"Banking Barriers to the Green Economy"

by Hans Degryse, Tarik Roukny, and Joris Tielens

Discussion by:

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Climate Change: Economic Impact and Challenges for Central Banks and the Financial System

Summary

- The more homogeneous the banking market is in a sector

    => the more banks profit maximization encourages supporting legacy firms from disruption

    => the less innovation is supported in the form of credit to entrants

- Incredibly important story.
- A very European story in:
    i. the central role of banks
    ii. markets (countries) with regional barriers / dominant player advantages
    iii. concentration of banking markets

Comments on positioning research relative to what matters & research
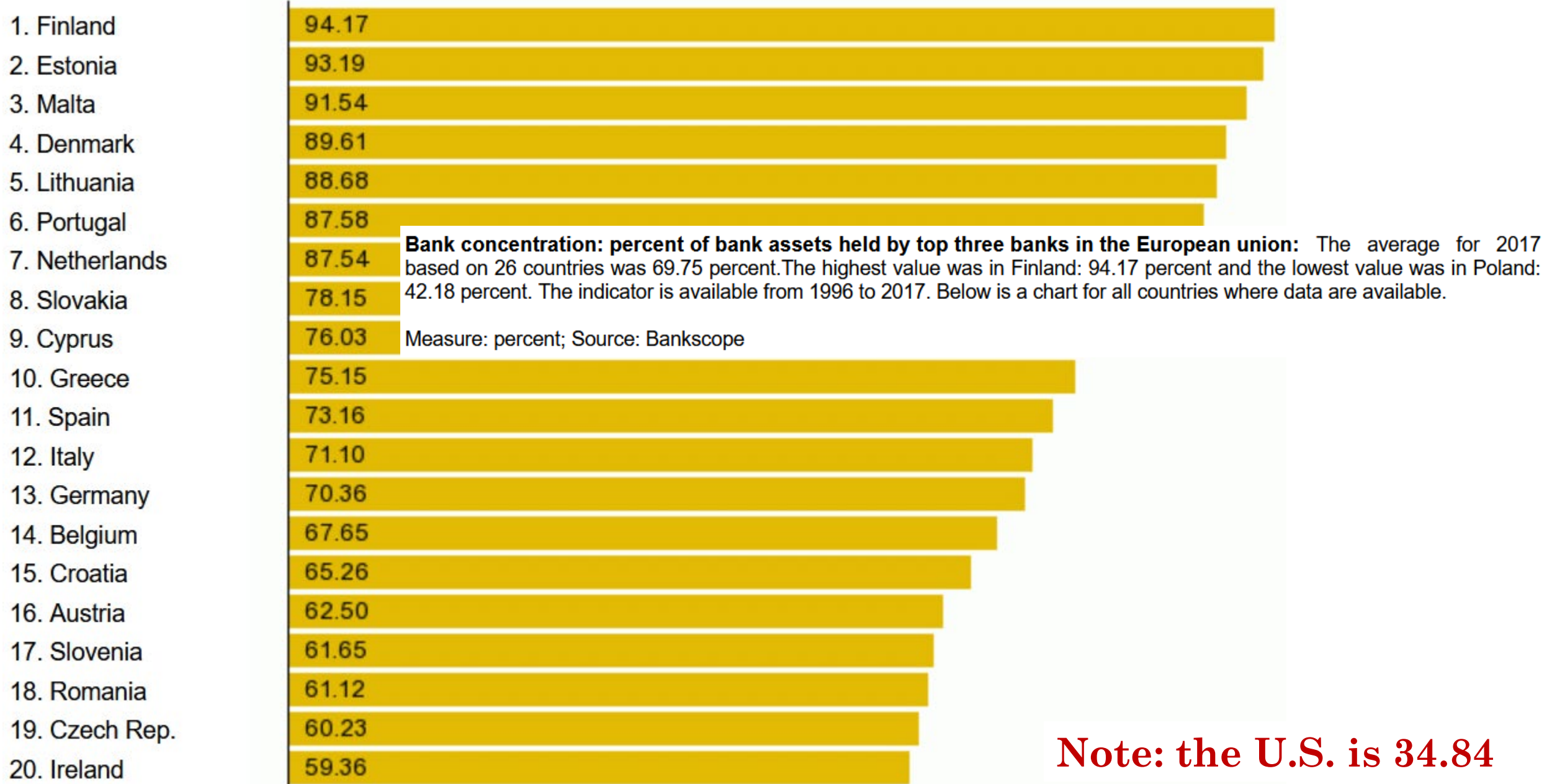
Concentrated bank market vs homogenous banks

The abstract and intro language blur concentration with homogeneity.

- The theory and empirical results are really about **homogenous banks** in a market dominated by them.
- Or perhaps, the **lack of a non-homogenous bank**.
  - In the result I saw, the results do not hold for concentration
    - I would not put them both in the estimation at the same time – competing for variation

This notion of not having heterogeneity is new (I think)…

- Are banks as homogeneous as they are concentrated in the cross section of Europe?
- Authors should emphasize, not mask with blurring with concentration
  - **What is the scope of the problem beyond the Belgium market?**
  - **What are the implications in aggregate? .. blown up to which markets?**

Concentration of top 3 banks in 20 most concentrated EU countries

1. Finland	94.17
2. Estonia	93.19
3. Malta	91.54
4. Denmark	89.61
5. Lithuania	88.68
6. Portugal	87.58
7. Netherlands	87.54
8. Slovakia	78.15
9. Cyprus	76.03
10. Greece	75.15
11. Spain	73.16
12. Italy	71.10
13. Germany	70.36
14. Belgium	67.65
15. Croatia	65.26
16. Austria	62.50
17. Slovenia	61.65
18. Romania	61.12
19. Czech Rep.	60.23
20. Ireland	59.36

Bank concentration: percent of bank assets held by top three banks in the European union: The average for 2017 based on 26 countries was 69.75 percent. The highest value was in Finland: 94.17 percent and the lowest value was in Poland: 42.18 percent. The indicator is available from 1996 to 2017. Below is a chart for all countries where data are available.

Measure: percent; Source: Bankscope

Note: the U.S. is 34.84

Additional Importance

- The EC/EU and European governments are leading rest of the world in looking to finance to achieve goals in climate change mitigation through legislation, support for research, and direct finance.
  - Achievements: impressive and game-changing.
    - eco-labeling
    - encouraging long-horizon considerations of sustainability
    - taxation
  - Additional voices argue for monetized disclosure that puts a monetary term on income statement items in terms of impact-adjusted cost or income
- **Yet:** The $31 trillion of sustainable investment is overwhelmingly not additionally. It's not creating much new investment.
- Customer demand may shift some with further disclosure, but there is a limit.
- Taxation may help where taxes are politically feasible.

Additional Importance

- The lacking piece is innovation
  - Europe leads in process innovation breakthroughs
  - But climate change mitigation is also about "entrant" innovation, "California style".
    (Tangent: Larger point – Engage with U.S. innovation ecosystem)

  - That makes this paper even more important
  - Europe does not run off a equity/VC- based system of innovation

  - The results suggest that the banking system is hindering the innovation needed to make progress on climate change.

Reinforcement of that point about entrants

- "Firm Boundaries Matter: Evidence from Conglomerates and R&D Activity" Amit Seru
  - Conglomerate form stifles innovation

- "Do unions affect innovation?" Daniel Bradley, Incheol Kim, and Xuan Tian (Management Science forthcoming)
  - Unionization causes declines in innovation. Me: role of maturation?

- Private pre-IPO firms vs public firm status matters for lending for innovation
  - "Does Banking Competition Affect Innovation?" Jess Cornaggia, Yifei Mao, Xuan Tian, Brian Wolfe
  - "Does Going Public Affect Innovation?" Shai Bernstein
  - <u>Punchline</u>: Innovation declines after IPO, and banking competition enables lending for innovation in private sectors.

Idea of Innovation being Stifled – US Style

- "Killer Acquisitions" Colleen Cunningham, Florian Ederer, Song Ma
  - Incumbent firms may acquire innovative targets solely to discontinue the target's innovation projects and preempt future competition

- "Catering Innovation" Xinxin Wang
  - Acquirer market concentration decreases inventors' propensity to become entrepreneurs
  - Acquirer concentration increases technological overlap with potential acquirers.

- "Kill Zone" Sai Krishna Kamepalli, Raghuram Rajan, Luigi Zingales
  - The prospect of an acquisition by the incumbent platform undermines early adoption by customers, reducing prospective payoffs to new entrants.

Comments on paper details

Theory Comment: Collusion?

Collusion vs smallest bank incentive

- I read the story and keep looking for the word collusion
  - Maybe that is the wrong instinct
- Banks "coordinate" over a host of things – syndication, policy stances, creating frictions and/or solutions to technology innovation, hold up on adoption

In authors' model, the lowest bank plays a key role in not giving the entrant a loan

- But there is always a lower bank, even if not modeled
- Perhaps more natural to think of this setting as collusion?

- The distinction matters for policy

Estimating Equation

$$GrowthInnovLending_{s,t} = \alpha ExcessGHG_{s,t-1} + \beta \Delta B4_{s,t-1} + \gamma ExcessGHG_{s,t-1} * \Delta B4_{s,t-1} + controls + \delta_s + \delta_t$$

Best lending growth measure:
- Credit growth as new loans to firms under age 5
- Mean 0.0297   Median 0.222 across 197 sector-time observations

Results

The main result
- Credit growth to entrants is statistically lower ("hindered")
  - in sectors with homogeneous banks (low $\Delta B4$) that also have a high stake to firms with legacy technologies (high excess GHG greenness)

Covariates	Credit growth new loan firm age 5 (1)	Credit growth new loan firm age 5 (3)
$\Delta B4_{s,t-1}$	0.023 (0.023)	0.024 (0.023)
$\Delta^{mean}_{s,t-1}$ / $\Delta^{median}_{s,t-1}$	0.00003 (0.00003)	0.0001 (0.00004)
$\Delta^{mean}_{s,t-1} \times \Delta B4_{s,t-1}$ /	0.0001** (0.0001)	0.0002*** (0.0001)
$\Delta^{median}_{s,t-1} \times \Delta B4_{s,t-1}$		

Estimating Equation

$$GrowthInnovLending_{s,t} = \alpha ExcessGHG_{s,t-1} + \beta \Delta B4_{s,t-1} + \gamma ExcessGHG_{s,t-1} * \Delta B4_{s,t-1} + controls + \delta_s + \delta_t$$

<u>Omitted variable</u>: Anything that is causing sector-year growth in entrant lending that is correlated with the banking distribution of clients in industries Belgium that happen to also be lagging the EU in GHG

- Historical bank distribution in agrarian vs industrial society could be at play
- Industries that Belgium has had an continuing competitive advantage in "brown" production techniques
- Many others possible

- Point: Hard to make the "hinder innovation" claim (my terminology) vs "consistent with hindering. But authors should focus efforts herein. It's important.

Empirics Suggestion 1: Can you make progress on causation by disaggregating?

Why not follow this main result with estimations at the bank-sector-time level?

- Using all banks, not just 4?
- Authors: "sector-year analysis mimics our theory"

- Theory is guidance here, but big assumptions about the limit of banks and outside options for entrants that could be loosened in the emprics

- Why?
- Do within analysis so that omitted variables of historical bank relationship with sectors can be absorbed
- This also allows for an estimation based on changes in ExcessGHG patterns

Empirics Suggestion 2: Dependent Variable

$$GrowthInnovLending_{s,t} = \alpha \text{Excess}GHG_{s,t-1} + \beta\Delta B4_{s,t-1} +$$
$$\gamma \text{Excess}GHG_{s,t-1} * \Delta B4_{s,t-1} + controls + \delta_s + \delta_t$$

Best lending growth measure: Credit growth as new loans to firms under age 5
  • Mean 0.0297   Median 0.222 across 197 sector-time observations

Second best lending growth measure: # New loans to firms under age 5
  • Mean 380   Median 194

  • Need to decide if sticking to an innovation story. If so (which I think is best):
    • Use these two variables only in main table
    • Estimate new loans count in negative binomial
    • Label other credit growth variables in a placebo table

Empirics Suggestion 3: GHG Variables

$$GrowthInnovLending_{s,t} = \alpha ExcessGHG_{s,t-1} + \beta \Delta B4_{s,t-1} +$$
$$\gamma ExcessGHG_{s,t-1} * \Delta B4_{s,t-1} +$$
$$\lambda_1 GHG_{s,t-1} + \lambda_2 GHG_{s,t-1} * \Delta B4_{s,t-1} + \lambda_3 HHI_{s,t-1} +$$
$$\lambda_4 HHI_{s,t-1} GHG_{s,t-1} + \lambda_5 HHI_{s,t-1} \Delta B4_{s,t-1}$$
$$+\delta_s + \delta_t$$

ExcessGHG
- Measured in a GHG/value deviation from EU mean or median
- Of course that varies widely by sector
- Authors control for emissions level, but hugely skewed and the interaction effect has a strange relationship to that control
- Better to estimate in percentage change to parallel dependent variable and not get results just as a collinear bounce effect off the small sample interactions

Empirics Comment 4: Concentration Variables

$$GrowthInnovLending_{s,t} = \alpha ExcessGHG_{s,t-1} + \beta \Delta B4_{s,t-1} +$$
$$\gamma ExcessGHG_{s,t-1} * \Delta B4_{s,t-1} +$$
$$\lambda_1 GHG_{s,t-1} + \lambda_2 GHG_{s,t-1} * \Delta B4_{s,t-1} + \lambda_3 HHI_{s,t-1} +$$
$$\lambda_4 HHI_{s,t-1} GHG_{s,t-1} + \lambda_5 HHI_{s,t-1} \Delta B4_{s,t-1}$$
$$+\delta_s + \delta_t$$

$\Delta B4$ = market share of #1 minus market share of #4 bank
- Isn't this highly correlated with HHI?
- I don't understand controls