Productivity Analysis: Cross-country firm-level indicators

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Measurement issues

• Many major measurement issues have emerged in productivity analysis
  • PPPs
  • Price deflators
  • Capital quality
    • Intangibles
    • Depreciation
  • Labor Quality
    • Age, tenure, skills, training (hours)
  • Theoretical/computational methods
Firm-level analysis

• Takes 5 steps backwards
  • No prices, capital proxy, employees, incomplete sector coverage, short time-spans
• And takes a few steps forwards
  • Entry, exit, reallocation
  • Within-firm cycle/growth
  • Understanding/measuring both firm-level levers and environmental factors driving growth

DMD

• Distributed micro data research
  • Allows cross-country analysis using micro data
    • Micro data is confidential, but single country micro-aggregated indicators can be pooled for analysis
    • Provides a platform for evaluation of policy that affects firms, using variation across countries and over time
Data Preparation by NSI

- Nothing that shouldn’t be in place already for producing reproducible/auditable statistics!!
  - How do NSIs prepare aggregate GDP and CPI, when they don’t have micro data in good shape?????
- Linking of individual surveys to ‘backbone’ (BusReg)
- Ensuring consistent industry code for each firm-year and concordance to harmonized industry list
- Linking questions across years in each survey
- Ensuring consistency of response values and mapping variable names to project
  - This could be done by harmonized code, if full machine readable metadata, including domain of question answers, were available

DMD Output Datasets

- Indicators from Production Surveys, E-Commerce Survey or CIS, split by country, industry, year, or other sub-industry splits (size, export status, ICT intensity)
- Industry dynamics, (re)allocation indicators, competition indicators
- Distributional characteristics
UK Productivity by size class
Manufacturing excl computers

ICT usage: No decline
Country-time effects in regression of BroadbandPct
Fixed effects: countryXtime and industry
ICT impact continues

regression of Productivity on ICT Coefficient by year. Fixed effects: c,i,t

Industry Dynamics OP-Gap

Cov(LPQ,Emp), industry avg (x-country weights)
Industry Dynamics: MFP Dispersion

\[
\text{Std(MFP)}
\]

Industry Dynamics: Churn

\[
\text{Sum(abs(Dq_{ij}))}
\]
Productivity Dispersion and ICT

| (d) BroadPct | .47 | .28 |
| t-stat       | 5.02 | 2.59 |
| R-sq         | .52 | .03 |
| N            | 1180 | 1021 |
| Fixed Effects| c,i,t | c,i,t |

Regression of Std(LPV) on BroadbandPct

Growth Dispersion and ICT

Scatter of Interquartile range of output growth on BroadbandPct
**Std-dev Prod Growth (within)**
by firm-level ICT intensity

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**Alternate Cross-Country Methods**

- DWB: Data Without Boundaries
  - EU Financed project with 4 countries
  - Provides funding for researchers to travel
  - Allows replication of results in separate countries
- Remote-access with cross-country access
- Private Sector sources: Amadeus, Orbis
  - How do collection costs compare to NSIs budgets?