

Innovation and Entrepreneurship: New Applications and Services Driving Future Growth

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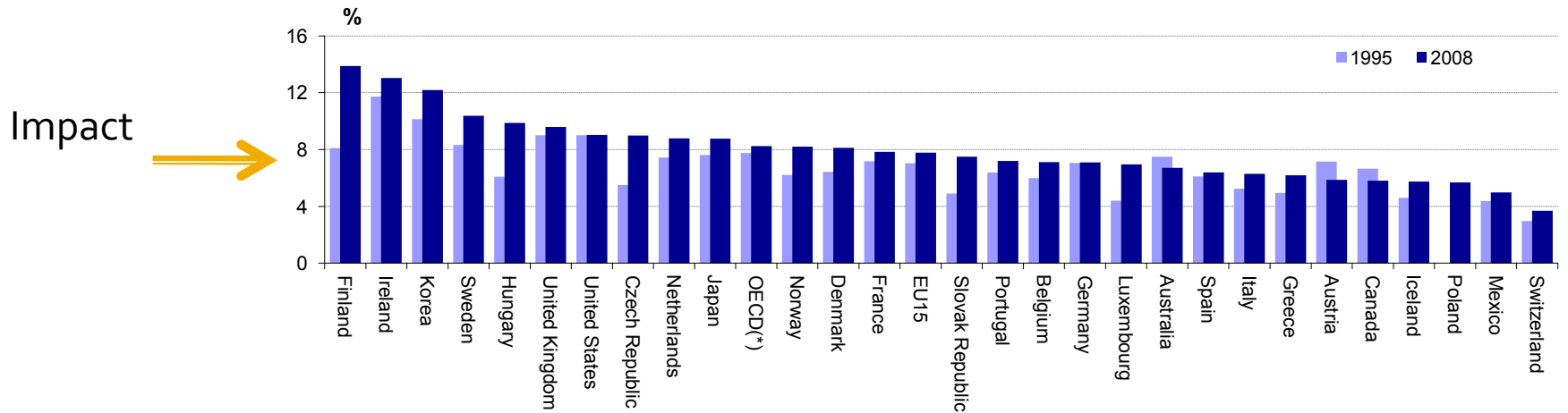
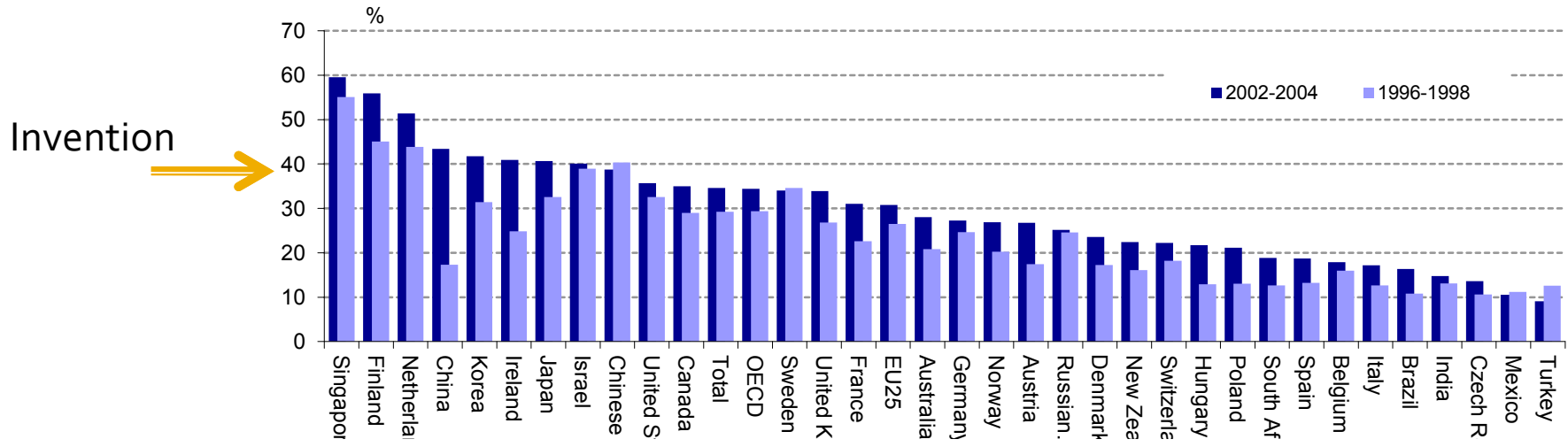


Just What Is Innovation?



- Innovation = Invention + Impact
 - technical or organizational invention
 - with an economic impact (social impact)
- “the introduction and spread of new and improved products and processes in the economy.”
- “the ability of individuals, companies, and entire nations to continuously create their desired future.”

ICT's and Innovation



Broadband Enabled Innovation



Comparing relationship of phones, internet, and broadband internet on patent data

Broadband Enabled Innovation



Comparing relationship of phones, internet, and broadband internet on patent data

Explanatory Variable	Dependent Variable: Patents per capita	p
GDP (US\$)	1.70E-10 (-4.14) ⁹	0.0001
Internet users per 100	3.28 (1.94)	0.06
Constant	-123.1 (-1.5)	0.14
Observations	50	
R ²	0.459	
F-statistic	19.97	<.0001

Explanatory Variable	Dependent Variable: Patents per capita	p
GDP (US\$)	2.36E-10 (5.66)	<.0001
Fixed + mobile phone per 100	0.45 (0.49)	0.63
Constant	-48.53 (-0.39)	0.7
Observations	50	
R ²	0.42	
F-statistic	16.95	<.0001

Explanatory Variable	Dependent Variable: Patents per capita	p
GDP (US\$)	1.71E-10 (4.14)	0.0001
Fixed + mobile broadband per 100	7.3 (3.67)	0.0006
Constant	-127.33 (-2.23)	0.031
Observations	49	
R ²	0.55	
F-statistic	28	<.0001

Broadband Enabled Innovation



Comparing relationship of phones, internet, and broadband internet on patent data

- Large and significant correlation between broadband penetration and patents
 - the addition of 1% in a nation's broadband penetration correlates with 7 additional patents in that year (5% jump)
- Phone correlation not significant
- Internet correlation almost significant and half as strong as for broadband

Broadband Enabled Innovation



Comparing relationship of phones, internet, and broadband internet on patent data

- *More broadband correlates with more patents; more phones do not significantly correlate with more patents; and more internet users do not significantly correlate with more patents, though they come close.*

The Trouble With Patents as Innovation Surrogate



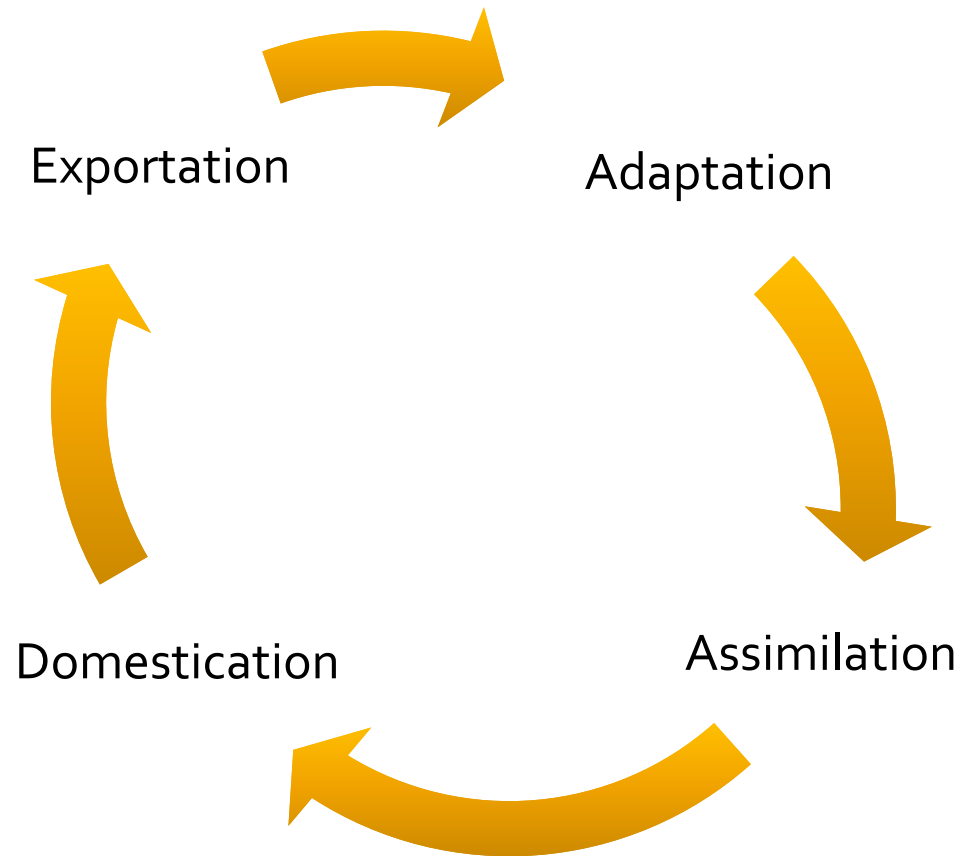
- Defensive patents
- Rent seeking
- Ignores important areas of innovation

National Systems of Innovation and the Developing World



National systems of innovation		Institutional dimension	
		Formal sector	Informal sector
Technological dimension	Exogenous technology	adaptation	assimilation
	Indigenous technology	exportation	domestication

National Systems of Innovation and the Developing World



Public Policy Pillars



- Research and development (R&D) investments
- Education and demand development
- Universities and public research institutes
- Openness
- Neutrality

Research and Development Investments



The private sector under invests in R&D

- Public goods problems: non-rival, non-excludable
- Monopoly concession, offered to encourage inventions, can dampen need to change
- Particularly unpredictable and high-risk so hard for market to assign value

Education and Demand Development



An educated population demands – and creates
– innovations

- Educated workforce needed to invent and build on inventions (supply)
- Educated workforce need innovations to get their jobs done (demand)
- Many users (from 10-40%) engage in developing or modifying products

Universities and Public Research Institutes



Research universities (and PRIs) are innovation engines (shameless self-promotion)



Openness



Open content

- New policies and licensing regimes - gift economies
 - Creative Commons
- Open source
 - “the quintessential instance of commons-based peer production” which is “radically decentralized, collaborative, and non proprietary; based on sharing resources and outputs among widely distributed, loosely connected individuals who cooperate with each other without relying on either market signals or managerial commands”

Openness



Open networks

- Open spectrum – license exemptions
- Open access – the “third way”

Neutrality



- Technology neutrality
- Service neutrality
- Net neutrality

Universal Innovation

