



ICT dan Ekonomi Syariah

E-Economy Knowledge Economy

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Pengantar

- This course highlights the importance of knowledge for long-term economic growth. It presents the concept of the knowledge economy, an economy where knowledge is the main engine of economic growth. The course also introduces the knowledge economy framework, which asserts that sustained investments in education, innovation, information and communication technologies, and a conducive economic and institutional environment will lead to increases in the use and creation of knowledge in economic production, and consequently result in sustained economic growth. In order to facilitate countries trying to make the transition to the knowledge economy, the *Knowledge Assessment Methodology* (KAM) was developed. It is designed to provide a basic assessment of countries' readiness for the knowledge economy, and identifies sectors or specific areas where policymakers may need to focus more attention or future investments. The KAM is currently being widely used both internally and externally to the World Bank, and frequently facilitates engagements and policy discussions with government officials from client countries.



Pengertian

- E-Economy
- Network Economy
- Information Economy
- Knowledge Economy
- Digital Economy:



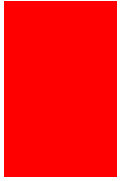
DIGITAL ECONOMY

- A **digital economy** is an economy that is based on electronic goods and services produced by an electronic business and traded through electronic commerce. That is, a business with electronic production and management processes and that interacts with its partners and customers and conducts transactions through Internet and Web technologies.
- in a digital economy, competition comes from all directions and business that fail to adapt risk their survival. Old social norms, laws, regulations, institutions, and customs are both inadequate and inappropriate. As information shifts from analog to digital, physical things become virtual which, in turn, alters institutional relationships and the nature of economic activity.

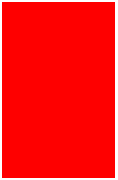


INFORMATION ECONOMY

- In a typical conceptualization, however, information economy is considered a "stage" or "phase" of an economy, coming after stages of hunting, agriculture, and manufacturing. This conceptualization can be widely observed regarding [information society](#), a closely related but wider concept.



KNOWLEDGE ECONOMY

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- **Knowledge** is defined ([Oxford English Dictionary](#)) variously as
 - (i) expertise, and skills acquired by a person through [experience](#) or [education](#); the theoretical or practical understanding of a subject,
 - (ii) what is known in a particular field or in total; facts and information or
 - (iii) awareness or familiarity gained by experience of a fact or situation.



Total factor productivity

- **Total-factor productivity** (TFP) addresses any effects in total output **not** caused by inputs or economies of scale. For example, a year with unusually good weather will tend to have higher output, because bad weather hinders agricultural output. A variable like weather does not directly relate to unit inputs, so weather is considered a total-factor productivity variable.
- The equation below (in [Cobb-Douglas](#) form) represents total output (Y) as a function of total-factor productivity (A), capital input (K), labor input (L), and the two inputs' respective shares of output (α is the capital input share of contribution).

$$Y = A \times K^{\alpha} \times L^{1-\alpha}$$

- Total Factor Productivity is often seen as the real driver of growth within an economy and studies reveal that whilst labour and investment are important contributors, Total Factor Productivity may account for up to 60% of growth within economies.



Knowledge Economy

- A Knowledge Economy (KE) is one that utilizes knowledge as the key engine of economic growth. It is an economy where knowledge is acquired, created, disseminated and used effectively to enhance economic development
- It has been found that the successful transition to the Knowledge Economy typically involves elements such as long-term investments in education, developing innovation capability, modernizing the information infrastructure, and having an economic environment that is conducive to market transactions. These elements have been termed by the World Bank as the pillars of the Knowledge Economy and together they constitute the Knowledge Economy framework



Knowledge Economy

Three interlocking driving forces are changing the rules of business and national competitiveness:

- [Globalization](#) — markets and products are more global.
- [Information/Knowledge](#) Intensity — efficient production relies on information and [know-how](#); over 70 per cent of workers in developed economies are information workers; many factory workers use their heads more than their hands.
- [Computer networking](#) and [Connectivity](#) – developments such as the [Internet](#) bring the "[global village](#)" ever nearer.



Knowledge Economy

- Highlights the importance of the use and creation of knowledge for long-term economic growth. It discusses the concept of the knowledge economy, which is essentially an economy where knowledge is the main engine of economic growth. The paper introduces the knowledge economy framework, which holistically encompasses elements or pillars such as education and training, innovation and technological adoption, the information infrastructure, and a conducive economic incentive and institutional regime. The framework asserts that sustained investments in these knowledge economy pillars will lead to the availability of knowledge and its effective use for economic production. This would tend to increase the growth rate of total factor productivity, and consequently result in sustained economic growth.



Karakteristik

- *Has abundant resources.* Unlike most resources that deplete when used, the knowledge input is ever expanding in tandem with technology and innovation.
- *No location barrier.* Innovation in technology opens access to resources and markets all over the world, creating virtual market places and organizations. There will be increased mobility of workers and capital.
- *A highly educated labour force.* The knowledge economy comprises a better-informed populace as the government invests more on human development. Workers contribute to ideas, skills and knowledge by using latest technology.
- *A high level of per capita wealth.* Knowledge-based investments generate increasing returns to scale and therefore, more wealth for all.
- *Open cosmopolitan society attractive to global talent.* There will be ample opportunities for locals to tap foreign knowledge and learn of best business practices as world-class infrastructure will encourage foreign investment. The population will be willing to accept and put into practice new ideas and technologies and hence, local companies will become fit and fully equipped to face global challenges.



Karakteristik (lanjutan)

- *Well connected to other global knowledge nodes.* Connectivity to the rest of the world and technology sharing as well as technology transformation will be made easy with the free flow of information with lower cost, and reliable infrastructure encourage information and technology sharing.
- *A shift from top-down hierarchical organizational structures to flatter shared-structures such as networks of semi-autonomous teams.* IT development and communications technology will lead to better interaction among workers and there will be active involvement of workers in contributing ideas and decision-making.
- *Skills and knowledge are key assets.* Skills and knowledge become the main assets for the economy to gain competitiveness.
- *Information and communications technologies (ICTs) are pillars of the knowledge-based economy.* Access to networking is essential in acquiring and disseminating knowledge and the Internet is a key driver of ICT especially in the development of E-based activities, resulting in new approaches to doing things.



Pilar

- An *economic incentive and institutional regime* that provides good economic policies and institutions that permit efficient mobilization and allocation of resources and stimulate creativity and incentives for the efficient creation, dissemination, and use of existing knowledge.
- *Educated and skilled workers* who can continuously upgrade and adapt their skills to efficiently create and use knowledge.
- An *effective innovation system* of firms, research centers, universities, consultants, and other organizations that can keep up with the knowledge revolution and tap into the growing stock of global knowledge and assimilate and adapt it to local needs.
- A *modern and adequate information infrastructure* that can facilitate the effective communication, dissemination, and processing of information and knowledge.



Components Of The Knowledge-based Economy Development Index

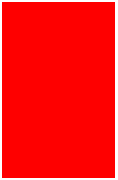
- **Computer Infrastructure**
- Examines the extent of availability of computers, specifically personal computers (PC) and the Internet, as a means of accessing the information superhighway. This is measured through:
 - *share of worldwide computers in use*
 - *computers per 1,000 population*
 - *share of total worldwide Millions of Instructions per Second (MIPS)*
 - *computer power per capita*
 - *connections to the Internet*

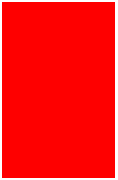


- **Infostructure**

- Comprises networks, appliances and legislation necessary to provide the conduit and enabling environment for seamless flow of information for learning and advancement at the personal, organizational and national levels. It includes indicators such as:

- *investment in telecommunications*
- *main telephones in use per 1,000 population*
- *cellular mobile telephone subscribers per 1,000 population*
- *television sets per 1,000 population*
- *radios per 1,000 population*
- *fax machines per 1,000 population*
- *international call cost*
- *newspaper circulation*

- 
- **Education and Training**
 - Critical to produce the core input of a knowledge-based economy i.e. human resource. This is assessed in terms of:
 - *total expenditure on education per capita*
 - *literacy rate*
 - *student-teacher ratio (primary)*
 - *student-teacher ratio (secondary)*
 - *secondary enrolment*
 - *higher education enrolment*

- 
- **Research & Development (R&D) and Technology**
 - Looks at the level of R&D and technology development in the country. R&D essentially reflects the capacity to innovate and apply new technologies. This includes:
 - *high-technology exports as a proportion of manufacturing exports*
 - *number of scientists and engineers in R&D*
 - *number of R&D personnel nationwide per capita*
 - *total expenditure on R&D as a per cent of GDP*
 - *average annual number of patents granted to residents*
 - *business expenditure on R&D per capita*



Knowledge Economy Index

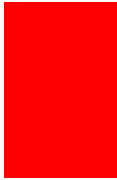
- KAM Knowledge Economy Index (KEI) is an aggregate index that represents the overall level of development of a country or region in the Knowledge Economy. It summarizes performance over the four KE pillars and is constructed as the simple average of the normalized values of the 12 knowledge indicators of the basic scorecard. The basic scorecard can be thus seen as a disaggregated representation of the Knowledge Economy Index.



Economic Performance

- Annual GDP Growth (%), avg 2001-2005
- GDP per Capita (in/nal current \$ PPP), 2005
- GDP (current US\$ bill), 2005
- Human Development Index, 2004
- Poverty Index, 2004
- Composite Risk Rating, 09/2005-08/2006
- Unemployment Rate (% of labor force), 2004
- Employment in Industry (%), 2005
- Employment in Services (%), 2005

Indonesia		Malaysia	
actual	normalized	actual	normalized
4.70	5.97	4.50	5.61
3,843.00	3.21	10,882.00	6.27
287.20	8.13	130.30	7.27
0.71	3.55	0.81	6.16
18.50	4.40	8.30	8.30
67.25	2.73	79.75	7.44
9.90	3.58	3.50	9.00
18.00	2.81	30.10	8.60
38.00	2.11	52.50	3.77



The Basic Scorecard

Singapore, Malaysia, Indonesia (most recent)



Average Annual GDP growth (most recent) is the average annual GDP growth for the period 1999-2003.

Variable	Singapore		Malaysia		Indonesia	
	actual	normalized	actual	normalized	actual	normalized
GDP Growth(%)	3.60	4.96	4.90	7.60	3.40	4.72
Human Development Index	0.90	8.02	0.79	6.03	0.69	3.33
Tariff & Nontariff Barriers	10.00	9.76	6.00	4.37	6.00	4.37
Regulatory Quality	1.89	9.84	0.58	6.30	-0.68	1.81
Rule of Law	1.75	8.90	0.58	6.46	-0.80	1.81
Researchers in R&D / million	4082.93	9.33	275.62	3.11	129.62	2.33
Scientific and Technical Journal Articles / mil pop.	418.27	8.66	18.32	4.57	0.70	0.63
Patent Applications Granted by the USPTO / mil pop.	108.24	8.91	2.54	7.00	0.06	2.91
Adult Literacy Rate (% age 15 and above)	92.60	5.04	88.00	4.33	87.87	4.25
Secondary Enrollment	74.09	4.14	69.62	3.59	57.91	2.73
Tertiary Enrollment	43.82	7.32	26.04	5.51	15.06	3.62
Telephones per 1,000 People	1253.50	8.05	623.60	6.17	91.70	2.50
Computers per 1,000 People	622.00	9.75	146.80	6.83	11.90	2.25
Internet Users per 10,000 People	6043.69	9.22	3453.31	8.05	377.16	3.83



Performance

Average annual GDP growth (%)
Human Development Index

Economic Incentive and Institutional Regime

Tariff and non-tariff barriers
Regulatory Quality
Rule of Law

Education and Human Resources

Adult literacy rate (% age 15 and above)
Secondary enrolment
Tertiary enrolment

Innovation System

Researchers in R&D, per million population
Patent applications granted by the USPTO, per million population
Scientific and technical journal articles, per million population

Information Infrastructure

Telephones per 1,000 persons, (telephone mainlines + mobile phones)
Computers per 1,000 persons
Internet users per 10,000 persons

Performance Indicators

Average Annual GDP growth (%)
GDP per capita (International Current PPP)
Human Development Index
Poverty index
Composite ICRG risk rating
Average unemployment rate, % of total labor force
Employment in industry (% of total employment)
Employment in services (% of total employment)
GDP (current US\$ bill)

Economic Regime

Average Gross capital formation as % of GDP
General government budget balance as % of GDP
Trade as % of GDP
Tariff & nontariff barriers
Intellectual Property is well protected
Soundness of banks
Exports of goods and services as % of GDP
Interest rate spread (lending minus deposit rate)
Intensity of local competition
Domestic credit to the private sector (% of GDP)

Institutions

Regulatory quality
Rule of law
Government Effectiveness
Voice and accountability
Political stability
Control of corruption
Press freedom

Education and Human Resources

Adult literacy rate (% age 15 and above)
Average years of schooling
Secondary enrolment
Tertiary enrolment
Life expectancy at birth, years
Internet access in schools
Public spending on education as % of GDP
Professional and technical workers as % of the labor force
8th grade achievement in mathematics
8th grade achievement in science
Quality of science and math education
Extent of staff training
Management education is locally available in first class business schools
Well educated people do not emigrate abroad

Innovation System

FDI as percentage of GDP
Royalty and license fees payments (\$ millions)
Royalty and license fees payments in US\$ millions / million population
Royalty and license fees receipts in US\$ millions
Royalty and license fees receipts in US\$ millions / million population
Science & engineering enrolment ratio (% of tertiary level students)
Researchers in R&D
Researchers in R&D / million
Total expenditure for R&D as percentage of GDP
Manufacturing. Trade as % of GDP
Research collaboration between companies and universities
Cost to register a business (% of GNI per capita)
Cost to enforce a contract (% of GNI per capita)
Scientific and technical journal articles
Scientific and technical journal articles per million people
Administrative burden for start-ups
Availability of venture capital
Patent Applications granted by the USPTO
Patent Applications granted by the USPTO (per million pop.)
State of cluster development
High-technology exports as percentage of manufactured exports
Private sector spending on R&D

Information Infrastructure

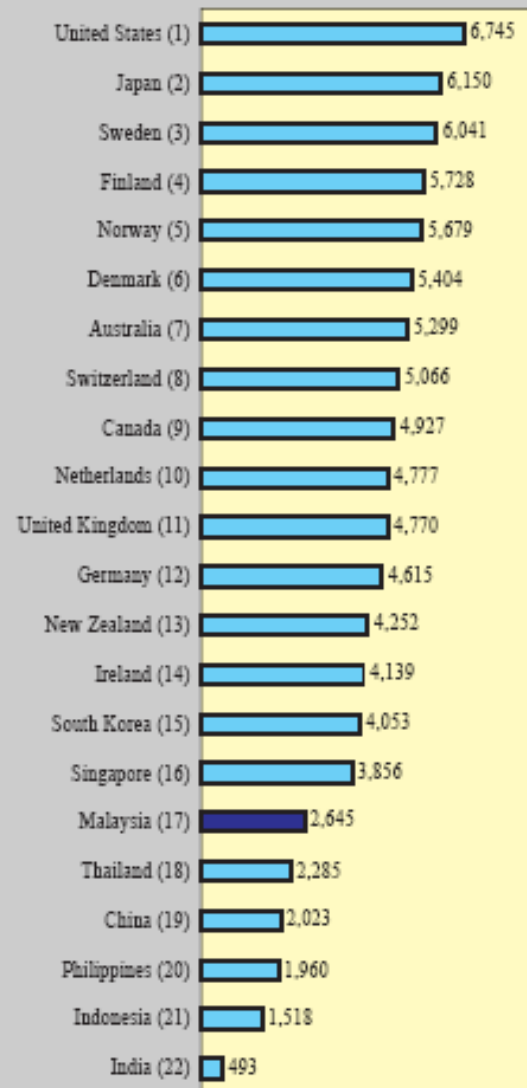
Telephones per 1,000 people (telephone mainlines + mobile phones)
Main Telephone lines per 1,000 people
65. Mobile phones per 1,000 people
Computers per 1,000 persons
TV Sets per 1,000 people
Radios per 1,000 people
Daily newspapers per 1,000 people
Internet hosts per 10,000 people
Internet users per 10,000 people
International telecommunications: cost of call to US in \$ per 3 minutes
E-government
ICT Expenditures as a % of GDP

Gender Equality

Gender development Index
Females in labor force (% of total labor force)
Seats in Parliament held by women (as % of total)
Females Literacy Rate (% of females ages 15 and above)
School enrolment, secondary, female (% gross)
School enrolment, tertiary, female (% gross)



RANKING OF COUNTRIES ACCORDING TO KDI, 2000



Note : The numbers in parenthesis are country rankings.
The numbers on the right are standardized scores.

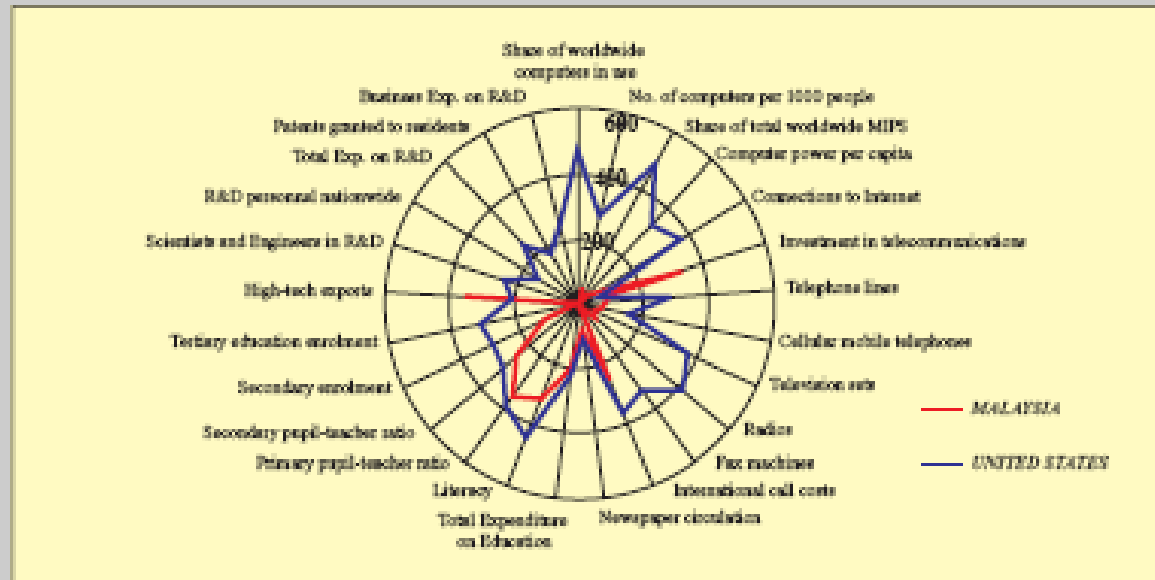
**COUNTRY POSITION BY COMPONENTS OF
KDI, 2000**

<i>Country</i>	<i>Knowledge Index</i>	<i>Computer Infrastructure</i>	<i>Infostructure</i>	<i>Education and Training</i>	<i>R&D and Technology</i>
United States	1	1	10	8	3
Japan	2	8	3	10	1
Sweden	3	5	2	3	2
Finland	4	2	4	4	4
Norway	5	4	1	1	10
Denmark	6	7	5	2	9
Australia	7	6	6	6	11
Switzerland	8	13	7	9	5
Canada	9	3	12	5	15
Netherlands	10	10	9	13	8
United Kingdom	11	9	8	11	14
Germany	12	12	13	12	7
New Zealand	13	11	14	7	17
Ireland	14	15	15	15	12
South Korea	15	16	11	16	13
Singapore	16	14	16	19	6
Malaysia	17	17	17	17	16
Thailand	18	19	21	14	19
China	19	18	19	18	20
Philippines	20	22	18	20	18
Indonesia	21	21	20	21	21
India	22	20	22	22	22



CHART 5-2

KNOWLEDGE WHEEL: MALAYSIA AND UNITED STATES, 2000



Note: The 'Knowledge wheel' shows Malaysia's preparedness for the knowledge-based economy. The wider the spread on the wheel, the more prepared it is.

KAM March 2006

Malaysia



Singapore



China



Korea



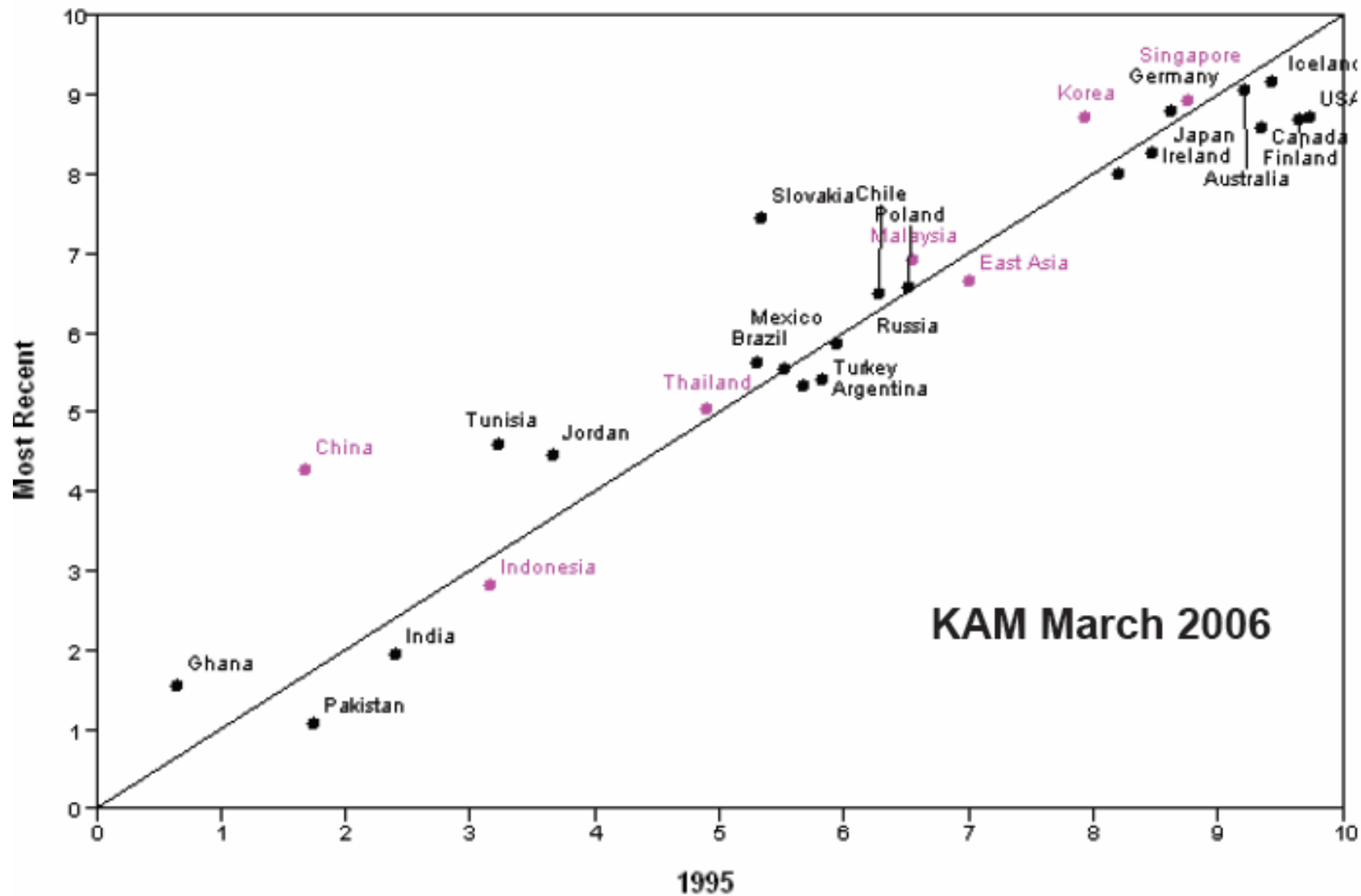
Thailand



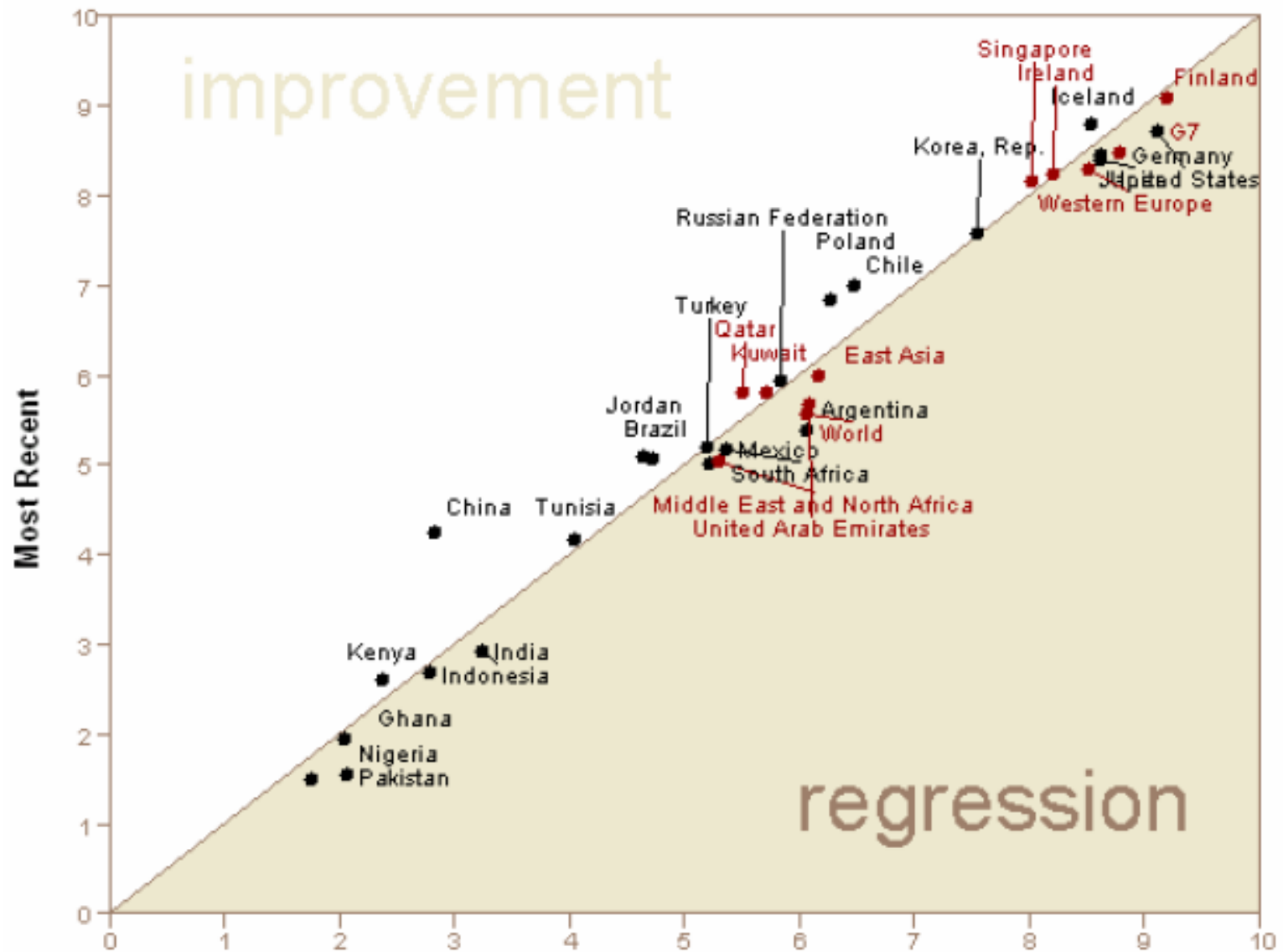
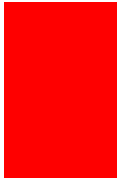
Indonesia



Global View: Information Infrastructure



KAM March 2006





4 pillars of the knowledge economy1:

- An economic and institutional regime to provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship;
- An educated and skilled population to create, share, and use knowledge well;
- An efficient innovation system of firms, research centers, universities, consultants and other organizations to tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology;
- Information and communication technology to facilitate the effective creation, dissemination, and processing of information.



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TERIMAKASIH