# Inequality in Productivity and Access to Capital Markets
# Geography and Finance of Leaders and Laggards
# A note on Italy

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# What is it about?

- Descriptive evidence of leaders and laggards patterns in Italy

- Link to financial structure of firms

- Reduced form estimation of the link between firms access to K markets (proxied by financial development at the provincial level and TFP)

- Implications for Covid 19

# Persistent Pattern of Leaders and Laggards

**Figure 2. TFP levels (a) and time trends (b) for given percentiles of the TFP distribution (2007-2017)**
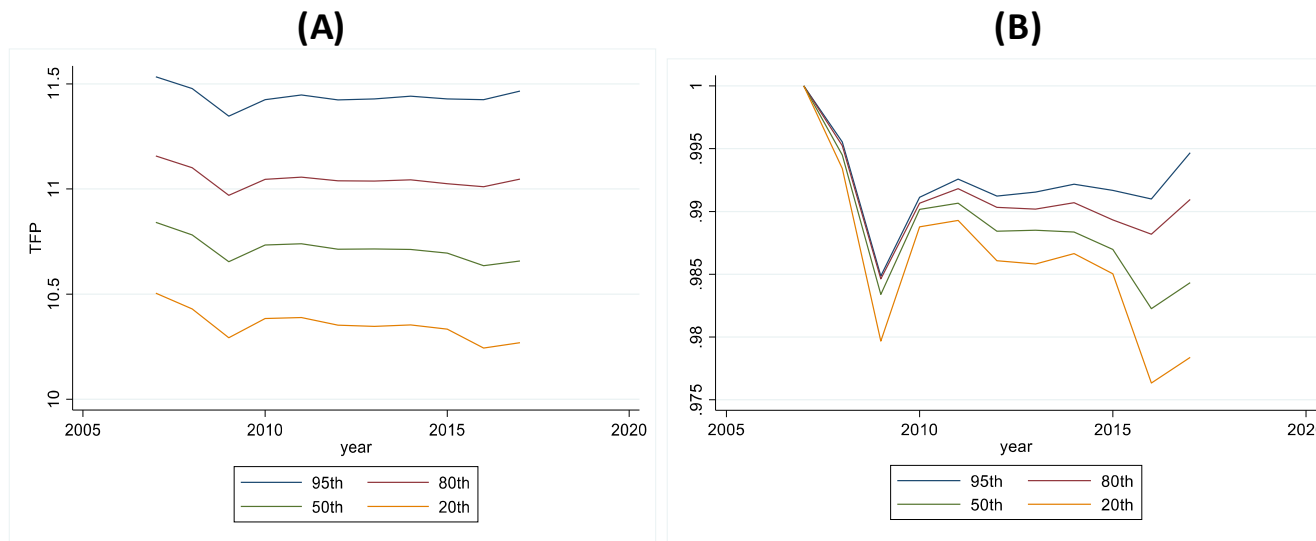


Note: TFP measured using the Wooldridge estimation procedure (see footnote 3)

# Geography Matters:
# Composition of the Population of Firms Different in the Three Macroregions

**Figure 5. Regional distribution of firms ranked by national productivity percentiles (2007-17)**
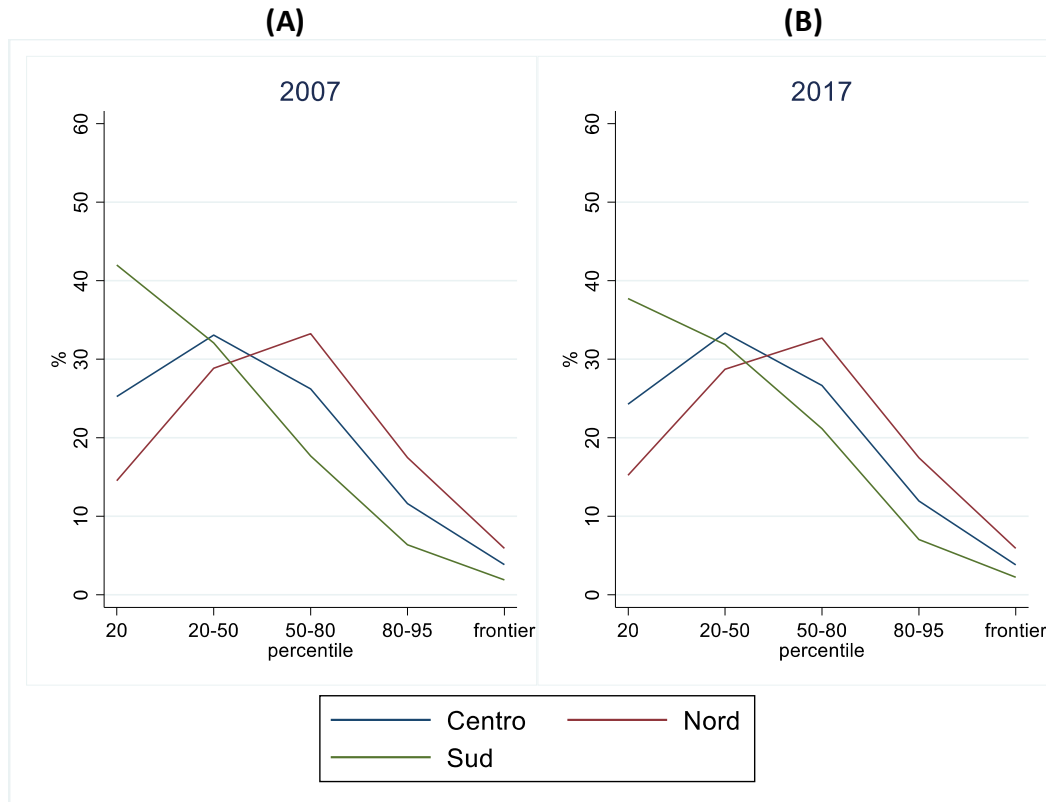
# Upgrading in the core Downgrading in the periphery

Transition Matrix t vs. t-5. Rows = 100

| | | NORTH | | | | |
|---|---|---|---|---|---|---|
| | | **time t** | | | | |
| | | larger 95 | 80-95 | 50-80 | 20-50 | smaller 20 |
| **5 years before** | larger 95 | 44.40 | 37.80 | 12.87 | 3.47 | 1.46 |
| | 80-95 | 10.12 | 42.61 | 34.61 | 9.89 | 2.77 |
| | 50-80 | 1.95 | 15.33 | 49.53 | 27.02 | 6.17 |
| | 20-50 | 0.68 | 5.24 | 28.42 | 48.17 | 17.48 |
| | smaller 20 | 0.60 | 3.72 | 13.97 | 33.74 | 47.97 |
| | | CENTRE | | | | |
| | | **time t** | | | | |
| | | larger 95 | 80-95 | 50-80 | 20-50 | smaller 20 |
| **5 years before** | larger 95 | 36.03 | 39.71 | 17.37 | 4.98 | 1.92 |
| | 80-95 | 10.23 | 37.80 | 35.94 | 12.53 | 3.50 |
| | 50-80 | 1.67 | 13.64 | 45.84 | 31.37 | 7.49 |
| | 20-50 | 0.42 | 3.65 | 21.70 | 53.16 | 21.06 |
| | smaller 20 | 0.41 | 2.31 | 9.52 | 30.29 | 57.47 |
| | | SOUTH | | | | |
| | | **time t** | | | | |
| | | larger 95 | 80-95 | 50-80 | 20-50 | smaller 20 |
| **5 years before** | larger 95 | 33.33 | 36.94 | 20.15 | 6.84 | 2.74 |
| | 80-95 | 8.96 | 34.12 | 36.31 | 15.23 | 5.38 |
| | 50-80 | 1.21 | 10.71 | 42.90 | 35.40 | 9.79 |
| | 20-50 | 0.42 | 2.83 | 16.52 | 52.90 | 27.34 |
| | smaller 20 | 0.18 | 1.31 | 5.65 | 23.05 | 69.80 |

# Firms financial structure and productivity are related

**Table 5 Finance and TFP performance**
**5(A) All country;  5(B) By macro area**

| | TFP | TFP (net markup) | Probability to upgrade at the frontier | Probability to improve by one category | Probability to worsen by one category |
|---|---|---|---|---|---|
| Bank exposure | -0.073*** | -0.057*** | -0.082*** | -0.008*** | 0.020*** |
| | (0.019) | (0.012) | (0.007) | (0.003) | (0.003) |
| Access to capital markets | 0.389*** | 0.163*** | 0.124*** | 0.000 | 0.041*** |
| | (0.046) | (0.029) | (0.026) | (0.012) | (0.012) |
| Leverage | 0.000 | 0.000 | -0.000 | 0.000** | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| R-squared | 0.474 | 0.597 | 0.081 | 0.032 | 0.033 |
| Observations | 489,413 | 458,692 | 489,413 | 489,413 | 489,413 |
| Probability | 10.7 | 10.44 | 0.049 | 0.141 | 0.126 |
| *FE* | | | | | |
| Local labour markets X year | Yes | Yes | Yes | Yes | Yes |
| Industry x year | Yes | Yes | Yes | Yes | Yes |
| Note: Cerved data 2007-2017, Authors' calculations. All regressions control the size of the firm at the beginning of the period. OLS estimation. | | | | | |

# But Core Periphery Patterns Matter

| | TFP | TFP (net markup) | Probability to upgrade at the frontier | Probability to improve by one category | Probability to worsen by one category |
|---|---|---|---|---|---|
| **Bank exposure** | | | | | |
| North | -0.165*** | -0.095*** | -0.102*** | -0.019*** | 0.012*** |
| | (0.008) | (0.009) | (0.006) | (0.002) | (0.002) |
| South | 0.344*** | 0.122*** | -0.002 | 0.044*** | 0.056*** |
| | (0.027) | (0.022) | (0.006) | (0.006) | (0.007) |
| Centre | -0.013 | -0.034* | -0.060*** | -0.002 | 0.026*** |
| | (0.033) | (0.017) | (0.011) | (0.005) | (0.005) |
| **Access to capital markets** | | | | | |
| North | 0.436*** | 0.174*** | 0.163*** | 0.003 | 0.032** |
| | (0.051) | (0.033) | (0.033) | (0.014) | (0.014) |
| South | 0.259* | 0.168 | 0.028 | -0.023 | 0.040 |
| | (0.136) | (0.108) | (0.069) | (0.028) | (0.043) |
| Centre | 0.130 | 0.056 | -0.049* | -0.009 | 0.082** |
| | (0.118) | (0.056) | (0.029) | (0.029) | (0.041) |
| **Leverage** | | | | | |
| North | 0.000 | 0.000 | -0.000 | 0.000*** | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| South | -0.000* | 0.000 | -0.000** | -0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Centre | -0.000 | -0.000 | -0.000** | 0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| R-squared | 0.479 | 0.598 | 0.082 | 0.032 | 0.033 |
| Observations | 489,413 | 458,692 | 489,413 | 489,413 | 489,413 |
| Probability | 10,697 | 10,435 | 0.049 | 0.141 | 0.126 |
| *FE* | | | | | |
| Local labour markets X year | Yes | Yes | Yes | Yes | Yes |
| Industry X year | Yes | Yes | Yes | Yes | Yes |

Note: Cerved data 2007-2017, Authors' calculations. All regressions control the size of the firm at the beginning of the period. OLS estimantion.

# Access to Capital Markets Important

- Diversification of financial sources
- Lower risk of being financially constrained
- Long term capital

Does Core Periphery Matters?
- *Yes*, proximity to financial centers
- *Yes*, role of banks as brokers of information and facilitators of access

Access to capital markets proxied by the financial development of the province.

# Earlier works

- Development of local financial markets and productivity (Guiso et al.2004)

- Local financial markets and access to credit (De Haas, 2016; Benfratello, 2008)

- Access to credit and productivity (Aghion et al. , 2010, Benfratello et al. 2008, Garcia- Macia, 2015; Caggese, 2016; Midrigan & Xu, 2014; Manaresi and Pierri 2018)

- Financial Constraints and Investment in Intangibles (Demmou et al. 2019, Ahn 2019)

- Banks, Access to Capital Markets and SMEs (Barba Navaretti et al 2019)

# Impact of Access to Capital Markets. What do we do?
## 1. New firm specific measure of peripherality

- $D_{ia}$ weighted distance of firm $i$ from the closest airport $a$

- $D_{ia} = (1 - k)\min(airport_a)$

- where $k = \dfrac{passangers_a}{passengersITA(2007)}.$

- Exploit privatization and liberalization of banking market in Italy in 1990

- Construct a time varying measure of financial development, an exogenous proxy for firms' access to capital markets

- Estimate reduced form impact on productivity and probability of being a leader (Bartik instrument, Goldsmith-Pinkham et al. 2019 ).

- Interact proxy with measure of distance

# Privatization and deregulation of Banks First half of 1990s

- Transformation of public commercial and saving banks in joint stock companies
  - In 1990 80% of branches and assets public
  - In 2006 80% of branches and assets private
- Before reforms opening of branches highly regulated
- After reforms branches belonging to either joint stock or mutual banks
- In 1996-98 distribution of banks by province not linked to economic factors

# Province share of branches in 1996-1998 and average TFP growth 2001-17
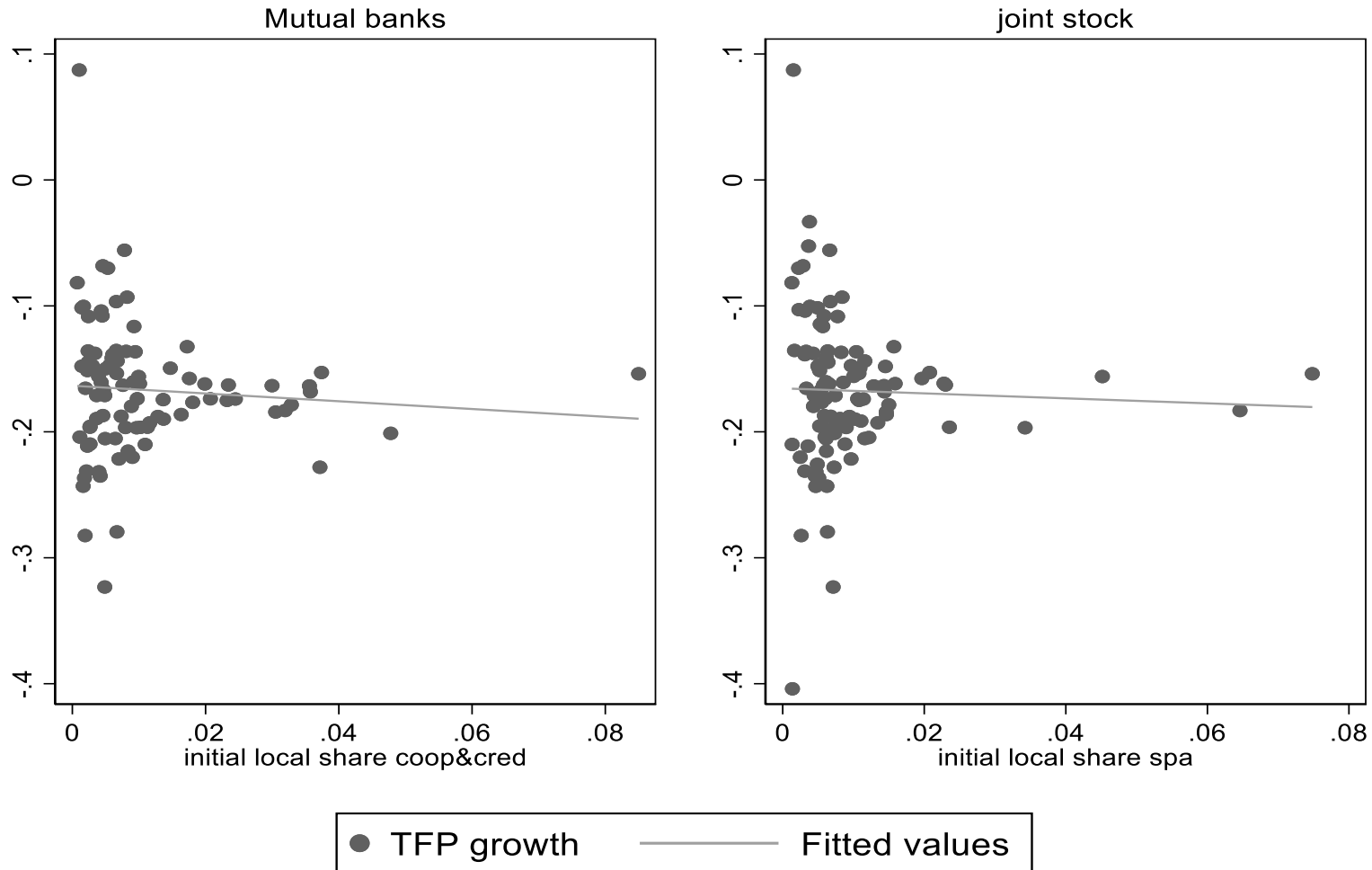
# 1996-2000 Fast growth of joint stock branches

**Total number of banking branches by type**
**(joint stock and mutual 1996-2006)**
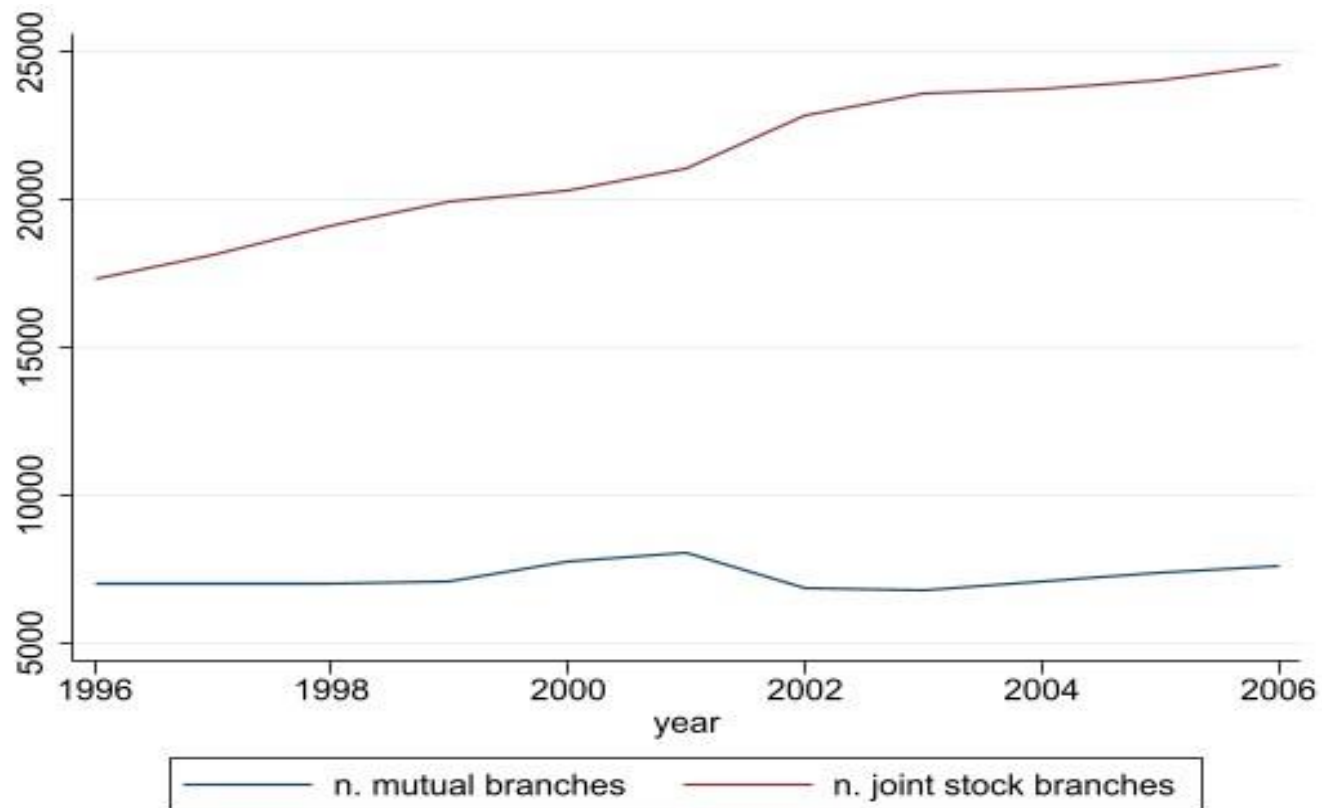
# Access to Capital Markets Instrument

- The measure of financial development :

  $\triangleright$ $SimulBranches_{pt-10} = \sum_J \overline{Share^J_{p,1996-1998}} \times Branches^J_{t-10}$

  $\triangleright$ $\Delta SimulBranches_{pt-10} = \sum_J \overline{Share^J_{p,1996-1998}} \times \Delta Branches^J_{t-10}$

- *Where, Exogenous provincial shares:*

  $\triangleright$ $\overline{Share^J_{p,1996-1998}} = \frac{1}{3}\sum_{t=1996}^{1998} \frac{TotalBranches^J_{p,t}}{TotalBranches^J_t}$

- *Where $Branches^J_{t-10}$* is the national number of branches of type *j* at *t-10*.

# Access to Capital Markets
# Reduced form estimation

- Access, distance and productivity

1. $y_{ipkt} = aD_{ipk} + \beta SimulBranches_{pt-10} + \mu\left(D_{ipk} * \beta SimulBranches_{pt-10}\right) + \delta_i + \gamma_k \times \tau_t + \varepsilon_{it}$

2. $y_{ipkt} = aD_{ipk} + \beta\Delta SimulBranches_{pt-10} + \mu\left(D_{ipk} * \beta\Delta SimulBranches_{pt-10}\right) + \delta_i + \gamma_k \times \tau_t + \varepsilon_{it}$

# Access to Capital Markets IV Estimations Results

| PANEL A: TFP (NET MARKUP) | | | | | |
|---|---|---|---|---|---|
| **Distance** | -0.000 | Distance | -0.001*** | Distance | -0.001*** |
| | (0.000) | | (0.000) | | (0.000) |
| **Lagged log (MLEV)** | 0.029*** | Lagged **MG** | 0.886*** | Lagged **MG2** | 0.539*** |
| | (0.011) | | (0.309) | | (0.201) |
| **Distance* lagged log (MLEV)** | -0.000 | Distance* lagged **MG** | -0.081* | Distance* lagged **MG2** | -0.050** |
| | (0.000) | | (0.043) | | (0.023) |
| **Observations** | 408,962 | Observations | 408,962 | Observations | 408,962 |
| **R-squared** | 0.496 | R-squared | 0.496 | R-squared | 0.496 |
| PANEL B: PROBABILITY TO UPGRADE AT THE FRONTIER | | | | | |
| **Distance** | 0.000* | Distance | -0.000 | Distance | -0.000 |
| | (0.000) | | (0.000) | | (0.000) |
| **Lagged log (MLEV)** | 0.018** | Lagged **MG** | 1.062*** | Lagged **MG2** | 0.623*** |
| | (0.008) | | (0.383) | | (0.215) |
| **Distance* lagged log (MLEV)** | -0.000** | Distance* lagged **MG** | -0.065* | Distance* lagged MG2 | -0.039* |
| | (0.000) | | (0.036) | | (0.021) |
| **Observations** | 435,470 | Observations | 435,470 | Observations | 435,470 |
| **R-squared** | 0.019 | R-squared | 0.019 | R-squared | 0.019 |

Mlev (levels); MG and MG2(growth rates)

Results mostly hold in the North

# Summing up

- Financial development and implicitly access to capital market crucial factor for productivity

- Also geographical peripherality, however measured matters and magnifies the effect of access to capital

# Thoughts on Covid

1. The lesson from the financial crisis is that shocks reinforce divergence between leaders and laggards...

2. Covid also and higher risk of exit of low productivity firms:

    I. Lower resilience

    II. Higher financial vulnerability per se

    III. Higher financial vulnerability because in peripheral markets

    IV. Probably lower digitalisation

3. Good news: Covid less severe in the periphery during first wave, but lockdown equally binding everywhere