Imperial College London
BUSINESS SCHOOL

Some comments on micro approach paper by Bernd Görzig, Hannu Piekkola and Rebecca Riley, January 2011, INNODRIVE Working Paper No 1.

Jonathan Haskel,
Imperial College Business School, Imperial College London

Innodrive conference, Brussels Feb 2011

Imperial College London
BUSINESS SCHOOL

Congratulations

Imperial College London
BUSINESS SCHOOL

Outline of paper

- Measurement of intangibles
  - ICT. 50% of spending on R&D personnel
  - R&D. 70% of time of all employees “with a technical education” (includes engineers, architects?)
  - Organisation and marketing: 20% of manag/marketing work
  - To get to intang spend, these numbers uplifted by industry factors which multiply labour costs to total costs for each intang. Model in section 4 sets out “internal production function” of intangible capital: the outputs counted traditionally as intermediates, these intermediate inputs are counted with the firm’s capital, labour etc. give rise to assumptions on uplift to labour costs. This gives cost stucture for intangibles
- Purchased not considered. Argued is correlated with own account.

Imperial College London
BUSINESS SCHOOL

Innodrive, central assumptions on firm-specfic labour costs

	ICT	R&D	OC
Invest share of L	0.5	0.7	0.2
point estimate range	(0.4-0.6)	(0.6-0.8)	(0.15-0.25)
Factor multiplier	1.48	1.55	1.76
Combined multiplier (m)	0.7	1.1	0.35
point estimate range	(0.6-0.8)	(0.9-1.2)	(0.26-0.43)
Depreciation rate	0.33	0.20	0.25

From which : $I = m \times WL$,
Deprecation rates, ICT, 33: R&D, 20, OC, 25

K from PIM, opening K interpolated.

Alternative approach: estimate matched e-e model to uplift wages if wages < marginal products

Imperial College London
BUSINESS SCHOOL

Outline, contd

- Then go to macro data and do growth accouting
  - Adjust nominal value added by nominal intangible investment
  - Build factor shares using ex ante returns
  - Results presented in this draft then on shares of org, R&D, ICT invest in value added. They vary across countries:
    - Finland: R&D>Org> ICT
    - UK; Org>R&D>ICT
    - Germany: R&D>Org>ict

Imperial College London
BUSINESS SCHOOL

Model outline, my version

$$Upstream: \Delta \ln N_{it} = \beta_L \Delta \ln L_{it}^N + \beta_K \Delta \ln K_{it}^N + \Delta \ln TFP_{it}^N$$

$$R_t = N_t + (1-\delta_R) R_{t-1}$$

$$Downstream: \Delta \ln Y_{it} = \alpha_L \Delta \ln L_{it}^Y + \alpha_K \Delta \ln K_{it}^Y + \alpha_R \Delta \ln R_{it}^Y + \Delta \ln TFP_{it}^Y$$

Measured

$$\Delta \ln(P_G G / P_{GI}) = \alpha_{1L} \Delta \ln L_{it} + \alpha_{1K} \Delta \ln K_{it} + \alpha_R \Delta \ln(P_R R_{it}^{OWN-AC} / P_{GI}) + t_{it}$$

1. LHS: deflation, output. Matters for econometrics and growth a/c?
2. RHS:
    1. L and K both in N and Y output,
    2. purchased R,
    3. deflation of R,
    4. depreciation of R varies by firm due to obsolescence,
    5. TFP,
    6. mark-ups

Imperial College London
BUSINESS SCHOOL

Comments

- Micro data.
  - Start period Ks very hard on short run of micro data
  - Depreciation varies by firm, as do prices? Mark-ups?
  - Misses purchased
  - Design?
  - Investment time allocations
  - Estimation of the amended multipliers has econometric problems with e.g. omitted prices, mismeasured output etc.
  - Conversion of time assumptions might be wrong/vary by firm
  - Output measures in service sector

- Paper uses micro results in the macro approach
  - What are the growth accounting results? Cost shares set out here.
  - How do the reported cost shares here correspond to official e.g. on software? (ICT shares here about 1-2%. UK software about 3%).
  - Is this the best use of micro data? Linked might be better used to examine econometrically the contributions of such workers to see how their estimated output elasticities compare with intangible theory. Or explore complementarities between “intangible” workers? Firm fixed effects as “intangible human” capital?
  - Strength is comparison of relative wages and relative marginal products. But reflects training?
  - Do extended spending survey?