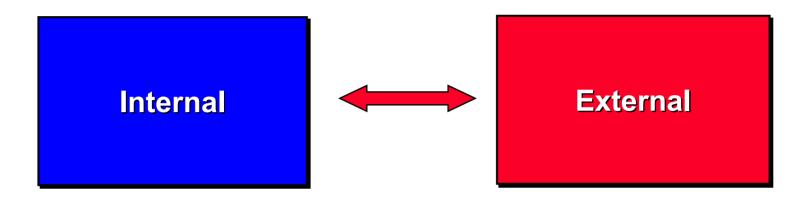
Malaysia's Competitiveness: Moving to the Next Stage

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

Kuala Lumpur, Malaysia 6 May, 2003

This presentation draws on ideas from Professor Porter's articles and books, in particular, <u>The Competitive Advantage of Nations</u> (The Free Press, 1990), "Building the Microeconomic Foundations of Competitiveness," in <u>The Global Competitiveness Report 2002</u>, (World Economic Forum, 2002), "Clusters and the New Competitive Agenda for Companies and Governments" in <u>On Competition</u> (Harvard Business School Press, 1998), and ongoing research on clusters and competitiveness. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means - electronic, mechanical, photocopying, recording, or otherwise - without the permission of Michael E. Porter. Further information on Professor Porter's work and the Institute for Strategy and Competitiveness is available at www.isc.hbs.edu

Perspectives on Firm Success



- Competitive advantage resides solely inside a company or in its industry
- Competitive success depends primarily on company choices

- Competitive advantage (or disadvantage) resides partly in the locations at which a company's business units are based
- Cluster participation is an important contributor to competitiveness

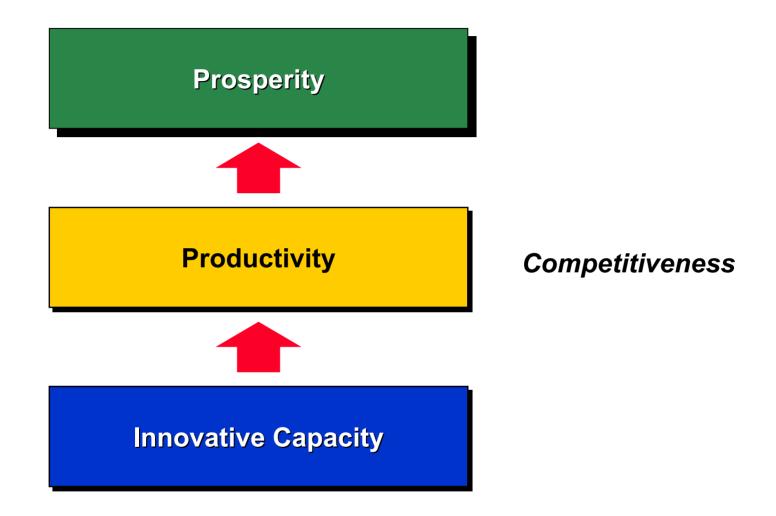
What is Competitiveness?

- Competitiveness is determined by the productivity with which a nation uses its human, capital, and natural resources. Productivity sets a nation's or region's standard of living (wages, returns to capital, returns to natural resource endowments)
 - 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 competes in that matters for prosperity, but how firms compete in those industries
 - Productivity in a nation 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 does not make a country more competitive



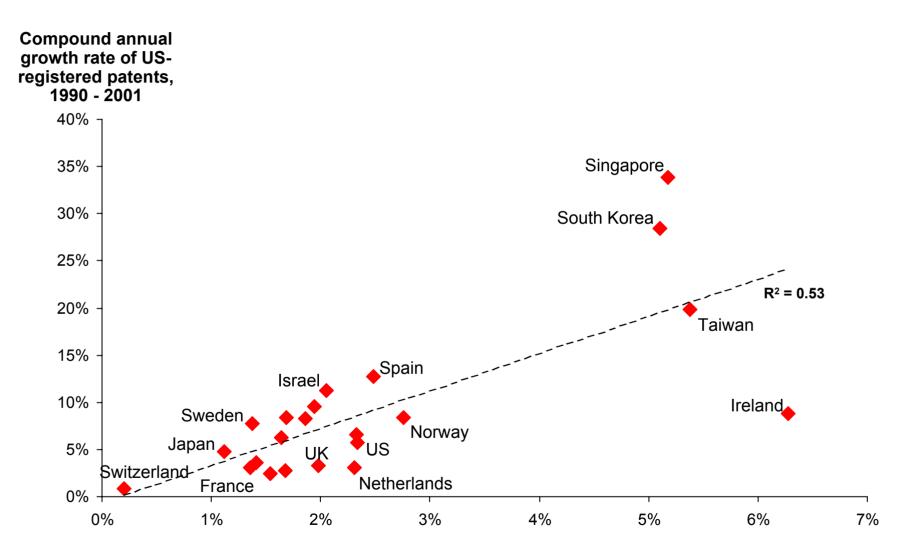
- Nations compete in offering the most productive environment for business
- The public and private sectors play different but interrelated roles in creating a productive economy

Innovation and Competitiveness



- Innovation is more than just scientific discovery
- There are no low-tech industries, only low-tech firms

Patenting Growth and Prosperity Growth Selected OECD Countries



Compound annual growth rate of real GDP, 1990-2000

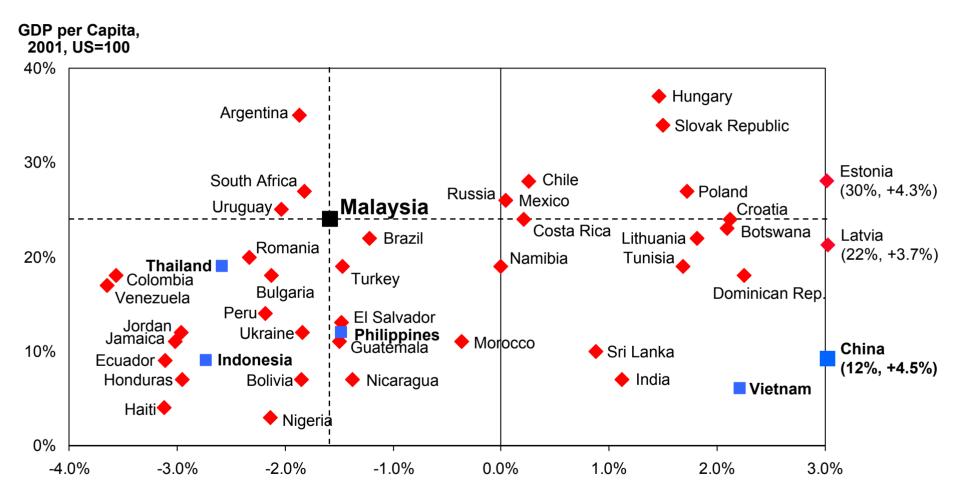
Malaysia's Economic Situation 2003

- Malaysia has achieved strong progress in the last several decades, and has weathered the Asian Crisis better than many of its regional neighbors
- Currently, however, the slowdown in the world economy and especially in IT/electronics is having a strong impact on Malaysian exports and revealing challenges in Malaysian competitiveness



 Malaysia will need a new strategy to move the economy to the next level

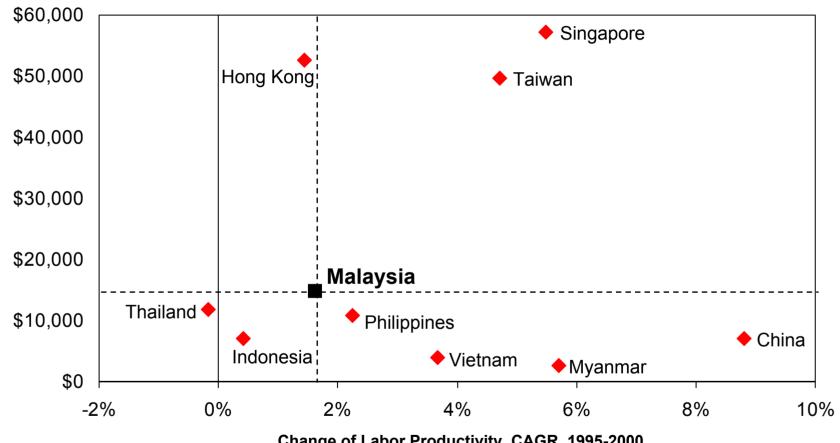
Comparative Economic Performance Selected Middle- and Lower-Income Economies



CAGR of GDP per Capita Relative to the US, 1995-2001

Comparative Labor Productivity Performance Selected Asian Economies

Labor Productivity (GDP per Employee), 2000

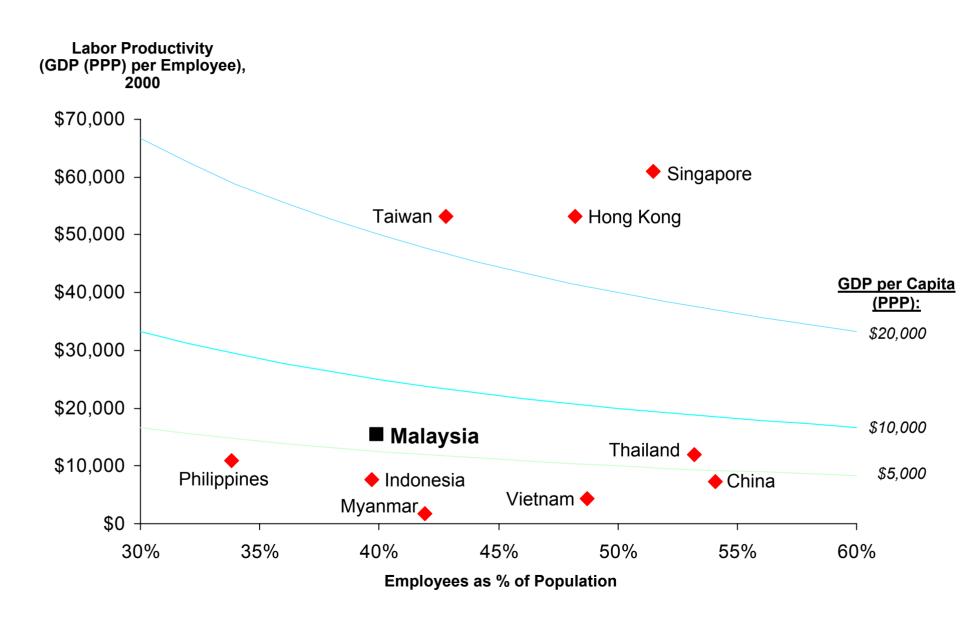


Change of Labor Productivity, CAGR, 1995-2000

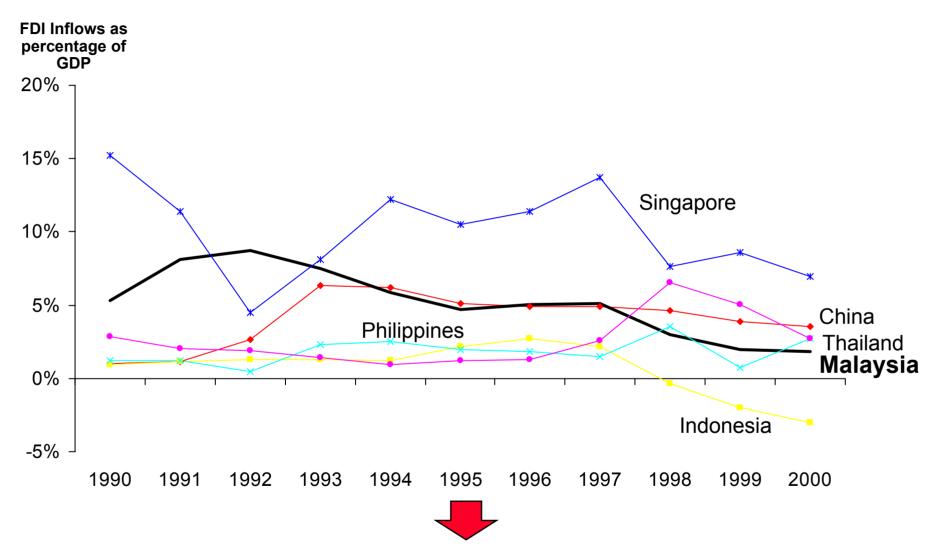


Malaysia's labor productivity growth is average among Asian economies, lagging the more dynamic economies

Prosperity and Productivity Performance Selected Asian Economies

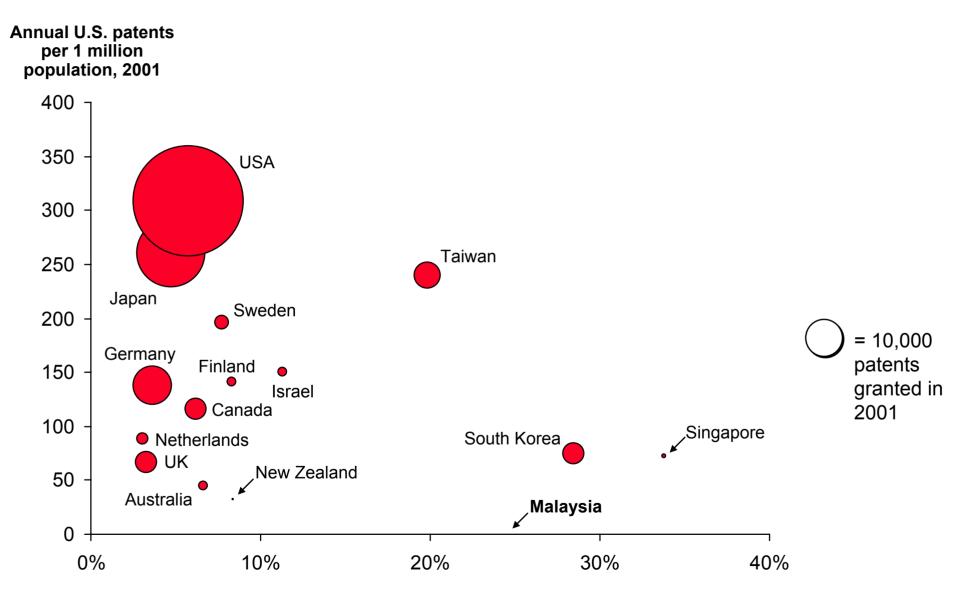


Comparative Inward Foreign Investment Flows <u>Selected Asian Economies</u>



 Malaysia has recently received relatively less foreign direct investment than many of its neighboring countries, after high inflow before the Asian Crisis

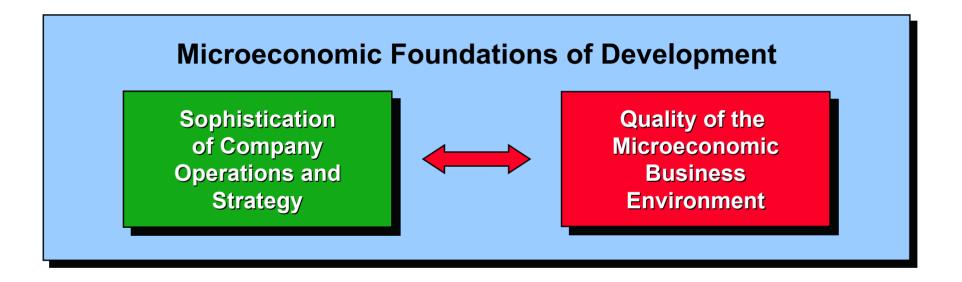
International Patenting Output



Compound annual growth rate of US-registered patents, 1990 - 2001

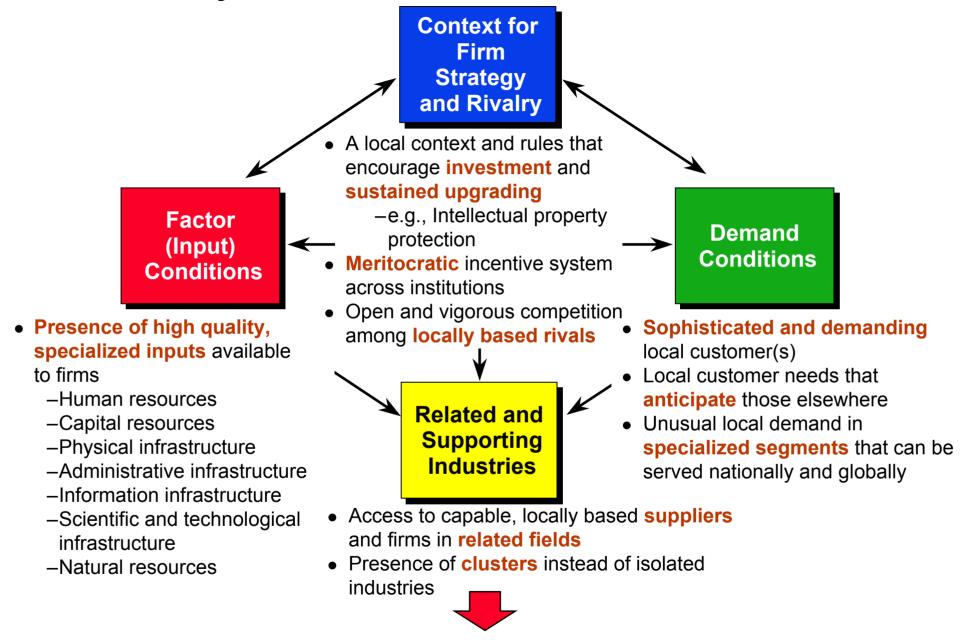
Determinants of Productivity and Productivity Growth

Macroeconomic, Political, Legal, and Social Context for Development

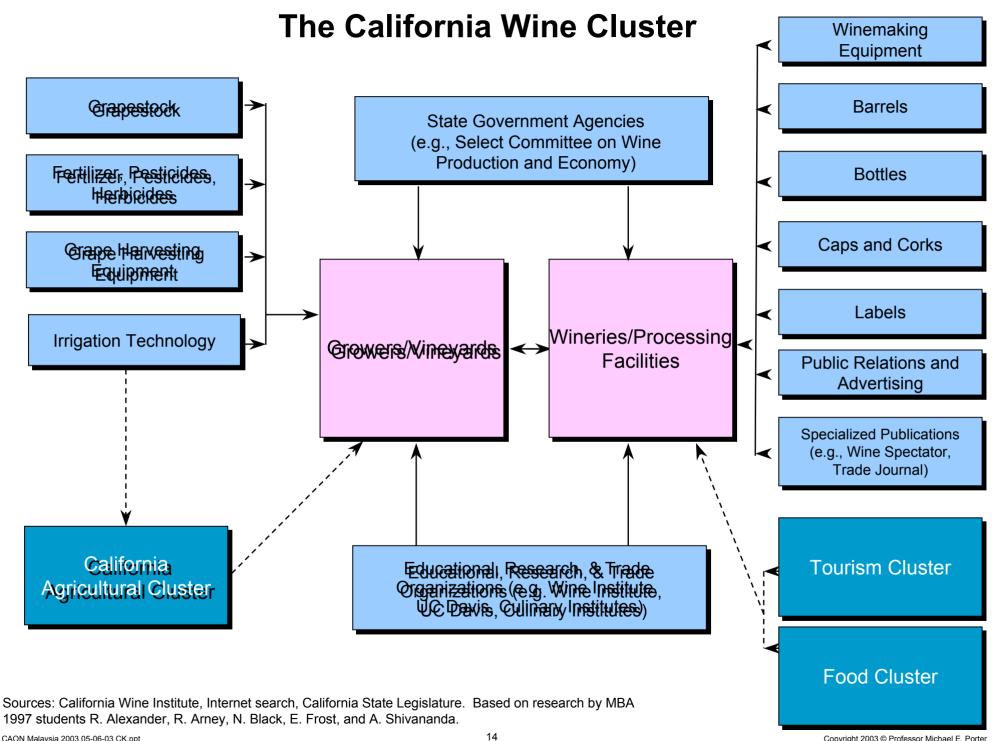


- A sound macroeconomic, political, legal, and social context creates the potential for competitiveness, but is not sufficient
- Competitiveness ultimately depends on improving the microeconomic capability of the economy and the sophistication of local companies and local competition

Productivity, Innovation, and the Business Environment



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



Clusters and Competitiveness

Clusters increase productivity and efficiency

- Efficient access to specialized inputs, services, employees, information, institutions, and "public goods" (e.g. training programs)
- Ease of coordination and transactions across firms
- Rapid diffusion of best practices
- Ongoing, visible performance comparisons and strong incentives to improve vs. local rivals

Clusters stimulate and enable innovation

- Enhanced ability to perceive innovation opportunities
- Presence of multiple suppliers and institutions to assist in knowledge creation
- Ease of experimentation given locally available resources

Clusters facilitate commercialization

- Opportunities for new companies and new lines of established business are more apparent
- Commercializing new products and starting new companies is easier because of available skills, suppliers, etc.



Clusters reflect the fundamental influence of **externalities / linkages** across firms and associated institutions in competition

Levels of Clusters

- There is often an array of clusters in a given field in different locations, each with different levels of specialization and sophistication
- Global innovation centers, such as Silicon Valley in semiconductors, are few in number. If there are multiple innovation centers, they normally **specialize** in different market segments
- Other clusters focus on manufacturing, outsourced service functions, or play the role of regional assembly or service centers
- Firms based in the most advanced clusters often seed or enhance clusters in other locations in order to reduce the risk of a single site, access lower cost inputs, or better serve particular regional markets
- The challenge for an economy is to move from isolated firms to an array of clusters, and then to upgrade the breadth and sophistication of clusters to more advanced activities

Leading Footwear Clusters

Portugal

- Production
- Focus on shortproduction runs in the medium price range

Romania

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

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 handsewn casual shoes and boots

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

Institutions for Collaboration

General

- Chambers of Commerce
- Professional associations
- School networks
- University partner groups
- Religious networks
- Joint private/public advisory councils
- Competitiveness councils

Cluster-specific

- Industry associations
- Specialized professional associations and societies
- Alumni groups of core cluster companies
- Incubators

- Institutions for collaboration (IFC) are formal and informal organizations that
 - facilitate the exchange of information and technology
 - conduct joint activities
 - foster coordination among firms
- IFCs can improve the business environment by
 - creating **relationships** and level of trust that make them more effective
 - defining of common standards
 - conducting or facilitating the organization of collective action in areas such as procurement, information gathering, or international marketing
 - defining and communicating common beliefs and attitudes
 - providing mechanisms to develop a common economic or cluster agenda

Institutions for Collaboration <u>Selected Institutions for Collaboration, San Diego</u>

General

- San Diego Chamber of Commerce
- San Diego MIT Enterprise Forum
- Corporate Director's Forum
- San Diego Dialogue
- Service Corps of Retired Executives, San Diego
- San Diego Regional Economic Development Corporation
- Center for Applied Competitive Technologies
- San Diego World Trade Center
- UCSD Alumni
- San Diego Regional Technology Alliance
- San Diego Science and Technology Council
- Office of Trade and Business Development

Cluster-Specific

Telecommunication

Linkabit Alumni

Biotech

- Hybritech Alumni
- Scripps Research Institute Alumni
- BIOCOMM
- UCSD Connect

Source: Clusters of Innovation project (www.compete.org)

Stages Of Competitive Development



Source: Porter, Michael E., The Competitive Advantage of Nations,

The Free Press: New York (1990)

Malaysia's Competitiveness Agenda 2003

- Prepare the business environment for the next stage of economic development
- Engage in cluster development
- Strengthen regional and cross-border initiatives for competitiveness
- Redefine the roles of government and the private sector in economic development



Factor (Input) Conditions Malaysia's Relative Position

Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Administrative Burden for Start-Ups	11
Air Transport Infrastructure Quality	14 分
Overall Infrastructure Quality	16
Port Infrastructure Quality	16
Railroad Infrastructure Quality	17 👉
Local Equity Market Access	23
Adequacy of Public Sector Legal Recours	e 23

Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

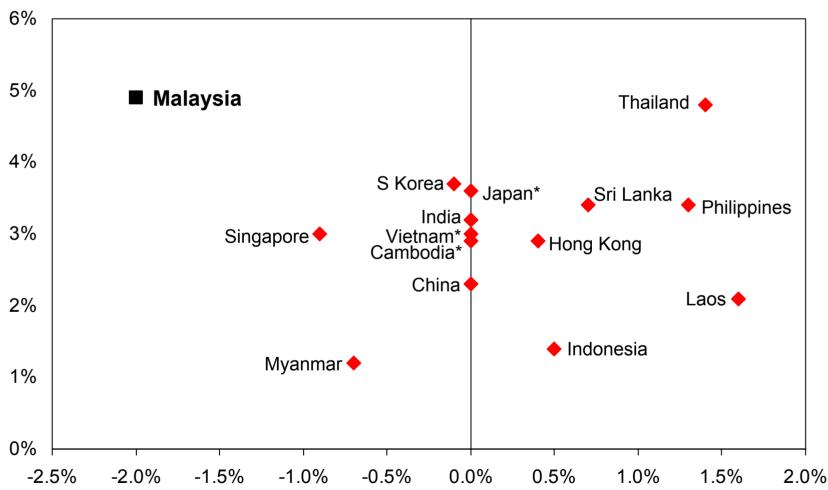
ranks since 1998
ers 52
48
44
43
y 39
37
37
36
ion 35
33
33
29

Note: Rank by countries; overall Malaysia ranks 26 out of 80 countries (26 on National Business Environment, 43 on GDP pc 2001)

Quality of Public Schools

Public Spending on Education Selected Asian Countries

Public expenditure on education, Share of GNP, 1995-97



Change of public education spending as % of GNP, 1995-97 to 1985-87

*No growth rate data available Source: UN – Human Development Indicators CAON Malaysia 2003 05-06-03 CK.ppt Factor (Input) Conditions

U.S. Patenting by Malaysian Institutions

	Organization	U.S. Patents Issued from 1996 to 2000
1	MOTOROLA, INC.	37
2	CERAM OPTEC INDUSTRIES, INC.	27
3	INTEL CORPORATION	11
4	SUNG LING GOLF & CASTING CO., LTD.	4
4	BRANDEIS UNIVERSITY	4
5	IRIS CORPORATION BERHAD	3
6	MOTOROLA MALAYSIA SDN BHD	2
6	OTIS ELEVATOR COMPANY	2
6	SHIN-ETSU HANDOTAI CO., LTD.	2
6	ADVANCED MICRO DEVICES, INC.	2
7	ALDES AERAULIQUE	1
7	ARTWRIGHT TECHNOLOGY SDN BHD	1
7	AUTOLIV DEVELOPMENT AB	1
7	CHARTERED SEMICONDUCTOR MANUF. PTE LTD	1
7	COLLINS INTERNATIONAL CO., LTD.	1
7	ELITE FURNITURE, INC.	1
7	GLOBAL PALM PRODUCTS SDN. BHD.	1
7	HALLIBURTON ENERGY SERVICES	1
7	IMPACT SURGE SDN. BHD.	1
7	INTEGRATED DEVICE TECHNOLOGY, INC.	1
7	INVETECH OPERATIONS PTY. LTD.	1
7	JOHNSON & JOHNSON MFG SN BHD	1
7	MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.	1
7	MAXHILL TOY INDUSTRIES SDN. BHD.	1
7	NATIONAL SEMICONDUCTOR CORPORATION	1
7	NOVAL CONTROLS SDN BHD	1
7	NOVO NORDISK A/S	1
7	PALM OIL RESEARCH & DEVELOPMENT BOARD	1
7	PETRONAS RESEARCH & SCIENTIFIC SERVICES	1

Patents by Organization Commonwealth of Massachusetts

	Organization	Patents Issued from 1997 to 2001
1	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	518
2	GENERAL HOSPITAL CORPORATION	296
3	EMC CORPORATION	269
4	DIGITAL EQUIPMENT CORPORATION	261
5	POLAROID CORPORATION	213
6	ANALOG DEVICES, INC.	167
7	MILLENNIUM PHARMACEUTICALS, INC.	165
8	HARVARD UNIVERSITY	150
9	COMPAQ COMPUTER CORPORATION, INC.	147
10	SUN MICROSYSTEMS, INC.	143
11	BOSTON SCIENTIFIC CORPORATION	135
12	ACUSHNET COMPANY	130
13	GENETICS INSTITUTE, INC.	127
14	GILLETTE COMPANY	112
15	BRIGHAM AND WOMEN'S HOSPITAL	107
16	RAYTHEON COMPANY	101
17	GENERAL ELECTRIC COMPANY	99
18	HEWLETT-PACKARD COMPANY	96
19	CHILDREN'S MEDICAL CENTER CORPORATION	93
20	QUANTUM CORP. (CA)	93
21	COGNEX CORPORATION	90
22	DANA-FARBER CANCER INSTITUTE	90
23	JOHNSON & JOHNSON PROFESSIONAL INC.	90
24	BOSTON UNIVERSITY	84
25	SEPRACOR INC.	84

Note: Shading indicates universities, research institutions, and other government agencies Source: US Patent and Trademark Office (www.uspto.gov). Author's analysis.



Context for Firm Strategy and Rivalry Malaysia's Relative Position

Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Extent of Distortive Government	19	
Subsidies		

Cooperation in Labor-Employer 19
Relations

Decentralization of Corporate Activity 19

Extent of Locally Based Competitors 24

Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Efficacy of Corporate Boards	44 🔻
Costs of Other Firms' Illegal/ Unfair Activities	39

Favoritism in Decisions of Government	38
Officials	

Hidden Trade Barrier Liberalization

Tariff Liberalization	34

Effectiveness of Anti-Trust Policy	33

Intensity of Local Competition 28 1

Note: Rank by countries; overall Malaysia ranks 26 out of 80 countries (26 on National Business Environment, 43 on GDP pc 2001)

Corruption Ranking Selected Asian Countries

Rank 2002	Country	Change in Rank since 1998
4.	Singapore	+3
14.	Hong Kong	+2
27.	Taiwan	+2
36.	Malaysia	-5
42.	South Korea	+4
57.	China	-1
61.	Thailand	+4
65.	Philippines	-4
75.	Vietnam	+7
88.	Indonesia	+1

 Malaysia scores better on corruption than many competing Asian countries, but has lost some ground recently

Note: Rank out of 91 countries, change in rank calculated for constant sample of countries

Source: Transparency International, author's calculations, Corruption in Thailand Report - Office of Civil Service Commission, 2001



Demand Conditions Malaysia's Relative Position

Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Government Procurement of Advanced 7
Technology Products

Laws Relating to Information Technology 16

Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Stringency of Environmental 31
Regulations

Presence of Demanding Regulatory 30 Standards

Consumer Adoption of Latest Products 29

Note: Rank by countries; overall Malaysia ranks 26 out of 80 countries (26 on National Business Environment, 43 on GDP pc 2001)

Source: Global Competitiveness Report 2002

Related and Supporting Industries

Related and Supporting Industries <u>Malaysia's Relative Position</u>

Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Local Supplier Quantity 194

Local Availability of Components 20 and Parts

Local Availability of Process Machinery 25

Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Local Availability of Specialized 34
Research and Training Services

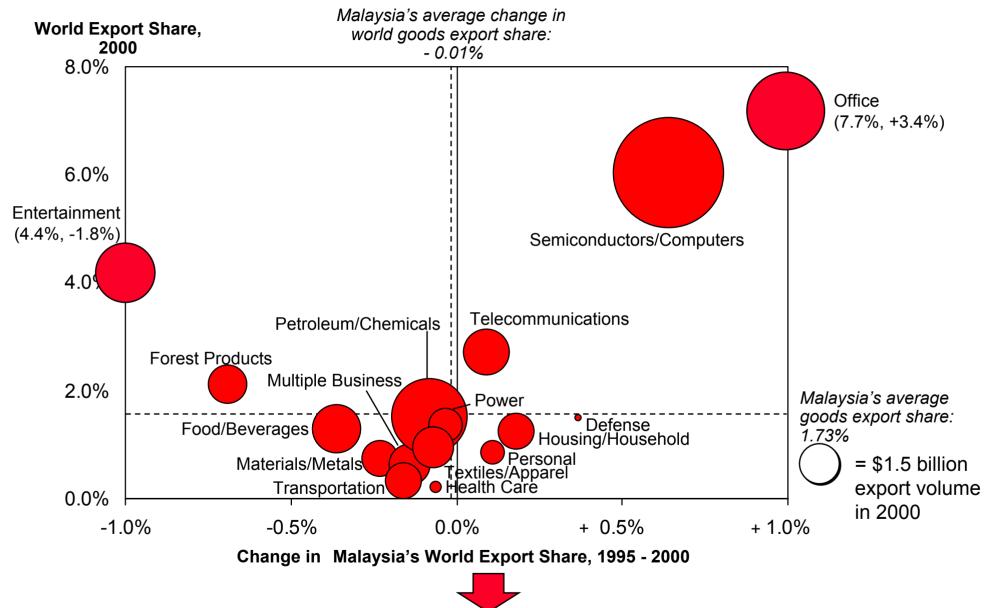
Extent of Product and Process 31
Collaboration

Local Supplier Quality 31

State of Cluster Development 28

Note: Rank by countries; overall Malaysia ranks 26 out of 80 countries (26 on National Business Environment, 43 on GDP pc 2001)

Malaysia's Export Performance By Broad Sector 1995-2000



Malaysia is strengthening its position in key export industries

Company Operations and Strategy Malaysia's Relative Position 2002

Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Prevalence of Foreign Technology 5 1

Willingness to Delegate Authority 22

Breadth of International Markets 23

Company Spending on R&D 23

Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows indicate a change of 5 or more ranks since 1998

Nature of Competitive Advantage 41

Control of International Distribution 37

Capacity for Innovation 364

Extent of Marketing 36

Extent of Incentive Compensation 33

Reliance on Professional Management 33

Extent of Branding 32 1

Production Process Sophistication 30

Degree of Customer Orientation 29

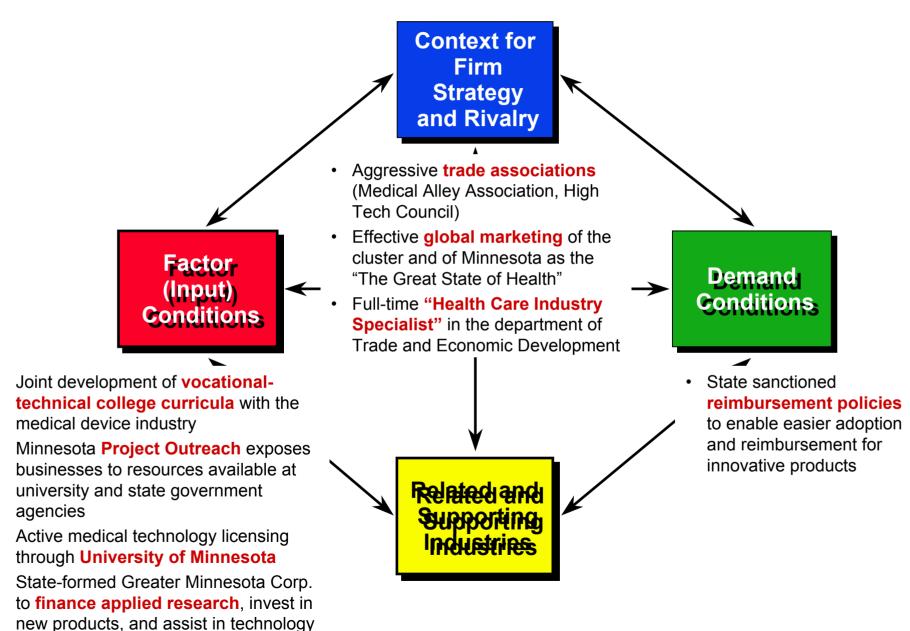
Note: Rank by countries; overall Malaysia ranks 26 out of 80 countries (27 on Company Operations and Strategy, 43 on GDP pc 2001)

Source: Global Competitiveness Report 2002

Malaysia's Competitiveness Agenda 2003

- Prepare the business environment for the next stage of economic development
- Engage in cluster development
- Strengthen regional and cross-border initiatives for competitiveness
- Redefine the roles of government and the private sector in economic development

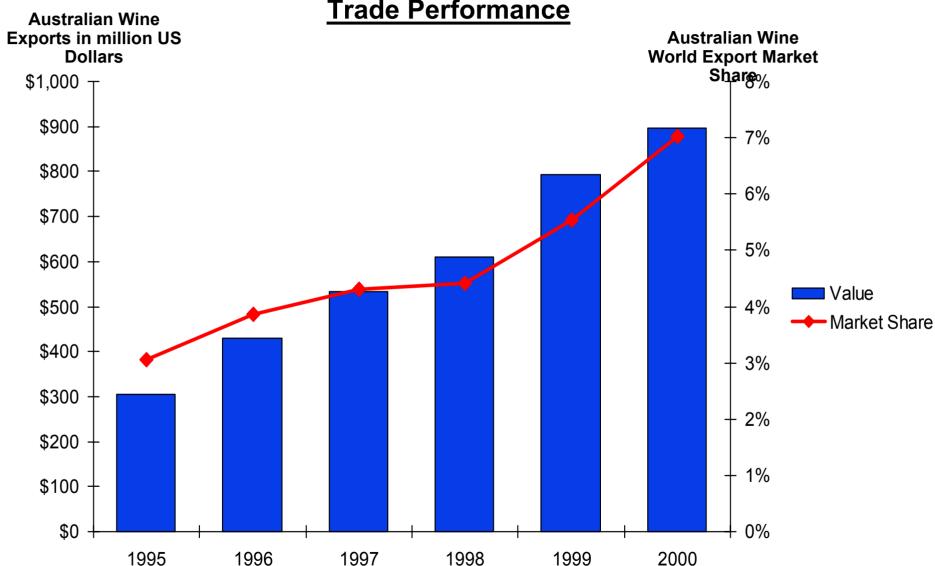
Public / Private Cooperation in Cluster Upgrading Minnesota's Medical Device Cluster



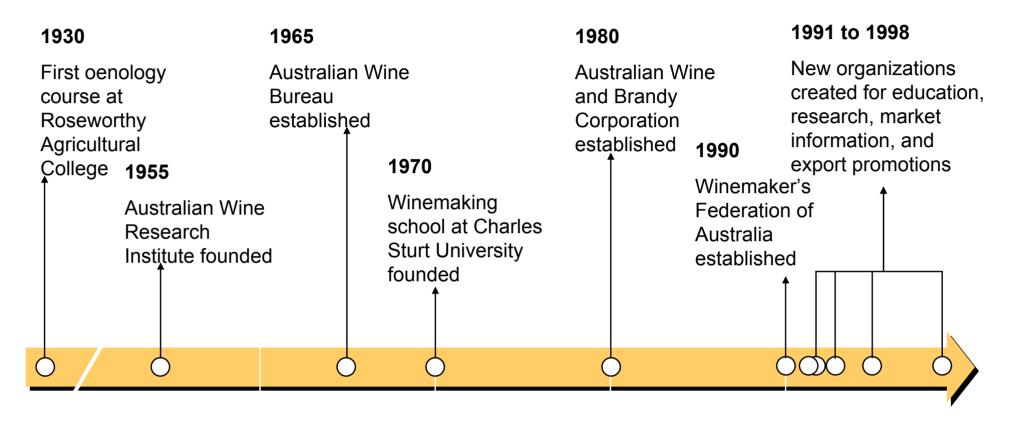
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transfer

The Australian Wine Cluster Trade Performance



The Australian Wine Cluster History



1950s	1960s	1970s	1980s	1990s
Import of European winery technology	Recruiting of experienced foreign investors, e.g. Wolf Bass	Continued inflow of foreign capital and management	Creation of large number of new wineries	Surge in exports and international acquisitions

The Australian Wine Cluster Recently founded Institutions for Collaboration

Winemakers' Federation of Australia

- Established in 1990
- Focus: Public policy representation of companies in the wine cluster
- Funding: Member companies

Australian Wine Export Council

- Established in 1992
- Focus: Wine export promotion through international offices in London and San Francisco
- Funding: Government; cluster organizations

Wine Industry Information Service

- Established in 1998
- Focus: Information collection, organization, and dissemination
- Funding: Cluster organizations

Cooperative Centre for Viticulture

- Established in 1991
- Focus: Coordination of research and education policy in viticulture
- Funding: other cluster organizations

Grape and Wine R&D Corporation

- Established in 1991 as statutory body
- Focus: Funding of research and development activities
- Funding: Government; statutory levy

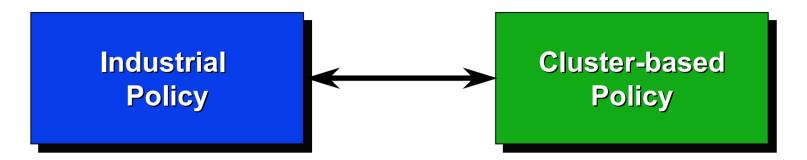
Wine Industry National Education and Training Council

- Established in 1995.
- Focus: Coordination, integration, and standard maintenance for vocational training and education
- Funding: Government; other cluster organizations

Appropriate Roles of Government in Cluster Development

- A successful cluster policy builds on sound overall economic policies
- Government should support the development of all clusters, not choose among them
- Government policy should reinforce established and emerging clusters rather than attempt to create entirely new ones
- Government's role in cluster initiatives is as facilitator and participant. The most successful cluster initiatives are a publicprivate partnership

Cluster Policy versus Industrial Policy



- Target desirable industries / sectors
- Focus on domestic companies
- Intervene in competition (e.g., protection, industry promotion, subsidies)
- Centralizes decisions at the national level

- All clusters can contribute to prosperity
- Domestic and foreign companies both enhance productivity
- Relax impediments and constraints to productivity
- Emphasize cross-industry linkages / complementarities
- Encourage initiative at the state and local level

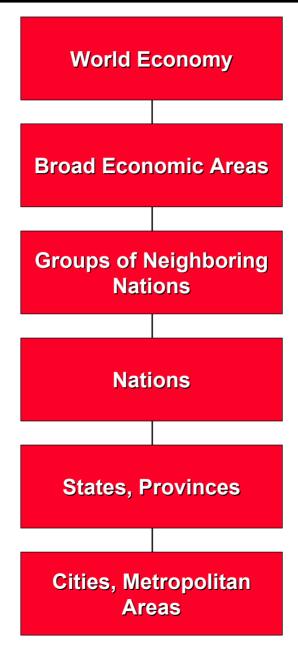




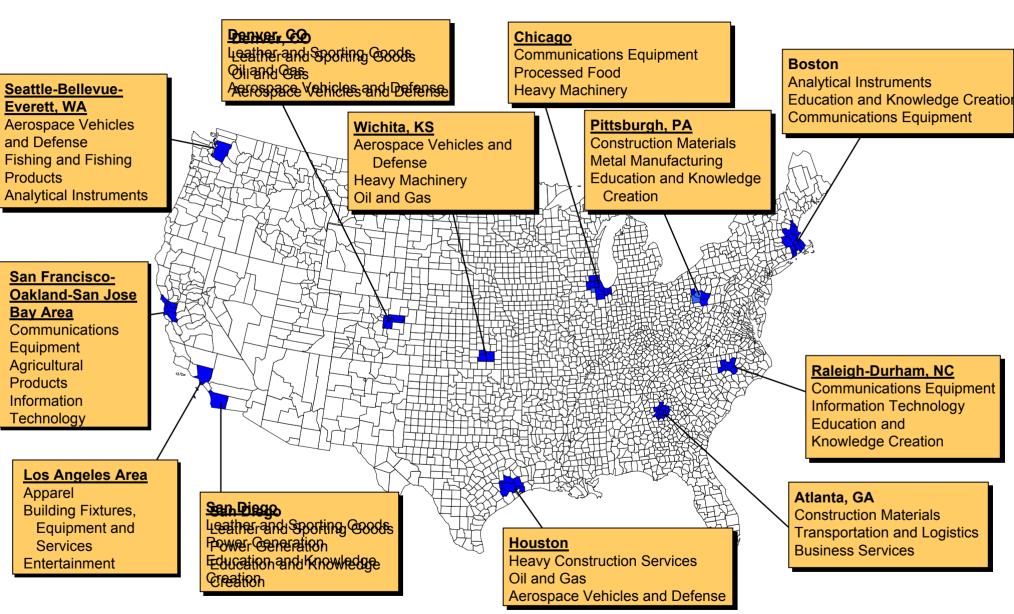
Malaysia's Competitiveness Agenda 2003

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Influences on Competitiveness <u>Multiple Geographic Levels</u>



Specialization of Regional Economies <u>Select U.S. Geographic Areas</u>



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

Cross-National Regions and Economic Strategy

Traditional Views

 Regions as free trade zones; regions as economic unions (e.g., United States, European Union)



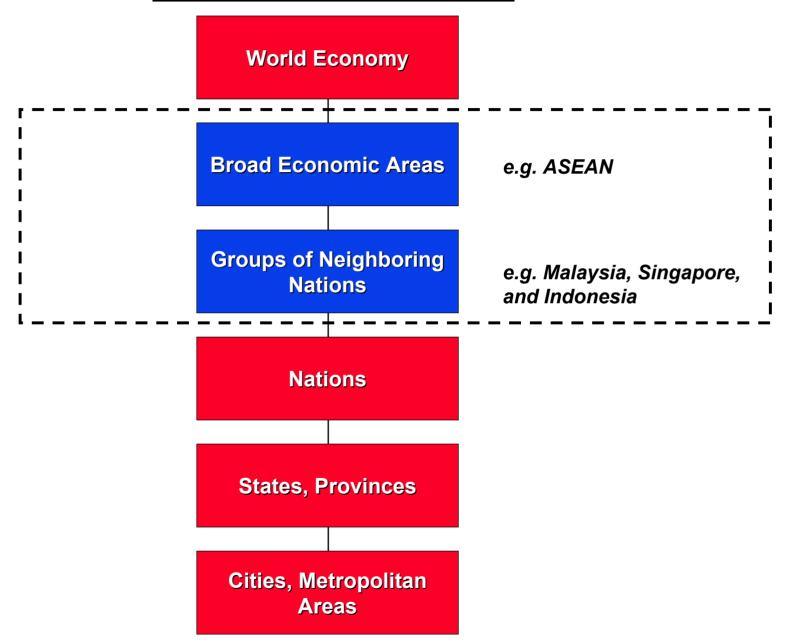
New View

- A regional strategy as a powerful tool to enhance competitiveness in autonomous countries
- Internal trade and investment
 - Gains from internal trade and investment

AND

- Company operations and strategy
 - Enhancing the competitive capability of firms
 - Expanding trade in non-traditional export industries
- Business environment
 - Mutual benefits to the productivity of the business environment through policy coordination that captures external economies and the benefits of specialization in institutions and infrastructure across borders
- Cluster development
 - Cross-border cluster specialization and integration
- Foreign investment
 - Enhancing interest and investment in the region by the international community
- Economic policy process
 - Improving economic policy formulation and implementation at the national level

Cross-National Economic Coordination Alternate Geographic Levels



Cross-National Economic Coordination Illustrative Policy Areas

Factor (Input) Conditions

- Improve regional transportation infrastructure
- Create an efficient energy network
- Upgrade/link regional communications
- Upgrade/link financial markets
- Upgrade higher education through facilitating specialization and student exchanges
- Expand cross-border business and financial information access and sharing
- Coordinate activities to ensure personal safety

Context for Strategy and Rivalry

- Coordinate macroeconomic policies
- Eliminate trade and investment barriers within the region
- Simplify cross-border regulations and paperwork
- Guarantee minimum basic investor protections

- Agree on foreign investment promotion guidelines to limit forms of investment promotion that do not enhance productivity
- Coordinated competition policy

Demand Conditions

- Set minimum environmental standards
- Set minimum safety standards
- Establish reciprocal consumer protection laws

Related and Supporting Industries

- Establish ongoing upgrading process in clusters that cross national borders, e.g.
 - Tourism
 - Agribusiness
 - Textiles and Apparel
 - Information Technology

Regional Governance

- Share best practices in government operations
- Improve regional institutions
 - Regional development bank
 - Dispute resolution mechanisms
 - Policy coordination body
- Develop a regional marketing strategy

Malaysia's Competitiveness Agenda 2003

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Shifting Responsibilities for Economic Development

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

Roles of Government in Economic Development

Macroeconomic, political, legal, and social context

- Establish a stable and predictable macroeconomic, legal, and political environment
- Improve the social conditions of citizens

General microeconomic business environment

- Improve the availability, quality, and efficiency of cross-cutting or general purpose inputs, infrastructure, and institutions
- Set overall rules and incentives governing competition that encourage productivity growth

Clusters

Facilitate cluster development and upgrading

Process of Economic Change

 Create institutions and processes for upgrading competitiveness that inform citizens and mobilize the private sector, government at all levels, educational and other institutions, and civil society to take action

Role of the Private Sector in Economic Development

- A company's competitive advantage is partly the result of the local environment
- Company membership in a cluster offers collective benefits
- Private investment in "public goods" is justified



- Take an active role in upgrading the local infrastructure
- Nurture local suppliers and attract new supplier investments
- Work closely with local educational and research institutions to upgrade quality and create specialized programs addressing cluster needs
- Provide government with information and substantive input on regulatory issues and constraints bearing on cluster development
- Focus corporate philanthropy on enhancing the local business environment



- An important role for trade associations
 - Greater influence
 - Cost sharing

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Web resources

Institute for Strategy and Competitiveness

www.isc.hbs.edu

ISC Cluster Mapping Data (US)

data.isc.hbs.edu/isc/index.jsp

- Cluster of Innovation Initiative
 - Council on Competitiveness
 - Monitor Company

www.compete.org

www.monitor.com