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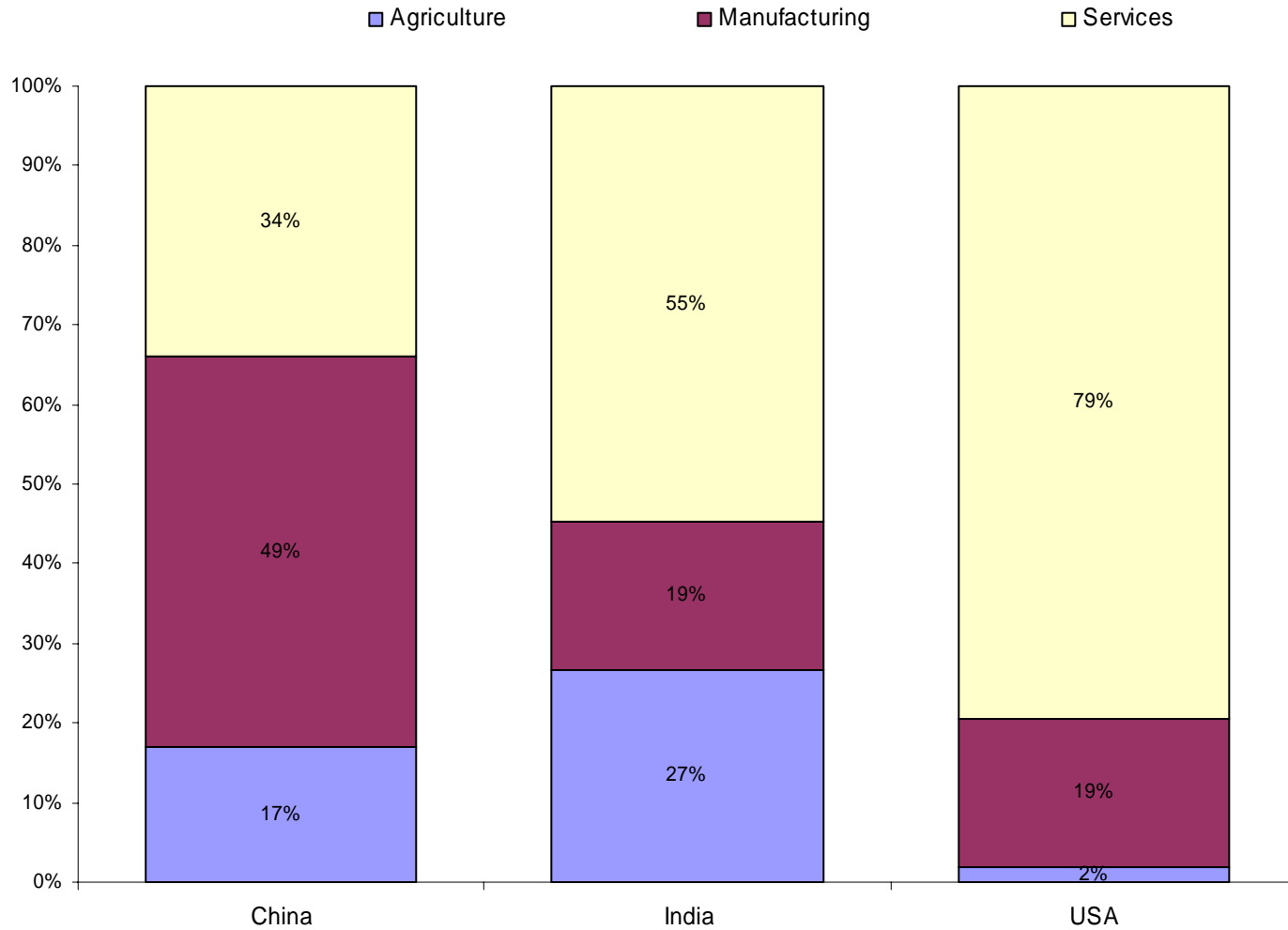
International Organisation for Knowledge Economy and Enterprise Development

Mechanisms for international diffusion of technology: the case of India and China in the era of ICT and globalisation

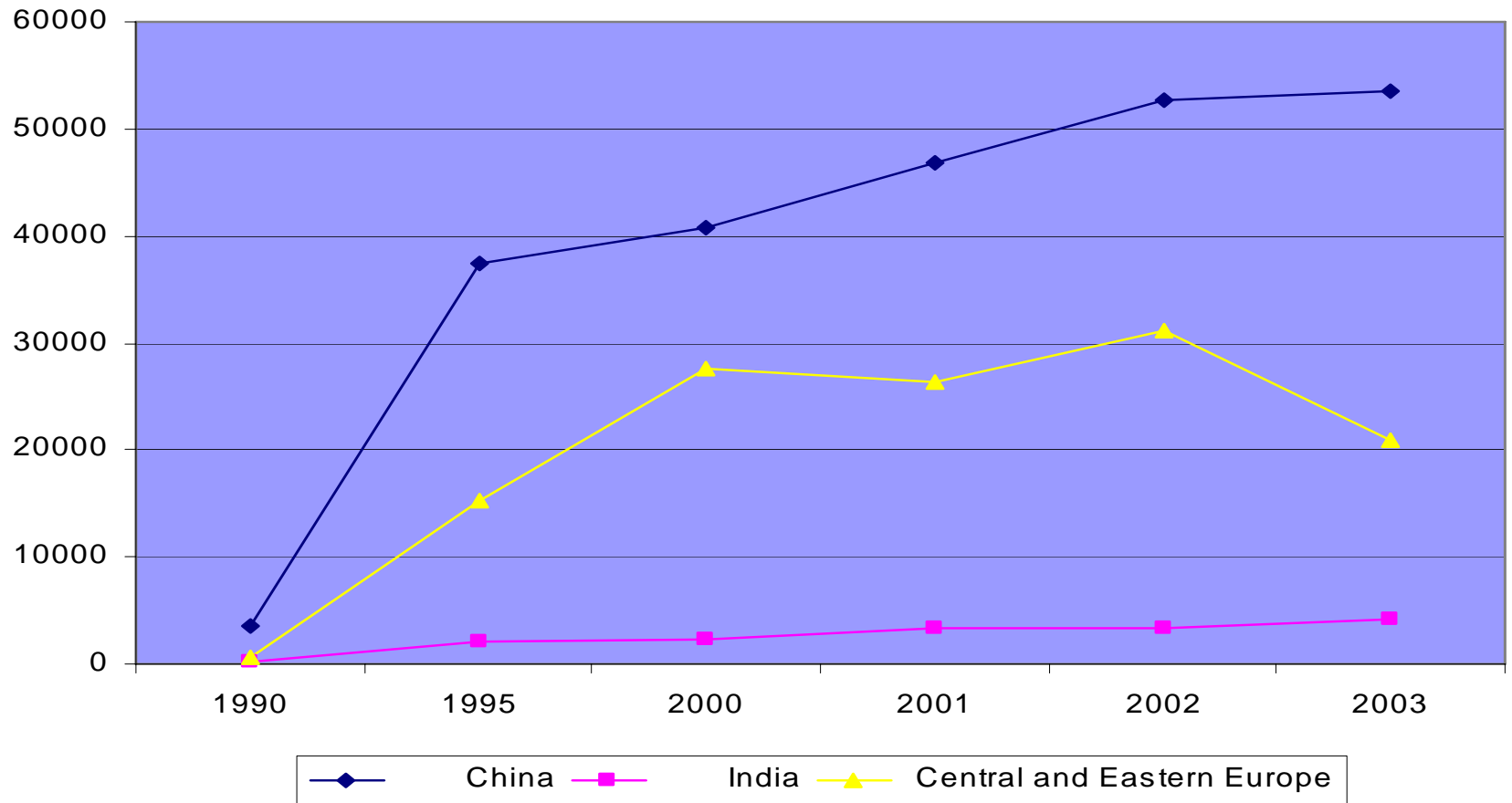
Thomas Andersson

April 2005

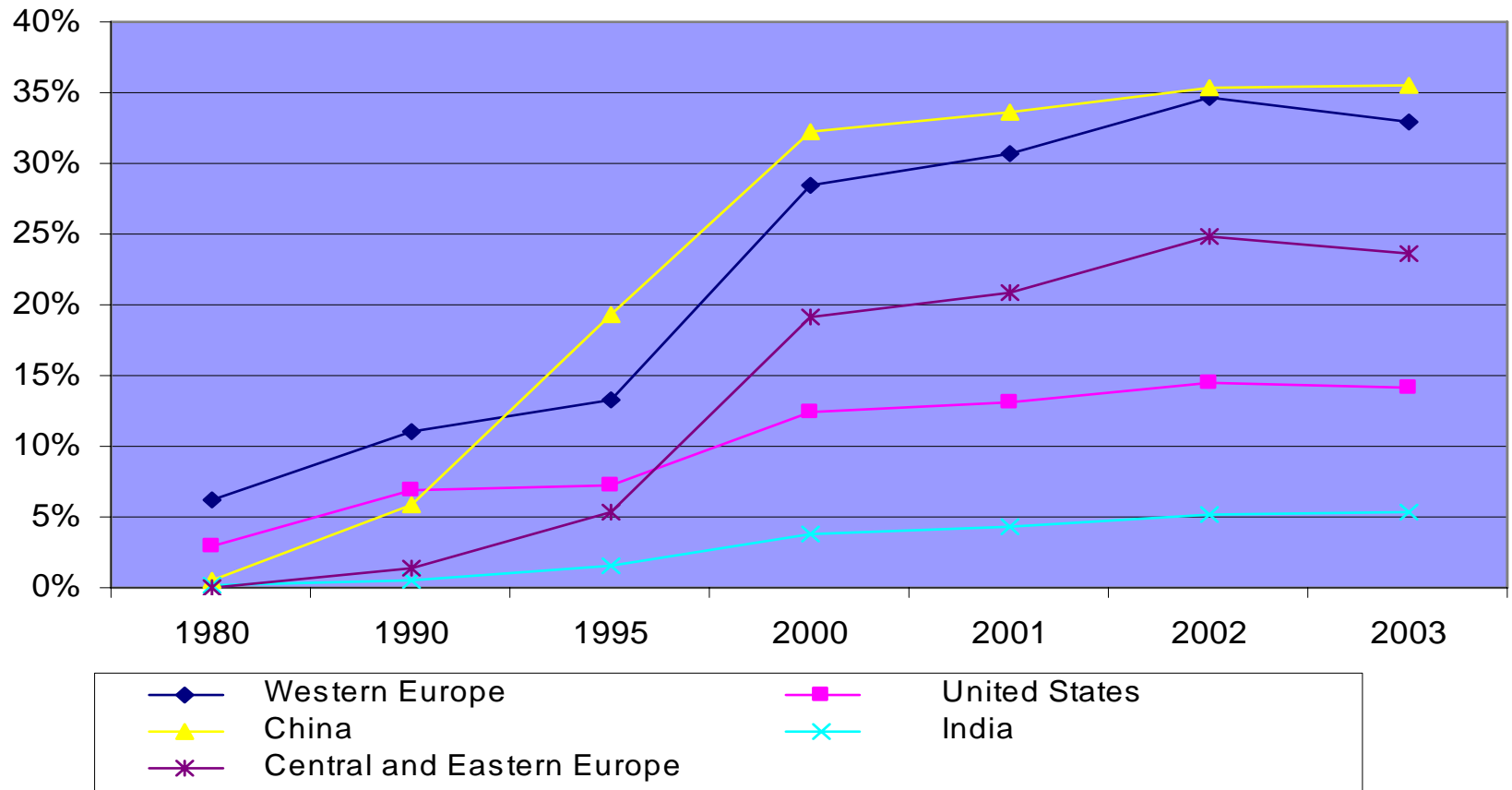
GDP growth by sector



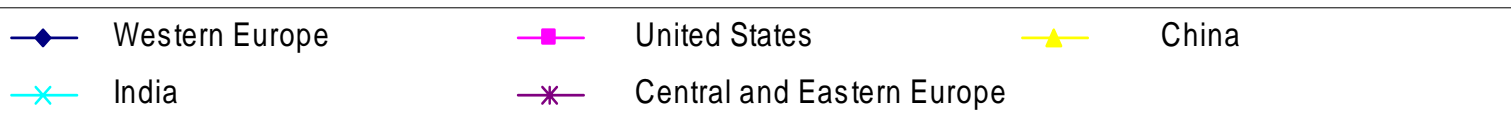
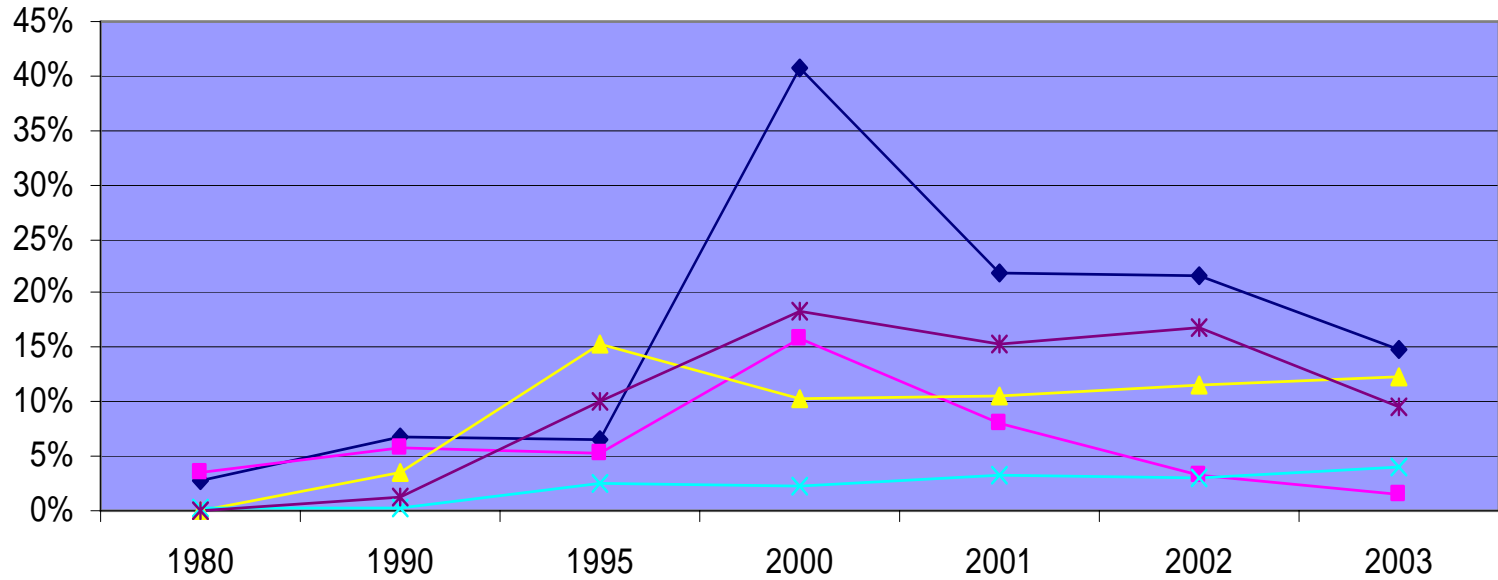
FDI Inflows in millions of dollars



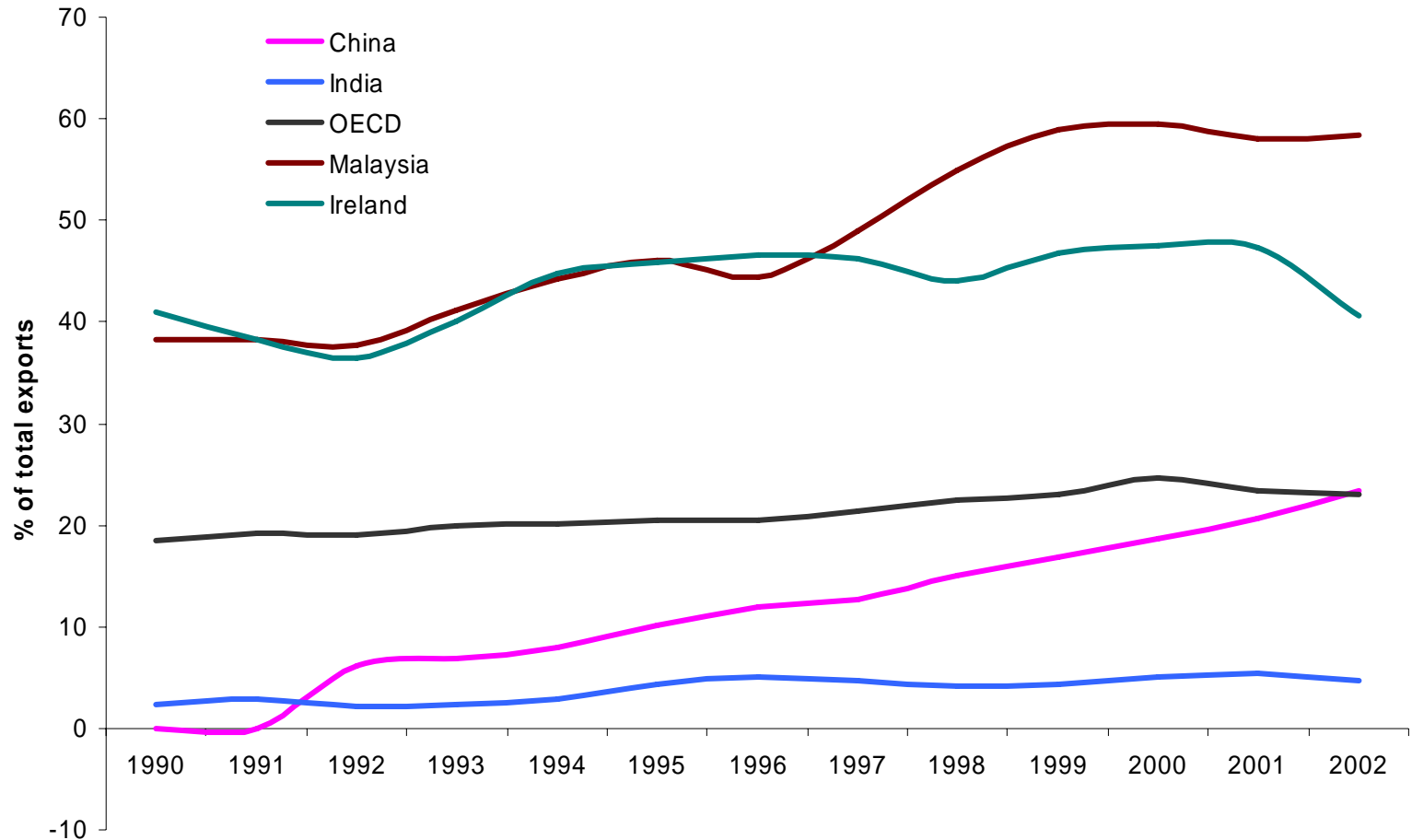
FDI inward stock as percentage of GDP



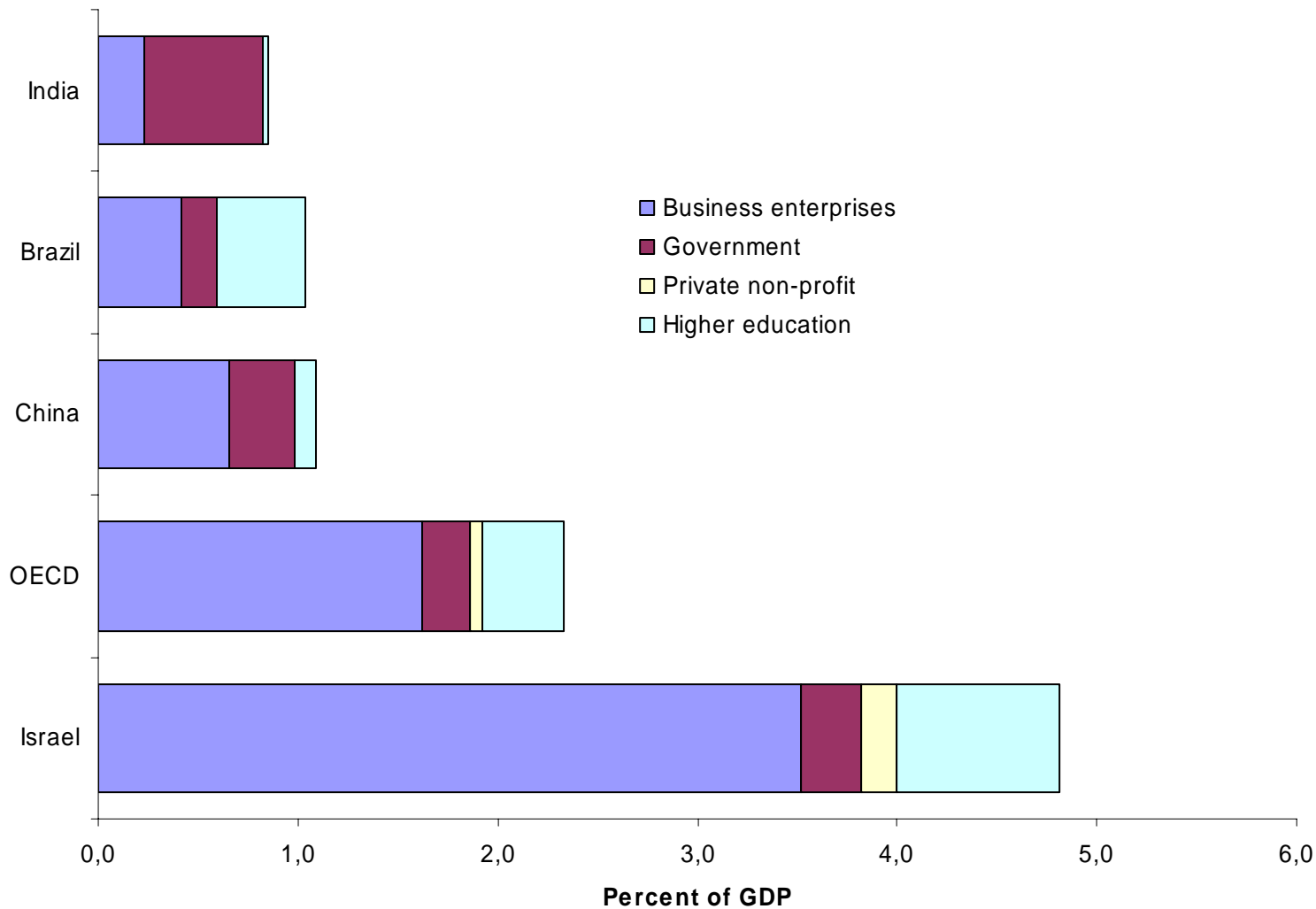
FDI inflows as Percentage of GFCF



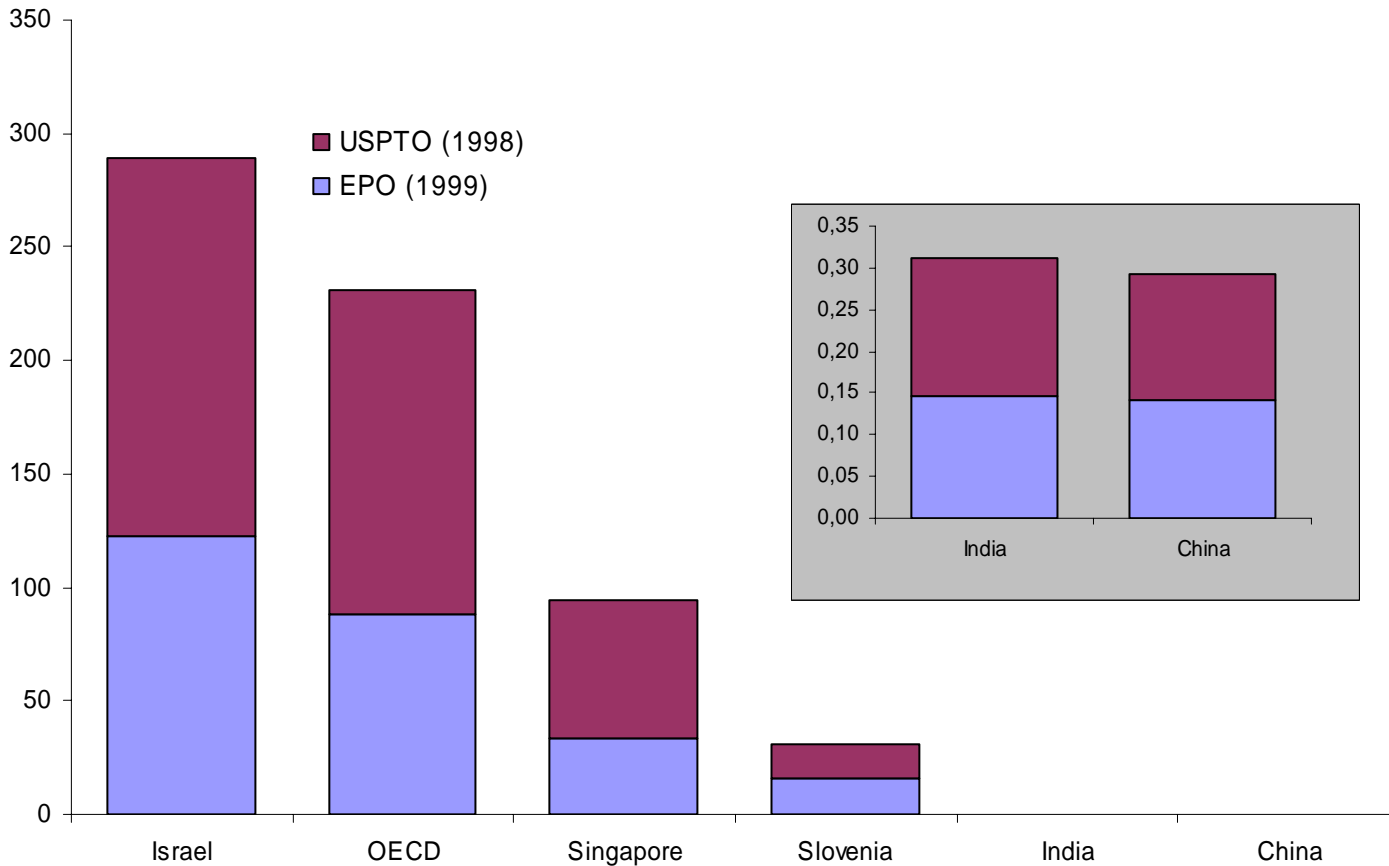
High tech exports as percent of manufactured exports



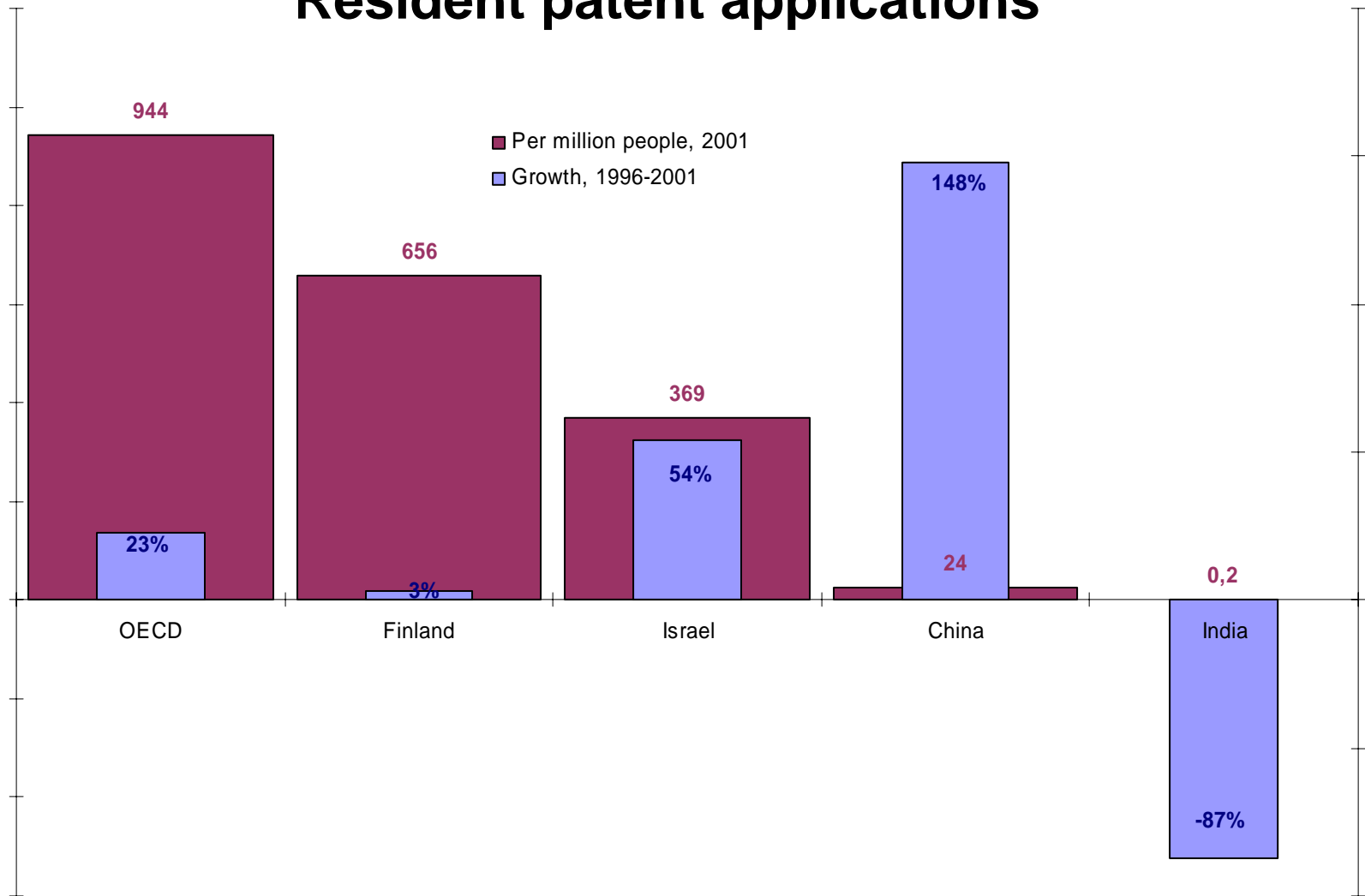
R&D expenditure by sector and in relation to GDP



Patents to EPO & USPO, per million people



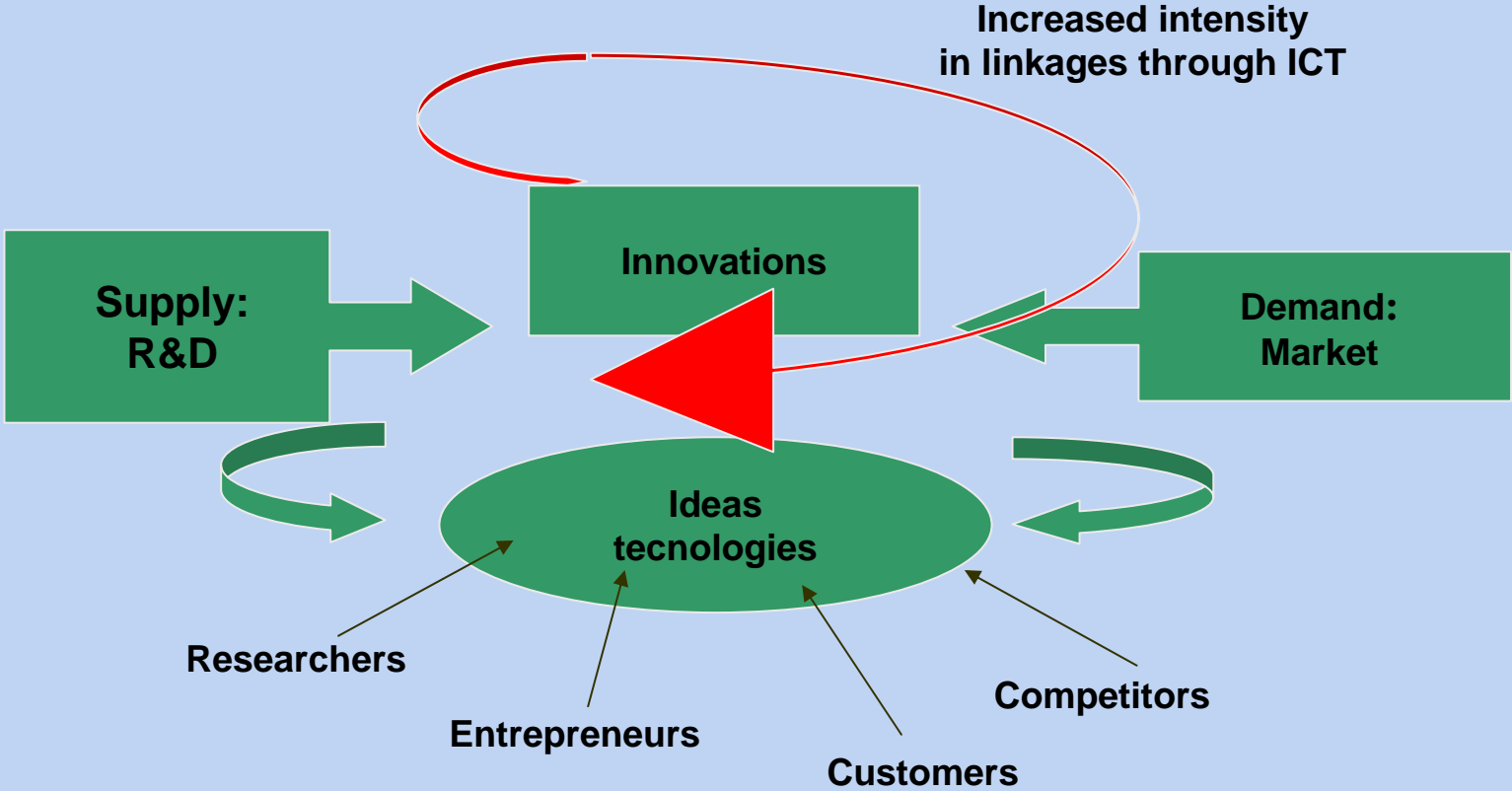
Resident patent applications



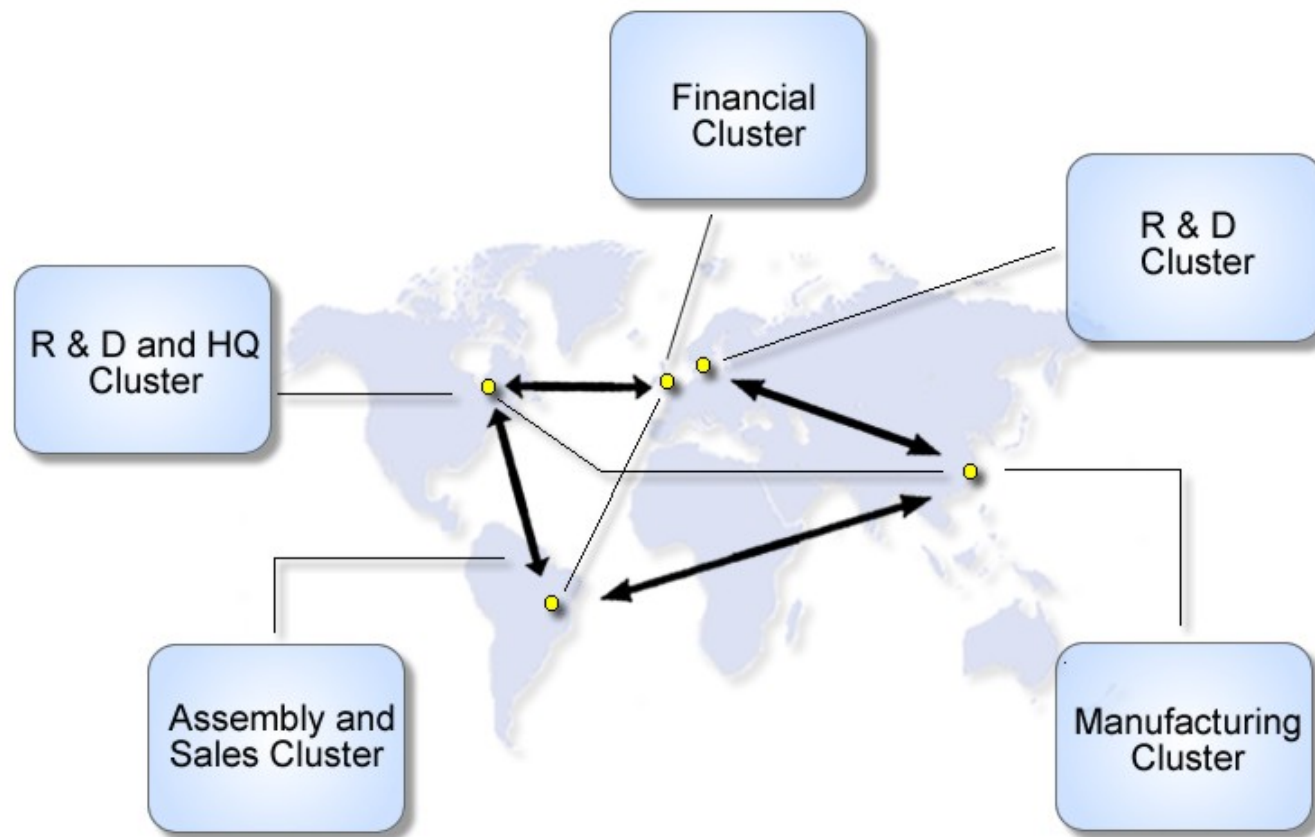
Cross-border ownership of inventions

	Foreign ownership of domestic inventions	Domestic ownership of inventions made abroad
OECD	13.7	13.9
Israel	28.4	11.7
Singapore	51.8	26.0
China	52.0	25.6
South Africa	38.7	15.2
India	49.3	13.8
Brazil	40.1	8.4
Slovenia	28.0	12.2

Abandoning the linear model



Cluster dynamics and linkages: cooperation and competition



Innovation policies

- **Evolving from Science background**
 - Scientific freedom and excellency, basis for education
 - Technology diffusion through research institutes
- **Adopting a systemic approach**
 - Human capital stressing quality issues
 - Public-private interface and other linkages
- **Concrete issues subject to reform**
 - Incentives within universities, science-industry linkages, private R&D
 - Seed and venture capital, entrepreneurship and risk-reward ratio
 - Standards, regulations
 - Assessment, evaluation and monitoring

FDI policies

- **Traditionally adverse**
 - Nationalisation, prohibition, barriers
 - Taxes, performance requirements
- **Universal: Information, marketing, attraction**
 - Provision of information, privatisation, selective incentives
 - Offering infrastructure, subsidised inputs, a favourable environment
- **Raising the benefits: Fostering "spillovers"**
 - Encourage higher value-added R&D in affiliates
 - Strengthening domestic suppliers and competitors
 - Human resources and labour mobility
 - Cluster approaches, networks, triple helix

Firm perspective: R&D globalisation and specialisation

- **Knowledge search**
 - Need to search, exploit and use knowledge anywhere
 - Adjusting to costs and opportunities in multiple locations
- **Changing organisational properties**
 - Asset-exploiting vs. Asset-augmenting
 - Affiliates more independent vs. more integrated in TNCs
- **Evolving linkages**
 - Greater capability to manage technology transfers
 - Stronger linkages within TNCs
 - Stronger ability to develop local linkages
 - Manage first-mover advantages vs. herd behaviour

Integrated approach: innovation and globalisation

- **Country specifics**

- Exploiting size while developing openness and flexibility
- Level of development, resource dependency, institutional bottlenecks

- **Interplay TNCs - domestic**

- Creating win-win situation TNCs and domestic actors
- Public role: targeting without “picking the winners”

- **Governance mechanisms**

- Institutional inertia, vested interests, letting go of control
- Engaging relevant stakeholders
- Division of labour: national – regional, allowing specialisation
- Ministerial responsibilities