

# Innovation: a key for Global Knowledge-based Economy

Presentation in OECD Conference

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# Why Innovation ?

## Why does innovation matter now?

Aging economy  
with less population  
→ Smaller domestic  
market

Global competition  
→ Emerging economies  
are more cost-  
competitive

Knowledge Economy  
→ Knowledge in  
Intangible assets  
became more valuable

**Creating values/profits by making products or services  
different from others is essential for business.**

-The origin of successful differentiation is capability for innovation.

-Innovation realizes new values through combining /fusing different kinds of knowledge, basically in a person's brain.

## Open Innovation

Combination of technologies necessary  
→ Companies need to rely on outside resources

ICT improvement →  
Outside knowledge can be achieved in easy, costless and speedy way.

More importance on knowledge fusion → Outside knowledge could be a trigger of fusion

Open innovation or reliance on outside knowledge is a rational way because

- it could also reduce the cost and risk due to the utilization of existing result of investment.

- the attitude to open some part of the achievement could make it easier for a company to grasp further knowledge which would raise the ability for innovation.

## Main Elements of 'Innovation'

- **New knowledge/wisdom arising from Knowledge fusion**
- **Real value in the market & society**
- **Impact on the present system**



# Innovation in Japan

## -Challenges and Policies-

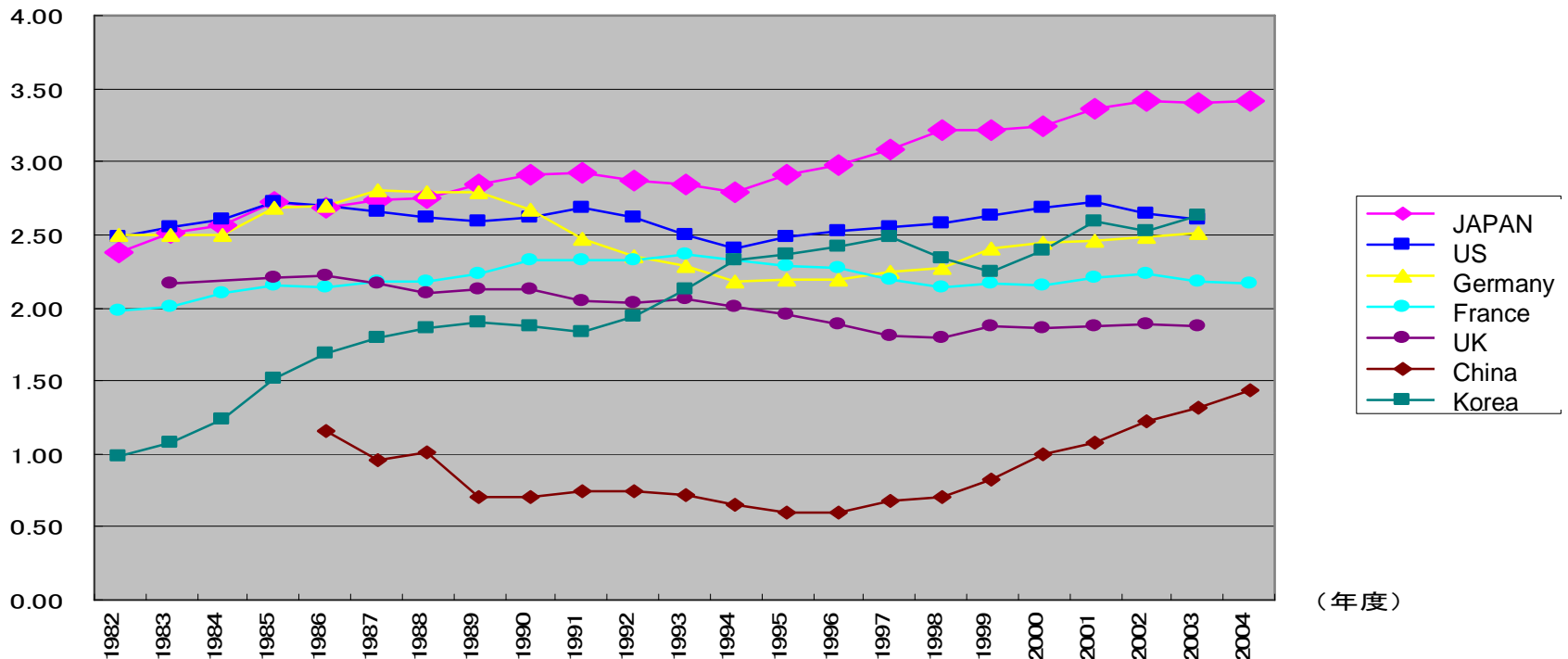
## Present Situation of Innovation in Japan

- Huge amount of investment into innovation
- Abundant outcome in the shape of patents
- Limited values and profits being generated
- Mainly caused by poor corporate management
  
- Scientific knowledge rarely utilized in industries
- A lot of nuisance in the Knowledge convergence
- Mobility of highly skilled people limited.

# R&D Expense

The ratio of total R&D expense in Japan vis-a-vis GDP exceeds 3 % which is extremely high level compared with those in other countries.

Trend in the ratio of R&D expense/GDP (%)



(年度)

Sources

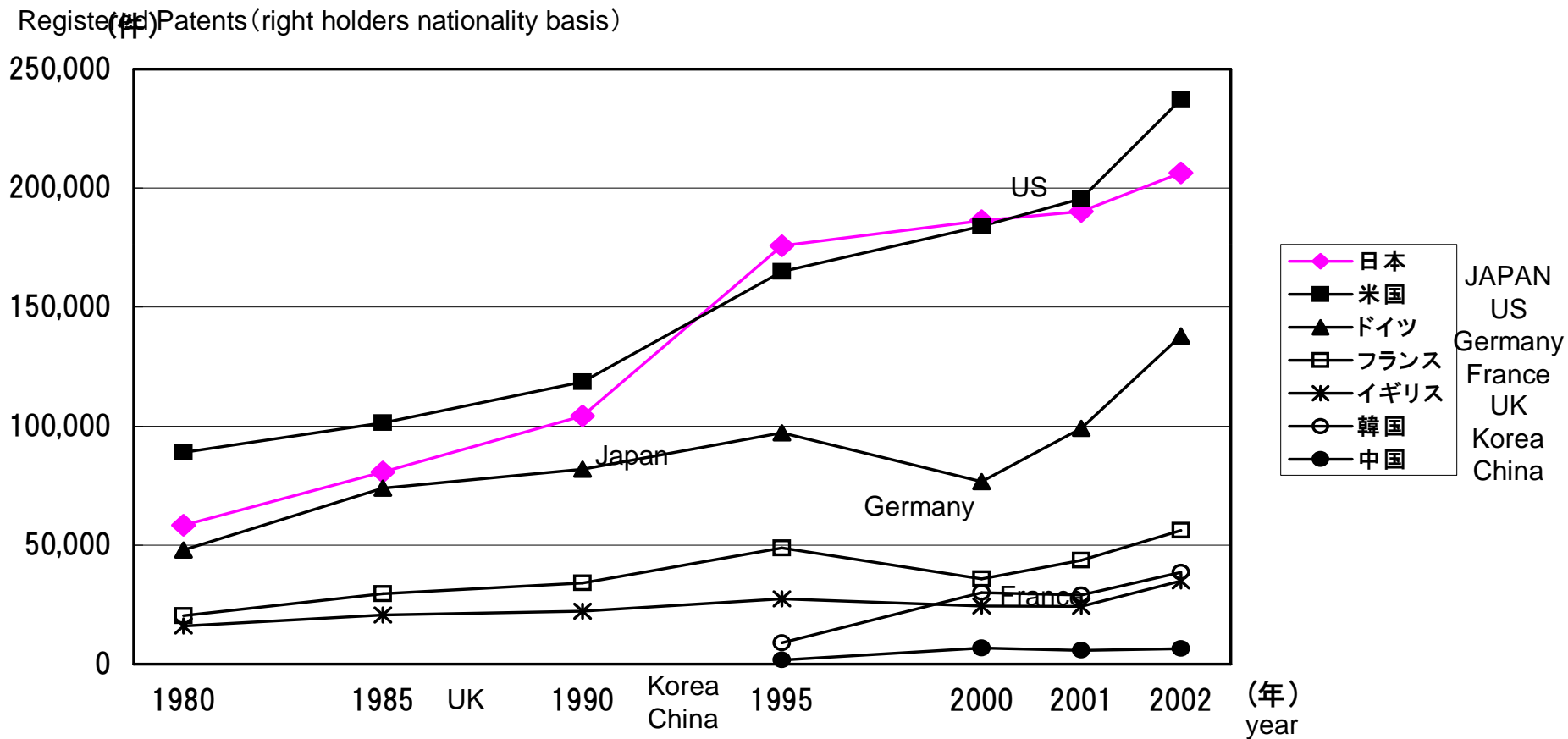
①WIPO「INDUSTRIAL PROPERTY STATISTICS」

②JPO annual report in 2005

Source: METI (calculated from Science & Technology Summary published by MEXT)

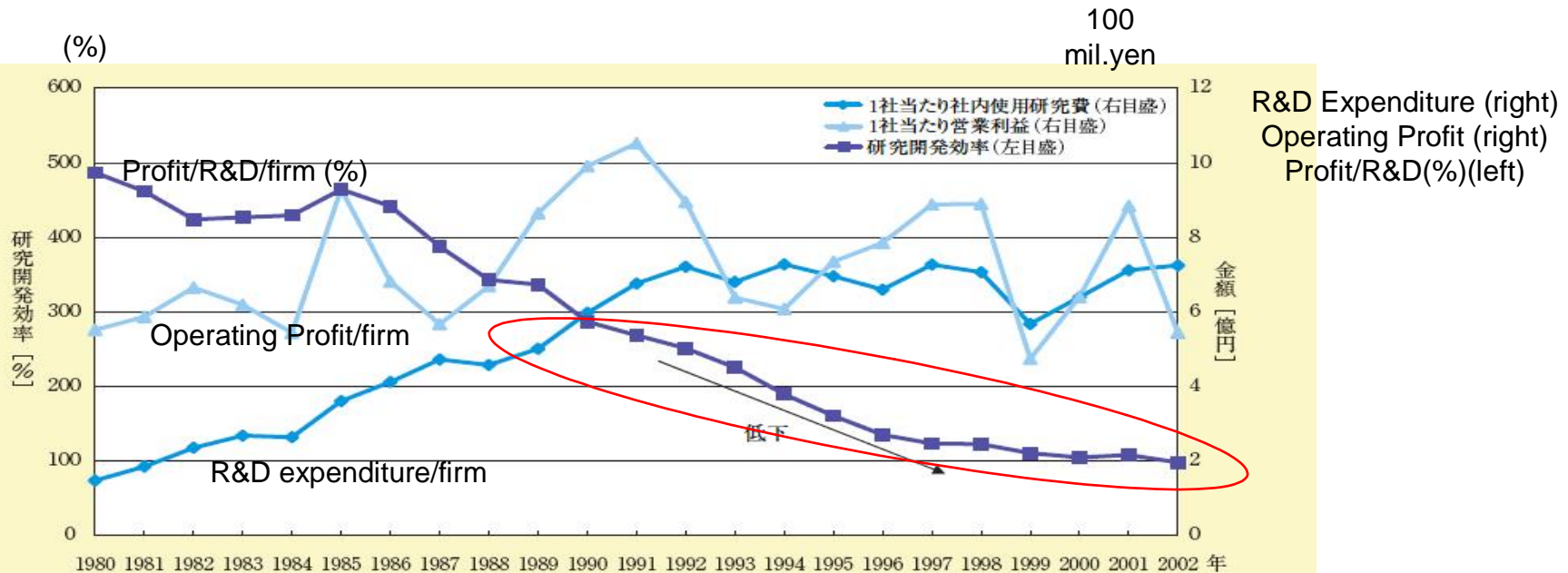
# Achievement from R&D investment

Large amount of R&D investment generated lots of seeds, especially when compared by the number of registered patents.



# Limited profits

Large amount of R&D investment generated lots of seeds, but limited values/profits.  
 More companies have a short sighted view on investment affected by the too much attention on short-term profit by stakeholders especially by shareholders.



注) 製品化に対する研究開発のリードタイムを5年と仮定した上で、投入した研究費に対する営業利益の大きさを研究開発効率と定義。具体的には、以下の計算式で算出。なお、名目値を用いて計算している。

当該年の研究開発効率 =  $\frac{\text{当該年から数えた過去5年間の1社あたりの営業利益}}{\text{当該年の5年前から数えた過去5年間の1社あたりの社内使用研究費}}$   
 資料: 総務省統計局「科学技術研究調査」

Source: Annual Report on promoting Science and Technology in 2003

(出典) 科学技術の振興に関する年次報告(平成15年度)

## Poor quality in corporate management

It is commonly believed that problem in corporate management is the cause of small profit.

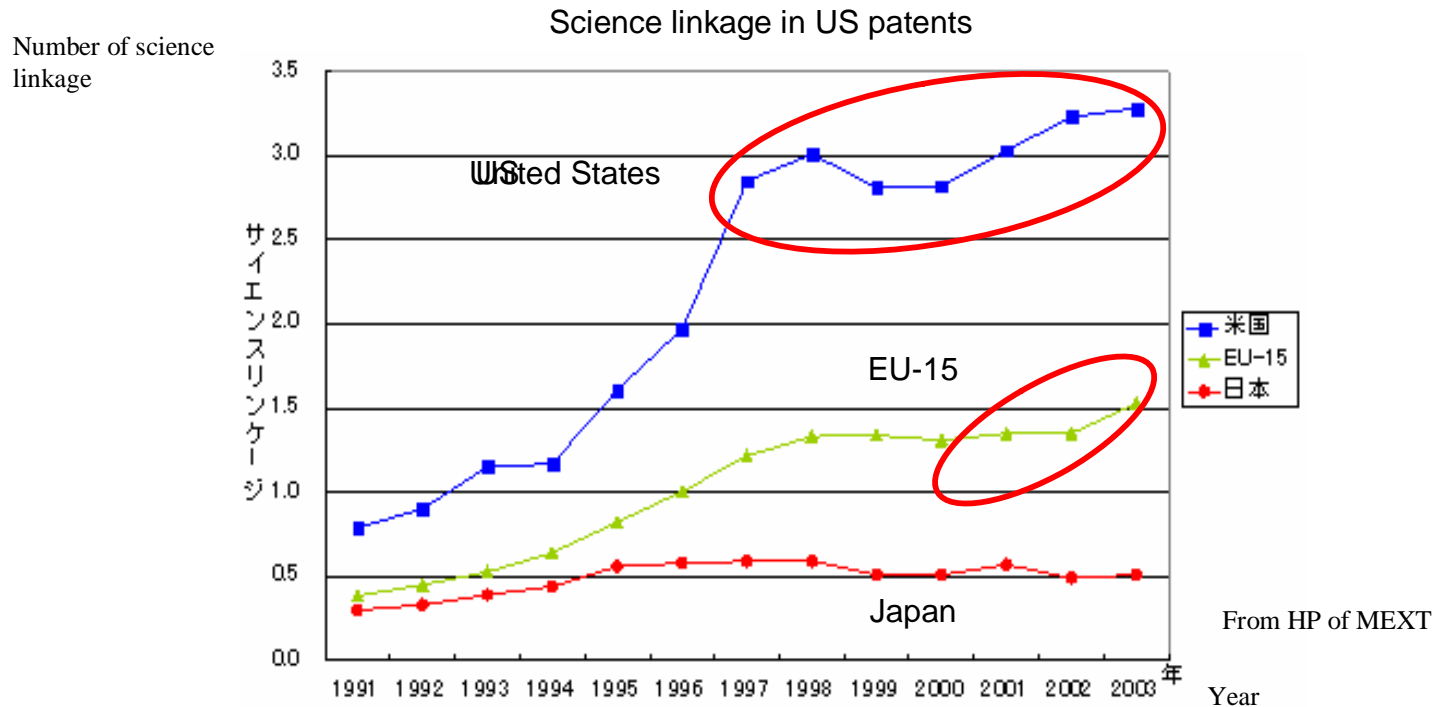
Strength and shortage from the viewpoint of competitiveness (Fy2004)

Ratio of people who responded that the element is recognized as the origin of competitive strength (%)		Ratio of people who responded that the element is recognized as the origin of competitive weakness (%)
42.3	R&D capability	17.5
43.4	Application of technology	10.7
50.3	production / manufacturing technology	7.9
13.7	business strategy	24.9
6.9	Management (related to technology)	20.3
9.7	Product Planning / Design	36.2
17.7	Leadership of corporate manager	5.6
28.0	Quality of human resources	13.6
4.0	Quantity of human resources	25.4
7.4	Collaboration with other companies	15.3
10.3	Challenging spirits	22.0
6.3	Absence of global competition	10.7
3.4	Miscellaneous	4.0

Source : survey on science technology development in 2004, METI  
 328 companies with large R&D investment were selected . Left: N=175 Right: N-177

## Limited substantial research

- Science linkage in patent is limited.
- Radical transformation in business model is scarce.



Science linkage is the number of citation of scientific articles described in the examination report of US patent.

# Nuisance against Knowledge fusion

College/public research institutes

Company

Lots of nuisance in a company and between companies

One way with selfish participants, and small collaboration

Research division

Business division

Compartmentalized and little respect on application

Too much focus on short-term competition, NIH syndrome and sectionalism

Science

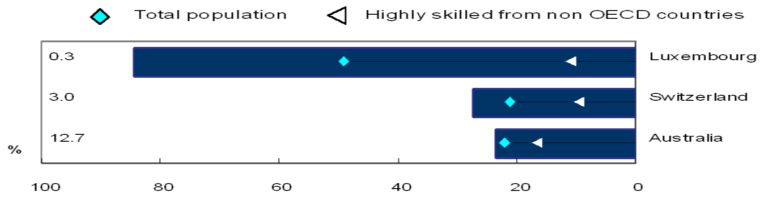
Technology

Business/Management

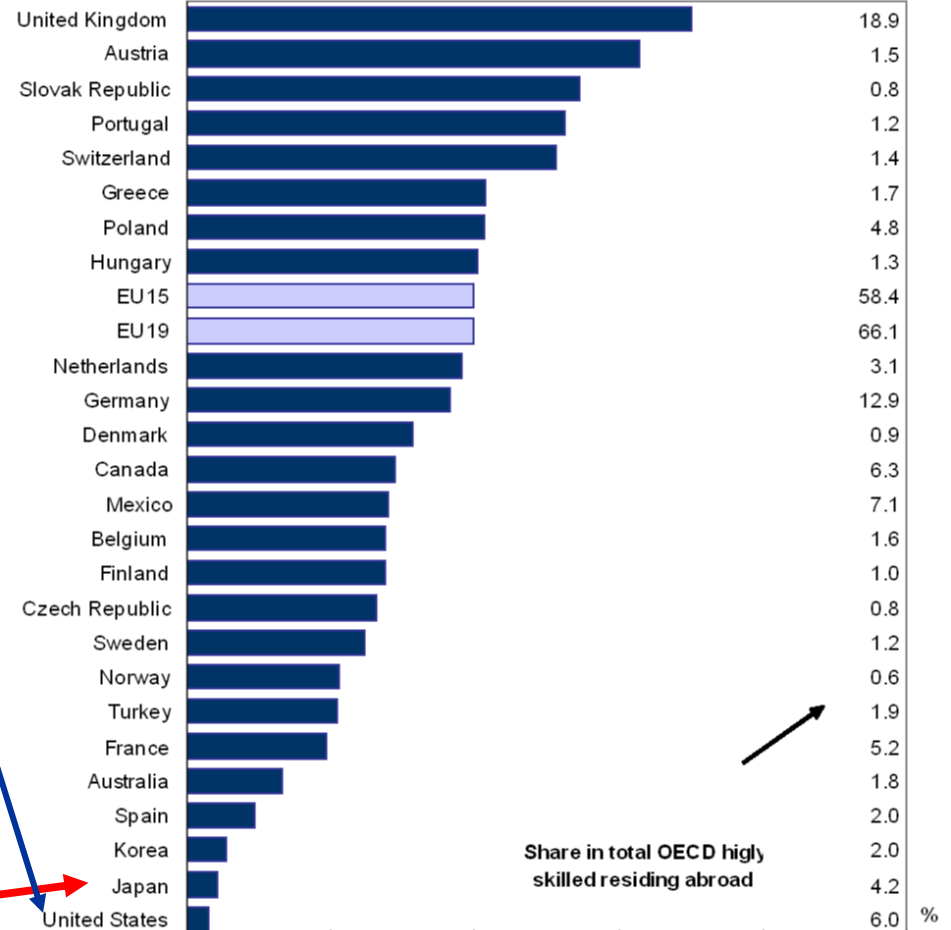
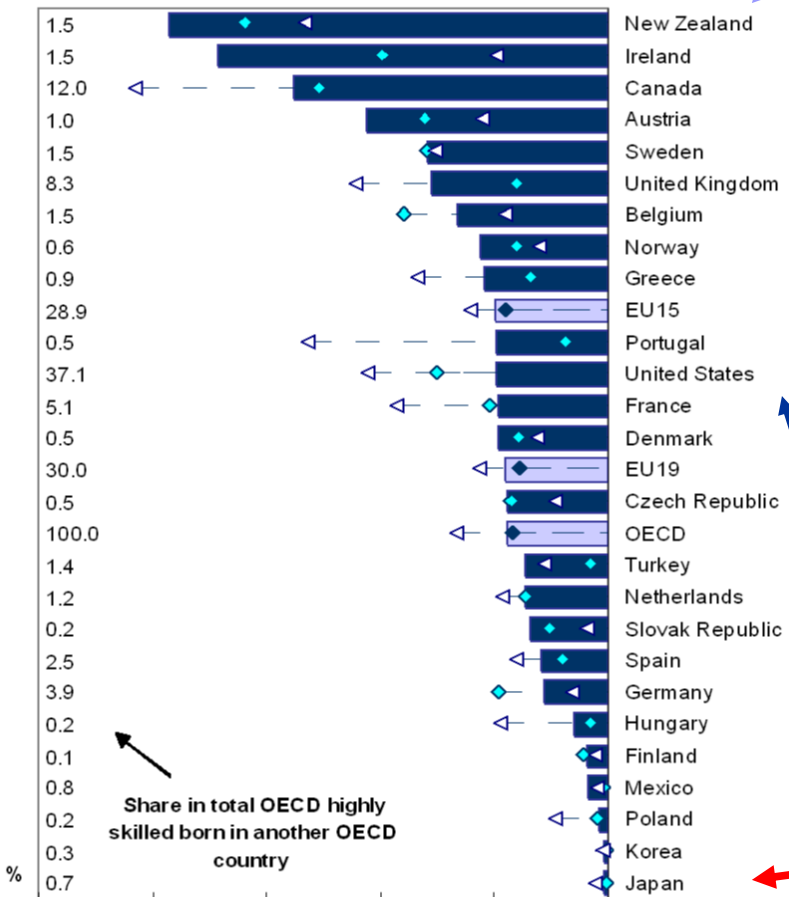
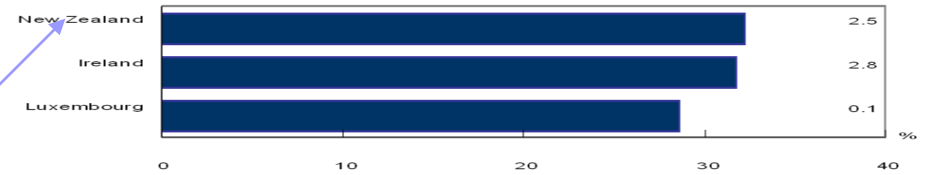
Due to the lack of forward-looking vision and the viewpoint to other areas, the flow of knowledge is limited, short, one-way and stagnant.

- Mobility of highly skilled people is extremely limited.

**Immigrants as a % of highly skilled native population**



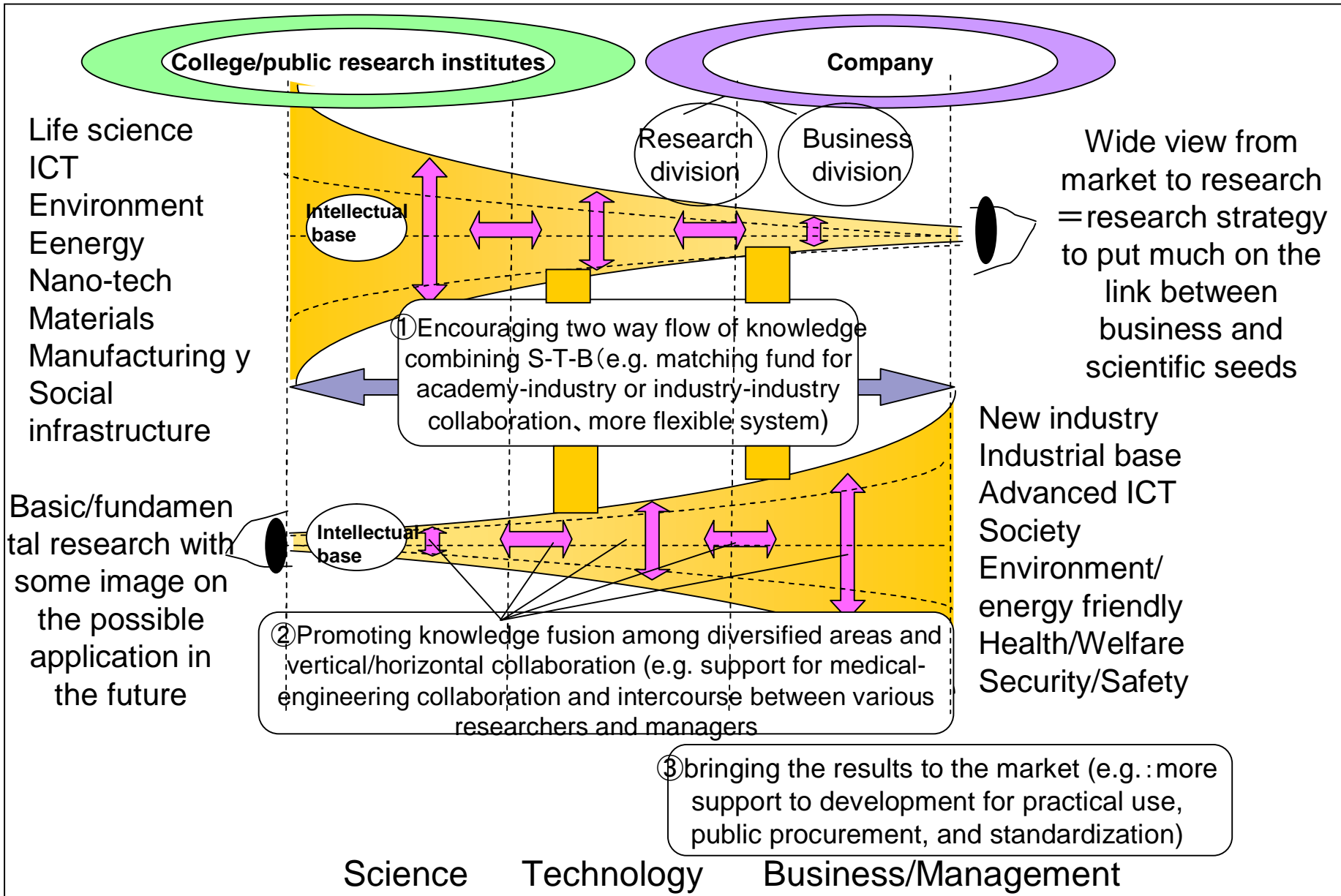
**Emigrants as a % of highly skilled in the country of origin**



Share in total OECD highly skilled born in another OECD country

Share in total OECD highly skilled residing abroad

# Concept of Innovation Super Highway



## Policy for improving Management

-New system to provide seed money for R&D in case the company is qualified to have adequate quality of corporate management judging from the gist of its own intellectual assets based management (IAbM) which should be submitted.

-Study on effective way for innovation management

-Promoting more sophisticated management through encouraging IAbM by means of

\*issuing the reference guideline for IAbM (Oct.2005)

[http://www.meti.go.jp/policy/intellectual\\_assets/index.htm](http://www.meti.go.jp/policy/intellectual_assets/index.htm)

\*developing software to assist a company to conduct IAbM

\*holding symposiums and conference on IAbM

## Disclosed Information (Examples)

- **OTERUMO Corporation and Nissan Co.** clearly described its intellectual assets in the Annual Reports published in the summer of 2006 which have special sections on intellectual assets.
- **Allabout, Inc.** published, IAbM report in Oct. 2005 and Jun. 2006 which explains the strength and business focus while advertising the company. ([http://corp.allabout.co.jp/ir/ir\\_release/060626\\_1.pdf](http://corp.allabout.co.jp/ir/ir_release/060626_1.pdf))
- **Mnemonic Security, Inc.** explained the substance of its IT security-related business in IA based management report (Mar.06), which was highly evaluated by a regional bank in loan building.
- **Neochemir, Inc.** summarized its IAbM report (Jan.06), which raised substantially its reputation among stakeholders. (<http://www.neochemir.co.jp/chizai/chizaihoukokusyoH17.pdf>)
- **Development Bank of Japan** wrote down its own IAs, synergy between them and reflection to financial services in the society, environment and IA report (Oct.05).
- **Dataplace, Inc.** presented the business report subject to the commercial law under a sub-title of 'IA based management report' (Mar. 06).
- **Five other start-up companies** originating from Kyoto Industrial College constructed their own IA reports in Sept. 2006
- **Almost 20 companies** presented brief IA reports to NEDO during the examination for R&D subsidies in July 2006
- **More than 30 companies** published independent IPR reports or indicated IP related information in annual reports in 2004 and 2005 respectively.

## IA Week 2006 in Japan

Dates: From Dec. 1st(Fri.) through Dec. 8th (Fri.)

Events:

Dec. 1 (Fri.) : Seminar for SMEs on IAbM (Osaka)

Dec. 4 (Mon.): Osaka Univ. Symposium on IAbM (Osaka)

Dec. 5 (Tue.): Nikkei IAbM Forum 2006 (Tokyo)

Dec. 6 (Wed.): Waseda Univ. Workshop on IAbM (Tokyo)

General Assembly of IA Management  
Consortium (IAMaC) (Tokyo)

Dec.7-8(Thu./Fri.) :OECD Conference on IAbM (Tokyo)

<http://www.meti.go.jp/english/information/data/200607IntellectualAssetCone.html>

## Policy for promoting Knowledge Fusion

- Diffusing the concept of Innovation Super High-way
- Focus on stronger linkage between science and business in governmental funding on R&D through
  - \*selection of specific areas (e.g. anti-cancer measures, nano-technology and related materials, industrial robot and new generation battery for automobiles)
  - \*promoting more effective industry-academy collaboration
- Promoting ‘Intellectual Café’ activities for Knowledge fusion



# Role of Innovation in Globalization and KE

# Innovation created by IAbM as a solution for global challenge

## Common Concern on Globalization

'Winner takes all' situation in the global market

- have-nots issue=social unrest
- majority(=losers) claims protectionist measures

Concentration of production of goods in cheaper labor countries

- regional employment lost
- destruction of local economy while raising the protectionism

Innovation through IAbM in companies

Innovation through IAbM in Regions

Innovation/Value Creation based on each company's unique characteristics

- each innovation may create a winner
- winner abundant society
- smaller economic/social unrest

Diversified regional management utilizing the characteristics of the region

- PR globally its own characteristics to attract more people and money
- Vitalize regional economy
- globalization and regional employment become compatible

Knowledge based Economy accepts a variety of values.

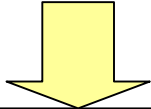
## Moving up the value chain 1

Technology transfer through global activities

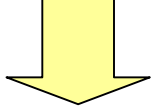
Globalization of supply chain



Knowledge/Technology transfer in each  
business base



Improvement in Local capability



More advanced knowledge/ technology  
transferred in each business base

## Moving up the value chain 2

Global collaboration for Open Innovation in global KE

Knowledge Economy

→ New way of knowledge creation using outside knowledge  
= Open Innovation

Globalization

+

Improvement in ICT

Easier access to global knowledge/technology

Global collaboration

# Moving up the value chain 3

## Dynamic Interaction between Innovation, Globalization in Knowledge Economy

