

Inventing the Future –
the importance of inventive and innovative
activity in maintaining competitiveness
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Sources of Economic Growth?

	GDP (PPP)		Polupation		GDP per Capita	
	1900/ 1950	1950/ 2000	1900/ 1950	1950/ 2000	1900/ 1950	1950/ 2000
China	1.1	17.6	1.4	2.3	0.8	7.6
India	1.3	8.5	1.3	2.8	1.0	3.1
Japan	3.1	16.3	1.9	1.5	1.6	10.8
UK	1.9	3.5	1.2	1.2	1.5	2.9
US	4.7	5.5	2.0	1.9	2.3	3.0

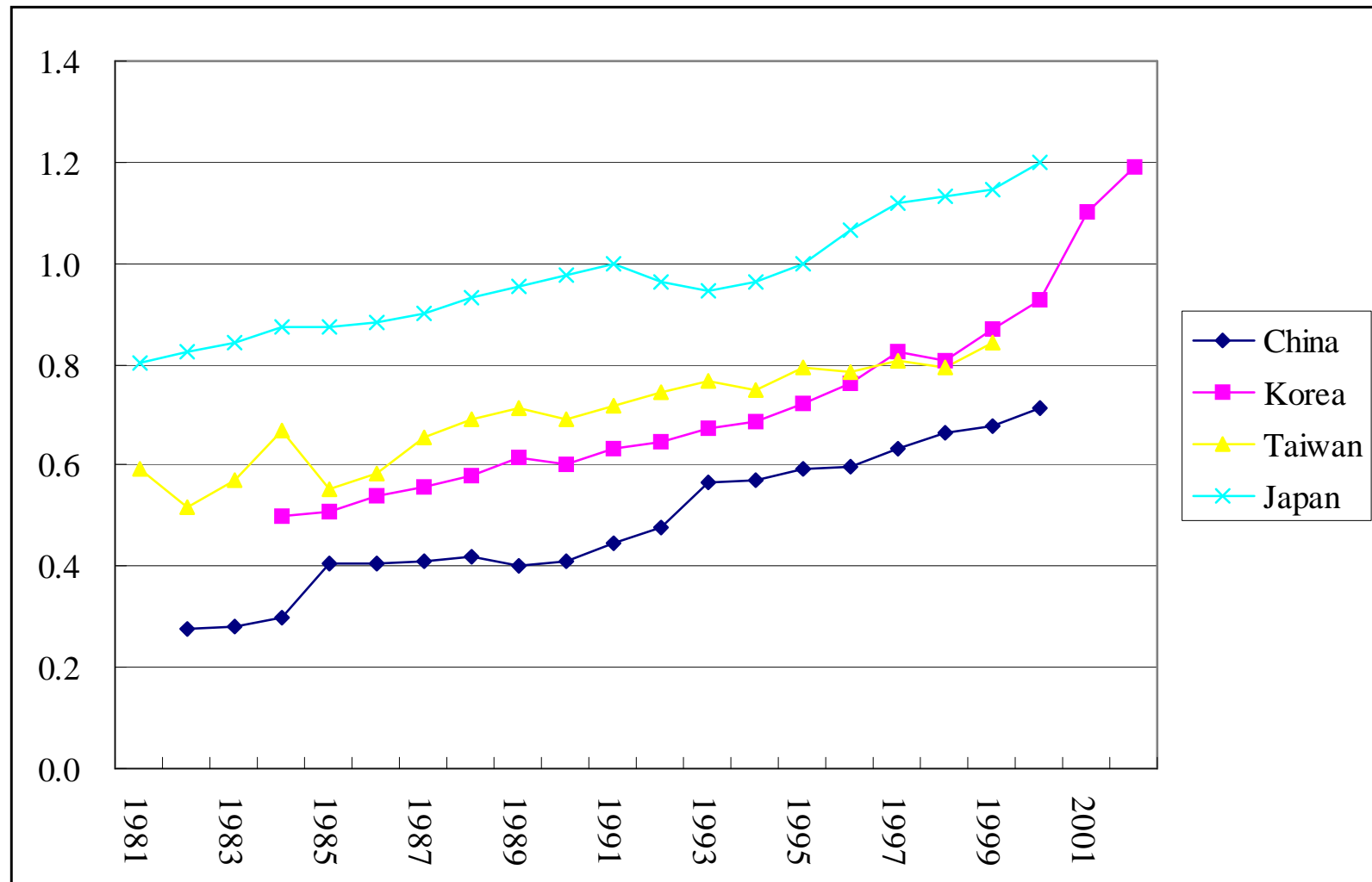
What is competitiveness?

(Japan, 1995=1.00)

	China	Korea	Taiwan	US
Output Price	0.29	0.68	0.47	0.68
Capital Price	0.69	1.07	0.81	1.29
Labor Price	0.02	0.21	0.30	0.68
Energy Price	0.27	0.53	0.50	0.53
Material Price	0.30	0.57	0.37	0.60
TFP	0.64	0.77	0.91	1.07

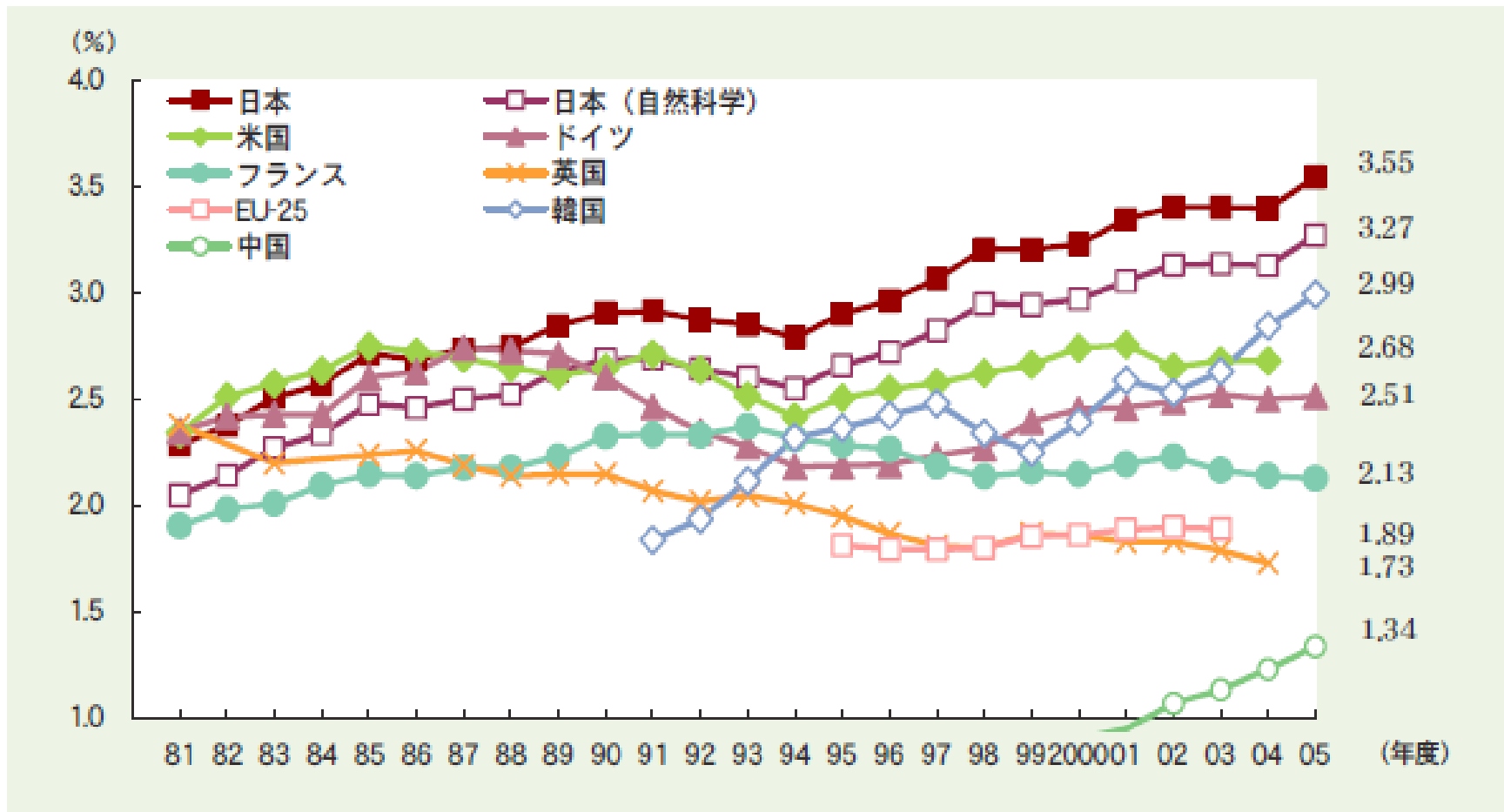
“Productivity in Asia”
(Jorgenson, Kuroda and Motohashi)
2007, Edgar Elgar

Catching up of TFP in Electronics Sector



RIETI-ICPA Project, Motohashi (2006)

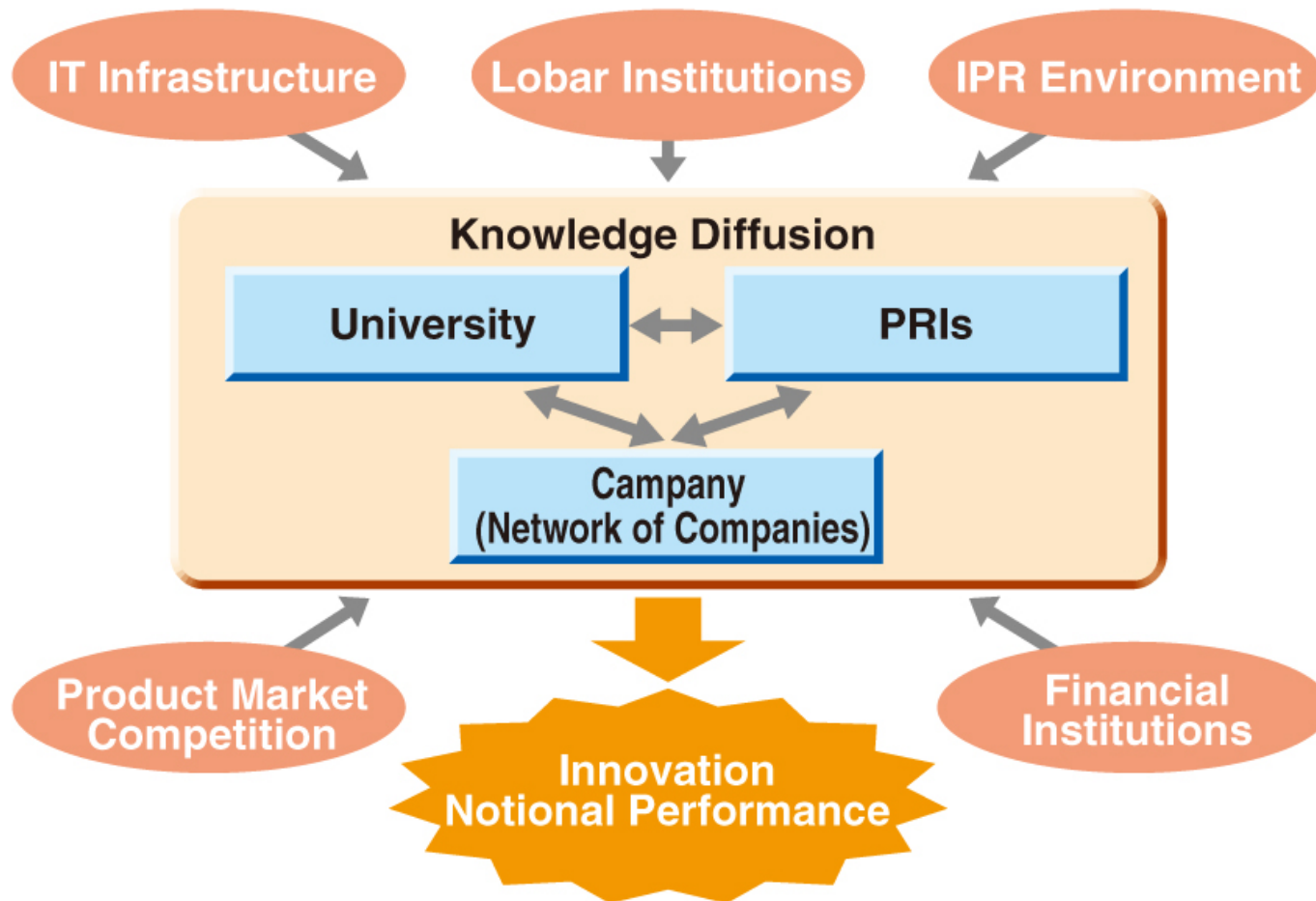
R&D/GDP: International Comparison



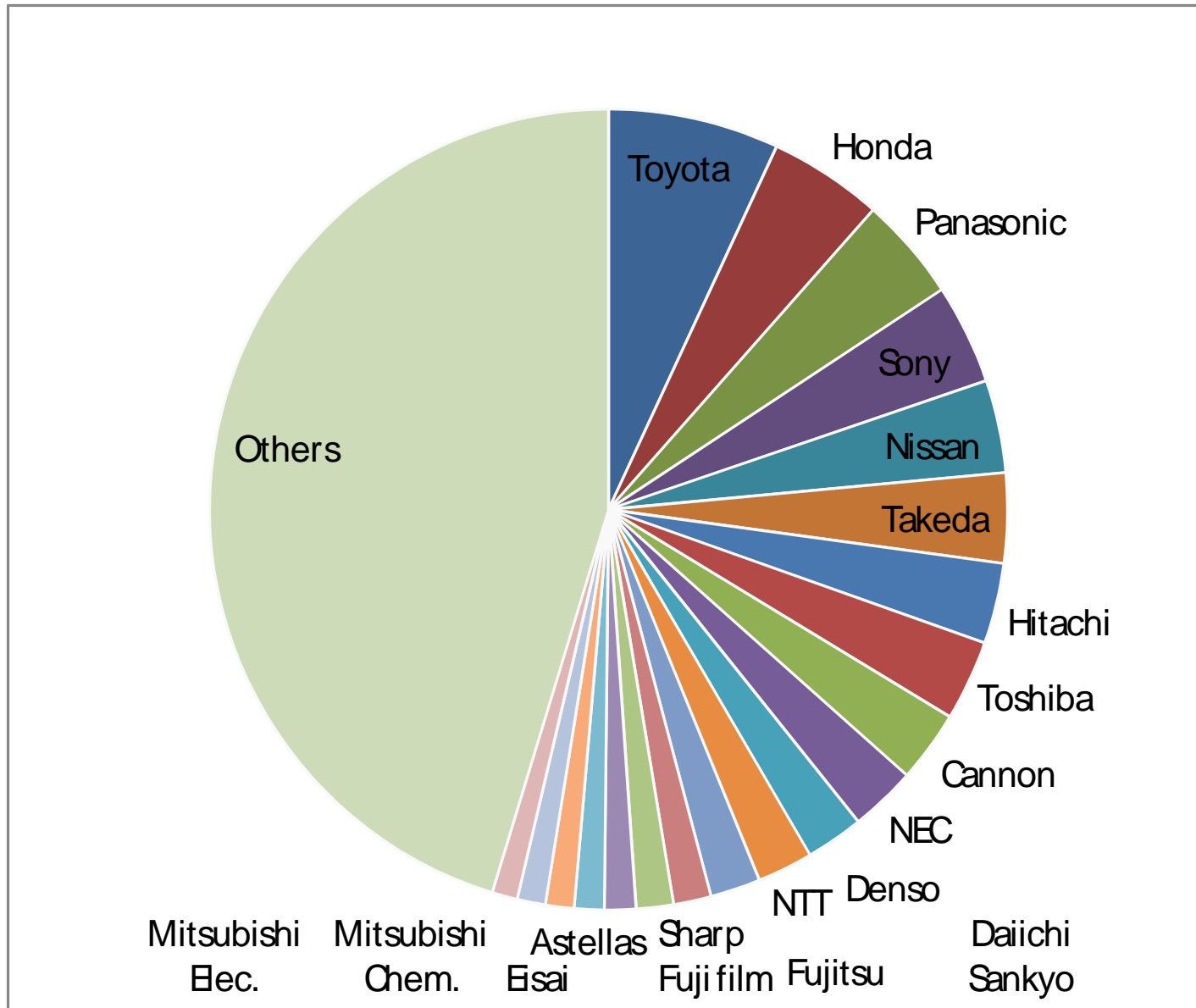
“2009 Science and Technology White Paper“ (MEXT)

Concept of National Innovation System

(by C. Freeman, R. Nelson, OECD etc.)

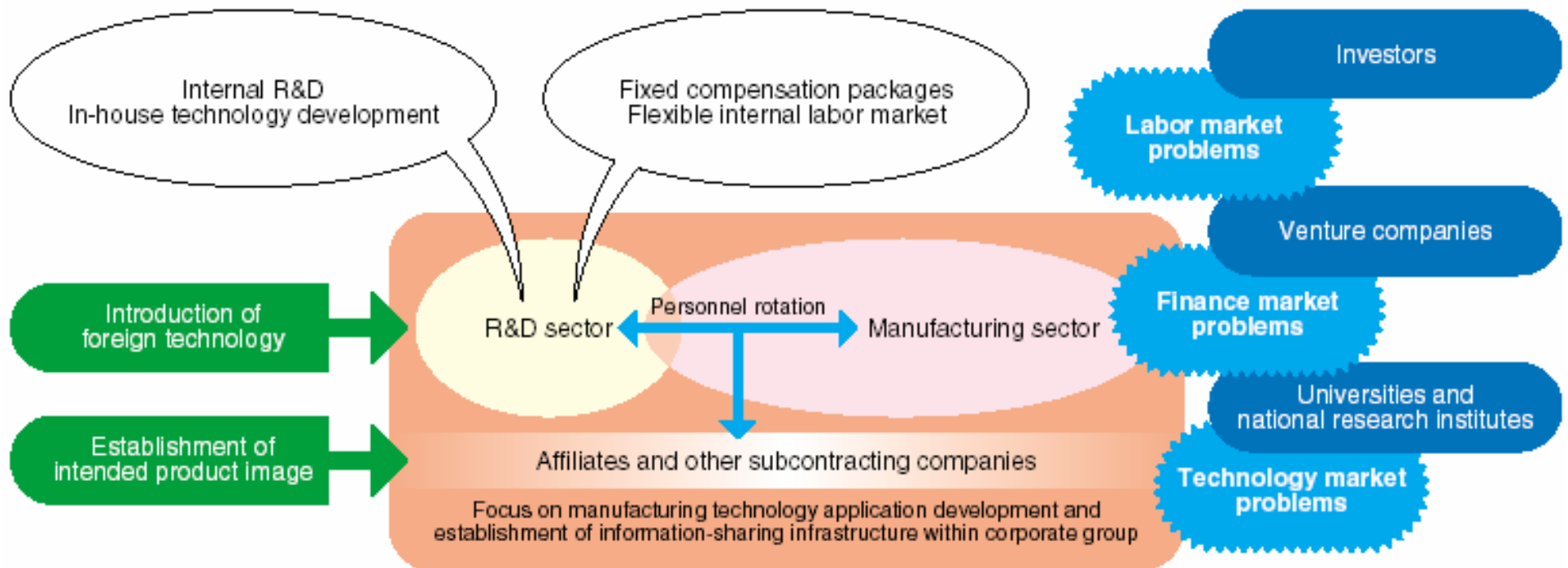


High concentration of R&D activities



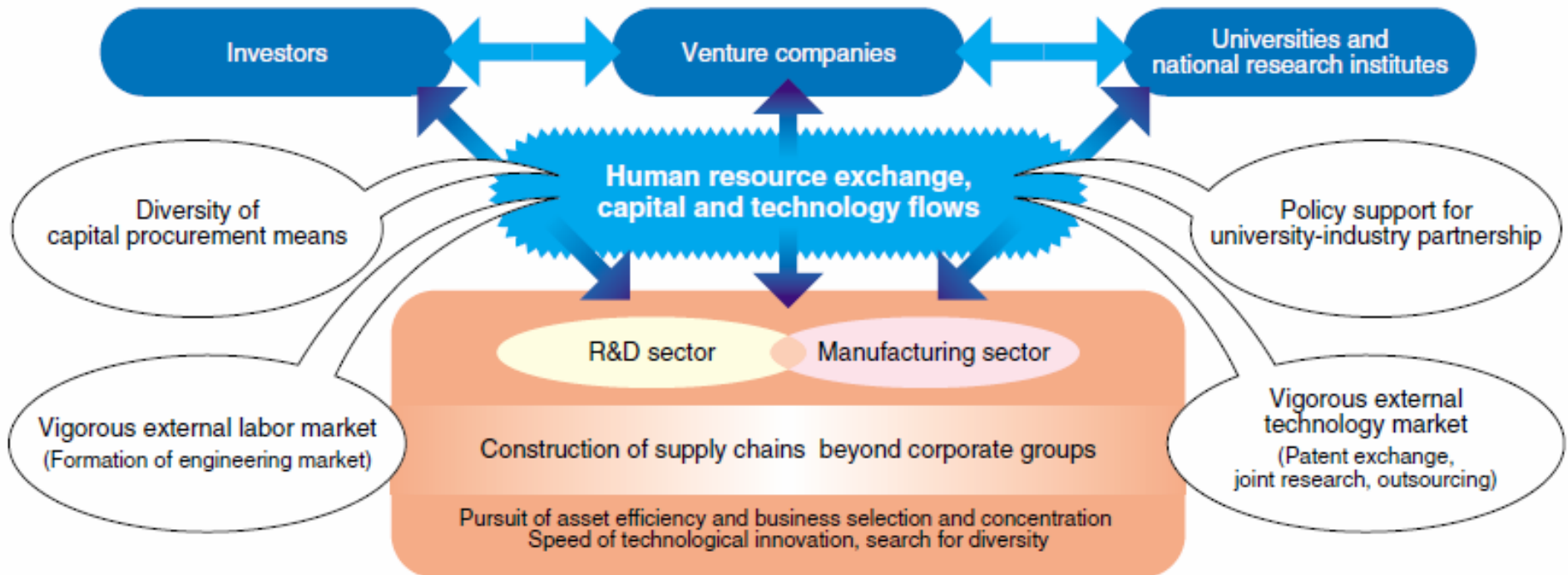
Japan's national innovation system

Compartment system by large company: Japan



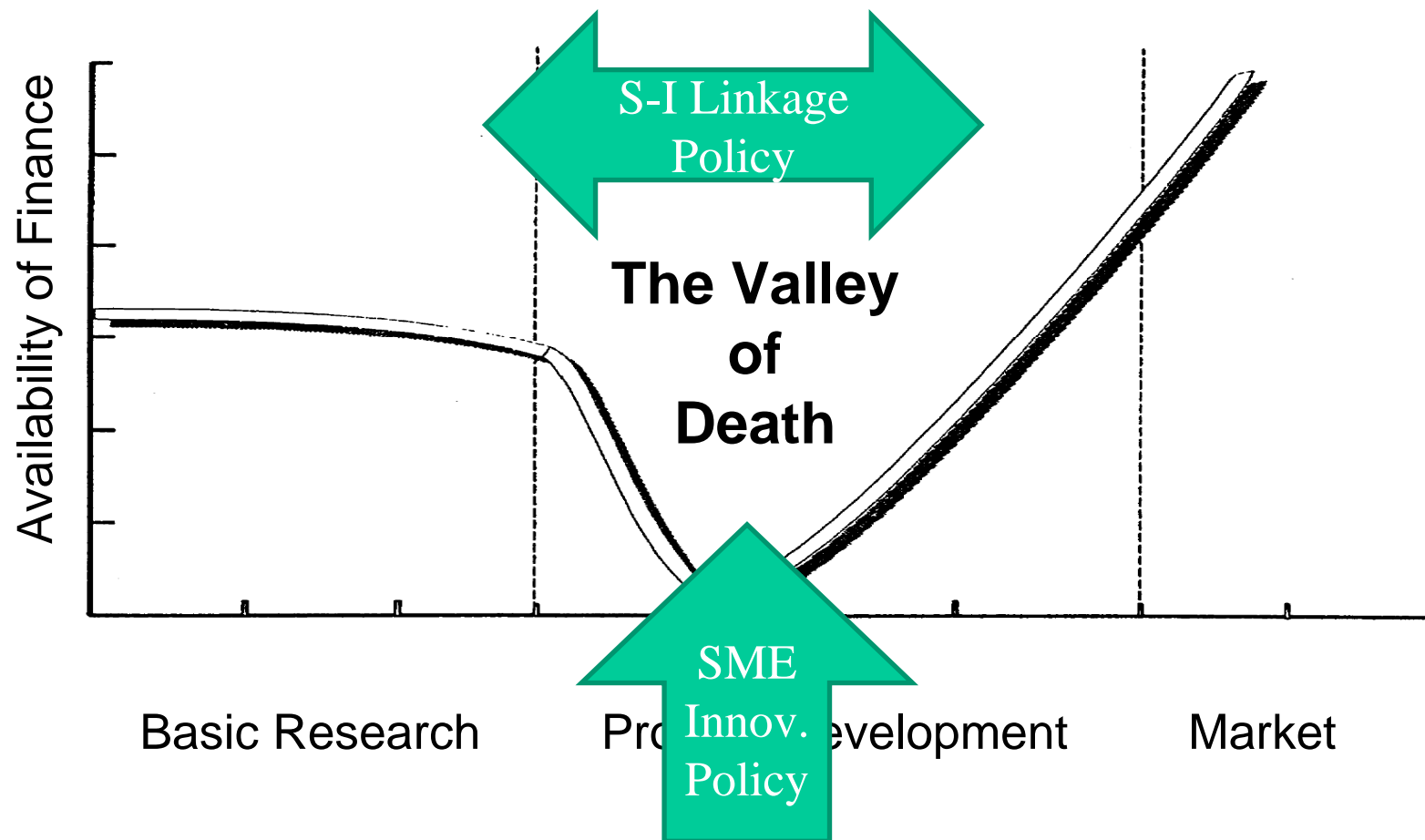
US national innovation system

Network-based system: America



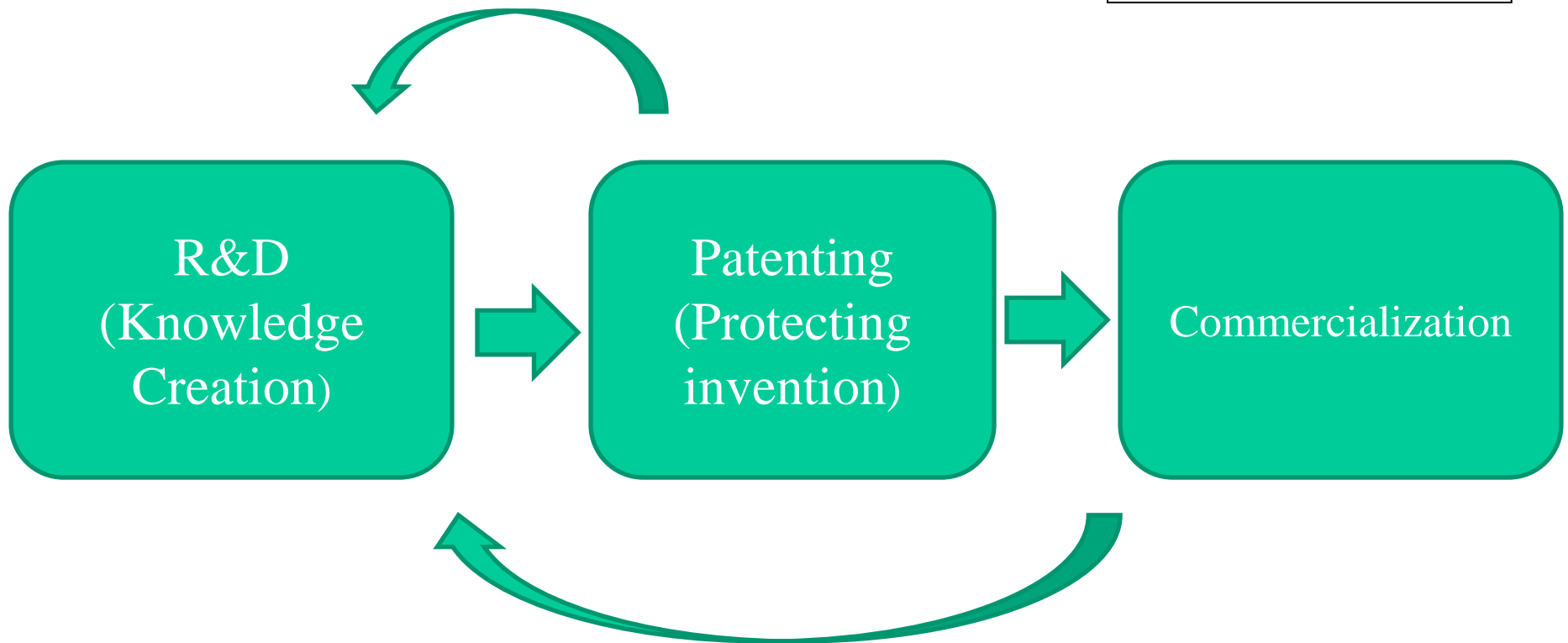
Why S-I & SME innovation policy?

“Valley of Death” (OECD: based on NIST material)



Invention, Patent and Innovation

Technology Spillover by Patent Publication → Social Welfare



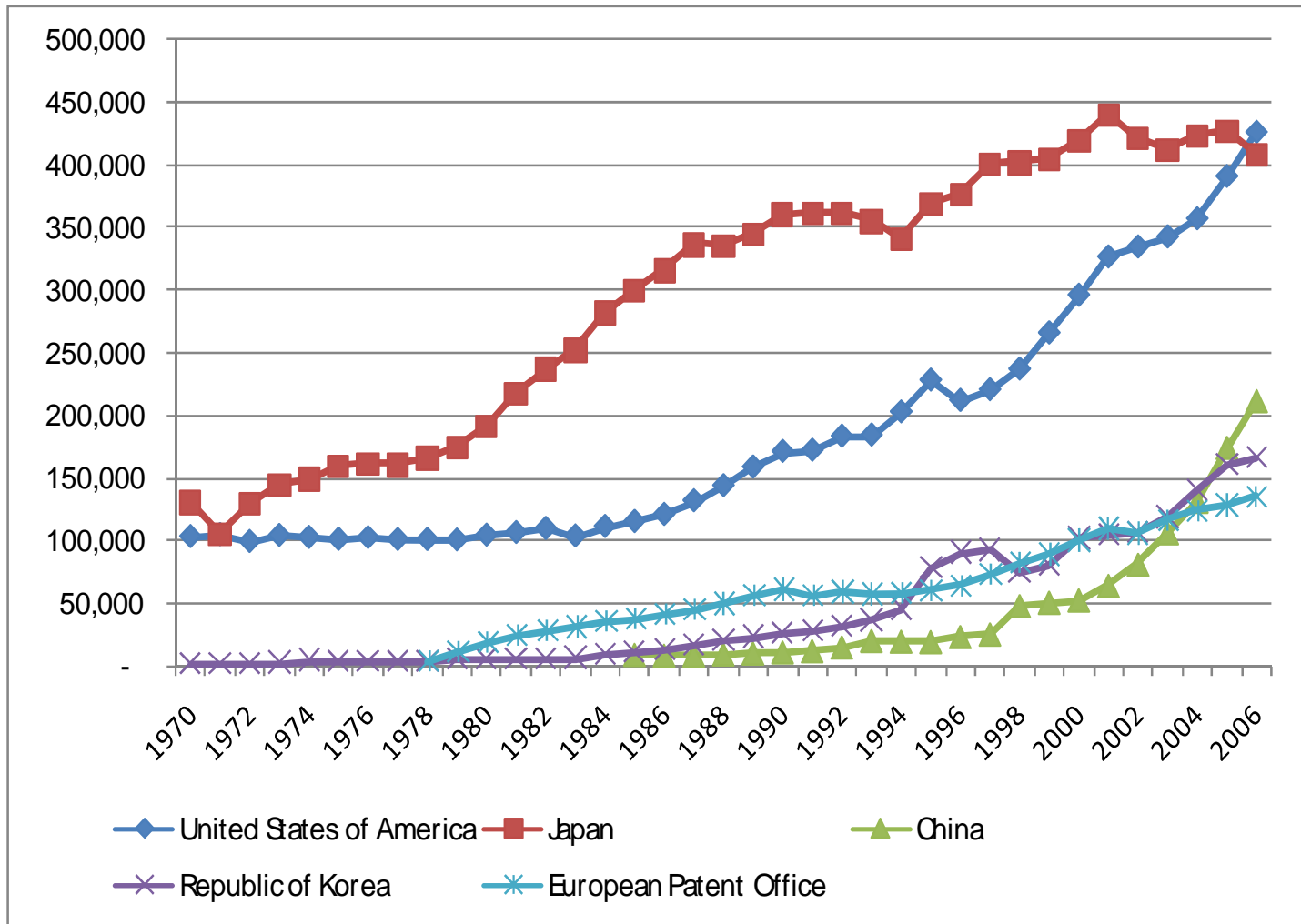
Monopoly Rent → Private Return

Pro-patent Policy in Japan

	New technology patent	Wider range patent	Stronger patent	User friendly patent
1970s	microbe (1979)	chemical compound (1976)	□ □	Application laying open system (1971) Request for examination system (1971)
1980s	animals (1988)	multichain (1988) extension of patent period for drugs (1988)		
1990s	Definition of software patent (1993) e-money (1995) software media (1997) ↑ (gene related patent) (business model patent) ↓	doctrine of equivalence □Ball Spline case□(1998)	Post grant opposition system (1996) Raising penalty to patent infringement (1999) Review of penal provisions (1999)	Electronic application (1990) Application in English (1995) Application fee reduction□(1998)* Application fee reduction□(1999)*
2000□ □	software (2000)		Expansion of remedies against infringements (2000) □	Shortening time limit for request for examination (7 yrs→ 3 yrs□2001)

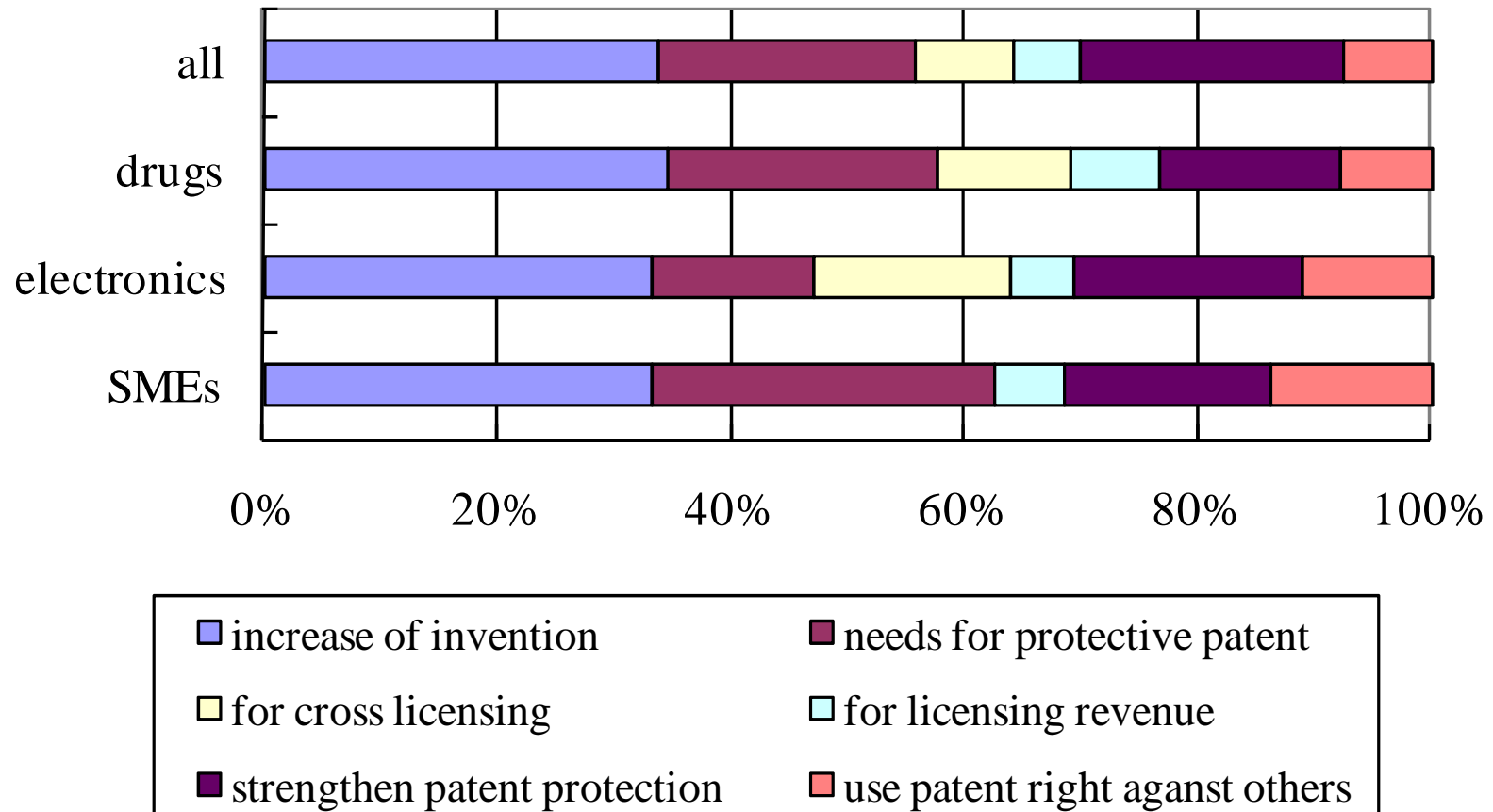
*:Until 1998, application and registration fees had been raised occasionally, which is not described in this table

Increasing patent applications

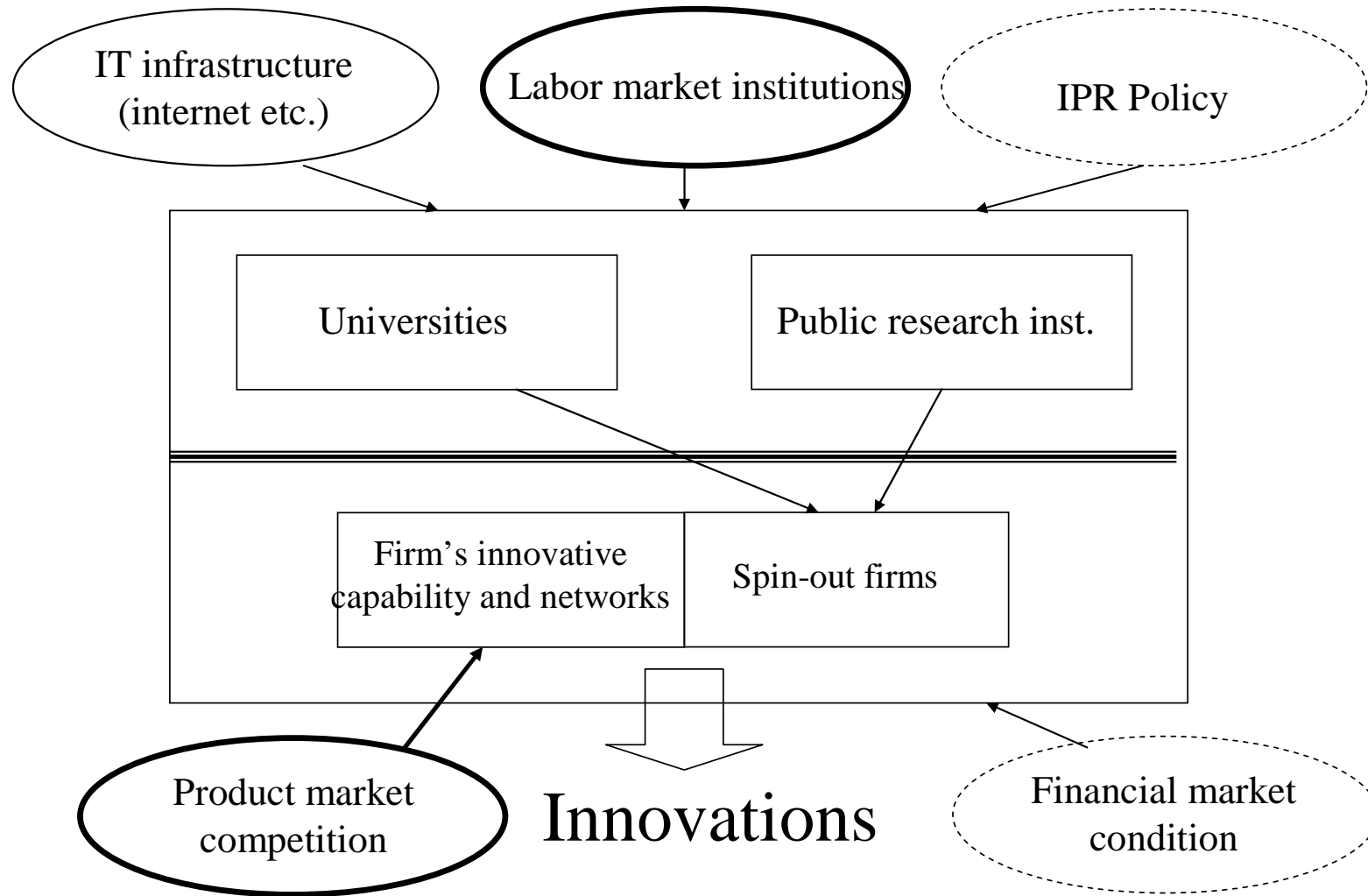


Factors behind patent explosion (Japan)

Figure 3-1: Reason for patent alication increase



China : Another catching up cases



IPR system changes in China

- 1985: Patent law enacted (for invention, utility models, and design patent)
- 1992: First revision
- 1994: Joined in PCT system
- 2001: Second revision (concordance to TRIPS by accession to WTO)
- 2009: Third revision (for “indigenous innovation”)
- 2010: Anti-patent infringement campaign

IPR and economic development stage

- Innovation v.s. Imitation
 - Weak patent right favors developing (catching up) economies: territoriality in patent system allows a local firm to learn from patents in developed countries
 - But, strong patent system is important for indigenous innovation
- Pro-patent reforms by development stage
 - US: early 1980's (CAFC)
 - Japan: late 1990's (IP headquarter etc.)
 - 1980's: Int'l harmonization, pressure from US
 - China: currently
 - 2001: Int'l harmonization (Accession to WTO)