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Innovation

The Return of the Guilds

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WHAT?

1. Evidence

- Productivity gains (process innovations): nails, silk cloth, glass, books, painting, ships → NB: high skill sectors
- Use of different techniques within a guild: individual 'secrets'
- · Guilds control outcome, not process (what do searches do?)

2. Factor bias in process innovation

- High skill-always
- Capital intensive—sometimes (if the guild is highly differentiated)
- Low skill—sometimes (if does not substitute for high skill labour)

- 3. Macro- vs. micro-inventions
- · Savants vs. masters
- Chains: incremental improvements and standardisation
- 'Stochastic' variation via learning by doing/learning by using

HOW?

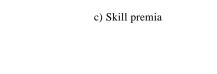
1. Train human capital

a) Cognition (cognitive psychology vs. developmental psychology): becoming expert takes time

- How long?
- Levels of expertise: becoming journeyman vs. becoming master
- Levels of expertise: masters vs. super-masters (fees, apprentice nos.)

b) Apprenticeship

- Who?
- How many?
- Do labour market restrictions work?
- How long?
- How much (fees)?



- production function for HC
- measure of added value from training
- · compare sectors

d) Chains of skill ('trees of knowledge')

- Measure (by sector, etc.)
- · Effects (by premia, by 'success', etc.)
- e) Labour market segmentation (by gender, skill, kin, origin)
- Does it restrain HC formation?

f) Organisational alternatives

- How can master/apprentice opportunism be sanctioned/controlled?
- Family (including extended kin and fictive-kin networks)
- 'Total institutions' ('asilums' e.g. orphanages, hospitals, prisons $\ldots)$
- · Small-scale, 'face to face' communities

- 2. Generate specialisation and division of labour
 - a) Coordination of firms (subcontracting and putting-out)
 - economies of scale and scope

- Subcontracting (in export-led industries) as a route to craft-based innovation (Lis/Soly)
 - · Production is high skill
 - Guilds have political voice
 - · Guilds are internally differentiated
 - Affluent masters (AM) can
 - access foreign markets
 - evade restrictions on shop size
 - transfer production risk to subcontractees
 - AM have strong incentives to innovate
 - Will (possibly) innovate more than merchant-entrepreneurs (ME)
 - Or, will always innovate, whereas ME will sometimes not
 - Product or process innovation?

b) Clustering and its externalities

• sharing of skilled labour, intermediate goods, information and knowledge

c) Create markets

Overcome asymmetric information

3. Protect and share knowledge

Property rights to invention alternative or complementary to patents and prizes 'secrecy', 'copying' and 'stealing'

4. 'Collective invention and innovation'

Competitive sharing: 'networks of trust' Costs of 'networks of trust'

5. Codify knowledge

Evidence of codification

Writing and drawing: chemical (e.g. glass), building, shipbuilding Model building: 'engineering'

Reasons for codification

Interaction btw 'local knowledges'

Processes of codification

Tracking over time

6. Promote labour mobility

- Journeymen
 - · Pull (economic) stronger than push (training) factors?
 - Formalised from 14th c.; intensifies from late 17th c. · Strong regional and sectoral patterns

· Masters

- Push (instability) stronger than pull factors pre-1648?
- Increasing role of pull factors from 17th c.
- · Entrepreneurs and labour brokers
 - Where? When? How?

- Integration
 - · How are mobile experts integrated into alien communities?
- · Rate of technological diffusion (spillover)
 - Is protectionism effective (Venice, Nuremberg)?
 - what are the key differences across technologies that influence the speed of diffusion?
 - · what are the key cross-country differences in endowments, institutions, and policies that impinge on technology diffusion?

WHEN?

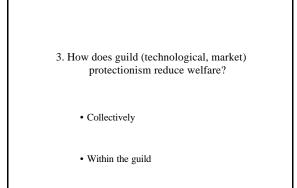
1. Response to exogenous change is shaped by:

• Factorintensity

- Small independent producers will adopt skill enhancing, capital saving innovations; they will oppose deskilling and capital deepening innovations Masters and merchant entrepreneurs will adopt labour saving (and possibly capital deepening) innovations
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- Internal guild structure

 Process innovation will be strong(er) in highly differentiated guilds
 where affluent masters or merchant entrepreneurs have control
- Political context
 - Rent-seeking will prevail in small polities (e.g. city states) where craft guilds have significant influence

- 2. Response can take 4 forms:
- Adoption
- · Skills intensive upgrading
- · Cost-reducing (e.g. substituting low skill for high skill labour, subcontracting)
- Rent-seeking (e.g. blocking entry, raising barriers to trade)



ALTERNATIVES?

- Training 'at home', in face-to-face communities w/ low enforcement costs
- Proto-industry: low skill, capital neutral
- Centralised (manu)factory: mix low/intermediate/high skill, capital intensive