

# Policy Research from Macro to Micro and Back

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- Policy Questions
- Micro behavior and macro outcomes
- Examples from recent work

# Comparisons of economic performance

- Traditional: Macro timeseries on expenditures, prices, and costs
- Recently: Industry Panels (STAN, EUKLEMS, Eurostat national acct's by industry) or single country micro studies
- Now: CompNet
  - WS 1: detailed productivity, prices and costs
  - WS 2: cross-country indicators (timeseries, moments) built up from firm-level data
  - WS 3: global value chains

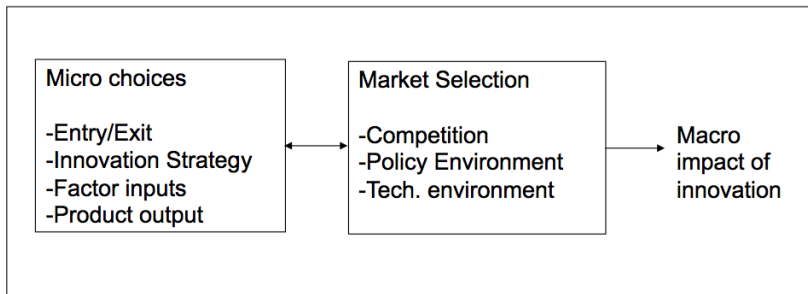
# What is the policy question?

- Choice of method should be preceded by the question asked or the problem to be studied
  - System of National Accounts (SNA) developed by Stone, was geared to signal the Keynesian problem of demand shortfall
  - No clear system of data collection and presentation has been developed to study the Schumpeterian view on the role of firms in cycles and growth
- Macro profession has not (in my opinion) come up with a definitive diagnosis of current economic problems
- So, even basic monetary policy questions may require broad-based indicators (and better theory to guide us...)

- Monetary Policy
  - Potential GDP, Productivity Forecast (Taylor Rule)
  - Resource Bottlenecks (market frictions, price pressure)
  - Financial Fragmentation (see below)
- Structural Economic Policy
  - Trade imbalances
  - Factor Markets (labor frictions, financial markets)
  - Competition, (De)regulation
  - Innovation, R&D, Growth
- ....need performance indicators
  - that identify micro-level behavior and market (sectoral/macro) outcomes

- Microdata econometrics (structural or reduced form)
- Aggregation to country/industry level
  - Cross-country analysis using panel data
  - Model simulation and calibration using moments from firm-level data

# From Micro to Macro



# Macro models with heterogeneous firms

- For Financial Frictions, e.g. Buera and Moll (2012)
  - No need to actually model demand and supply for credit
  - Instead, look for wedges at firm-level (distortions in inputs and/or outputs) which can identify problem of credit constraints
- For Competitiveness: e.g. Melitz et al. (various years)
  - Relative changes in intensive and extensive margins can reveal changes in supply conditions (wages, non-traded inputs), using revealed behavior rather than measurement of price/quality in outputs and inputs.



Based on observation of relative low productivity growth in EU, and variation within the EU:

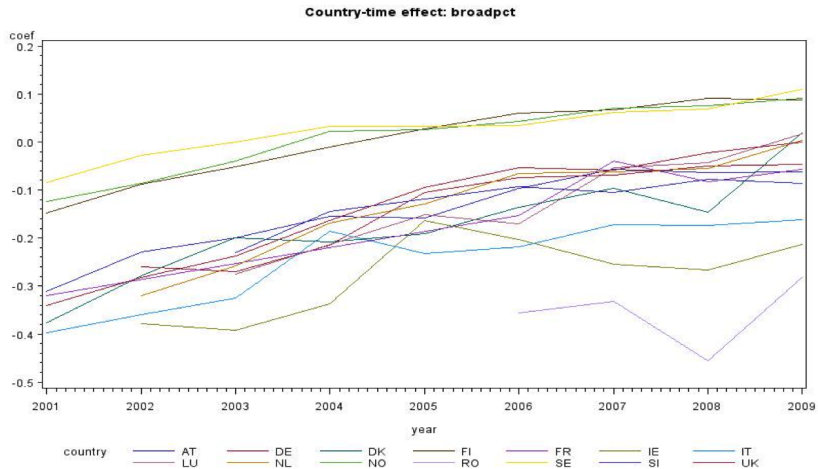
- Does ICT use vary across countries?
- Does this matter for productivity?
- Does it relate to reallocation?
- What can policy do to boost ICT uptake?
- What are implications for future growth?

- 14 countries, 2001-2010
- Data from Production Survey, ICT Usage Survey, Community Innovation Survey
- Common analysis in each country
- Collection of moments from firm-level data to country/industry/time panel

# Variation in ICT usage Across countries

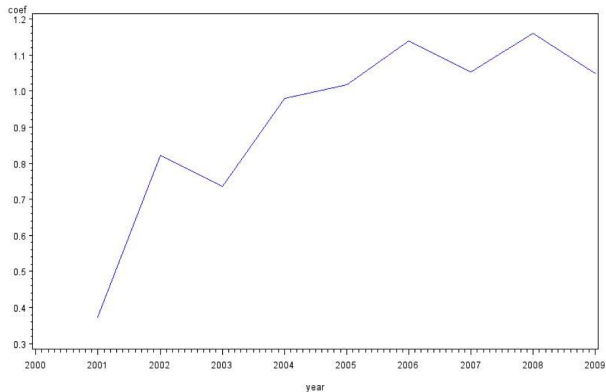
country	ICT	Mfg-x	Svc-x
FI	1	4	1
SE	2	1	2
DK	4	3	3
NO	3	2	4
NL	5	5	5
UK	6	6	6
LU	8	7	7
DE	10	8	9
SI	11	11	8
AT	7	10	10
FR	9	9	11
PL	12	13	12
IT	13	12	13
IE	14	14	15
RO	15	15	14

# ICT usage is still increasing



Source: ESSLimit, ruwt

# ICT impact continues to grow



Source: ESSLimit

Coefficient of productivity on ICT usage

# Some moments to summarize allocation

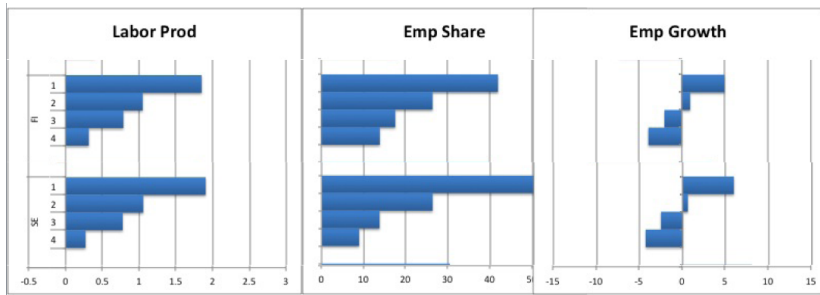
- OP cross-term
  - $\sum_i \theta_{it} \omega_{it} = \bar{\omega}_t + \sum_i (\theta_{it} - \bar{\theta}_t) (\omega_{it} - \bar{\omega}_t)$
  - Aggregate Productivity = average firm-level productivity + cross term
- Standard Deviation of Revenue TFP,  $\sigma_{TFP}$
- Sum of absolute value of market share changes (Churn)

# Moments to summarize allocation

Industry	Country	OP-gap	$\sigma_{TFP}$	Churn
Manufacturing excl. ICT	AT	0.65	0.19	0.13
	DE	0.42	0.85	0.10
	DK	0.08	0.72	0.17
	FR	0.21	0.76	0.13
	IT	0.42	1.00	0.16
	LU	0.41	0.89	0.12
	NL	0.38	0.83	0.13
	NO	0.58	0.97	0.18
	SE	0.49	0.85	0.18
UK	0.32	0.84	0.13	

Source: ESSnet

# Prod and allocation: FI and SE, Mfg x ICT





# Prod and allocation: IT and UK, Mfg x ICT

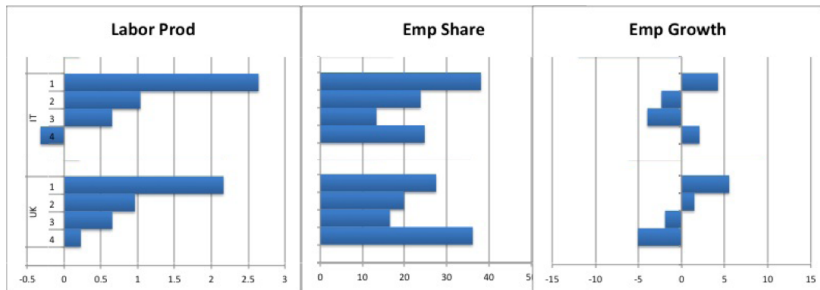


Table : Std. Dev. of firm-level productivity distribution regressed on Broadband intensity

	Levels	First-differences
$\gamma$	0.47 (5.02)	.28 (2.59)
$R^2$	0.52	0.03
D.F.	1180	1021
Fixed effects	ctry, ind, time	ctry, ind, time

$$\sigma_{c,i,t} = \alpha + \gamma BBI_{c,i,t} + FE + \varepsilon_{c,i,t}$$

*FE*: country, industry, time fixed effects

Source: ESSNet

Table : Output Growth Dispersion by ICT intensity

Country	Time Series		Cross Section	
	ICT=0	ICT=1	ALL	ICT=1
DK	.057	.068	.29	.32
FI	.043	.097	.30	.33
FR	.047	.031	.21	.19
NL	.012	.017	.20	.21
NO	.043	.082	.33	.35
SE	.101	.141	.49	.52

Source: ESSnet

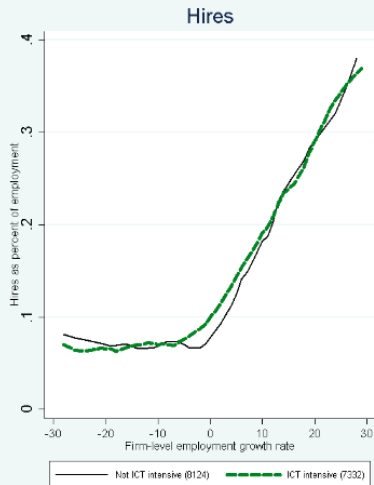
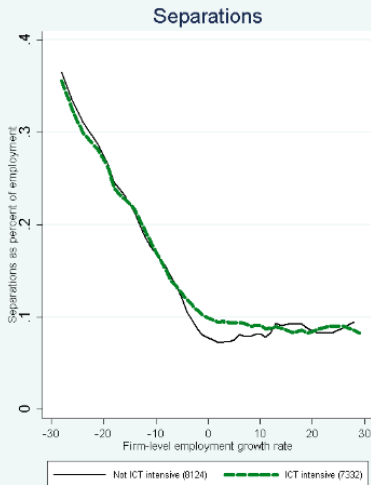
Table : Productivity Growth Dispersion by ICT intensity

Country	Time Series		Cross Section	
	ICT=0	ICT=1	ALL	ICT=1
DK	.037	.044	.23	.24
FI	.036	.079	.25	.27
FR	.040	.034	.21	.18
NL	.016	.019	.22	.24
NO	.031	.070	.32	.35
SE	.039	.067	.33	.37

Source: ESSnet

# ICT Investment: a response to shocks?

Worker flow rates as a function of firm-level growth



No. of observations in parantheses

Measure of ICT intensity: Percentage of employees with broadband ([0,100]). Data source: SSB Banen merged with ICT Bedrijven.

Sector: Manufacturing\_15-37. Entries and exits are accounted for.

# In the long-run: We're all rich

