

From the Economics of Knowledge to the Learning Economy



Globelics Academy
Rio August 2012
Bengt-Åke Lundvall

Why focus on economics of knowledge?

- In international organisations – OECD, UN, World Bank, European Commission - it is now recognised that competitiveness and economic progress is based upon knowledge.
- In the management literature it is increasingly recognised that knowledge is the strategic resource – knowledge needs to be managed!
- But how to understand Knowledge and Learning in this context? What can we learn from economic theory and what are the implications for innovation policy and knowledge management?

Understanding knowledge is a key to intelligent management and policy!!!

- Uneven development in the world and inequality within countries reflect the uneven distribution of knowledge.
- Change in the global knowledge landscape - the new role for emerging economies – especially China.
- What kind of knowledge matters for economic performance?
- How easy/difficult is it to 'transfer' or 'learn' different kinds of knowledge?
- *To understand and master the process of knowledge creation and learning is a key to intelligent management and economic development strategies!!*

Is knowledge a public good? Does it float freely in geographical space?

Public good is characterised by being **Non-rival** (the value of knowledge is not reduced by others using it) and **Non-excludable** (not possible to exclude others from using it).

- Marshall (around 1920) on industrial district – cf Silicon Valley. Knowledge is local and **not** easy to move from one place to another. May inspire diffusion policy and analysis of REGIONAL CLUSTERS.
- Kenneth Arrow and Richard Nelson (around 1960) knowledge as public good. Calls for government intervention. IPR for specific knowledge. Government subsidy or production for generic knowledge.

To solve the contradiction we need to distinguish between **knowledge about the world** (Know What / Know Why) and **knowledge how to change the world** (Know How).

Taxonomy for knowledge (Lundvall and Johnson 1994)

- Know what – facts about the world
- Know why – scientific laws in relation to nature and society
- Know how – how to use tools and concepts
- Know who – know who knows what and who knows to do what (plus social competence to mobilise the knowledge of others).

Economics: Information (know-what/know why) as commodity – the insights of Arrow

- **Market failure**
 - Buyer uncertainty about the value of information
 - Seller keeps it when selling it
 - Buyer can sell it to others after he has bought it
 - Easy to reproduce once it has been produced
- **Policy issues – underinvestment in knowledge creation – therefore:**
 - Intellectual property rights to give incentives to knowledge producers
 - Public production or subsidies to knowledge producers

Economics: Skills and competence as commodity

- Skills are partially tacit and embodied in people and organisations - cannot be sold or bought separately.
- Access to skills through hiring, through mergers and take-overs and through networking.
- Labour market dynamics affect skill formation.
- Underinvestment in skill formation within firms - people move on from one firm to the next.
- Policy issue: Competition clause, employee share holding (c.f. IPRs) – but this may **slow down** learning at the level of society.

Tacit versus codified knowledge

- Know how (biking, swimming but also management and research) has always elements of tacit knowledge
- Codification of know-how is always incomplete - lack of distinction between more or less complete codification.
- Codification as an economically determined activity - a crucial element of knowledge management

Information technology and its impact on the different kinds of knowledge

How ICT change the demand and supply for codified and tacit knowledge:

- Know-what in data bases - **But** limits of search machines
- Know-why in global science networks – **But** a need to have absorptive capacity
- Know-how in expert systems - **But** limits of skill codification
- Know-who in registers of firms - **But** importance of trust and the social dimension.

Intellectual property rights – The basic dilemma

- Protection to give incentives to invest in the development of new technology
- Promoting the diffusion of new technology
- On balance company lawyers favour protection while economists favor diffusion

The two sides of patenting

- First we think about patents as barriers to access to knowledge. A time limited monopoly to the use of knowledge
- But they might also increase access to knowledge – what might have remained secret is codified and put into the public sphere.

Alternatives to the use of IPRs as incentives

- Government production of knowledge
- Government support to the production of knowledge
- **Prizes** to the one who first come up with a solution or a new insight

Patents should **not** be allowed when the knowledge involved is generic – of general interest – genes and soft-ware.

The learning economy – differs from the knowledge-based economy!

All economies are knowledge-based: what is **new** is the high rate of change in competences required (depreciation rate of knowledge investment is high!)

- The learning economy - a new perspective on economic dynamics
 - Change and learning
 - Selection, transformation and speed-up of change
 - Social and economic exclusion in the learning economy
 - Social dimension – trust and interactive learning
- Competence building at the firm level
 - Implications for knowledge management
 - Implications for policy making – including ‘new new deal’

Characterising the learning economy

- More rapid transformation
 - shorter product life cycles
 - shorter life time for competences (halving time = 1 year for computer engineers?)
 - more frequent shifts in working tasks
- New kind of competition
 - Learning based rather than knowledge based
 - Success of people, firms and regions reflect capability to learn
- Inherent polarisation in the Learning Economy
 - Exciting but stressful for the rapid learners - exclusion of slow learners
 - End of European regional convergence

An important source of competence building is the learning organisation

- Learning organisations and networking organisations (in Denmark)
 - Create more and more stable jobs
 - Are more productive
 - Are more active in terms of product innovation
- But they constitute only minority of all firms
- Shop stewards and middle management are strategic agents of change

Learning organisations

- We define learning organisations as those that:
 - Are flatter and allow more horizontal communication inside and outside the organisational borders
 - Establish cross-departmental and cross-functional teams and promote job-circulation between functions.
 - Delegate responsibility to workers and invest in their skills
 - Establish closer co-operation with suppliers, customers and knowledge institutions.
- (In DK such firms also tend to engage in both indirect and direct forms of employee participation.)

Why do learning organisations thrive in the learning economy?

- Permits permanent renewal of competences and capabilities as a response to change in the environment.
- **Offers SPEED – horizontal communication inside and outside the organisational borders and delegation of responsibility is much quicker than moving up and down in multi-level hierarchy**

The learning economy perspective raises new challenges

- The learning economy remains effective only as long as it is rooted in social capital (trust, integrity, solidarity and openness). Inherent forces in the globalising learning economy undermine social capital by increasing uncertainty and polarisation.
- The learning economy calls for new perspectives on education, working life, labour markets and industrial organisation - and for integrated strategies in firms, trade unions and government.

Policy implications of the learning economy-perspective

- Education: Educate in order to establish learning capability. Give access to life long learning.
- Labour markets: Need for labour market institutions and trade unions that support competence building (new workers' contracts emphasising competence building).
- Firms: Promote the diffusion of learning organisations.
- Income distribution: Need for new new deal with focus on redistribution of learning capability.
- Responsibility of last resort for the public sector – otherwise only the already skilled get more training.

The four clusters

- **Discretionary learning**
 - A lot of learning, complex tasks and delegation of responsibility for quality
- **Lean production**
 - Job rotation, team work and quality control but little discretion
- **Taylorism**
 - No problem solving, no autonomy
- **Simple production**
 - Little learning but some discretion and problem-solving

Table 1: National Differences in Organisational Models (percent of employees by organisational class)				
	Discretionary learning	Lean production learning	Taylorist organisation	Simple organisation
North				
Netherlands	64,0	17,2	5,3	13,5
Denmark	60,0	21,9	6,8	11,3
Sweden	52,6	18,5	7,1	21,7
Finland	47,8	27,6	12,5	12,1
Austria	47,5	21,5	13,1	18,0
Center				
Germany	44,3	19,6	14,3	21,9
Luxemb.	42,8	25,4	11,9	20,0
Belgium	38,9	25,1	13,9	22,1
France	38,0	33,3	11,1	17,7
West				
UK	34,8	40,6	10,9	13,7
Ireland	24,0	37,8	20,7	17,6
South				
Italy	30,0	23,6	20,9	25,4
Portugal	26,1	28,1	23,0	22,8
Spain	20,1	38,8	18,5	22,5
Greece	18,7	25,6	28,0	27,7
EU-15	39,1	28,2	13,6	19,1

Source : Third Working Condition survey. European Foundation for the Improvement of Living and Working.

The national context affects what is good practise knowledge management

- Education and labour markets differ (Lam – Lundvall paper)
- The mode of learning in firms differs across countries (Lorenz – Lundvall-Valeyre paper for conference) – affects what is going on inside firms
- Social capital and networking opportunities differ- networks and alliances show different patterns.

Results: International diffusion – after correcting for sector and job function

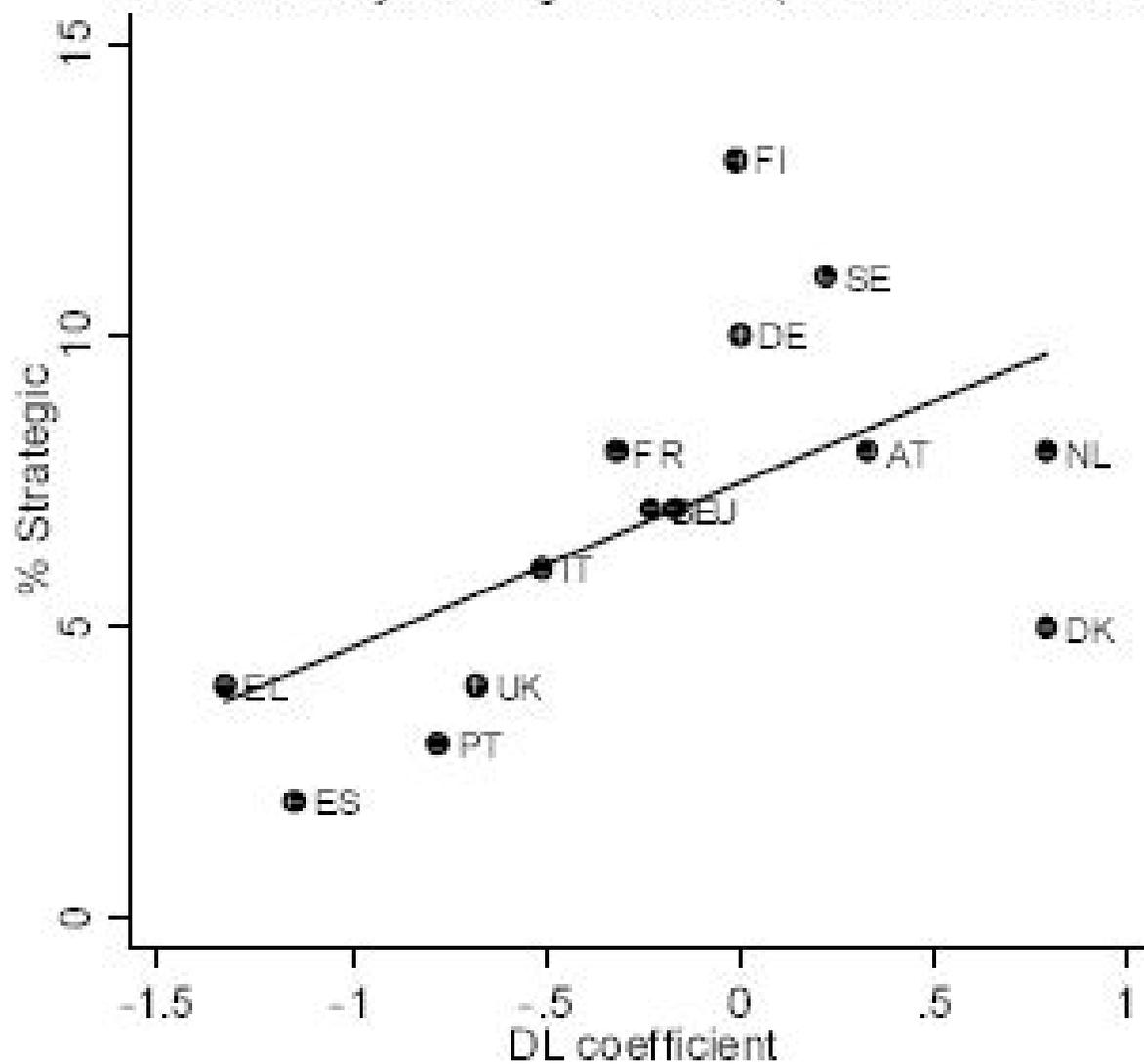
- Discretionary learning and lean production in Nordic countries and Netherlands
- Little DL and a lot of Lean production in UK, Ireland and Spain
- Taylorism and simple production in Portugal, Greece and Italy.
- Germany and France in between 1 and 2 above.

Table 2: National differences with focus on equality in the access to discretionary learning

**Management=managers, engineers and technicians;
Workers=low skilled and high skilled workers, clerks**

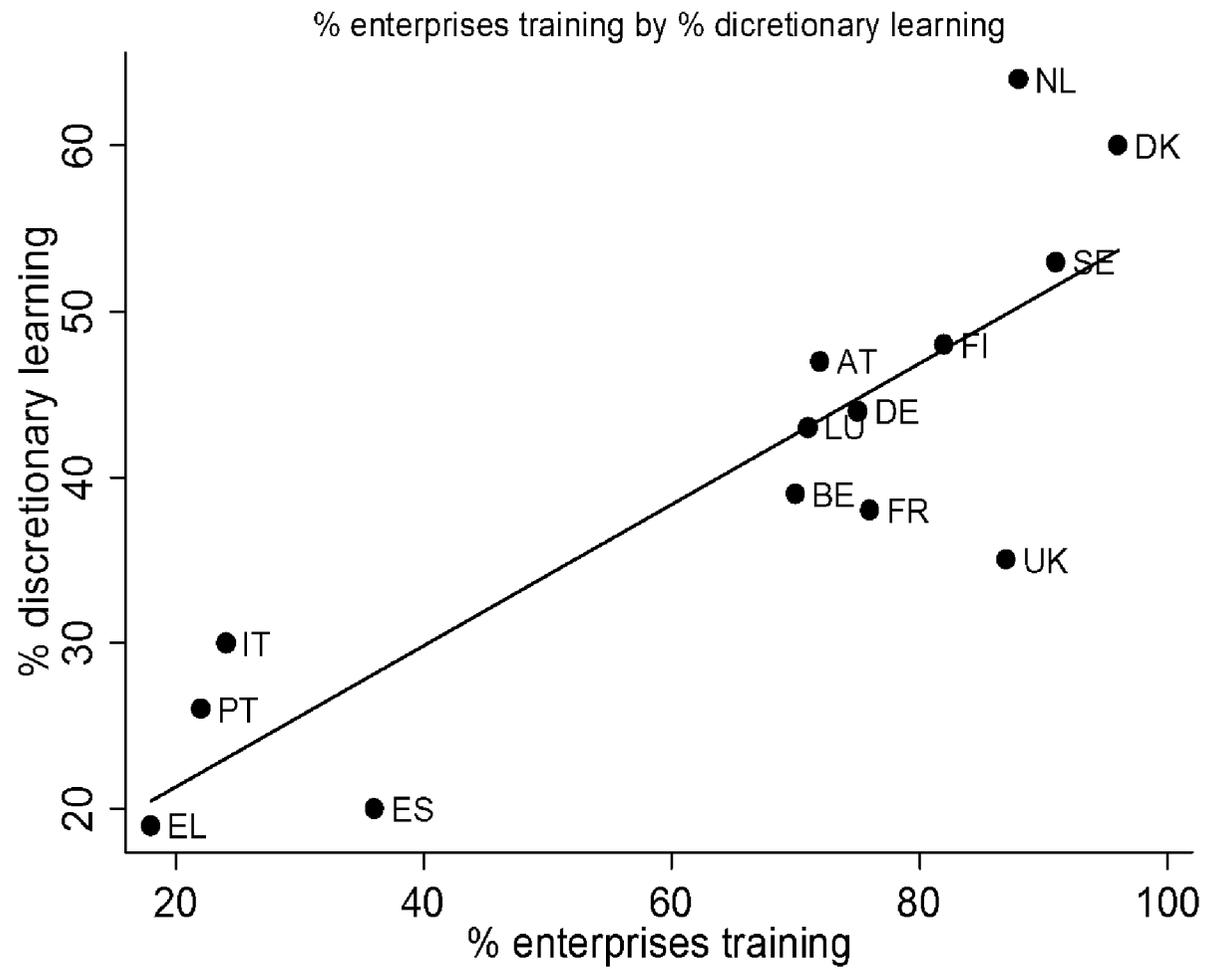
	Discretionary learning*	Share of managers in discretionary learning	Share of workers in discretionary learning	Learning Inequality index
North				
Netherlands	64,0	81.6	51.1	160.0
Denmark	60,0	85.0	56.2	151.2
Sweden	52,6	76.4	38.2	200.0
Finland	47,8	62.0	38.5	161.0
Austria	47,5	74.1	44.6	166.1
Center				
Germany	44,3	65.4	36.8	177.8
Luxemb.	42,8	70.3	33.1	212.4
Belgium	38,9	65.7	30.8	213.3
France	38,0	66.5	25.4	261.8
West				
UK	34,8	58.9	20.1	293.0
Ireland	24,0	46.7	16.4	284.8
South				
Italy	30,0	63.7	30.8	206.8
Portugal	26,1	59.0	18.2	324.2
Spain	20,1	52.4	19.1	274.3
Greece	18,7	40.4	17.0	237.6
EU-15	39,1			

DL coefficient by % strategic innovators (with structural controls)



● Strategic — Fitted values

R-squared = .33



● DL — Fitted values

R-squared = .73

Conclusion

- In order to explain how new ideas are brought to the market and transformed into **economic performance** it is necessary to take into account how learning takes place in working life.
- National systems of work organisation and learning are dramatically different.
- NSI is a useful perspective also for microstudies of specific firms. In spite of globalisation the management challenge is nation specific.

- **THANK YOU FOR YOUR
ATTENTION**