

Finland on Top of the Competitiveness Game?

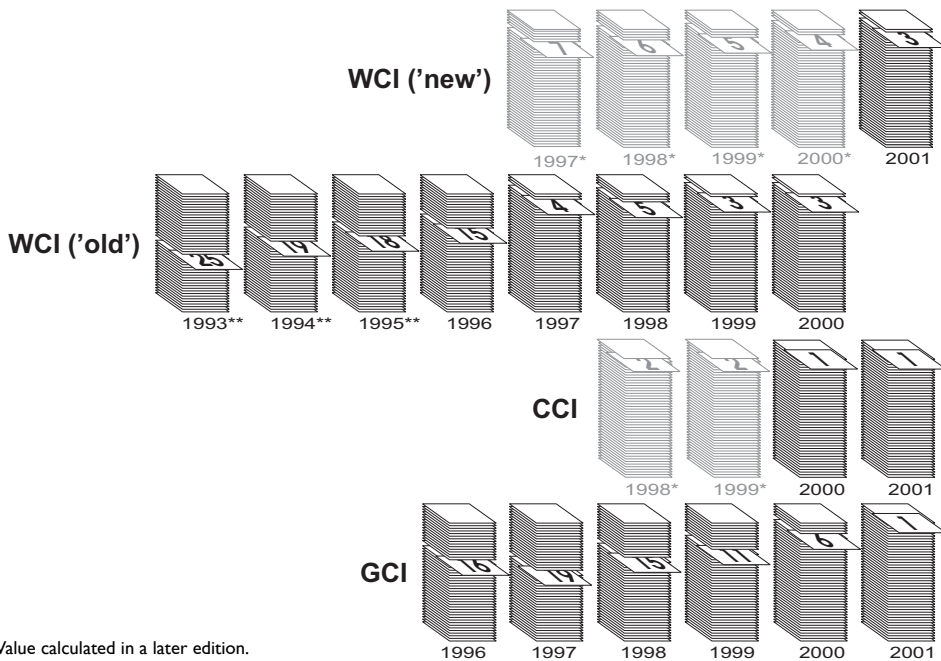
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Introduction

Finland is currently the most competitive country in the world – at least according to a recent report by *World Economic Forum* (WEF, 2001, www.weforum.org/gcp).¹⁾ A few months earlier the other Swiss authority on competitiveness, the *International Institute for Management Development* (IMD, 2001, www.imd.ch/wcy),²⁾ ranked Finland as 3rd, right after the

United States and Singapore. The high rankings given to Finland in these reports have attracted the attention of the media and the public worldwide. The same questions are being asked over and over again: What exactly are these competitiveness reports? How did Finland do it? Can something be learned from the Finnish experience?

Figure 1.
The Finnish Competitiveness Rankings in Recent Years



* Value calculated in a later edition.

** Joint report by IMD and WEF.

Source: Individual and joint reports by IMD and WEF (various years).

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From 1980 to 1996 IMD and WEF published joint reports. Since then, the referees themselves have felt each others' competitive pressure. According to IMD (previous [www](#), April 24, 1998), WEF's desire to develop a report more related to its conference activities was the reason for the parting of the ways. However, the preface of WEF's first individual report (Schwab, 1996, p. 5) indirectly suggests that they wanted to re-engineer the methodology and presentation of the report. In order to match or even outdo IMD's academic rigor, WEF marched in the 'academic cavalry' of *Harvard*.

What Do the Indices Measure?

Strictly speaking, neither IMD's nor WEF's indices and rankings are comparable through time, due to changes in data, methodology and the countries included. IMD's *World Competitiveness Index* (WCI) has continued in the spirit of the joint report and has been mostly moderate in

its revisions. However, IMD's methodology was revised considerably for the year 2001 edition of the report. To further complicate matters, in its year 2000 edition, WEF introduced a completely new measure, the *Current Competitiveness Index* (CCI), and relabeled the competitiveness index introduced in 1996 as the *Growth Competitiveness Index* (GCI).

WCI "... measures and compares how countries are doing in providing firms with an environment that sustains the domestic and global competitiveness of the firms operating within their borders." (Rosselet, 2001, p. 50). Somewhat similarly, CCI "... evaluates the underlying conditions defining the *current* level of productivity..." (Porter, Sachs, & McArthur, 2001, p. 21).³⁾ GCI is considerably different from the two. It "... aims to measure the capacity of the national economy to achieve sustained economic growth over the medium term, controlling for the current level of economic development..." (McArthur & Sachs, 2001, p. 32).⁴⁾

BOX: CONSTRUCTION OF THE INDICES

WCI has two layers. First, indicators are divided into four main factors: economic performance, government efficiency, business efficiency and infrastructure. Second, each main factor is divided into five subcategories, giving a total of twenty sub-factors. The actual index is calculated as follows: (1.) indicators are individually standardized (multiplied by -1 if reverse ranking is preferred; each indicator will have a mean zero and a variance one across countries) and missing values are replaced by zero after standardization; (2.) for each sub-factor, standardized values are averaged (5% weight in the index); (3.) main factor rankings are determined as an average of the sub-factor values (25% weight in the index); (4.) WCI is calculated as an average of the main factor indices.

The construction of GCI is similar. The main factors are technology, public institutions and macroeconomic environment. Each main factor has two or three sub-factors. GCI is calculated as follows: (1.) countries are divided into

'core' and 'non-core' groups according to their patenting intensity (granted utility patents at the United States patent office); (2.) outliers are adjusted (the method or the adjusted values are not reported); (3.) hard data is converted into the 1-7 scale used in the survey; (4.) the sub-factor indices are calculated as weighted averages of non-missing variables included; (5.) the main factor indices are calculated as weighted averages of sub-factor indices; and (6.) GCI is calculated as a weighted average of the main factor indices. In the final results, technology, institutions and macroeconomic environment get, respectively, the weights of $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{4}$ for the core countries and equal weights for the non-core countries.⁵⁾

CCI is constructed using common factor analysis. The index value is defined as the factor score of the dominant factor found. This factor captures two thirds of covariance among the indicators.

A Pinch of This, a Pinch of That, Mix Well...

There is no readily available economic theory that could be applied to the construction of the indices. Growth literature provides some guidance in selecting the appropriate variables and their relative weights but, beyond that, index crafters must rely on expert judgment and *ad hoc* empirical analysis. Porter's (1990) work on competitiveness has influenced WCI and his diamond model is obviously highly visible in CCI. GCI is influenced by Barro (1991) and subsequent works.

All the indices combine 'hard' (statistical indicators, e.g., patents per capita) and 'soft' data (indicators based on survey responses, e.g., intensity of research collaboration).⁶⁾ The basic features of the indices are summarized in Table 1 (technical details in Box). The number of indicators included ranges from 32 to 223. The weight of the survey data ranges from roughly forty per cent in WCI to, in practice, one hundred per cent in CCI.⁷⁾ The representatives of the country in question are asked to evaluate conditions in *their* host country. Thus, even though the executive opinion surveys have a respectable number of total responses, the actual responses per country are often quite low.⁸⁾ There are, for instance, fewer than a dozen responses for the Slovak Republic (5) and the Netherlands (11). On the other hand, some rather surprising countries provide the most responses: Russia (190), Panama (156), Nicaragua (153) and Guatemala (152). At least in the Finnish case, the responses are mostly from the representatives of large globally-oriented firms.

Finland Has Been the Fastest Climber in the Rankings

Keeping the afore-mentioned limitations in mind, Figure 1 illustrates the Finnish rankings in recent years. At its 1993 low-point, Finland ranked 25th amongst the 38 countries then included. Somewhat misleadingly, the 1993 report notes that "Finland's relative competitiveness ... has taken a plunge ... When Eastern European countries became more open to the outside world, Finland lost its privileged status of being the "gateway" to the region. The consequences can be clearly seen ..." (p. 16). By the end of the decade Finland had re-established itself amongst the most competitive

Table 1.
Basic Features of the Competitiveness Indices

	WCI ^{a)}	GCI ^{b)}	CCI ^{c)}
Countries included:	49	75	75
Index: introduced in:	1980	1996	2000
Index: last major revision in:	2001	1996	2000
Rank: Finland 2001 (reported):	3	1	1
Rank: Finland 2000 (2001 comp.):	4	5	1
Rank: Finland 2001 (soft data only):	1	1	1
Rank: Finland 2001 (hard data only):	19	3	8
Rank: Finland 2001 (WCI method): ^{d)}	3	2	1
Rank: Finland 2001 (GCI method): ^{e)}	4	2	1
Rank: Finland 2001 (CCI method): ^{f)}	1	1	1
Indicators, used in calculations:	223	32 or 34	67
Indicators, hard: ^{g)}	118	14-15	66
Indicators, hard, share:	53%	44%	99%
Indicators, hard, year '99 or earlier:	55%	7-13%	0%
Indicators, soft: ^{h)}	105	18-19	1
Indicators, soft, share:	47%	56%	1%
Indicators, soft in results: ⁱ⁾	39%	48%	99%
Survey responses:	3 678	4 601	
Survey resp. per country, min.:	–	5	
Survey resp. per country, max.:	–	190	
Survey resp. per mill. pop., min.:	–	0.11	
Survey resp. per mill. pop., max.:	–	76.09	
Survey resp., large firms: ^{j)}	–	83%	
Survey resp., export firms: ^{k)}	–	82%	
Survey resp., firms engaged in FDI: ^{l)}	–	88%	

^{a)} WCI, World Competitiveness Index by IMD, International Institute of Management Development. WDI "...measures and compares how countries are doing in providing firms with an environment that sustains the domestic and global competitiveness of the firms operating in their borders."

^{b)} GCI, Growth Competitiveness Index by WEF, World Economic Forum. GCI "...aims to measure the capacity of the national economy to achieve sustained economic growth over the medium term, controlling for the current level of economic development..."

^{c)} CCI, Current Competitiveness Index by WEF, World Economic Forum. CCI "...evaluates the underlying conditions defining the current level of productivity..."

^{d)} WCI Standardization procedure and treatment of missing values implemented – weighting and indicators unchanged.

^{e)} GCI scaling implemented – weighting and indicators unchanged.

^{f)} CCI common factor analysis with the variables included in the index in question.

^{g)} hard = indicators not derived from the executive opinion surveys.

^{h)} soft = indicators derived from the executive opinion surveys.

ⁱ⁾ The share of soft data in final results. Adjusted for the effects of weighting.

^{j)} Firms with over 250 employees in the country.

^{k)} Domestically based exporting firms and units/subsidiaries of multinational corporations.

^{l)} Firms having regional or global foreign direct investment.

Source: IMD (2001), WEF (2001).

Table 2.
Factors Supporting and Undermining the Finnish Competitiveness Rankings

WCI: Finnish competitiveness is supported by

1. Soft: Technology transfer between companies and universities is sufficient
2. Soft: Technology cooperation is common between companies
3. Soft: The implementation of new technology meets business requirements
4. Hard: High total share R&D personnel (1999, full-time equivalent, per 1,000 people)
5. Soft: Development and application of technology is supported by the legal environment
6. Soft: Existing laws to protect the environment do not hinder businesses
7. Soft: Bureaucracy does not hinder business development
8. Soft: Electronic commerce is sufficiently developed for business opportunities
9. Hard: High total share R&D personnel in business (1999, full-time equiv., per 1,000 people)
10. Soft: The educational system meets the needs of a competitive economy

WCI: Finnish competitiveness is undermined by

1. Hard: Low real growth of goods exports (2000, percent, nat. curr., constant prices)
2. Hard: High share of collected total tax revenues (1999, percentage of GDP)
3. Hard: High effective personal income tax rate (2000, percentage of GDP per capita)
4. Hard: High share of collected indirect tax revenues (1999, percentage of GDP)
5. Hard: High government subsidies (1998, to companies, percentage of GDP)
6. Hard: High management remuneration (salary, bonuses and long-term incentives, USD)
7. Hard: High compensation levels (2000, hourly total, wages and benefits, USD)
8. Hard: High relative central government foreign debt (1999, percentage of GDP)
9. Soft: Unemployment legislation does not provide an incentive to look for work
10. Hard: Low density of the road network (1998, kilometers per square kilometers)

GCI: Finnish competitiveness is supported by

1. Soft: Government programs promoting ICT are highly successful
2. Soft: When deciding upon policies and contracts, government officials treat firms and individuals impartially
3. Soft: In its R&D activity, business collaboration with local universities is intensive and ongoing
4. Hard: High gross tertiary enrollment (1997 or most recent year available)
5. Soft: Internet access in schools pervasive – most children have frequently accessed/widely used the Internet

GCI: Finnish competitiveness is undermined by

1. Hard: High relative share of government expenditure (2000, general government expenditure, percentage of GDP)
2. Hard: High inflation (2000, percentage change in consumer price index)
3. Hard: High interest Rate Spread (2000, average interest rate spread: difference between typical lending and deposit rates)
4. Hard: Low national Savings Rate (2000, national savings as a percentage of GDP)
5. Soft: The likelihood of your country's economy being in recession next year is high

CCI: Finnish competitiveness is supported by

1. Soft: Government subsidies to business in your country improve the productivity of industries
2. Soft: Clusters in the country are common and deep
3. Soft: Product and process development in your country are conducted in collaboration with local suppliers, customers and research institutions
4. Soft: Companies obtain technology by pioneering their own new products and processes
5. Soft: Lease-line or dial-up access to the Internet in the country is as fast and cheap as anywhere in the world

CCI: Finnish competitiveness is undermined by

1. Soft: Prevalence of Foreign Technology Licensing*
2. Soft: Considering road quality outside major cities, the typical driving speed between cities is...
3. Soft: Cellular phones are cheap and readily available*
4. Soft: Quality of math and science education is low*
5. Soft: Raising money by issuing shares in the local market is not easy

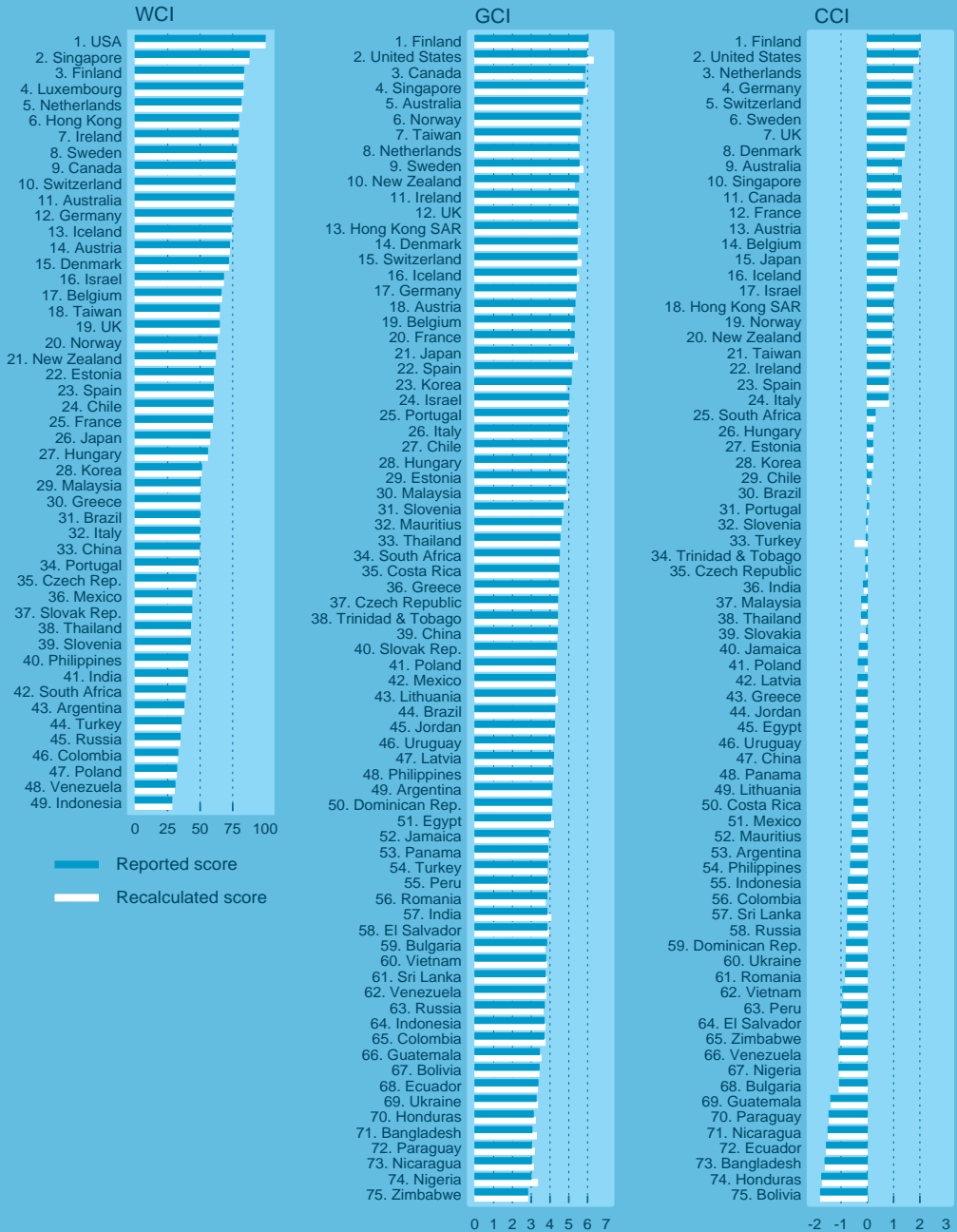
Note: WCI standardization method used to determine the strengths and weaknesses in GCI and CCI.

Note: Since Finland is quite competitive by most indicators included, the fact that an indicator is listed under factors undermining Finnish competitiveness does not necessarily mean that Finland would rank amongst the worst countries. Indeed, in a few cases Finland is in the top ten even though the factor in question is considered a weakness.

* These variables were kindly provided by Professor Weifeng Weng at Harvard Business School. For some reason they are not listed in WEF's report.

Sources: IMD (2001), WEF (2001).

Figure 2. WCI, GCI and CCI Values, Corresponding Rankings and Recalculated Values



Source: IMD (2001), WEF (2001).

Note: CCI values are approximate, since the index values are not reported (the values above are measured from Figure 4 on p. 64 of WEF's report).

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countries in the world. The rollercoaster ride in WEF's rankings has been equally rocky. In 1997 Finland was 19th amongst the 53 countries then included, only to become the top dog of the 75 countries currently included. In CCI, Finland successfully defends its previous top position.

The factors supporting and undermining the Finnish ranking in the three indices are listed in Table 2. Finnish strengths were typically related to innovation, technology and the general functioning of society. Finnish weaknesses were related to the size and financing of the public sector, as well as to inflexibilities in the labor market. Note that, since Finland is quite competitive by most indicators included, the country might rank at the top, even though the indicator is listed as a weakness. Rather embarrassingly, the biggest weakness in WCI – real export growth – would have been a strength, had IMD used the right figure of roughly twenty per cent rather than -0.31%.

Sensitivity Analysis

In order to get a better feel for the results, we manually entered the data in the recent publications and recalculated the indices. As Figure 2 indicates, we were mostly able to replicate the results. With the exception of GCI, discrepancies may be due to somewhat inaccurate presentation of the data in the printed reports. Problems with GCI relate to the outlier adjustment, not documented in the report.⁹⁾ In fact, without this adjustment, Finland ranks second after the United States, rather than first. In CCI, there are apparent problems with France and Turkey.¹⁰⁾

We also performed some sensitivity analyses. The results in Table 1 show a considerable discrepancy between Finnish hard and soft data rankings: Finland always tops the soft-data-only rankings, but is either 3rd (GCI), 8th (CCI) or 19th (WCI) in the hard-data-only rankings. We also calculated the three indices using the others' data and methods.¹¹⁾ As seen in the Table, slight discrepancies emerge, although the dominant factor score method of CCI always puts Finland on top. We also recalculated WCI without the size-biased variables, such as GDP and population.¹²⁾ Although the United States dropped from 1st to 8th position, the Finnish

ranking remained unchanged, since Luxembourg climbed from 4th to 2nd place.

We also calculated the effect of replacing just one 'optimist' respondent with a 'pessimist' respondent in the surveys.¹³⁾ The effect on the Finnish ranking is quite severe: in GCI, Finland drops one notch, while in CCI and WCI, it drops four and seven notches respectively.¹⁴⁾

What is National Competitiveness in the Global Arena?

According to IMD and WEF, current competitiveness is the same as having an attractive environment for firms' business activities. This is somewhat different from the typical definitions, emphasizing a country's ability to offer a high and rising standard of living to its citizens, or from the following definition of Pajarinen *et al.* (1998, p. 16) concerning the global competitiveness of a nation, which is: "the ability of a nation state to continuously attract high value-added activities of private enterprises worldwide in such a way that all factors of production are fully employed and earn high returns, and the long-term external balance of the country is maintained."

The point-of-view obviously influences the selection and weighting of indicators. Even if they are similar, value judgments have to be made concerning the construction of the indices. The three indices considered here reflect values that are somewhat different from those normally associated with the 'Nordic model'; *i.e.*, 'Scandinavian' competitiveness indices would undoubtedly lay more emphasis on equality and social coherence than these 'American' alternatives do.¹⁵⁾ The indices nevertheless tell a consistent story: Finland is amongst the most competitive countries in the world. The exact rank remains unclear and is perhaps even meaningless.

Indices Have Their Shortcomings

Two things are puzzling in the Finnish competitiveness rankings. First, there is a rather high divergence between the hard and soft data results. Either Finnish strengths lie in the factors that cannot be quantitatively measured, but are captured by the surveys, or Finnish business managers are overly optimistic. Second, despite

its competitiveness, Finland does not top the GDP per capita ranks – in purchasing power parity terms Finland was 14th in the year 2000 among WEF's 75 countries. The WEF interpretation of this is that Finland has 'upside potential', i.e., the current microeconomic structures would support a higher GDP per capita (Porter, 2001, p. 71). This argument is not unreasonable. If, however, one takes WEF's statement that "GDP per capita... is the best single, summary measure of current competitiveness available across all countries." (Porter, 2001, p. 59) as given, the country's current ranking seems too high.¹⁶⁾

The competitiveness indices have their shortcomings. Perhaps the most serious critique relates to the executive opinion surveys: non-representative opinions of fewer than twenty business managers do not provide solid foundations for economic analysis. Even if these few answers may reasonably well reflect the characteristics of the business environment, they cannot possibly reflect justly the *Internet use in schools* (WEF's indicator 4.03) or *sufficiency of educational finance* (IMD's indicator 2.5.11).

The Roots of the Finnish Turnaround Date Back Several Decades

There is no question that Finland made a remarkable turnaround in the 1990s. It was able to make a transition from an investment-driven to an innovation-driven economy in just a few years. The foundations for this were laid in previous decades with continuously rising R&D intensity and educational level, as well as liberalization and deregulation. The Finnish 'great depression' of the early 1990s helped to reach a political consensus on the rather difficult but

necessary refocusing of associated economic policies. In *ex post* evaluation Finland should have been the most competitive country in the early 1990s, at least if it is agreed that *dynamics* is the key dimension of competitiveness. The future is a difficult thing to predict, and these indices do not seem to outdo macroeconomic models in this respect.

Even the Top Dog is Facing Tough Challenges

There is no doubt that success in these competitiveness rankings has brought Finland a lot of positive attention worldwide. Nowadays, being from Finland opens doors abroad, rather than closes them, and multinational corporations eye the country more seriously.

The real caveat of this newfound fame is that Finns might start believing in their own excellence and try a little less. In the very long run, developments in competitiveness are non-linear and even chaotic – seemingly little changes can make a rich country poor and *vice versa*.¹⁷⁾ Rankings come and go; competitiveness should be built with the long-term perspective in mind, and that is exactly what Finland has done.

Furthermore, despite the recent success, great challenges remain. Problems of unemployment and double aging are far from being solved. As Porter (Leaders Forum, 24 Sep. 2001) pointed out in his recent visit, Finland seems to have some symptoms of the Japanese disease, i.e., a highly competitive export-oriented sector and a somewhat less competitive domestic sector. The Finnish paradox remains: if Finland has such an attractive business environment, why are the Finns so reluctant to become entrepreneurs?¹⁸⁾

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Notes

- ¹⁾ WEF is an independent non-profit organization based in Geneva, Switzerland. It promotes economic growth and social progress worldwide and has NGO consultative status with the *United Nations' Economic and Social Council*. Its activities are funded by multinational corporations.
- ²⁾ IMD is an independent non-profit foundation and a premier business education institution located in Lausanne, Switzerland. It educates business executives at every stage of their careers. *Financial Times* (22 Jan. 2001) recently ranked its MBA program the third best in Europe.
- ³⁾ We used the definition in the executive summary since in the actual CCI section (Porter, 2001) the definition is not stated clearly.
- ⁴⁾ Discussion elsewhere (Porter *et al.*, 2001) would seem to suggest, that GCI focuses on GDP per capita growth (p. 22) over the coming five years (p. 16).
- ⁵⁾ The index values of three countries appearing to be 'at the cusp of innovation-driven growth' – Hong Kong, Ireland, and Singapore – are calculated as an average of the core and non-core values.
- ⁶⁾ Example of WEF's survey question: "Accounting for road quality outside major cities, the typical driving speed between cities is (1=10km/hr, 7=150 km/hr)" (WEF 2001, p. 389 – indicator 5.04). Example of IMD's survey question: "Economic literacy is generally low among the population - high among the population" (dash (-) added, IMD, 2001, p. 440 – indicator 2.5.10).
- ⁷⁾ Due to the method of CCI, the possibly different story of hard data cannot possibly be captured by including only one such indicator.
- ⁸⁾ IMD does not give details on its executive opinion survey, but it is unlikely that its characteristics would differ from WEF's survey.
- ⁹⁾ McArthur and Sachs (2001, p. 51 – Note ix) note that "... In some instances, minor adjustments were made to account for extreme outliers in the hard data."
- ¹⁰⁾ We checked the indicators included in the printed report but found no errors in our hand-entered data. We were unable to verify that unreported indicators, which WEF kindly provided, were indeed correct. The method of CCI is not documented in great detail, but it is highly unlikely that the problems with the two countries would relate to methodological problems.
- ¹¹⁾ In this analysis the only difference between WCI and GCI is the standardization method and treatment of missing values. CCI is simply the dominant factor score obtained with the data set in question.
- ¹²⁾ Of course it can be reasonably argued, that a bigger country is more competitive simply because of its size.
- ¹³⁾ We assumed that at least one respondent gave Finland the maximum score and replaced this score with the minimum score. Other countries were kept intact. Recall that the Finnish survey rankings are quite high across the board, so in an overwhelming majority of the cases there is bound to be not only one but several Finnish respondents given their host country the maximum score. IMD does not report the number of respondents by country, but we assumed that, like WEF, it had 18 Finnish responses.
- ¹⁴⁾ In practice the composition of the executive opinion surveys seem to vary considerably from year-to-year; in its 2000 edition WEF had 24 Finnish respondents – in the current edition only 18.
- ¹⁵⁾ Anecdotal evidence of the American orientation of these indices can be found on WEF's discussion on the possible range of countries to be included in the future editions of the report: "... there is no reason why we should include fewer countries than those where CNN can be received on television..." (Cornelius & McArthur, 2001, p. 167).
- ¹⁶⁾ Admittedly the quote is taken out of context. GDP per capita is also a problematic measure, not least because it does not account for cumulated wealth or its concentration, not to mention a myriad of measurement and definition problems.
- ¹⁷⁾ Recall that once-upon-the-time China and India were amongst the wealthiest countries in the world.
- ¹⁸⁾ A recent survey (www.tuta.hut.fi/isib/research/gem.htm) suggests, however, that the situation might be improving. Furthermore, besides quantity, also the quality of the to-be entrepreneurs matters.