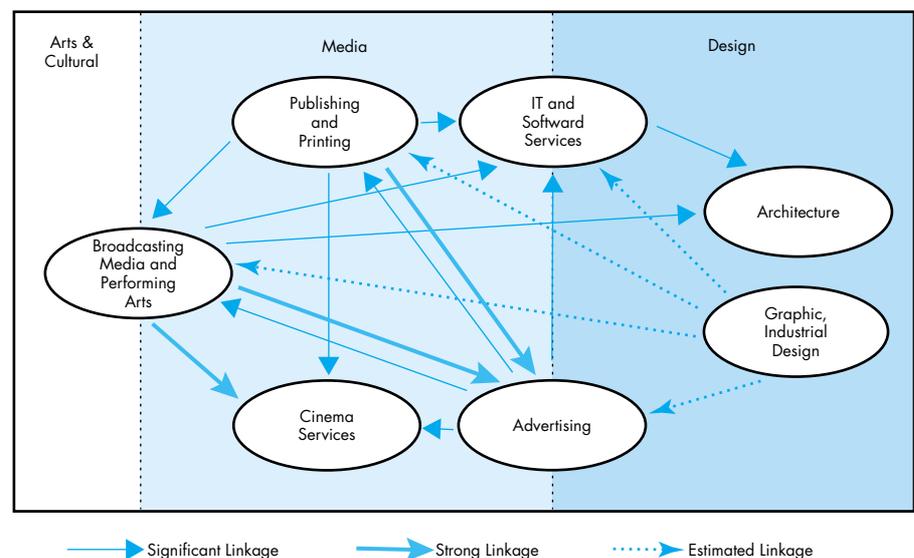
Creative industries generate original knowledge, products and services. The economic value of these creations could multiply many-fold when they are adopted and commercialised by services and manufacturing industries. This constitutes the tertiary economic impact. One could consider creative industries as upstream economic activities that provide inputs to other industries in the economy. Hence they constitute a major source of competitive advantage for the economy, especially in a knowledge-based economy where products and services are knowledge- and technology-intensive.

One way of assessing the tertiary economic impact is to look at the utilisation of creative goods and services in other sectors' production. This information can be found from the 1995 I-O table. A sector is assessed to derive economic competitiveness from the creative industries if creative goods and services are extensively used by the sector.

The creative industries exhibit significant linkages among each other by this measure. The linkages suggest an ecosystem of creative industries, where even small industries such as cinema services, broadcasting media and performing arts can benefit from and contribute to the vibrancy of larger sectors such as advertising, publishing. These linkages are depicted in *Exhibit 6*.

Creative industries provide inputs to other industries, and constitute a major source of competitive advantage...

NETWORK AMONG CREATIVE INDUSTRIES [Exhibit 6]



Note: The creative industries acquire an average of 0.35 per cent of their inputs from each of the 155 I-O sectors in the economy. The forward linkage is assessed to be significant if the source industry accounts for at least double the economy-wide average – 0.7 per cent of the purchasing industry's total goods and services inputs. The linkage is considered strong if this dependence is at least 3 per cent.

Exhibit 6 covers only six of the original ten creative industries in detail as the remaining industries are subsumed under highly aggregated segments in the 1995 I-O table. However, an IE Singapore-commissioned survey⁷ of 111 graphic and industrial design firms in 2000 suggests that linkages from the design industries to the creative ecosystem are significant as well. These estimated linkages are depicted by dotted arrows in *Exhibit 6*.

On average, each sector of the Singapore economy (as defined in the 1995 I-O Table) acquires 0.32 per cent of its inputs from each of the other 154 I-O sectors in the economy. Compared to this average, the share of creative products⁸ in the inputs used by major industries in their production is substantial. The utilisation rates for major industries are tabulated in *Exhibit 7*.

Substantial usage of creative inputs in Singapore's economy...

UTILISATION OF CREATIVE PRODUCTS BY MAJOR INDUSTRIES [Exhibit 7]

User Industry	Creativity Utilisation (Inputs from Local Creative Industries as % of Total Inputs)
Overall Manufacturing	0.79
Chemicals & Chemical Products	2.32
Electronics	0.63
Machinery & Equipment	0.90
Transport Equipment	1.22
Construction	9.96
Overall Services	6.11
Wholesale & Retail Trade	6.42
Hotels & Restaurants	2.91
Transport	1.57
Communications	6.88
Financial Services	5.97
Business Services	6.89
Tourism	2.42
Education	9.70
Healthcare	3.55

Source: Ministry of Trade and Industry, Singapore I-O Table (1995)

As a whole, the manufacturing industries acquire 0.79 per cent of their inputs from the creative industries. The chemicals industry has the highest creativity utilisation (2.32 per cent) among the manufacturing industries due to its extensive usage of advertising and IT services. In comparison, the other manufacturing industries have much lower creativity utilisation. However, creativity utilisation is expected to be higher for these industries once data from the design industries are available and included. The importance of design inputs is increasing as manufacturing move higher up in the VA chain, expanding activities such as chip design and building highly-customised products. The construction industry has the highest creativity utilisation of 9.96 per cent due to its close integration with architectural services.

⁷ Pascal Pong, Chow Kit Boey, Teh Kem Jin, Andre Liem (2001), "Product & Visual Communication Design Activities in Singapore", Centre for Business Research & Development, National University of Singapore.

⁸ Aggregation of the inter-industry sales of the six creative industries covered in the 1995 I-O table — publishing, broadcasting media & performing arts, cinema services, advertising, IT and software services and architecture.

Collectively, the services sectors have a creativity utilisation rate of 6.11 per cent. This signifies the heavy dependence of Singapore's services on domestic creative products. The only major services to buck this trend is the transport sector which competes primarily through cost-efficiency rather than innovative product offerings. Creative inputs figure most strongly in education services (9.70 per cent) due to its extensive usage of publishing as well as IT services products.

Creative inputs key in differentiating Singapore's products internationally...

Many of the major services sectors have a high or potentially high exportable content. The quality and availability of creative inputs to these services will be key in differentiating Singapore from regional competitors, and in allowing these sectors to realise their full potential. These services are also important for Singapore's bid to be a total business environment. Through their tertiary impact on these services sectors, the creative industries contribute significantly to Singapore's ability to attract industries and create a more diversified industrial structure.

Although utilisation of creative products differs substantially between manufacturing and services sectors, advertising services are a major constituent of creative inputs across all sectors. Advertising accounts for 0.4 and 1.4 percentage points of creativity utilisation for manufacturing and services sectors respectively. This points to the importance of advertising in helping local firms gain domestic and global market share. Singapore businesses⁹ have also indicated that product and packaging design complement branding to enhance recognition of company products, increase demand and lead to expansion into new markets.

(3) BENCHMARKING CAPABILITIES

Singapore's creative industries already contribute significantly to the economy. With the right capabilities in place, the creative industries could become an important driver of growth for the Singapore economy. This section identifies and measures national-level capabilities essential to the development of creative industries.

Creative industries could be important driver of growth...

The capability ratings represent the conduciveness of the national environment to further development of the creative industries, and not the present state of development of the creative industries. There are three broad capabilities commonly espoused in the literature:

⁹ Pascal Pong (2001), et al.

- a. Creative manpower. Richard Florida, a Carnegie Mellon professor and author of The Rise of the Creative Class, sums up the importance of creative manpower succinctly: "The key to economic growth lies not just in the ability to attract the Creative Class, but to translate that underlying advantage into creative economic outcomes in the form of new ideas, new high-tech businesses and regional growth."¹⁰ Accordingly, the indicators chosen to measure this capability would have to proxy the **availability** as well as **quality of creative manpower**.
- b. Markets. Studies commissioned by Australia, the UK and US governments have emphasised the importance of both domestic and foreign markets in driving the growth of the creative industries. Indicators measuring the **purchasing power of the consumer** as well as **industrial demand for creative inputs** would be used to estimate domestic demand. The ability of a country's creative industries to tap overseas demand can be estimated by the **creative industries' penetration into overseas markets**.
- c. Infrastructure. According to John Howkins, author of The Creative Economy, "It (Creativity) flourishes most when and where they are rewarded...The most marked growth is not actually in the creation of new products, but in their exploitation, distribution and trade."¹¹ The **institutional framework** of a country needs to be able to protect creative property, while enabling it to be exploited, distributed and traded efficiently. With the strong interdependence among the creative industries, the clustering effect arising from the **size of the copyright industries** would be substantial. **Public expenditure on media, arts and culture** in projects such as performing venues, IT networks and museums provide the physical backbone for creative industries.

Creative manpower, markets and infrastructure key to development of creative industries...

Three indicators have been selected with equal weightage to map each major capability. The indicators and their functions are summarised in *Exhibit 8*.

¹⁰ Florida, Richard (2002), The Rise of the Creative Class, Basic Books.

¹¹ Howkins, John (2001), The Creative Economy, Penguin Books.

CHOICE OF PROXY INDICATORS FOR MEASURING CREATIVE CAPABILITIES

[Exhibit 8]

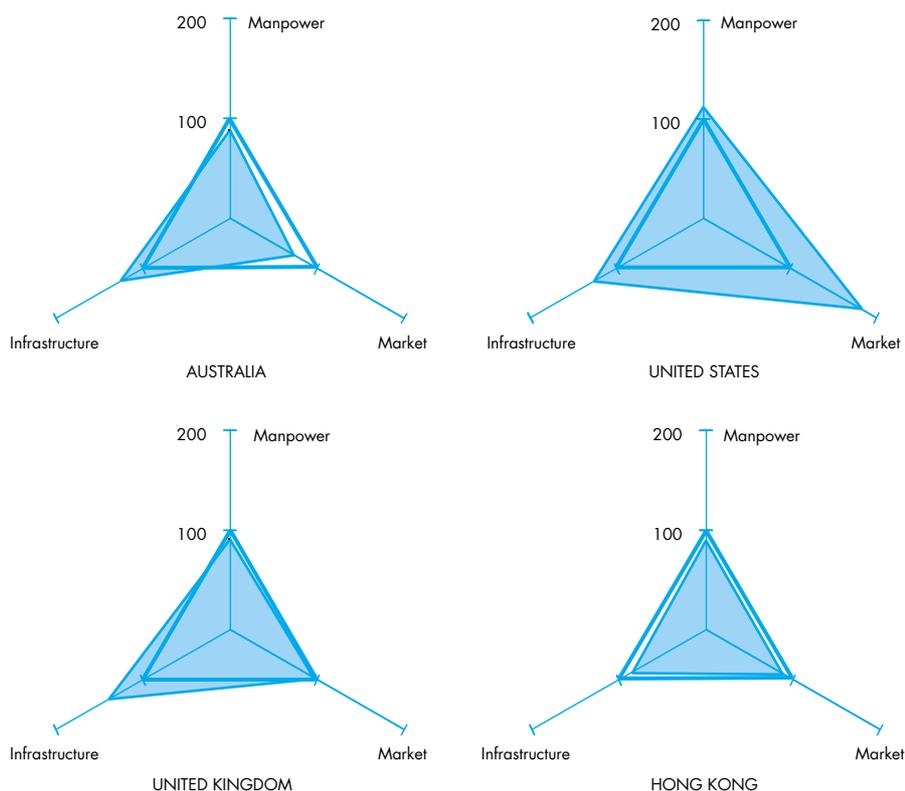
Proxy Indicator	Aspect Measured by Indicator
Creative Manpower	
Social Diversity	Ability to nurture and attract more creative talent.
Size of Creative Workforce	Present availability of creative manpower.
Innovative Capability	Quality of creative workforce, as measured by the ability and success of creative workers in applying their skills to economic activity.
Markets	
Copyright Industries Exports	Penetration in overseas markets.
GDP Per Capita at PPP ¹²	Ability of domestic consumers to purchase creative goods and services.
VA of Knowledge Intensive Industries	Demand of local industries for creative goods and services i.e. knowledge and technology intensive industries have higher demand.
Infrastructure	
Institutional Framework	Ability to protect and distribute creative property.
Size of Copyright Industries	Clustering effect of copyright industries, which includes both creative and associated distribution industries.
Public Expenditure on Media, Arts and Culture	Quality of infrastructure such as performing venues, IT network, museums.

The nine indicators are compiled for a basket of five countries (Australia, Hong Kong, Singapore, the UK and US) which have conducted studies on their creative industries and have available data. This allows for international benchmarking to assess the relative competitiveness of Singapore’s creative capabilities. Details of these proxy indicators and their sources are enclosed in *Annex B*.

The nine indicators have different denominations and ranges. To make them compatible, the Standard Deviation Method is used. The results are summarised in *Exhibit 9*. Details of the data processing methodology can be found in *Annex C*.

¹² PPP stands for Purchasing Power Parity which is the internationally accepted method of adjusting income by relative price levels in different countries so that each PPP dollar can buy the same amount of goods across countries.

COMPARISON OF NATIONAL CREATIVE CAPABILITIES [Exhibit 9]



TABULATION OF RATINGS

	Manpower	Market	Infrastructure	Overall
Singapore	100	100	100	100
Australia	88	73	125	94
United States	112	183	126	136
United Kingdom	90	98	138	106
Hong Kong	89	89	86	88

Source: See Annex B

Singapore's capability rating is set to 100 and compared to the capabilities of another country (represented by the shaded area) in each of the radar diagrams. In terms of overall capabilities in all three dimensions, Singapore's position is comparable with Australia, and better than Hong Kong. This means that Singapore has some competitive advantage in developing its creative industries, although it is behind the leading economies of the UK and US. The US leads the other countries by a large margin, in line with its position as the creative capital of the world.

Singapore possesses some competitive advantage in developing creative industries...

Singapore has the second strongest manpower rating, while the US outperforms all other countries by a large margin. Singapore's good rating can be attributed to its cosmopolitan society and openness to foreign ideas as well as the relative size of its creative class i.e. professionals engaged in creative activity. This is somewhat offset by its weaker innovative capability, i.e. the extent and success with which Singapore companies are able to capture a larger value chain from product innovation, design, customisation and marketing is notably weaker than the UK and US firms.

Singapore has the second best overall market capability. The US's rating of 180 is, however, almost twice as large as Singapore's rating of 100. The US's advantage stems primarily from the pervasiveness of its copyright exports to the rest of the world, attributable to the strong competitiveness and reputation of US's creative products. In addition, domestic consumers in the US possess almost 50 per cent more purchasing power than the other four countries. This creates a large domestic market for creative products, many of which are considered luxury goods.

For overall infrastructure, Singapore is ranked a distant fourth behind the US, UK and Australia. This is in spite of Singapore spending 0.30 per cent of GDP on infrastructure related to creative sectors, twice that of the 0.13 per cent spent by the US and 0.15 per cent by the UK. Business executives surveyed in the World Competitiveness Yearbook 2002 consider Singapore's legal framework to be more cumbersome and the press more restrictive than in Australia, the US and UK. Hence, the institutional framework in Singapore is considered to be somewhat less conducive to the development of creative industries. Singapore is at a substantial disadvantage as the collective size of copyright industries is much bigger in the US and UK (7.75 per cent and 7.90 per cent of GDP respectively).

The benchmarking exercise is not comprehensive due to the inadequacy of data at both the national and international levels. Firstly, there are no suitable indicators for measuring the success of the education system in nurturing creativity as well as the level of emphasis placed on subjects such as arts, design, media. Secondly, the infrastructure rating does not cover private sector funding of creative sectors. This is likely to be more substantial in the US and UK than the other three countries, giving these two countries an even larger advantage. Nonetheless, the relative magnitude of the rankings give a good sense of the potential of an economy to develop its creative industries, and its relative strengths and weaknesses.

(4) POLICY IMPLICATIONS

The Economic Review Committee has identified creative industries as one of the three new and promising service areas to grow, alongside healthcare and education. The Ministry of Information, Communications and the Arts (MITA) will spearhead the Creative Industries Development Strategy and work in collaboration with key partner agencies and stakeholders to develop the creative cluster into a key pillar and strategic enabler for the Singapore economy. Its vision is to develop a vibrant and self-sustaining creative cluster, with the target of doubling the percentage GDP contribution of the cluster from 3 per cent in 2000 to 6 per cent in 2012.

Singapore's overall national level capabilities appear to be comparable with those of Australia and the UK. This means that the macro environment is relatively conducive to its creative industries becoming globally competitive. Singapore's strongest competitive advantage lies in the openness of its society to various sources (both local and foreign) of ideas and talent, whether it be at the individual or firm level. This creates an environment for attracting, nurturing and applying creative talent. Singapore also enjoys some market advantage due to the trade-orientation of the economy and the sophisticated needs of its increasingly knowledge-based industries and services.

However, the benchmarking analysis has also highlighted some key gaps that may need to be addressed.

Creative Manpower

While Singapore's overall manpower rating is favourable, its innovative capacity lags substantially behind the US and UK. Singapore has scored well in terms of the size of its creative class relative to its total workforce, but the rather broad definition of the Creative Class¹³ may not be an accurate reflection of the number of creative professionals who participate in the creative industries.

- a. Skills and Training. There is a need to take stock of the manpower supply and demand situation, and to examine the specific skills and training needs of the creative cluster, at both the education and post-education levels.

Creative industries could be a key pillar and strategic enabler for Singapore...

Skills and training as well as innovative capacity need to be enhanced...

¹³ The mathematical, engineering, education, legal and healthcare occupations are included in Florida's definition of the Creative Class.

- b. Innovative Capacity. Design, branding and product innovation are critical components of innovation capability. The Design Singapore Initiative under MITA's Creative Industry Development Strategy will look into how Singapore can strengthen its innovative capacity through design, branding and product innovation.

Markets

Singapore's overall market capabilities are conducive. However, more can be done to boost the level of copyright exports, particularly since Singapore's domestic market is limited in size. Singapore's proportion of copyright exports out of total exports (2.9 per cent) lags substantially behind that of the US (20 per cent) and UK (9.4 per cent).

- a. Copyright Exports. Singapore should look for ways to boost its copyright exports. Possible strategies forward would be to identify and target key overseas markets, enter into bilateral co-production agreements, improve market information access for creative businesses as well as formulate a co-ordinated and focused approach to export promotion activity.

Infrastructure

Singapore's biggest challenge lies in improving the infrastructural conditions. While the government has invested heavily in physical infrastructure, this by itself is not enough. The institutional framework is not as effective for the creative industries as the framework in the US, UK or Australia. At present, creative industries in Singapore also suffer from a lack of critical mass. The government can exert profound influence on all three elements of this capability:

- a. Institutional framework. Existing laws and regulations should be continually reviewed with the aim of streamlining them. The government could also look into how the legal framework could be refined to cover emerging nebulous areas straddling creative, technology and traditional industries, such as e-commerce and Internet censorship. Intellectual property issues pertaining to the creation and exploitation of creative content should be another area for further exploration.

Copyright exports should be further boosted...

Investment in physical infrastructure alone not sufficient...

- b. Size of copyright industries. Copyright industries benefit from proximity to other copyright producers and services. MITA's Creative Industries Development Strategy aims to develop a critical mass of creative industries in Singapore through a holistic approach of developing creative capabilities, stimulating new demand and markets, and nurturing robust creative enterprises. Physical aggregation of industries would be achieved through initiatives such as Fusionpolis, which is a zone within Singapore's One-North development¹⁴ dedicated to the clustering of media and infocomm companies and research institutes.
- c. Public expenditure on media, arts and culture. The government should continue to invest in the creative and ICT sectors, especially for projects with both social and economic value. This will help Singapore continue to build its competitive edge in creative industries.

Deeper Analysis of Specific Creative Industries

It is hoped that this study would provide a springboard for further in-depth studies on the unique characteristics of each creative industry (growth trends, strengths and weaknesses, supporting factors and conditions, etc). This should be done in tandem with international competitiveness analysis to understand how Singapore compares vis-à-vis other countries. This would be helpful to identify niche areas for Singapore to focus on and maximise returns from its developmental efforts.

¹⁴ One-North is a work-live-play-learn ecosystem which aims to provide an intellectually stimulating and creative physical environment for entrepreneurs, scientists, artists and researchers to congregate, interact and exchange ideas.

ANNEX A

SSIC COMPOSITION OF CREATIVE CLUSTER IN SINGAPORE

COMPOSITION OF CREATIVE INDUSTRIES

Creative Industry	Name of Segment	SSIC 2000 Code	Included by UK ¹⁵	Included by Australia
IT and Software Services	Data processing services (IT consultancy, IT development & IT Services)	721xx, 722xx, 723xx	Yes	Yes
	Publishing of software & multimedia works	74404	Yes	Yes
Advertising	Advertising services	74300	Yes	Yes
Broadcasting Media	Television broadcasting/ Internet services providers	64231	Yes	Yes
	Television services	92131	Yes	Yes
	Radio services	64232, 92132, 92139	Yes	Yes
Publishing	Publishing of newspapers	74402	Yes	Yes
	Publishing of books, brochures, musical books & periodical	74401	Yes	Yes
	Recorded media manufacturing	22200	Yes	Yes
	Other periodical publishing (journals, periodicals and magazines)	74403	Yes	Yes
	News agency activities	74991	Yes	No
	Publishing activities nec	74409	Yes	Yes
Interior, Graphics and Fashion Design	Specialised design activities	74951, 74952, 74953	Yes	No
Architectural Services	Architectural services	74211	Yes	Yes
	Surveying services	74212	Yes	Yes
Arts/ Antiques Trade, Crafts^	Antiques, works of art, handicrafts, curios, stamps retailing	51461	Yes	No
Performing Arts^	Music and theatre production	92141	Yes	Yes
	Film and art venues/ performing art venues/ sound recording studio/ Services to the arts	92142, 92149	Yes	Yes
	Operas, wayang & puppet shows	92143	Yes	Yes
	Orchestras & dance bands	92144	Yes	Yes

¹⁵ The UK [Creative Industries Mapping Document](#) focuses on creative industries only, whereas the Australian study considers both creative and distribution industries.

COMPOSITION OF CREATIVE INDUSTRIES (Cont'd)

Creative Industry	Name of Segment	SSIC 2000 Code	Included by UK ¹⁵	Included by Australia
Cinema Services	Museums activities & preservation of historical sites & buildings nec	92229	Yes	No ¹⁶
	Other cultural activities	92291, 92299	Yes	No
	Film and video production	92111	Yes	Yes
	Video filming and recording services	92113	Yes	Yes
	Motion picture post-production services	92114	Yes	Yes
Photography	Photographic studios	74949	Yes	Yes
Industrial Design	Industrial design activities	74241, 74242, 74243	No ¹⁷	No

^ Also classified as a "cultural industry".

COMPOSITION OF DISTRIBUTION INDUSTRIES

Category	Name of Segment	SSIC 2000 Code	Included by Australia
IT and Software Services Related	Web hosting services	64223	No
	Computer and software retailing	51473	Yes
	Cyber 'cafes'	64224	No
	Data communication services nec	64229	No
	Internet access providers	64221	No
Broadcasting Media Related	Video hire outlets	71303	Yes
	Record music wholesaling	50342	Yes
	Record music retailing	51452	Yes
	Satellite uplink and downlink services	64213	No
	Third party value-added network operators	64222	No
Publishing Related	Printing of newspapers	22111	Yes
	Printing of periodicals, books and magazines	22112	Yes
	Information storage and retrieval systems (publishing of directories & databases, incl information providing services)	74405	Yes
	Printing, paper stationery manufacturing	22113	Yes
	Services to printing	2212x	Yes
	Newspapers, books and stationery retailing	51483	Yes
	Paper product wholesaling	50371	Yes
	Book and magazine wholesaling	50374	Yes
	Libraries	92210	Yes

¹⁶ Classified by Australia under distribution industries.

¹⁷ Targeted for inclusion by the UK but no matching industry codes.

COMPOSITION OF DISTRIBUTION INDUSTRIES (Cont'd)

Category	Name of Segment	SSIC 2000 Code	Included by Australia
Performing Arts Related	Museums/Arts galleries	92221, 92222	Yes
Cinema Services Related	Motion picture projection	92121, 92129	Yes
	Motion picture exhibition/distribution	92112, 92115	Yes
Photography Related	Photographic film processing	74941	Yes
	Photographic equipment wholesaling	50391	Yes
	Photographic equipment retailing	51482	Yes

Manpower Indicators

1. The Social Diversity rating is the average of the following three survey ratings (on a scale of 1 – worst to 10 – best) from the World Competitiveness Yearbook 2002:
 - a. National culture surveys how open the society is to foreign ideas.
 - b. Flexibility and adaptability surveys the flexibility and adaptability of people in a country when faced with challenges.
 - c. Discrimination surveys the extent to which discrimination (race, gender, etc.) does not pose a handicap in society.
2. The Size of the Creative Class rating is the percentage of the workforce that are occupationally classified as professionals and associate professionals by the International Labour Organisation in 2000. These include the computer, mathematical, architecture, engineering, education, arts, design, entertainment, legal as well as healthcare occupations. This composition is similar to the breakdown used by Florida in compiling his Creativity Index¹⁸. This figure is larger than the employment figure for creative industries as it includes personnel doing creative work outside these core industries.
3. The Innovative Capability rating is the average of the following three survey ratings (on a scale of 1 – worst to 7 – best) from the Global Competitiveness Report 2002:
 - a. Value chain presence surveys the extent to which the nation's exporting companies engage in product design, marketing sales, logistics and after-sales services.
 - b. Extent of branding surveys the extent to which the nation's exporting companies have well-developed international brands and sales organisations.
 - c. Capacity for innovation surveys the extent to which the nation's companies conduct formal research and pioneer their own products and services.

Market Indicators

4. The Copyright Exports rating is the percentage of total exports that can be attributed to copyright industries according to international Standard Industrial Classification (SIC) codes. Copyright industries consist of the creative industries studied in this paper as well as the distribution industries associated with them. The exports data are for the year 2000 and compiled from the following sources:

¹⁸ Florida (2002), at el.

- a. Copyright Industries in the US Economy – the 2002 Report, The Economists Incorporated.
 - b. Creative Industries Mapping Document 2001, UK Creative Industries Task Force.
 - c. The Economic Contribution of Australia Copyright Industries, Australian Copyright Council and Centre for Copyright Studies.
 - d. Creative Industries in Hong Kong, Hong Kong Trade Development Council.
 - e. Singapore Department of Statistics.
5. The GDP per capita at PPP figures are obtained from the World Competitiveness Yearbook 2002 and are denoted in US dollars.
 6. The VA of Knowledge Intensive Industries rating is expressed as a percentage of national GDP. The classification of knowledge intensive industries is according to the OECD Science, Technology and Industry Outlook 2000. Data for Australia, the UK and US is obtained from the same OECD publication. Figures for Singapore are compiled based on the Singapore Census of Industrial Production and Survey of Services 2000. Figures for Hong Kong are not publicly available.

Infrastructure Indicators

7. The Institutional Framework rating is the average of the following three survey ratings (on a scale of 1 – worst to 7 – best) from the Global Competitiveness Report 2002:
 - a. Efficiency of legal framework surveys the extent to which the legal framework in the country is efficient and follows a clear, neutral process when settling disputes between private businesses and challenging existing government regulations.
 - b. Intellectual property protection surveys how stringent the protection is compared with the best in the world.
 - c. Freedom of the press surveys the extent to which newspapers can publish stories of own choosing without fear of censorship or retaliation.
8. The Size of the Copyright Industries rating is the VA of the copyright industries expressed as a percentage of GDP in 2000. Data sources are the same as for Copyright Exports.
9. The Public Expenditure on Media, Arts and Culture is expressed as a percentage of GDP. The figures are estimated from the official government budget allocation on media, arts and culture for each country.
10. The values of the various indicators are tabulated overleaf.

PROXY INDICATORS FOR SELECTED COUNTRIES

	Manpower		
	Social Diversity (Rating of 1 to 10)	Size of Creative Class (% of Total Workforce)	Innovative capability (Rating of 1 to 7)
Singapore	7.64	41.88	4.80
Australia	7.77	37.68	3.60
United States	7.70	34.35	6.00
United Kingdom	6.08	38.52	6.07
Hong Kong	7.54	31.89	4.60
	Markets		
	Copyright Exports (% of Total Exports)	GDP Per Capita at PPP (US\$)	VA of Knowledge Intensive Industries (% of GDP)
Singapore	2.90	22,262	56.38
Australia	1.82	25,980	48.60
United States	19.78	34,158	56.10
United Kingdom	9.41	24,146	51.40
Hong Kong	3.10*	25,467	NA
	Infrastructure		
	Institutional Framework (Rating of 1 to 7)	Size of Copyright Industries (% of GDP)	Public Expenditure on Media, Arts and Culture (% of GDP)
Singapore	5.90	3.20	0.30
Australia	6.10	3.30	0.32
United States	6.17	7.75	0.13
United Kingdom	6.27	7.90	0.15
Hong Kong	5.80	2.64 [^]	0.29

* Hong Kong's official estimate is computed as the percentage of total export services that could be attributed to creative industries, unlike other countries which consider both goods and services.

[^] Hong Kong's official estimate of 2 per cent of GDP is based on creative industries only. This has been apportioned upwards to include distribution industries, assuming Hong Kong's copyright industries share a similar structure as Singapore's.

Source:

- [World Competitiveness Yearbook 2002](#)
- International Labour Organisation
- [Global Competitiveness Report 2002](#)
- [OECD Science, Technology and Industry Outlook 2000](#)
- [Copyright Industries in the US Economy – the 2002 Report](#), The Economists Incorporated
- [Creative Industries Mapping Document 2001](#), UK Creative Industries Task Force
- [The Economic Contribution of Australia Copyright Industries](#), Australian Copyright Council and Centre for Copyright Studies
- [Creative Industries in Hong Kong](#), Hong Kong Trade Development Council
- Singapore Department of Statistics

ANNEX C

DATA PROCESSING METHODOLOGY

1. The Standard Deviation Method (SDM) measures the relative difference between the countries' performances. For each of the nine indicators in the study, the five-country average is computed. The standard deviation for each indicator is calculated using the following formula:

$$s = \{S_i(x_i - \bar{x})^2 / N\}^{1/2}$$

The standardised values (STD) for each country's indicators are then computed by weighting the differential between the country's original value and the five-country average by the standard deviation. This creates a standardised measure of relative difference. The STD formula is written as:

$$STD_i = (x_i - \bar{x}) / s$$

Where:

- x_i = original value for country i
- \bar{x} = five-country average
- N = number of countries
- s = standard deviation
- STD_i = standardised values for country i

2. To allow more intuitive interpretation, the STDs are converted into ratings (Z_i) from 1 to 100 using a logarithmic transformation using the following formula:

$$Z_i = \{e^{STD_i} / (1 + e^{STD_i})\} * 100$$

3. To benchmark the various Z_i ratings with Singapore, all Z_i ratings are normalised with Singapore's ratings as the basis of 100 using the following formula:

$$R_i = Z_i / Z_s * 100$$

Where:

- R_i = Normalised rating for country i
- Z_s = Z rating for Singapore

REFERENCES

- Allen Consulting Group (2001), The Economic Contribution of Australia Copyright Industries, Australian Copyright Council and Centre for Copyright Studies.
- Caves, Richard (2000), Creative Industries, Harvard University Press.
- EMF Foundation (2002), World Competitiveness Yearbook, Lausanne: International Institute for Management Development.
- Economic Review Committee (ERC) (2002), Creative Industries Development Strategy, ERC Creative Industries Working Group.
- Florida, Richard (2002), The Rise of the Creative Class, Basic Books.
- Hong Kong Trade Development Council (2002), Creative Industries in Hong Kong, Hong Kong Trade Development Council.
- Howkins, John (2001), The Creative Economy, Penguin Books.
- OECD (2000, 2001), Science, Technology and Industry Outlook, Paris: OECD.
- Ooi Giok Leng (2002), "Economics of the Arts", Arts, Media and Infocomm in Singapore 2002, Singapore Ministry of Information, Communications and the Arts.
- Pascal Pong, Chow Kit Boey, Teh Kem Jin, Andre Liem (2001), Product & Visual Communication Design Activities in Singapore, Centre for Business Research & Development, National University of Singapore.
- Singapore Department of Statistics (2002), An Overview of the Copyright Industries in Singapore, Singapore Department of Statistics.
- Siwek, Stephen (2002), Copyright Industries in the US Economy – the 2002 Report, The Economists Incorporated.
- Toh, Mun Heng and Adrian Choo (2002), "Mapping Singapore's Knowledge-Based Economy", Economic Survey of Singapore, Third Quarter 2002, Ministry of Trade and Industry, pp. 56-75.
- Toh, Mun Heng and Linda Low (1994), Input-Output Tables 1988: Models and Applications, Department of Statistics.
- Toh, Mun-Heng (2000), The Development of Singapore as a Knowledge Based Economy: Size of KBE and Its Economic Impact, Faculty of Business Administration, National University of Singapore.
- UK Creative Industries Task Force (2001), Creative Industries Mapping Document 2001, UK Department for Culture, Media and Sport.
- World Economic Forum (2002), The Global Competitiveness Report, Geneva: World Economic Forum.