

ic



Intellectual Capital for
Communities
In the Knowledge Economy

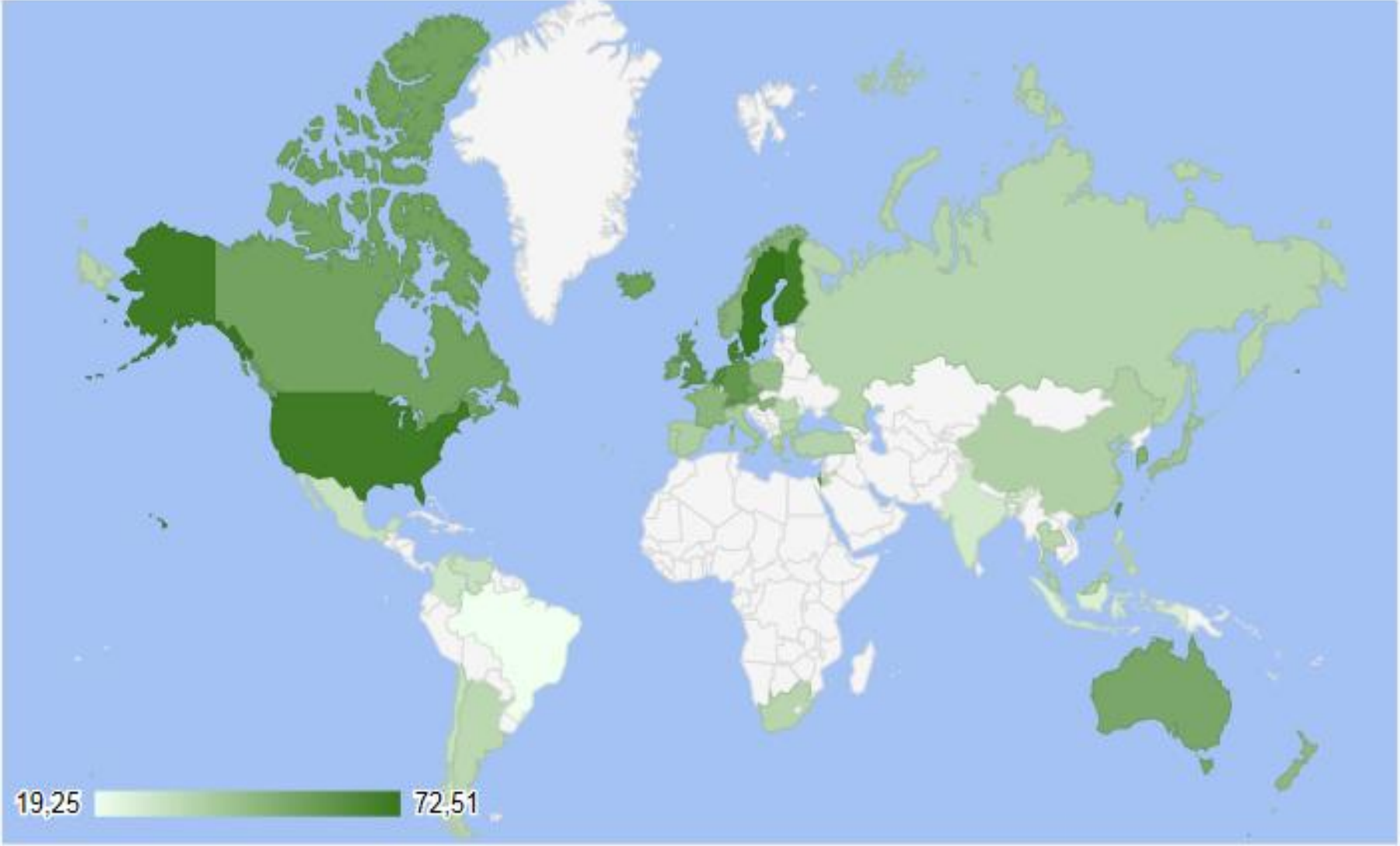
Intellectual Capital of Nations - some findings by ELSS methodology Paris 7.6.2013



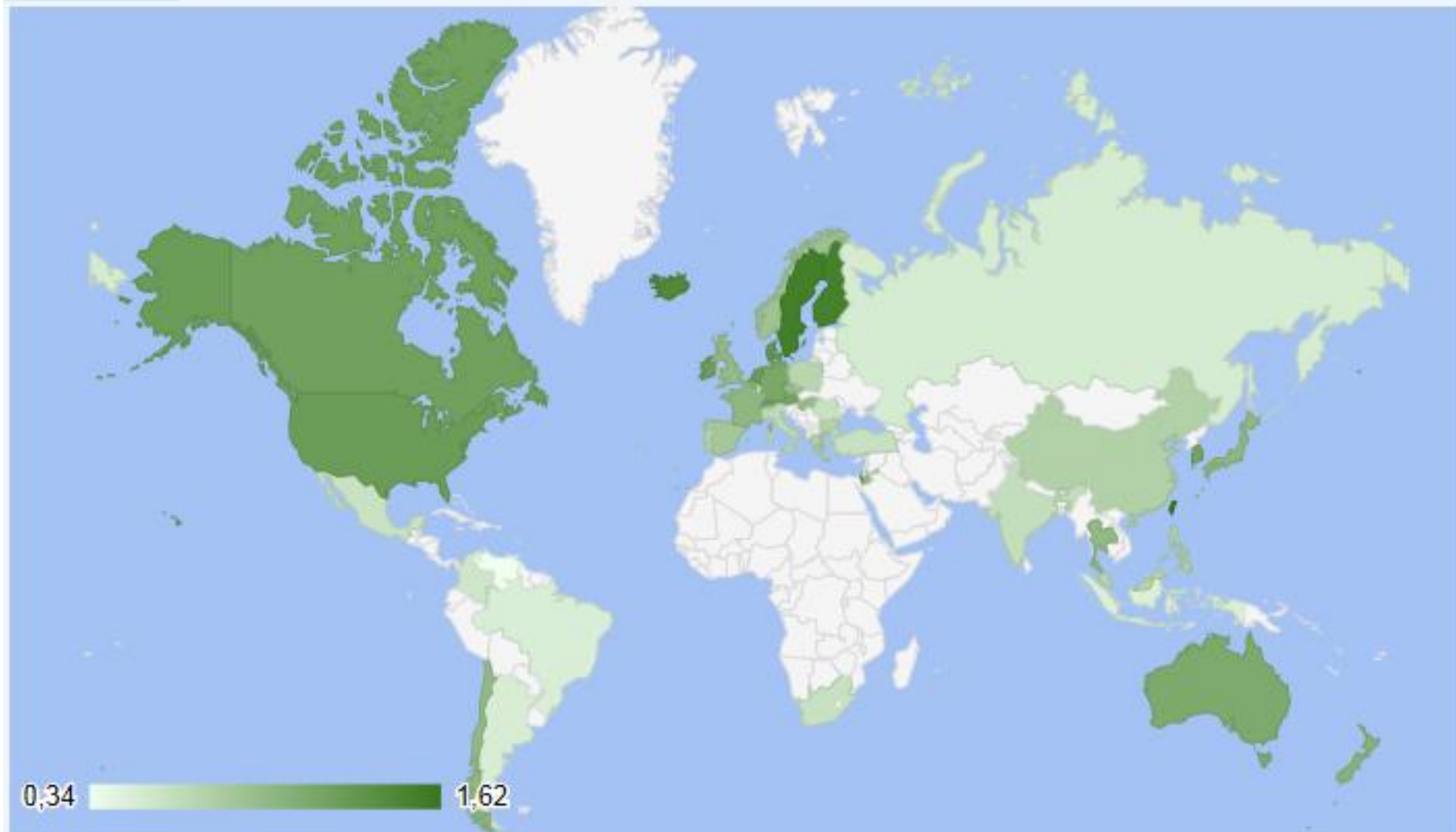
Prof. Pirjo Ståhle
University of Turku
Finland Futures Research Centre

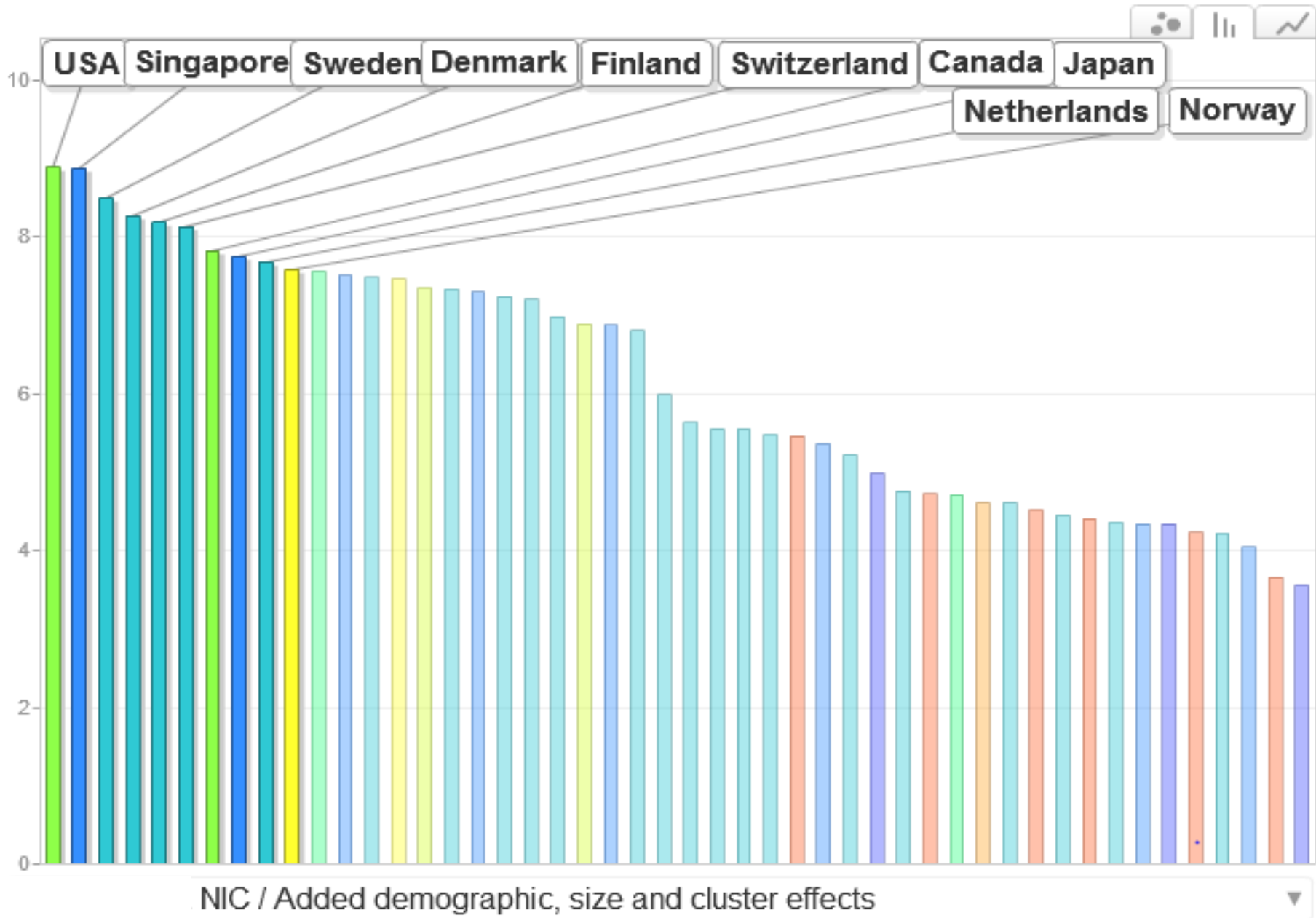


NIC, percentage share in GDP formation 2011

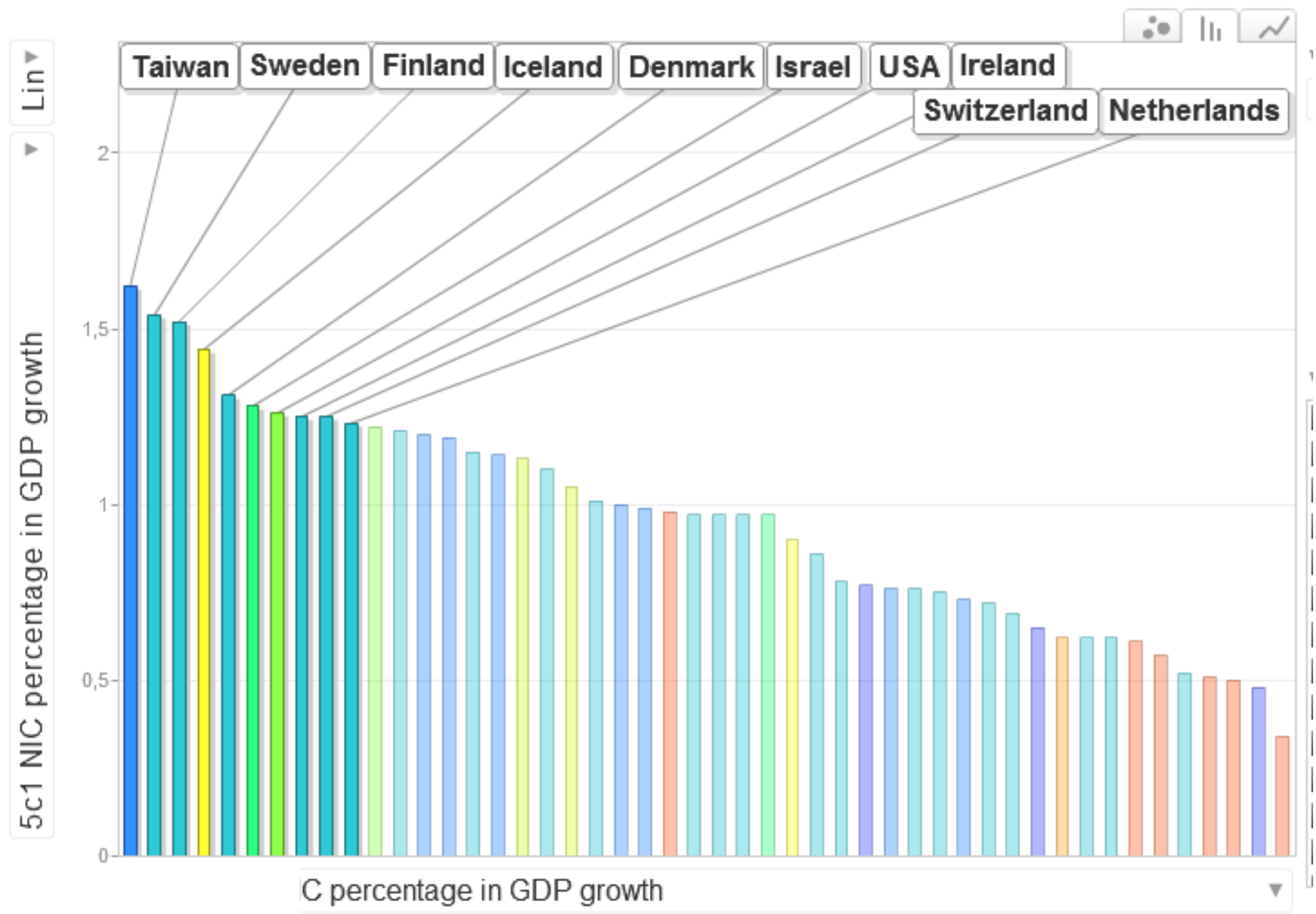


Overall NIC nominal share/fraction in real GDP (PPP) annual growth, percentage 2011





The best countries by National Intangible Capital (NIC) 2011₄



Countries where NIC acts as a strong economic driver (2011)

ELSS - intelligent database for analysing economic impact of NIC

www.nic4nations.com

- Basic NIC model by Leif **E**dvinsson
- Initial NIC database by Carol **L**in; extended and further developed by Carol Lin & Pirjo Ståhle
 - > Analyses and country comparisons based on levels of NIC indicators
- Methodology by Pirjo **S**tåhle and Sten **S**tåhle
 - > NIC indicators validated by the effects of time and country specifics
 - > Analyses and country comparisons based on economic impact of NIC

National Intellectual Capital

Potential for future earnings

Human Capital

Capacity and capability of people

Structural Capital

Market Capital

Global business attractivity

Organization Capital

Renewal capital

Knowledge creation, exploitation and innovation

Process capital

Operational functionality of society)

Human Capital

Capacity and capability of people

1. Skilled labor*
2. Employee training*
3. Higher education achievement
4. Pupil-teacher ratio
5. Public expenditure on education
6. 15-64 years old population
7. Qualified engineers*
8. Students' PISA performance
- 9.** Human Development Index
10. Gender equality
11. Years of education
- 12.** R&D researchers



Process Capital

Operational functionality of society

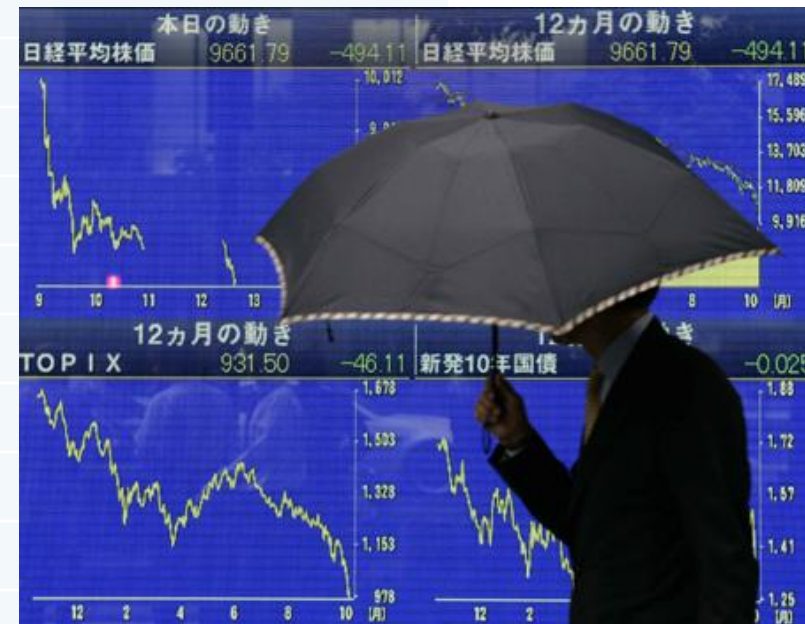
1. Business competition environment*
2. Government efficiency*
3. Computer per capita + Mobile subscribers
4. Internet subscribers + Broadband subscribers
5. Convenience of establishing new firms + start up days*
6. Goods & services distribution efficiency*
7. Overall productivity
8. Unemployment % and youth unemployment %
9. Consumer price inflation
10. Health & environment
11. Corruption
12. Freedom of speech



Market Capital

Global business attractiveness

1. Corporate tax encouragement*
2. Cross border venture*
3. Openness of culture*
4. Transparency of government policies*
5. Image of the country*
6. Capital availability*
7. Trade to GDP ratio (exports + imports)
8. Current account balance %GDP
9. Investment flows %GDP
- 10.** Country credit rating
- 11.** Investment risk
12. Globalization index



Source: Lin and Ståhle 2011

Renewal Capital

Knowledge creation, exploitation and innovation

1. Business R&D spending
2. Basic research*
3. R&D spending/GDP
4. R&D US\$ per capita
5. IP right protection*
6. Utility Patents/ R&D expenditure
7. Cooperation between corporations and university*
8. Scientific articles
9. Patents per capita (USTPO+EPO)
10. Entrepreneurship*
11. Development & application of technology*
12. Venture capital*



ELSS methodology in a nutshell



- **IC indicators are augmented into Cobb-Douglas production function**
- **Capital (K) and labor (L) are linked to the external economic specifics**
 - metropolization, structure of economy (public/private, industry/service, urban/rural), and demographics
 - national resources and financial resources in excess
 - labour compensation (low/high) and tax rates (low/high).
- **IC indicators are based on validated national level measurements**
 - The indicators are tested via regression analysis or GDP, GDP/employer and TFP
 - The indicators take time and country specifics into account

NIC impact in GDP

- NIC impact in GDP formation ranges 16 % - 72 % of GDP.
- NIC impact in GDP annual growth varies between 0.25% - 2.15 %.
 - Depending on real growth this represents 10 – 100 % of real annual growth.
 - For advanced economies almost 75% of growth can be traced back to NIC (2001 – 2011.)

NIC impact varies on different levels of economies

NIC impact (%) in GDP formation in upper (*u*), mid (*m*) and lower (*l*) level economies:

	(u)	(m)	(l)
• NIC total	66,5	47,8	29,0
• Human capital HC	17,1	<u>14,6</u>	7,6
• Market capital MC	14,5	10,6	<u>8,7</u>
• Process capital PC	<u>18,1</u>	12,8	7,1
• Renewal capital RC	16,7	9,6	5,6

In the upper class of economies 1% increase of NIC index level contributes 0.7 % in GDP formation.

For mid and lower economies the corresponding gains in GDP formation are 0.9% and 1.5 %

During 2001 – 2011 the GDP impact of NIC has increased

- **12 % in advanced economies**
- **26 % in mid economies**
- **33 % in developing economies**

NIC48 /2011	Index NIC	Percentage share in GDP formation				
		NIC %	NHC %	NMC %	NPC %	NRC %
Weighted by GDP	6.5	47.7	12.8	11.4	12.3	11.1
Europe						
European Union	6.7	51.6	14.3	11.7	14.3	11.3
EMU countries	6.7	49.8	13.6	11.5	13.6	11.2
USA						
SCANDINAVIA	8.1	64.7	16.0	14.8	16.2	17.7
Sweden	8.5	72.5	16.8	16.7	17.9	21.2
Denmark	8.3	67.6	17.5	14.6	17.9	17.7
Finland	8.2	69.7	17.8	15.1	17.5	19.3
Norway	7.6	49.1	12.5	12.7	11.8	12.1
Iceland	7.5	56.4	18.3	6.6	15.7	15.8
Economic groups						
ASEAN	5.3	39.6	11.0	12.1	8.1	8.4
BRICS	4.8	33.4	9.6	10.4	7.0	6.4
PIGSI	5.7	39.4	11.9	9.3	10.9	7.3
Groups by wealth						
GDP/POP 1 /Rich	8.7	67.9	17.2	13.8	18.8	18.0
GDP/POP 2 / Median	6.1	42.8	12.3	10.3	11.3	9.0
GDP/POP 3 / Poor	4.7	34.2	9.4	10.9	6.9	7.0

Some references

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* Outstanding Paper Award Winner at the Literati Network Awards for Excellence 2009.

** Outstanding Paper Award Winner at the Literati Network Awards for Excellence 2012.