Building A Competitive Economy:
Implications for Iceland

Professor Michael E. Porter
Institute for Strategy and Competitiveness
Harvard Business School

Reykjavik, Iceland
October 2, 2006
Iceland’s Long Term Economic Performance

GDP per capita (PPP adjusted) in US-$

Source: Groningen Growth and Development Centre and The Conference Board (2006), authors’ calculations
Iceland’s Economic Legacy

• Geographic location

• Natural resources

• Small population
What is Competitiveness?

• Competitiveness is the **productivity** (value per unit of input) with which a nation, region, or cluster uses its human, capital, and natural resources. Productivity sets a nation’s or region’s standard of living (wages, returns on capital, returns on natural resources)
  – Productivity depends both on the **value** of products and services (e.g. uniqueness, quality) as well as the **efficiency** with which they are produced.
  – It is not **what** industries a nation or region competes in that matters for prosperity, but **how** firms compete in those industries
  – Productivity in a nation or region is a reflection of what both domestic and foreign firms **choose to do in that location**. The location of ownership is secondary for national prosperity.
  – The productivity of “local” industries is of fundamental importance to competitiveness, not just that of traded industries
  – Devaluation and revaluation do **not** make a country more or less “competitive”

• Nations or regions compete in offering the **most productive environment** for business
Drivers of Sustainable Prosperity

- Prosperity
- Productivity
- Innovative Capacity

Competitiveness
Determinants of Productivity and Productivity Growth

Macroeconomic, Political, Legal, and Social Context

Microeconomic Capabilities

- A sound context creates the potential for competitiveness, **but is not sufficient**
- Competitiveness ultimately depends on improving the **microeconomic capability** of the economy and the **sophistication of local companies and local competition**
Enhancing Competitiveness: Improving the Business Environment

Context for Firm Strategy and Rivalry

- A local context and rules that encourage investment and sustained upgrading—e.g., Intellectual property protection
- Meritocratic incentive systems across all major institutions
- Open and vigorous competition among locally based rivals

Demand Conditions

- Sophisticated and demanding local customer(s)
- Local customer needs that anticipate those elsewhere
- Unusual local demand in specialized segments that can be served nationally and globally

Factor (Input) Conditions

- Presence of high quality, specialized inputs available to firms—Human resources
  - Capital resources
  - Physical infrastructure
  - Administrative infrastructure
  - Information infrastructure
  - Scientific and technological infrastructure
  - Natural resources

Related and Supporting Industries

- Access to capable, locally based suppliers and firms in related fields
- Presence of clusters instead of isolated industries

- Successful economic development is a process of successive economic upgrading, in which the business environment in a nation evolves to support and encourage increasingly sophisticated ways of competing
Enhancing Competitiveness: Cluster Development
Cairns (Australia), Tourism

Public Relations & Market Research Services

Travel agents

Tour operators

Hotels

Restaurants

Attractions and Activities
e.g., theme parks, casinos, sports

Airlines, Cruise Ships

Local retail, health care, and other services

Local Transportation

Souvenirs, Duty Free

Banks, Foreign Exchange

Government agencies
e.g. Australian Tourism Commission, Great Barrier Reef Authority

Educational Institutions
e.g. James Cook University, Cairns College of TAFE

Industry Groups
e.g. Queensland Tourism Industry Council

Food Suppliers

Property Services

Maintenance Services

Public Relations & Market Research Services

Travel agents

Tour operators

Hotels

Restaurants

Attractions and Activities
e.g., theme parks, casinos, sports

Airlines, Cruise Ships

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Industry Groups
e.g. Queensland Tourism Industry Council

Sources: HBS student team research (2003) - Peter Tynan, Chai McConnell, Alexandra West, Jean Hayden

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Norwegian Maritime Cluster

Norway has 0.1% of the world’s population, represents 1.0% of the world’s economy, yet accounts for 10% of world seaborne transportation.
Specialization of Regional Economies
Select U.S. Geographic Areas

Seattle-Bellevue-Everett, WA
Aerospace Vehicles and Defense
Fishing and Fishing Products
Analytical Instruments

San Francisco-Oakland-San Jose Bay Area
Communications Equipment
Agricultural Products
Information Technology

Los Angeles Area
Apparel
Building Fixtures, Equipment and Services
Entertainment

San Diego
Leather and Sporting Goods
Power Generation
Education and Knowledge Creation

Denver, CO
Leather and Sporting Goods
Oil and Gas
Aerospace Vehicles and Defense

Chicago
Communications Equipment
Processed Food
Heavy Machinery

Wichita, KS
Aerospace Vehicles and Defense
Heavy Machinery
Oil and Gas

Pittsburgh, PA
Construction Materials
Metal Manufacturing
Education and Knowledge Creation

Boston
Analytical Instruments
Education and Knowledge Creation
Communications Equipment

Atlanta, GA
Construction Materials
Transportation and Logistics
Business Services

Raleigh-Durham, NC
Communications Equipment
Information Technology
Education and Knowledge Creation

Note: Clusters listed are the three highest ranking clusters in terms of share of national employment
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School
## The Composition of Regional Economies
### United States, 2004

<table>
<thead>
<tr>
<th></th>
<th>Traded</th>
<th>Local</th>
<th>Natural Resource-Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of Employment</td>
<td>29.3%</td>
<td>70.0%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Employment Growth Rate, 1990 to 2004</td>
<td>0.7%</td>
<td>2.4%</td>
<td>-1.2%</td>
</tr>
<tr>
<td>Average Wage</td>
<td>$49,367</td>
<td>$30,416</td>
<td>$35,815</td>
</tr>
<tr>
<td>Relative Wage</td>
<td>137.2%</td>
<td>84.5</td>
<td>99.5</td>
</tr>
<tr>
<td>Wage Growth</td>
<td>4.2%</td>
<td>3.4%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Relative Productivity</td>
<td>144.1</td>
<td>79.3</td>
<td>140.1</td>
</tr>
<tr>
<td>Patents per 10,000 Employees</td>
<td>23.0</td>
<td>0.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Number of SIC Industries</td>
<td>590</td>
<td>241</td>
<td>48</td>
</tr>
</tbody>
</table>

Note: 2004 data, except relative productivity which uses 1997 data.
Composition of the Traded Economy
Stockholm (Sweden) Cluster Portfolio

Share in National Cluster Employment, 2003

Change in Stockholm’s overall share of National Cluster Employment: -0.5%

- Biopharmaceuticals
- Financial Services
- Business Services
- Communication Equipment
- Publishing & Printing
- Transportation & Logistics
- Analytical Instruments
- Education & Knowledge Creation
- Heavy Construction Services
- Information Technology
- Distribution Services
- Tourism
- Stockholm Share of National Cluster Employment, 2003: 22.9%

Note: Bubble size is proportional to employment levels
Source: Statistics Sweden (2005), author’s calculations
Determinants of Regional Prosperity
Cluster Strength and Wage Levels, U.S. Regions

Average Regional Wage, 2001

$55,000

$50,000

$45,000

$40,000

$35,000

$30,000

$25,000

$20,000

$15,000

50 100 150 200 250 300

Share of Traded Employment in Strong Clusters (LQ > .8), Broad Cluster, 2001

New York, NY

Bay Area, CA

Boston, MA

y = 96.736x + 16218

R² = 0.377

Source: County Business Patterns; Michael E. Porter, The Economic Performance of Regions”, Regional Studies, Vol. 37, 2003
Related Clusters in the U.S. Economy
Schematic Representation

Note: Clusters with overlapping borders or identical shading have at least 20% overlap (by number of industries) in both directions.
Cluster Specialization
Leading Footwear Clusters

**Portugal**
- Production
- Focus on short-production runs in the medium price range

**Romania**
- Production subsidiaries of Italian companies
- Focus on lower to medium price range

**China**
- OEM Production
- Focus on low cost segment mainly for the US market

**Vietnam/Indonesia**
- OEM Production
- Focus on the low cost segment mainly for the European market

**Italy**
- Design, marketing, and production of premium shoes
- Export widely to the world market

**United States**
- Design and marketing
- Focus on specific market segments like sport and recreational shoes and boots
- Manufacturing only in selected lines such as hand-sewn casual shoes and boots

**Brazil**
- Low to medium quality finished shoes, inputs, leather tanning
- Shift toward higher quality products in response to Chinese price competition

Source: Research by HBS student teams in 2002 – Van Thi Huynh, Evan Lee, Kevin Newman, Nils Ole Oermann

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The Process of Economic Development
Shifting Roles and Responsibilities

Old Model

- **Government** drives economic development through policy decisions and incentives

New Model

- Economic development is a **collaborative process** involving government at multiple levels, companies, teaching and research institutions, and institutions for collaboration

• Competitiveness must become a **bottom-up process** in which many individuals, companies, clusters, and institutions take responsibility

• **Every** region and cluster can take steps to enhance competitiveness
Influences on Competitiveness

Multiple Geographic Levels

- World Economy
- Broad Economic Areas
- Groups of Neighboring Nations
- Nations
- States, Provinces
- Cluster
Cross-National Collaboration of Cluster Initiatives

**SWEDEN**
- Biotech Umeå
- Uppsala BIO
- Biomedical Development, West Sweden
- Livets Nya Verktyg
- Healthcare Technology Alliance
- BioMedley

**FINLAND**
- Centre of Expertise, Gene Technology and Molecular Biology
- FIVDIC, In Vitro Diagnostics Industry Cluster
- Culminatum, Medical & Welfare Technologies
- Technology Centre Teknia Ltd

**NORWAY**
- BIOINN
- BCNorth

**DENMARK**
- bioTEAMsouth
- BioMedico Forum

**ESTONIA**
- Estonian Biotechnology Association
- Tartu Biotech Cluster

**NORTHERN GERMANY**
- Life Sciences SH & HH
- BioCon Valley
- medRegio Luebeck

**CROSS-BORDER EFFORTS**
- ScanBalt
- Medicon Valley Academy
- MedCoast Scandinavia
Building A Competitive Economy: Implications for Iceland

- Principles of Competitiveness
- Iceland’s Competitive Position
- Strategic Issues for Iceland’s Future
Comparative Economic Performance
Selected Countries

Source: Groningen Growth and Development Centre and The Conference Board (2006), authors’ calculations
Decomposing Created Prosperity

Prosperity

Domestic Purchasing Power

Income

Labor Productivity

- Skills
- Capital stock
- TFP

Labor Utilization

- Working hours
- Unemployment
- Participation rate
- Population age profile

- Consumption taxes
- Level of local market competition
- Efficiency of local industries
Domestic Purchasing Power

Normalized Purchasing Power Across Countries

Purchasing Power Factor, 2005

Source: IMF (2006), authors’ calculations
Productivity versus Working Hours
Selected Countries

Real GDP per Hour Worked, PPP adjusted, 2005

Source: Groningen Growth and Development Centre and The Conference Board (2006), authors’ calculations
Iceland’s Export Performance
World Export Market Shares

Source: WTO (2006)
Iceland
Cluster Export Portfolio, 1997-2003

Iceland's world export market share, 2003

Change in Iceland’s Overall World Export Share: +0.003%

Iceland’s Average World Export Share: 0.044%

Exports of $250million

## Iceland
### Top 50 Goods Export Industries, 2003

<table>
<thead>
<tr>
<th>Industry</th>
<th>Cluster</th>
<th>World Export Share</th>
<th>Change in Share, 1997-2003</th>
<th>Export Value (in $1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish, fresh, chilled, or frozen</td>
<td>Fishing and Fishing Products</td>
<td>3.30%</td>
<td>-2.00%</td>
<td>$781,531</td>
</tr>
<tr>
<td>Aluminum and aluminum alloys, unwrought</td>
<td>Metal Mining and Manufacturing</td>
<td>1.94%</td>
<td>0.67%</td>
<td>$446,594</td>
</tr>
<tr>
<td>Fish, dried, salted, or smoked</td>
<td>Fishing and Fishing Products</td>
<td>11.23%</td>
<td>1.25%</td>
<td>$303,741</td>
</tr>
<tr>
<td>Miscellaneous prepared or preserved fish, crustaceans and the like</td>
<td>Fishing and Fishing Products</td>
<td>1.49%</td>
<td>1.06%</td>
<td>$164,554</td>
</tr>
<tr>
<td>Flours, meals of meat, fish or aquatic invertebrates for animal feeds</td>
<td>Agricultural Products</td>
<td>6.57%</td>
<td>2.43%</td>
<td>$155,568</td>
</tr>
<tr>
<td>Pig iron, spiegeleisen, sponge iron or steel granules</td>
<td>Metal Mining and Manufacturing</td>
<td>0.74%</td>
<td>0.04%</td>
<td>$78,541</td>
</tr>
<tr>
<td>Animal oils and fats</td>
<td>Agricultural Products</td>
<td>3.67%</td>
<td>1.81%</td>
<td>$74,261</td>
</tr>
<tr>
<td>Miscellaneous medicaments</td>
<td>Biopharmaceuticals</td>
<td>0.05%</td>
<td>0.05%</td>
<td>$66,754</td>
</tr>
<tr>
<td>Artificial aids, disabled</td>
<td>Medical Devices</td>
<td>0.19%</td>
<td>0.12%</td>
<td>$31,083</td>
</tr>
<tr>
<td>Weighing machinery, weights, and parts</td>
<td>Production Technology</td>
<td>1.60%</td>
<td>1.20%</td>
<td>$30,363</td>
</tr>
<tr>
<td>Crustaceans, mollusks, and aquatic invertebrates</td>
<td>Fishing and Fishing Products</td>
<td>0.18%</td>
<td>-1.24%</td>
<td>$27,292</td>
</tr>
<tr>
<td>Ships, boats and other vessels</td>
<td>Marine Equipment</td>
<td>0.05%</td>
<td>0.01%</td>
<td>$20,165</td>
</tr>
<tr>
<td>Other food-processing machinery and parts</td>
<td>Processed Food</td>
<td>0.26%</td>
<td>0.20%</td>
<td>$17,063</td>
</tr>
<tr>
<td>Other animal materials</td>
<td>Agricultural Products</td>
<td>0.38%</td>
<td>0.31%</td>
<td>$13,223</td>
</tr>
<tr>
<td>Twine, cordage, rope and cables</td>
<td>Textiles</td>
<td>0.74%</td>
<td>0.52%</td>
<td>$12,691</td>
</tr>
<tr>
<td>Electro-medical equipment</td>
<td>Medical Devices</td>
<td>0.12%</td>
<td>0.12%</td>
<td>$11,476</td>
</tr>
<tr>
<td>Other meat, meat offal</td>
<td>Agricultural Products</td>
<td>0.04%</td>
<td>0.01%</td>
<td>$10,086</td>
</tr>
<tr>
<td>Activated natural minerals</td>
<td>Chemical Products</td>
<td>2.53%</td>
<td>2.53%</td>
<td>$8,429</td>
</tr>
<tr>
<td>Fur skins, tanned or dressed</td>
<td>Leather and Related Products</td>
<td>0.80%</td>
<td>-0.61%</td>
<td>$8,258</td>
</tr>
<tr>
<td>Other plastic containers</td>
<td>Plastics</td>
<td>0.05%</td>
<td>0.01%</td>
<td>$7,758</td>
</tr>
<tr>
<td>Petroleum bitumen, coke, bituminous mixtures</td>
<td>Oil and Gas Products</td>
<td>0.11%</td>
<td>0.05%</td>
<td>$4,749</td>
</tr>
<tr>
<td>Fur skins, raw</td>
<td>Leather and Related Products</td>
<td>0.34%</td>
<td>-0.03%</td>
<td>$4,639</td>
</tr>
<tr>
<td>Other ferrous waste and scrap</td>
<td>Metal Mining and Manufacturing</td>
<td>0.05%</td>
<td>0.05%</td>
<td>$4,530</td>
</tr>
<tr>
<td>Live animals</td>
<td>Agricultural Products</td>
<td>0.04%</td>
<td>0.01%</td>
<td>$4,310</td>
</tr>
<tr>
<td>Containers, cartons, bags and cases of paper, paperboard</td>
<td>Processed Food</td>
<td>0.04%</td>
<td>0.02%</td>
<td>$4,200</td>
</tr>
</tbody>
</table>

### Iceland

**Top 50 Goods Export Industries, 2003 (continued)**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Cluster</th>
<th>World Export Share</th>
<th>Change in Share, 1997-2003</th>
<th>Export Value (in $1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 Other non-ferrous metal waste</td>
<td>Metal Mining and Manufacturing</td>
<td>0.04%</td>
<td>0.02%</td>
<td>$3,282</td>
</tr>
<tr>
<td>27 Miscellaneous articles of iron or steel</td>
<td>Metal Mining and Manufacturing</td>
<td>0.01%</td>
<td>-0.01%</td>
<td>$2,653</td>
</tr>
<tr>
<td>28 Other plastics in primary forms</td>
<td>Plastics</td>
<td>0.01%</td>
<td>0.01%</td>
<td>$2,630</td>
</tr>
<tr>
<td>29 Prepared additives for cements, mortars or concretes</td>
<td>Chemical Products</td>
<td>0.51%</td>
<td>0.32%</td>
<td>$2,400</td>
</tr>
<tr>
<td>30 Miscellaneous tables, kitchen or other household articles</td>
<td>Furniture</td>
<td>0.04%</td>
<td>-0.14%</td>
<td>$2,292</td>
</tr>
<tr>
<td>31 Seaweeds and other algae</td>
<td>Fishing and Fishing Products</td>
<td>0.54%</td>
<td>0.54%</td>
<td>$1,924</td>
</tr>
<tr>
<td>32 Self-propelled mechanical shovel, excavators and loaders</td>
<td>Heavy Machinery</td>
<td>0.01%</td>
<td>0.01%</td>
<td>$1,809</td>
</tr>
<tr>
<td>33 Wool, other animal hair</td>
<td>Textiles</td>
<td>0.04%</td>
<td>0.02%</td>
<td>$1,752</td>
</tr>
<tr>
<td>34 Miscellaneous mineral insulating products</td>
<td>Chemical Products</td>
<td>0.10%</td>
<td>-0.02%</td>
<td>$1,739</td>
</tr>
<tr>
<td>35 Miscellaneous natural abrasives</td>
<td>Production Technology</td>
<td>0.43%</td>
<td>0.13%</td>
<td>$1,638</td>
</tr>
<tr>
<td>36 Printed books, maps, globes</td>
<td>Publishing and Printing</td>
<td>0.01%</td>
<td>0.01%</td>
<td>$1,617</td>
</tr>
<tr>
<td>37 Stamps for philately</td>
<td>Jewelry, Precious Metals and Collectibles</td>
<td>0.55%</td>
<td>-0.14%</td>
<td>$1,387</td>
</tr>
<tr>
<td>38 Electronic microcircuits</td>
<td>Information Technology</td>
<td>0.00%</td>
<td>0.00%</td>
<td>$1,342</td>
</tr>
<tr>
<td>39 Miscellaneous prepared cereal grains</td>
<td>Processed Food</td>
<td>0.04%</td>
<td>0.04%</td>
<td>$1,305</td>
</tr>
<tr>
<td>40 Miscellaneous goods vehicles</td>
<td>Automotive</td>
<td>0.00%</td>
<td>0.00%</td>
<td>$1,234</td>
</tr>
<tr>
<td>41 Compasses, surveying instruments</td>
<td>Analytical Instruments</td>
<td>0.01%</td>
<td>0.01%</td>
<td>$1,070</td>
</tr>
<tr>
<td>42 Other chemical products and preparations</td>
<td>Chemical Products</td>
<td>0.01%</td>
<td>0.01%</td>
<td>$1,064</td>
</tr>
<tr>
<td>43 Jerseys, pullovers, cardigans, waistcoats, knitted</td>
<td>Apparel</td>
<td>0.00%</td>
<td>-0.02%</td>
<td>$1,062</td>
</tr>
<tr>
<td>44 Yarn of wool or animal hair</td>
<td>Textiles</td>
<td>0.04%</td>
<td>-0.01%</td>
<td>$1,043</td>
</tr>
<tr>
<td>45 Miscellaneous non-alcohol beverage</td>
<td>Processed Food</td>
<td>0.01%</td>
<td>-0.11%</td>
<td>$934</td>
</tr>
<tr>
<td>46 Other plastic articles</td>
<td>Plastics</td>
<td>0.00%</td>
<td>0.00%</td>
<td>$909</td>
</tr>
<tr>
<td>47 Sauce, seasoning, condiment</td>
<td>Processed Food</td>
<td>0.02%</td>
<td>0.02%</td>
<td>$863</td>
</tr>
<tr>
<td>48 Miscellaneous crude minerals</td>
<td>Chemical Products</td>
<td>0.05%</td>
<td>-0.45%</td>
<td>$838</td>
</tr>
<tr>
<td>49 Petroleum Oils</td>
<td>Oil and Gas Products</td>
<td>0.00%</td>
<td>0.00%</td>
<td>$835</td>
</tr>
<tr>
<td>50 Commercial refrigerating equipment and parts</td>
<td>Motor Driven Products</td>
<td>0.01%</td>
<td>0.01%</td>
<td>$833</td>
</tr>
</tbody>
</table>

**Top 50 Industries as % of Iceland’s total goods exports: 98.7%**

Inbound Foreign Direct Investment
Selected Countries

Inflows of Foreign Direct Investment, in % of Domestic Capital Formation, 2002 - 2004

Stock of Foreign Direct Investment, in % of GDP, 2004

Source: UNCTAD (2006), author's analysis.
Capital Investment Intensity
Selected Countries

Gross Investment in % of GDP, 2005

Growth Rate of Real Gross Investment, CAGR, 2000 - 2005

Source: EIU (2006), author’s analysis.
Patenting Intensity: 1996 – 2005
Selected Countries

Source: USPTO (2006), author’s analysis.
# U.S. Patents by Iceland-based Institutions

<table>
<thead>
<tr>
<th>Patentor</th>
<th>Number of patents, 2000-04</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONEXANT SYSTEMS, INC.</td>
<td>22</td>
</tr>
<tr>
<td>OSSUR HF</td>
<td>7</td>
</tr>
<tr>
<td>MAREL H.F.</td>
<td>6</td>
</tr>
<tr>
<td>DECODE GENETICS EHF.</td>
<td>5</td>
</tr>
<tr>
<td>FLAGA HF</td>
<td>2</td>
</tr>
<tr>
<td>STYLE - R.M. MAGNUSSON</td>
<td>2</td>
</tr>
<tr>
<td>ARTLITE LIMITED</td>
<td>2</td>
</tr>
<tr>
<td>PROKARIA LTD.</td>
<td>2</td>
</tr>
<tr>
<td>INTEL CORPORATION</td>
<td>1</td>
</tr>
<tr>
<td>TELEFONAKTIEBOLAGET LM ERICSSON</td>
<td>1</td>
</tr>
<tr>
<td>TEXAS INSTRUMENTS, INCORPORATED</td>
<td>1</td>
</tr>
<tr>
<td>3COM CORPORATION</td>
<td>1</td>
</tr>
<tr>
<td>PHARMACIA &amp; UPJOHN COMPANY</td>
<td>1</td>
</tr>
<tr>
<td>PC-TEL, INC.</td>
<td>1</td>
</tr>
<tr>
<td>NORSK HYDRO ASA</td>
<td>1</td>
</tr>
</tbody>
</table>

Twelve additional institutions with 1 patent

Iceland’s Competitive Position

Overview

Economic performance

• Strong prosperity growth has turned Iceland into one of the world’s most prosperous economies
• High labor participation in the economy together with solid productivity performance has driven prosperity
• High local prices reduce the effective standard of living

Trade, Investment, and Innovation

• Stable export position
• Foreign direct investment has been moderate, but the ALCOA investment will push up the numbers
• Domestic investment is very high for the country’s stage of development
• Patenting rates, measured by U.S. patents, are rising, against the global trend
<table>
<thead>
<tr>
<th>Top 25</th>
<th>Country</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>United States</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Germany</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Finland</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Switzerland</td>
<td>+4</td>
</tr>
<tr>
<td>5</td>
<td>Denmark</td>
<td>-1</td>
</tr>
<tr>
<td>6</td>
<td>Netherlands</td>
<td>+1</td>
</tr>
<tr>
<td>7</td>
<td>Sweden</td>
<td>+4</td>
</tr>
<tr>
<td>8</td>
<td>United Kingdom</td>
<td>-3</td>
</tr>
<tr>
<td>9</td>
<td>Japan</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Hong Kong SAR</td>
<td>+7</td>
</tr>
<tr>
<td>11</td>
<td>Singapore</td>
<td>-5</td>
</tr>
<tr>
<td>12</td>
<td>Austria</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td><strong>ICELAND</strong></td>
<td>+3</td>
</tr>
<tr>
<td>14</td>
<td>Norway</td>
<td>+5</td>
</tr>
<tr>
<td>15</td>
<td>Canada</td>
<td>-1</td>
</tr>
<tr>
<td>16</td>
<td>France</td>
<td>-6</td>
</tr>
<tr>
<td>17</td>
<td>Belgium</td>
<td>+1</td>
</tr>
<tr>
<td>18</td>
<td>Australia</td>
<td>-5</td>
</tr>
<tr>
<td>19</td>
<td>Israel</td>
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<tr>
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<td>Malaysia</td>
<td>+3</td>
</tr>
<tr>
<td>21</td>
<td>Taiwan</td>
<td>-6</td>
</tr>
<tr>
<td>22</td>
<td>Ireland</td>
<td>-1</td>
</tr>
<tr>
<td>23</td>
<td>New Zealand</td>
<td>-3</td>
</tr>
<tr>
<td>24</td>
<td>Estonia</td>
<td>+3</td>
</tr>
<tr>
<td>25</td>
<td>Korea, Rep.</td>
<td>-1</td>
</tr>
</tbody>
</table>

Note: Constant sample of countries
Business Competitiveness Index, 2006
Relationship with GDP Per Capita

2005 GDP per Capita (Purchasing Power Adjusted)

Business Competitiveness Index

Source: Global Competitiveness Report 2006
Competitiveness and Wages

Hourly Wage in Manufacturing, 2004

### Factor (Input) Conditions

#### Iceland’s Relative Position 2006

<table>
<thead>
<tr>
<th>Competitive Advantages</th>
<th>Competitive Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative to GDP per Capita</td>
<td>Relative to GDP per Capita</td>
</tr>
</tbody>
</table>

**Country Ranking, Arrows indicate a change of 5 or more ranks since 2001**

- Telephone/fax infrastructure quality: 1 ➪
- Quality of electricity supply: 1 ➪
- Efficiency of legal framework: 2 ➪
- Quality of public schools: 5 ➪
- Reliability of police services: 8 ➩
- Ease of access to loans: 8 ➩

- Quality of math and science education: 32 ➩
- Quality of scientific research institutions: 31 ➩
- University/industry research collaboration: 19 ➩
- Air transport infrastructure quality: 16 ➩
- Local equity market access: 15 ➩
- Availability of scientists and engineers: 15 ➩
- Financial market sophistication: 14 ➪
- Judicial independence: 10 ➪
- Port infrastructure quality: 13 ➪
- Quality of management schools: 11 ➪
- Venture capital availability: 10 ➪
- Overall infrastructure quality: 10 ➪

---

**Note:** Rank versus 121 countries; overall, Iceland ranks 3rd in 2005 PPP adjusted GDP per capita and 13th in Business Competitiveness.

**Source:** Global Competitiveness Report 2006-2007.
Doing Business 2006 Ranking

Iceland

<table>
<thead>
<tr>
<th>Category</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registering Property</td>
<td>8</td>
</tr>
<tr>
<td>Enforcing Contracts</td>
<td>8</td>
</tr>
<tr>
<td><strong>OVERALL</strong></td>
<td><strong>12</strong></td>
</tr>
<tr>
<td>Closing a Business</td>
<td>13</td>
</tr>
<tr>
<td>Getting Credit</td>
<td>13</td>
</tr>
<tr>
<td>Paying Taxes</td>
<td>13</td>
</tr>
<tr>
<td>Starting a Business</td>
<td>16</td>
</tr>
<tr>
<td>Trading Across Borders</td>
<td>18</td>
</tr>
<tr>
<td>Dealing with Licenses</td>
<td>30</td>
</tr>
<tr>
<td>Employing Workers</td>
<td>42</td>
</tr>
<tr>
<td>Protecting Investors</td>
<td>83</td>
</tr>
</tbody>
</table>

Effectiveness of Public Spending
Selected Countries

Note: Number refers to rank among 124 countries
## Context for Strategy and Rivalry

### Iceland’s Relative Position 2006

#### Competitive Advantages Relative to GDP per Capita

<table>
<thead>
<tr>
<th>Advantage</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low costs of corruption</td>
<td>1</td>
</tr>
<tr>
<td>Efficacy of corporate boards</td>
<td>5</td>
</tr>
<tr>
<td>Cooperation in labor-employer relations</td>
<td>6</td>
</tr>
<tr>
<td>Decentralization of economic policymaking</td>
<td>6</td>
</tr>
<tr>
<td>Intellectual property protection</td>
<td>9</td>
</tr>
</tbody>
</table>

#### Competitive Disadvantages Relative to GDP per Capita

<table>
<thead>
<tr>
<th>Disadvantage</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence of trade barriers</td>
<td>54</td>
</tr>
<tr>
<td>Decentralization of corporate activity</td>
<td>49</td>
</tr>
<tr>
<td>Intensity of local competition</td>
<td>18</td>
</tr>
<tr>
<td>Effectiveness of antitrust policy</td>
<td>13</td>
</tr>
<tr>
<td>Favoritism in decisions of government officials</td>
<td>10</td>
</tr>
</tbody>
</table>

Incentive Effect of Taxation
Selected Countries

### Related and Supporting Industries

#### Iceland’s Relative Position 2006

<table>
<thead>
<tr>
<th>Competitive Advantages Relative to GDP per Capita</th>
<th>Competitive Disadvantages Relative to GDP per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local availability of process machinery 44↑</td>
<td>Local availability of process machinery 44↑</td>
</tr>
<tr>
<td>Local supplier quantity 31↓</td>
<td>Local supplier quantity 31↓</td>
</tr>
<tr>
<td>Local supplier quality 23↓</td>
<td>Local supplier quality 23↓</td>
</tr>
<tr>
<td>Local availability of specialized research and training services 20↓</td>
<td>Local availability of specialized research and training services 20↓</td>
</tr>
</tbody>
</table>

Country Ranking, Arrows indicate a change of 5 or more ranks since 2001.

Note: Rank versus 121 countries; overall, Iceland ranks 3rd in 2005 PPP adjusted GDP per capita and 13th in Business Competitiveness.

## Demand Conditions

### Iceland’s Relative Position 2006

#### Competitive Advantages Relative to GDP per Capita

| Presence of demanding regulatory standards | 9 |

#### Competitive Disadvantages Relative to GDP per Capita

| Government procurement advanced technology products | 58 ↓ |
| Buyer sophistication | 27 ↓ |
| Laws relating to ICT | 16 ↓ |
| Stringency of environmental regulations | 15 ↓ |

Outbound Foreign Direct Investments
Selected Countries

Stock of Foreign Direct Investment Abroad, in % of Domestic GDP

Source: UNCTAD (2006), author's analysis.
Outbound Foreign Direct Investments

• A number of Icelandic groups have recently made **major acquisitions** in the UK and the Nordic countries, concentrating on finance, retail, and food products enabled by the **availability of investment capital** after the opening of the Icelandic economy.

• If Icelandic companies can **leverage experiences** made on the competitive domestic markets, they are in a strong position to succeed abroad.

• The positions on foreign markets can be a platform to further **upgrade domestic operations**, through the adoption of new practices and the use of new linkages with foreign clusters and markets.
Drivers of Iceland’s Competitiveness

Overview

• Overall strong context conditions provide opportunities

• Wages are relatively high after recent growth ahead of competitiveness improvements, a sign of the overheating economy

• Iceland’s prosperity is ahead of its competitiveness, supported by a strong context and clear cluster-focus

• Improving microeconomic fundamentals
  – Key strengths in infrastructure, basic skills, administrative capacity, and openness to competition
  – Key weaknesses in the innovation environment, depth of clusters, and demand conditions

• Iceland has developed a focused portfolio of traded clusters

  Established
  • Fishing products
  • Energy-intensive metal production

  Emerging
  • Financial services
  • Life Sciences
  • Specialty food
  • Specialty apparel

• Icelandic companies are internationalizing
Strategic Issues for Iceland

- Continue to upgrade the business environment
- Strengthen the capacity for innovation
- Deepen clusters and foster related cluster development
- Address macroeconomic volatility
- Coalesce a national economic strategy
National Innovative Capacity Framework

**Common Innovation Infrastructure**
- e.g., funding for science and technology, protection of intellectual property, quality of research universities

**Cluster-Specific Conditions**
- e.g., presence of specialized research facilities

**Quality of Linkages**
- e.g., university-company collaboration

**Company Innovation Orientation**
- e.g., company strategies based on innovation
Iceland’s Innovative Capacity

• A clear science, technology, and innovation agenda is essential to overcome the challenges of the country’s small size

• Leverage unique national conditions (homogeneity of population’s gene-pool, geothermal energy, climate)

• Focus innovative investments around clusters

• Create linkages into innovation networks in neighboring regions (US, Baltic Sea Region)
Strategic Issues for Iceland

- Continue to upgrade the business environment
- Strengthen the capacity for innovation
- **Deepen clusters and foster related cluster development**
- Address macroeconomic volatility
- Coalesce a national economic strategy
Cluster Development in Massachusetts

Health
- Tertiary Hospital Services
- Medical Information Processing
- Medical Devices
- Biopharmaceuticals
- Medical Research
- Consulting
- Think Tanks
- Research Organization
- Knowledge Creation

Information Technology
- Networking
- Telecommunications
- High Capacity Computers
- Software
- Universities
- Medical Outcomes Measurement
- Medical Software

Cluster Development in Massachusetts
The Evolution of Regional Economies
San Diego

- Climate and Geography
- U.S. Military
- Bioscience Research Centers

Key Industries:
- Hospitality and Tourism
- Transportation and Logistics
- Power Generation
- Communications Equipment
- Analytical Instruments
- Information Technology
- Education and Knowledge Creation
- Medical Devices
- Biotech / Pharmaceuticals
- Aerospace Vehicles and Defense
- Sports and Leather Goods

Timeline:
- 1910
- 1930
- 1950
- 1970
- 1990
## Cluster-Based Economic Policies

### Three Key Dimensions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aims to increase the positive economic effects of clusters</td>
<td>• Aims to increase the efficiency of existing economic policies</td>
<td>• Aims to improve the efficiency of public-private co-operation in economic policy design and implementation</td>
</tr>
<tr>
<td>• Based on the hypothesis that cluster development can be supported</td>
<td>• Based on the hypothesis that impact of policies can be strengthened if clusters are available as multipliers</td>
<td>• Based on the hypothesis, that discussions on the cluster-level can be more issue-driven and less politically loaded</td>
</tr>
</tbody>
</table>

- While the three dimensions often overlap in practice, it is important for cluster-based policies to be based on a clear understanding of their specific aims.
Structuring Cluster Initiatives

• Activities need to be based on a consistent *conceptual framework* of the drivers of the cluster’s performance, shared across the cluster

• A cluster strategy needs to build on the *unique* circumstances of Iceland’s clusters rather than copying successful clusters based elsewhere

• Cluster development requires an enduring *organizational framework* with sufficient resources for at least 3-5 years
  – Eventually institutionalized in the private sector

• **Data** creation and analysis needs to be a central focus in developing the cluster action agenda and measuring progress
Cluster Development in Iceland

• Iceland has launched a number of regional competitiveness efforts around the mobilization of clusters

• For these efforts to reach full effect, it is critical to:
  – Consider their nature as local or traded clusters
  – Get clarity on whether network building, economic growth, or higher efficiency of policy is the overriding objective
  – Develop an understanding of each cluster’s strategic positioning
  – Institutionalize impact control

• An overarching cluster portfolio strategy should leverage linkages between clusters in the traded sector
  – Increase resilience of cluster portfolio to external shocks
  – Leverage existing strengths
Strategic Issues for Iceland

• Continue to upgrade the business environment

• Strengthen the capacity for innovation

• Deepen clusters and foster related cluster development

• **Address macroeconomic volatility**

• Coalesce a national economic strategy
Micro reform is needed to raise the level of sustainable prosperity.

Stability and confidence support investment and upgrading.

Macro reform alone can lead to short term capital inflows and growth spurts that ultimately are not sustainable.

Macro reform

Create opportunity for productivity

Required to achieve productivity

Microeconomic reform

Productivity growth allows economic growth without inflation, making macroeconomic stability easier to achieve.

Macroeconomic reform
Icelandic Macroeconomic Context

• Recent exchange rate fluctuations are not a sign of weakening competitiveness

• The overheating of the economy is a concern, but not a competitiveness problem

HOWEVER

• Volatility drives investors to demand a risk premium, leading to higher financing costs for Iceland companies and consumers

• Volatility distorts company decision making, especially on longer-term investments

• Efforts to manage the volatility of the economy are important

• The arguments for tying the Icelandic currency to an external anchor are gaining weight
Strategic Issues for Iceland

- Continue to upgrade the business environment
- Strengthen the capacity for innovation
- Deepen clusters and foster related cluster development
- Address macroeconomic volatility
- Coalesce a national economic strategy
A Changing Global Competitive Environment

**Driver**
- Fewer barriers to trade and investment
- Rapidly increasing stock and diffusion of knowledge
- Competitiveness upgrading in many countries

**Market reaction**
- Globalization of markets
- Globalization of value chains
- Internationalization of capital, especially portfolio investment
- Increasing knowledge and skill intensity of competition
- Value increasingly in the service component of activities

**Implications**
- **Productivity** increasingly determines success
- Competition among nations need **not** be zero-sum
- Economic success depends on providing **unique value**, not just meeting best practice benchmarks
National Economic Strategy

- What is a **unique competitive position** for the country?
  - What roles has it in the world and the regional economy?
  - What is the country’s unique value proposition as a business location?
  - For what range or types of businesses can the country be competitive?

Developing Unique Strengths

- What **elements of the business environment** are essential to the national value proposition?
- What **existing and emerging clusters** must be mobilized?

Achieving and Maintaining Parity with Peer Countries

- What **macroeconomic, political, legal and social improvements** are necessary to maintain parity with peer countries?
- What areas of the **general business environment** must improve to maintain parity with peer countries?
National Economic Strategy
Issues for Iceland

• **Market niches** tied to Iceland’s unique geography, skills, culture, and values

• **Reinforcing positions** in related clusters as a growth vehicle
  – Ecology as an overriding theme