Market Power, Business Dynamism and Structural Change in the UK

Seven Facts from Firm-Level Survey Data, 1998-2019

Russell Black [1,3] Joel Kariel [2] Jakob Schneebacher [2,3]

[1]Office for National Statistics [2]Competition and Markets Authority [3]King's College London

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Outline

Motivation

- Concern about rising market power and falling business dynamism.
- **Many different theories** seek to explain these trends.
- Concern about **rising market power** as measure by price-marginal cost markups (De Loecker, Eeckhout, and Unger, 2020; De Loecker and Eeckhout, 2021).
  - Note: debate about measurement and econometric approaches (Traina, 2018; Flynn, Traina, and Gandhi, 2019; Bond et al., 2021).
- **Declining business dynamism** (Decker et al., 2016; Akcigit and Ates, 2021)
  - Causal link to markups? In which direction? Both driven by something else?

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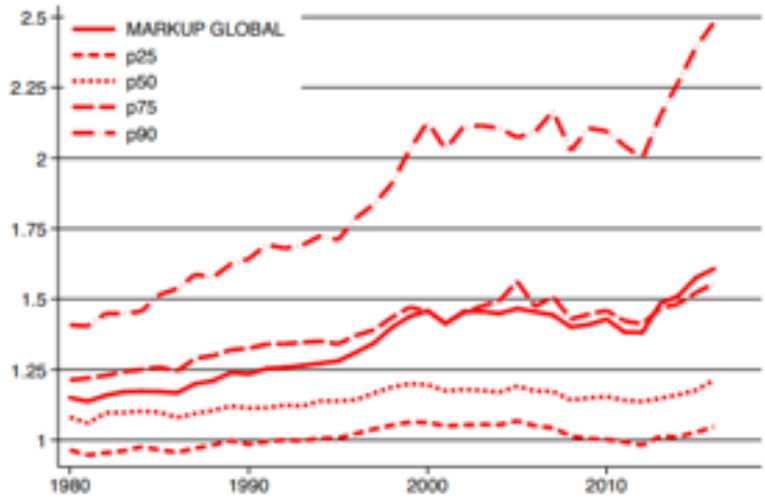
This Paper

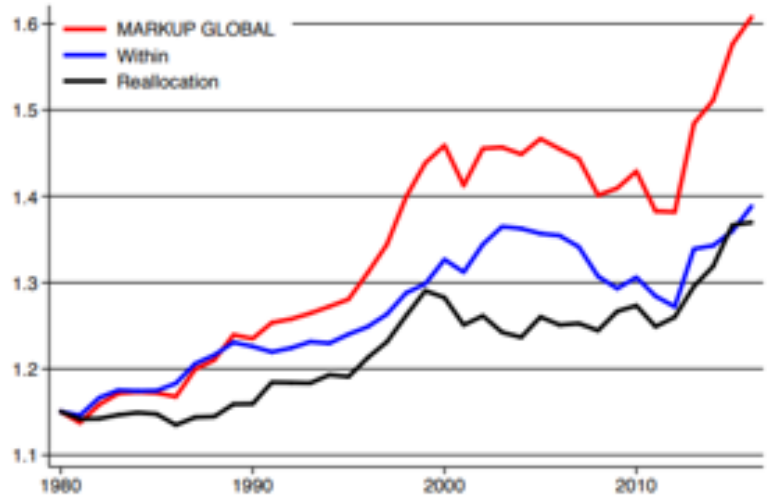
What's happened to UK competition?

1. Documents seven stylised facts in the UK using firm-level data.
2. Highlights the cross-sectional variation which can help unpick mechanisms and sort through competing theories.
3. Compares our UK evidence to 'grand theories' which have often relied on U.S. trends.

Rising Markups



(a) Revenue weighted distribution: Percentiles

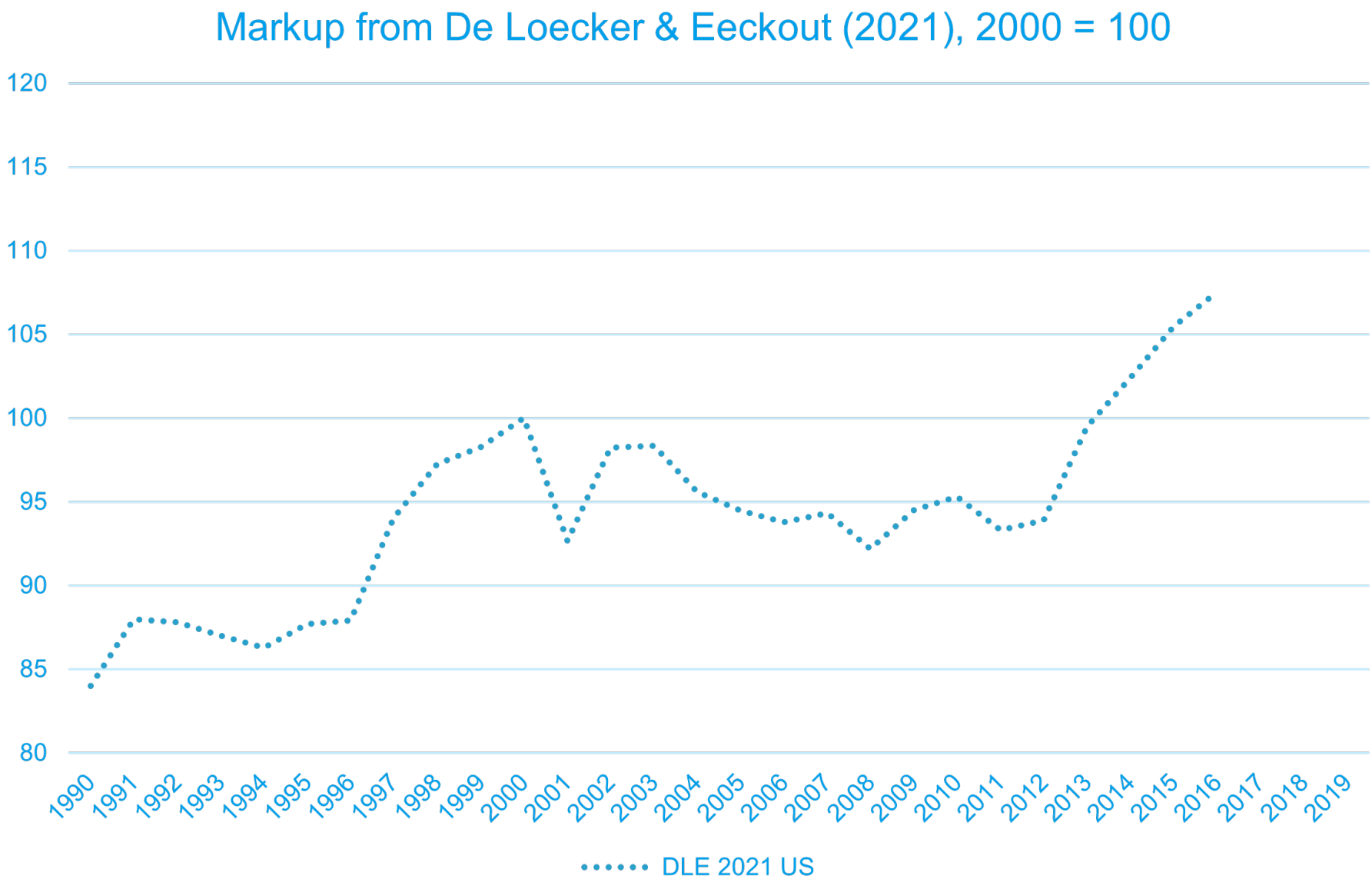


(b) Decomposition of markups

Figure 4: The Change of the Revenue Weighted Distribution of Markups

Figure: From De Loecker and Eeckhout, 2021: markups increasing globally, based on data from listed companies.

To what extent is this true for the UK?



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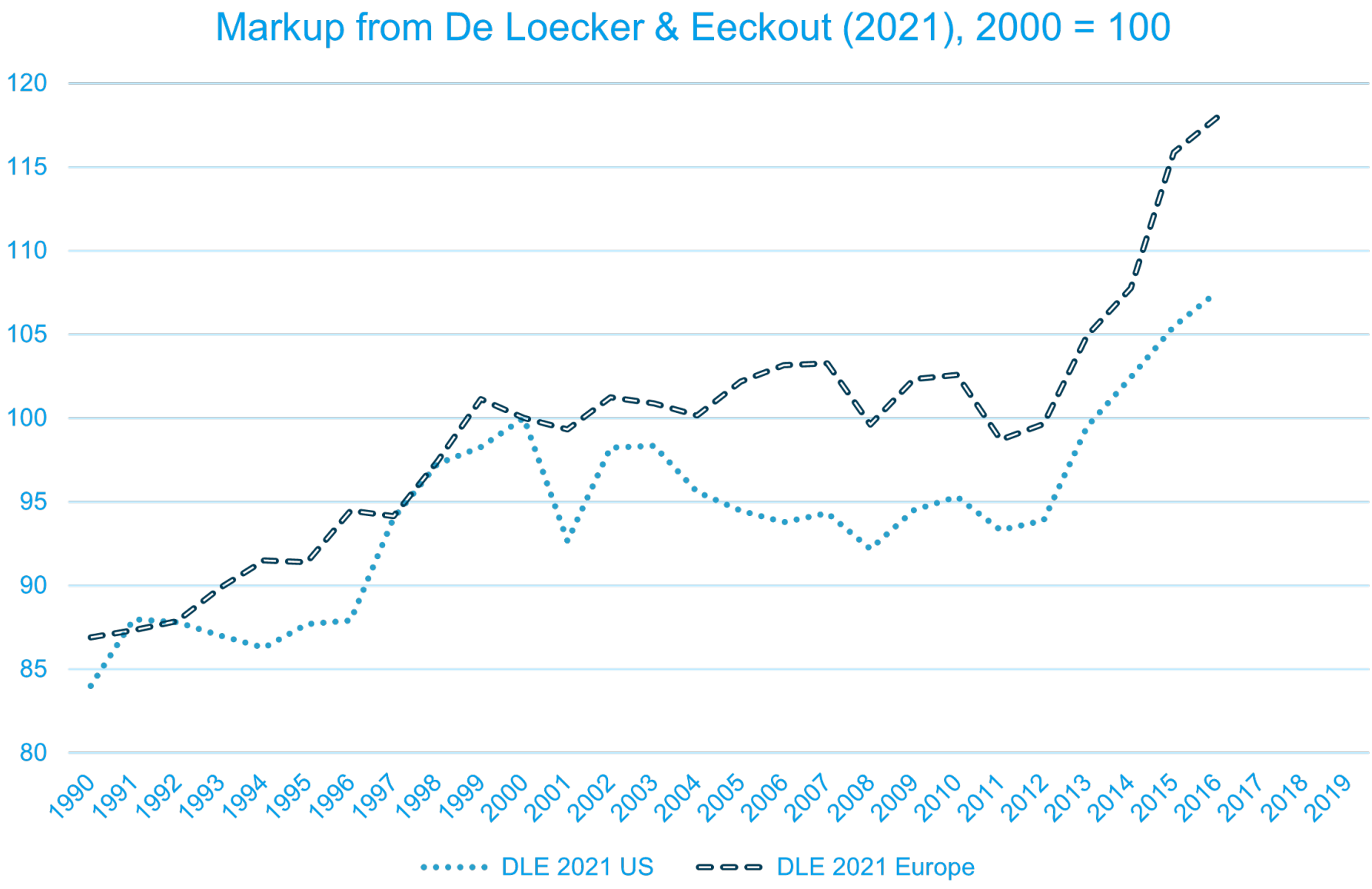

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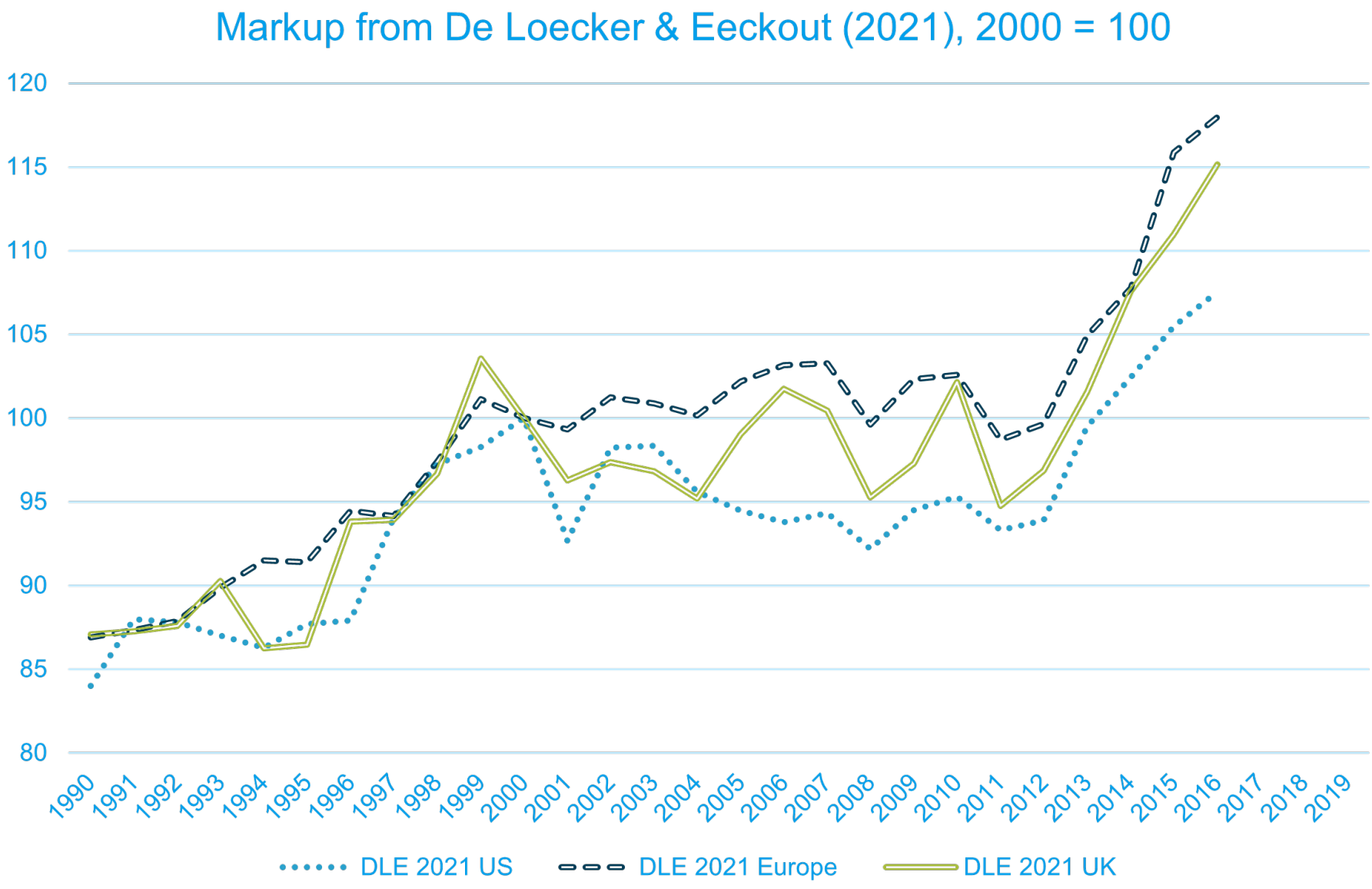

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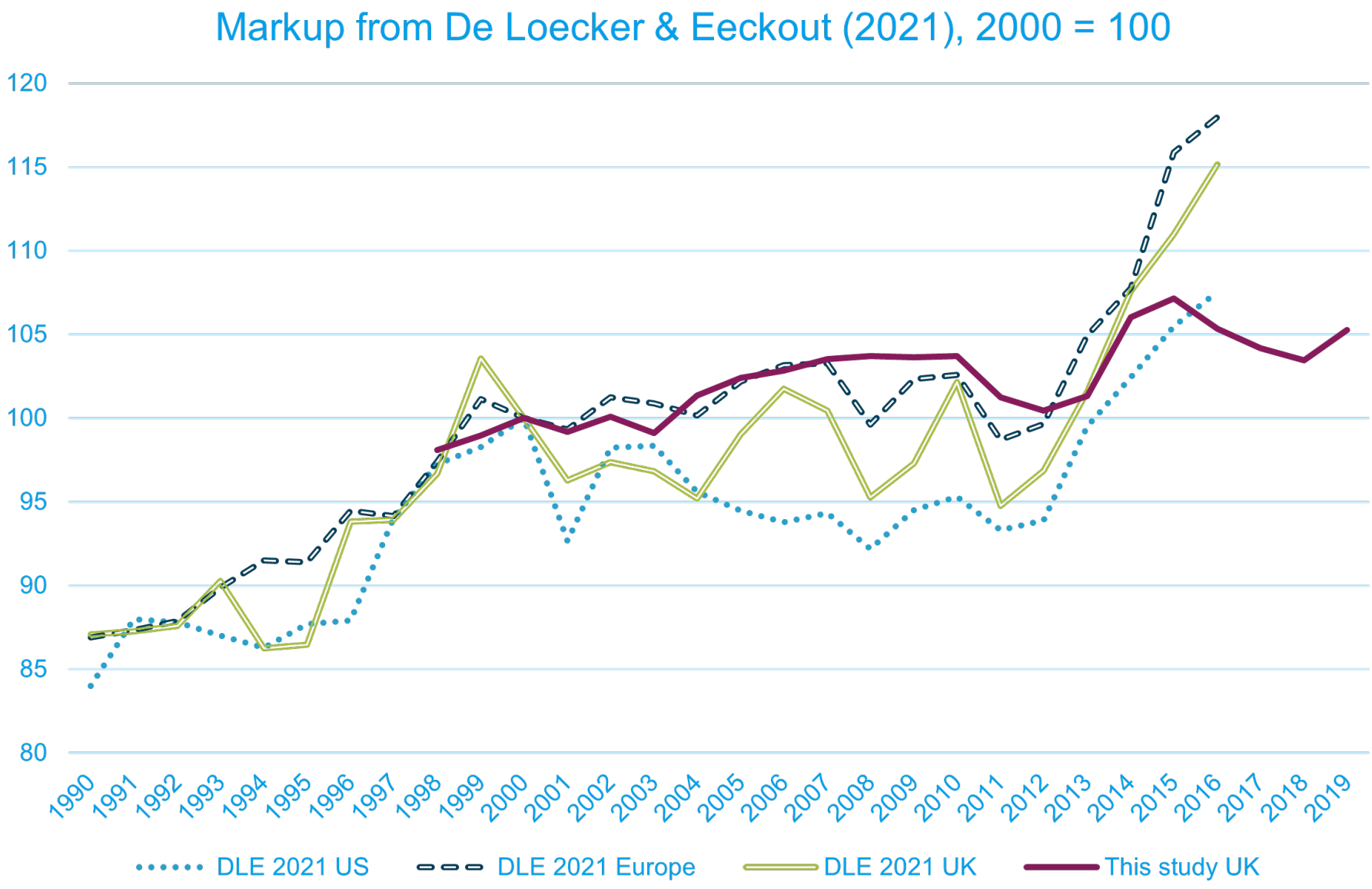


Many Competing Theories

Some are interconnected!

- Intangible investment (De Ridder, 2023).
- Lack of ideas & innovation (Bloom et al., 2020; Park, Leahey, and Funk, 2023).
- Changing firm innovation distribution (Olmstead-Rumsey, 2019).
- Low interest rates (Liu, Mian, and Sufi, 2022).
- Winner-takes-all dynamics due to globalisation (Autor et al., 2017; Van Reenen, 2018).
- Weakening antitrust (Baker, 2019; Cao and Zhu, 2021).
- Role of platforms (Baker and Scott Morton, 2018).
- ICT raising economies of scope/scale (Aghion et al., 2019; Kariel and Savagar, 2023).

Outline

Data

- Annual Business Inquiry (ABI) 1998 - 2008 & Annual Business Survey (ABS) 2009 - 2019.
- Approximately 50,000 businesses surveyed each year.
- Census of large businesses (employing approximately 10m workers), and stratified survey of smaller businesses.
- Covers around two thirds of gross value-added.
- We use sales, value added, labour (# employees), materials and investment.
- Construct capital stock using the perpetual inventory method from firm-level investment data.

Coverage

- Firms drawn from IDBR (i.e. large enough to be in VAT or PAYE).
- Non-farm, non-finance business economy (SIC07):
  - Excludes farms within section A (agriculture, forestry & fishing).
  - Excludes all of section K (finance & insurance).
  - Excludes all of section O (public admin & defence).
  - Excludes government components of P (education) and Q (health), but includes non-profits (e.g. includes universities).
- Great Britain (excludes NI) $\rightarrow$ not comparable to National Accounts, which are comprehensive.

Outline

Production Approach

- We estimate production functions at the 2-digit level.
- We regress gross output on capital, labour, and intermediate inputs.
- Cobb-Douglas:

$$\ln y_{it} = \beta_k \ln k_{it} + \beta_\ell \ln \ell_{it} + \beta_m \ln m_{it} + \epsilon_{it}$$

- Translog:

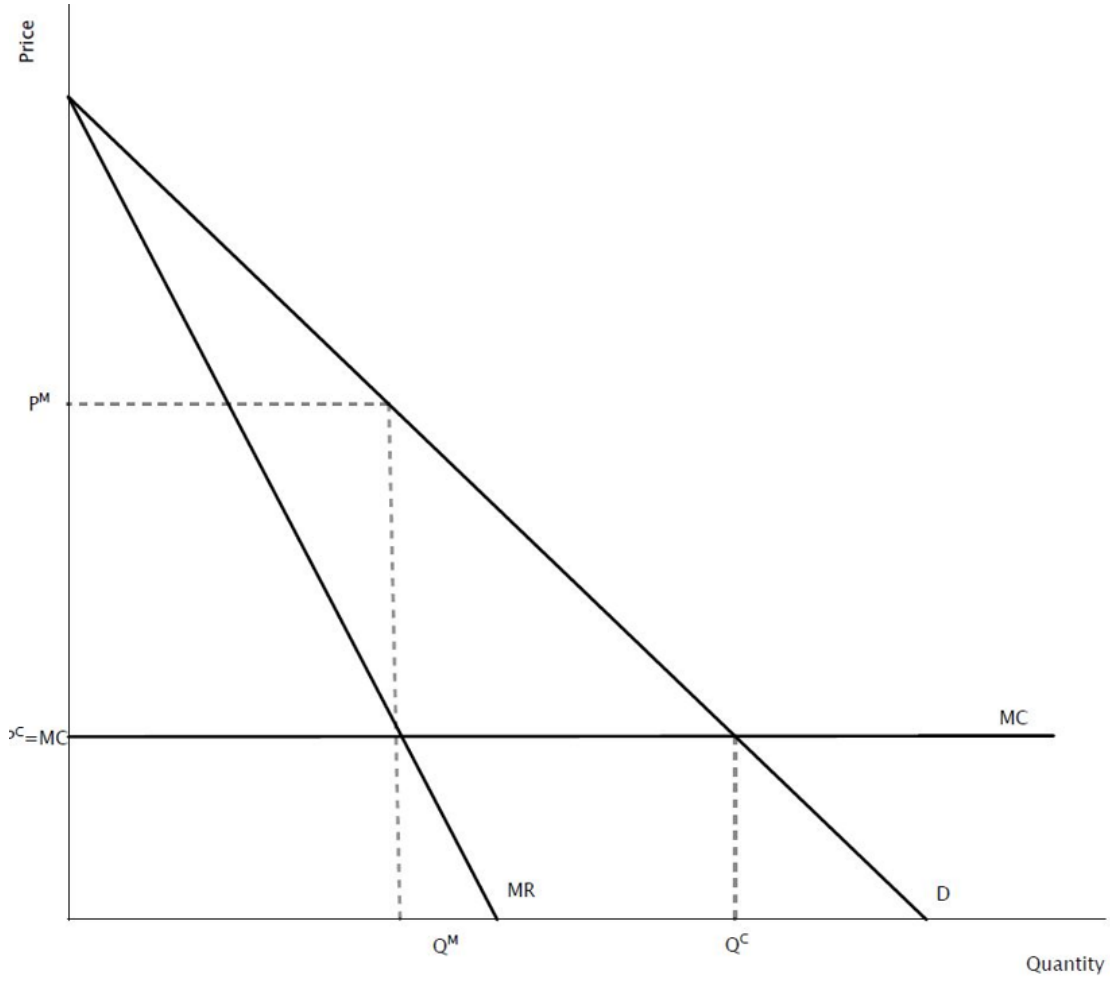
$$\begin{aligned}\ln y_{it} = {} & \beta_k \ln k_{it} + \beta_\ell \ln \ell_{it} + \beta_m \ln m_{it} \\ & + \beta_{kk} \ln k_{it}^2 + \beta_{\ell\ell} \ln \ell_{it}^2 + \beta_{mm} \ln m_{it}^2 \\ & + \beta_{k\ell} \ln k_{it}\ell_{it} + \beta_{m\ell} \ln m_{it}\ell_{it} + \beta_{km} \ln k_{it}m_{it} + \epsilon_{it}\end{aligned}$$

An Aside on Unobserved Productivity

- Not controlling for productivity $\rightarrow$ classic omitted variable bias.
- To deal with this, control function methods are popular.
- We find these approaches don't really change the picture.
- Such methods introduce added complications, can produce nonsensical results, and rely on strict assumptions (e.g. Markov process for productivity; specific timing of firm choices; monotonic & invertible relationship between productivity & proxy variable).
- We interpret the residual as firm-level productivity.

What's a Markup?

$$\mu = \frac{P}{MC} \geq 1$$



Markup Estimation

Following De Loecker and Warzynski (2012) and a large subsequent literature, we obtain markups by:

1. Assuming cost-minimising firm behaviour: $P_{it}^{m} = \lambda_{it} \frac{\partial F_{it}}{\partial m_{it}}$.
2. The markup is the output price divided by marginal cost:

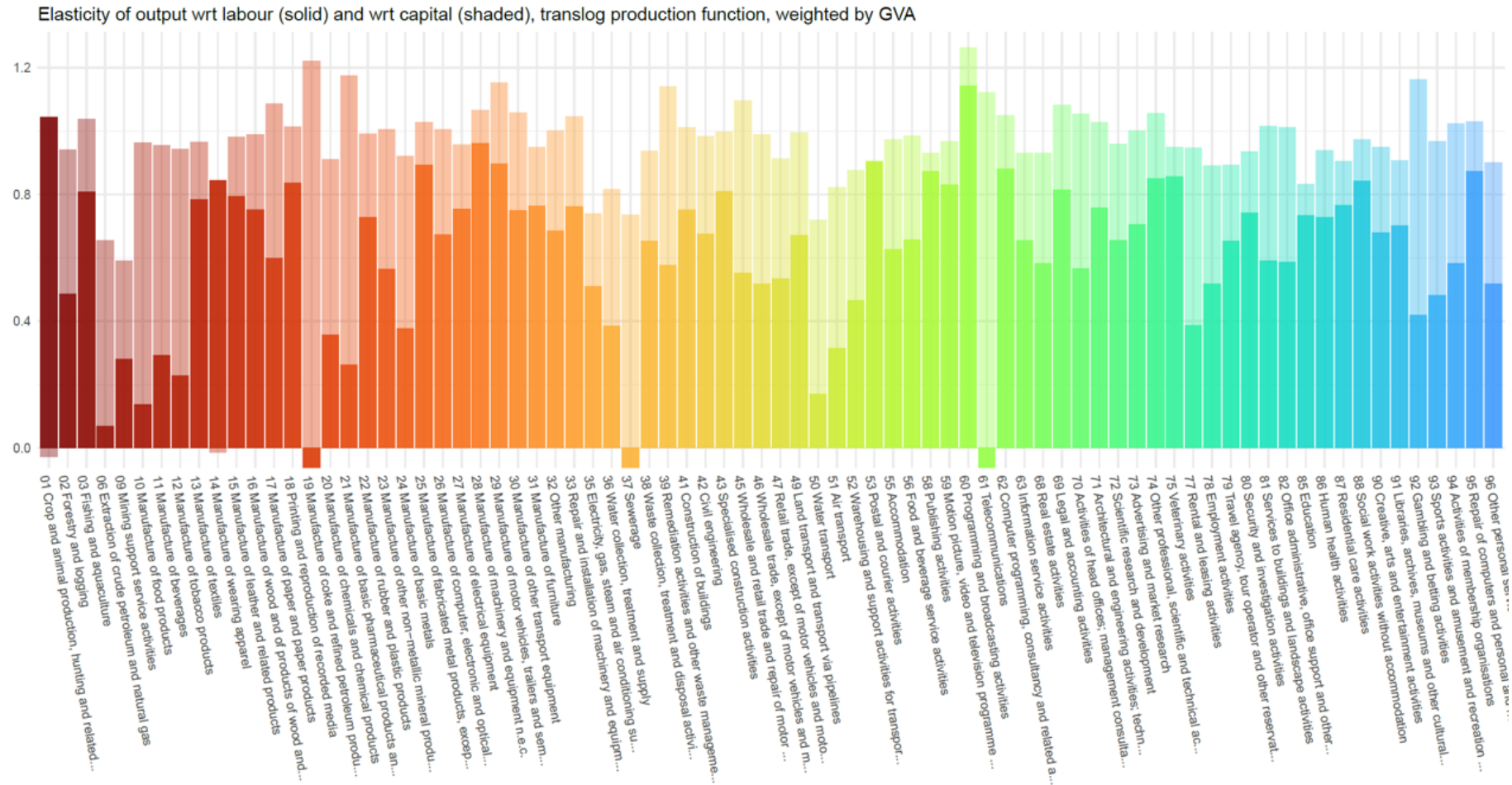
$$\mu_{it} = \theta_m (\alpha_{it}^{m})^{-1}$$

$\theta_m = \frac{\ln \partial F_{it}}{\ln \partial m_{it}}$ is the output elasticity with respect to the material input.
$\alpha_{it}^{m} = \frac{P_{it}^{m} m_{it}}{P_{it} Y_{it}}$ is the materials expenditure share in revenue.

Outline

Estimated Elasticities

Translog



Declining Business Dynamism

Table 2: Quarterly job creation and destruction rates by intensive and extensive margins

	1999-2007	2011-2019	Change
Job Creation	**5.12%**	**4.82%**	**-0.31%**
Entry	1.31%	1.12%	-0.20%
Continuers, growing	3.81%	3.70%	-0.11%
Job Destruction	**4.71%**	**4.37%**	**-0.34%**
Exit	1.36%	0.74%	-0.62%
Continuers, shrinking	3.35%	3.63%	0.27%
Net Effect	**0.41%**	**0.45%**	**0.04%**

Source: Office for National Statistics – Inter-Departmental Business Register (IDBR)

Productivity Slowdown

Average annual contribution to labour productivity growth

	1999-2007	2011-2019
Total productivity growth (national accounts[1])	1.98%	0.77%
Total productivity growth (ABS)	2.30%	1.38%
Total growth contrib. from reallocation (ABS)	1.37%	0.39%

[1] output per worker, removing public sector & finance, matching ABS coverage.

Sectoral Productivity Slowdown

Average annual contribution to labour productivity growth

Annual Business Survey	1999-2007	2011-2019
Total productivity growth	2.30%	1.38%
Total growth contrib. from reallocation	1.37%	0.39%
Manuf. productivity growth	-1.68%	-0.76%
Manuf. growth contrib. from realloc.	-0.14%	-0.04%
Non-fin. services productivity growth	2.37%	1.68%
Non-fin. services growth contrib. from realloc.	1.34%	0.42%

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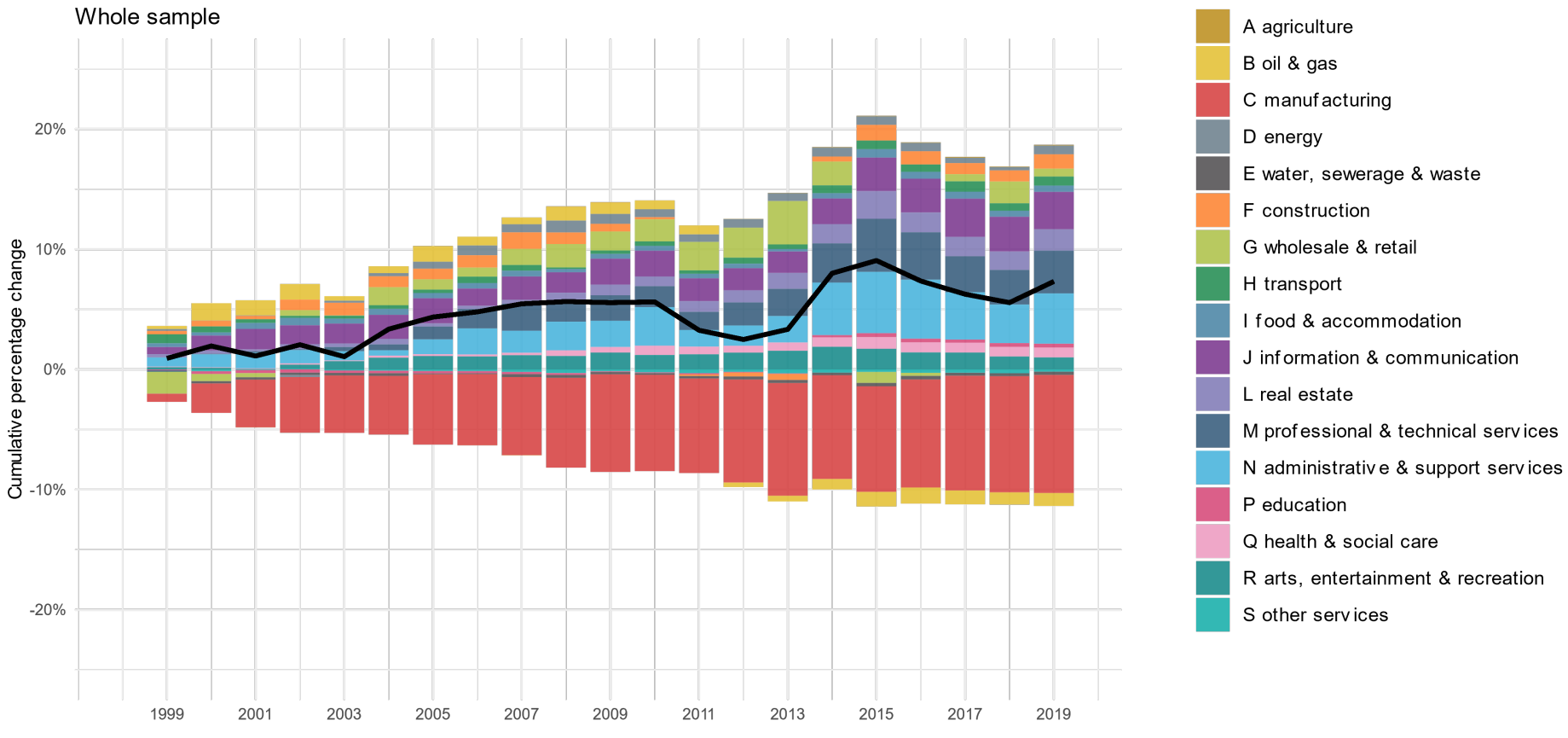
Fact #1: Markups Rising in the UK

Fact #2: Pulled down by Manufacturing

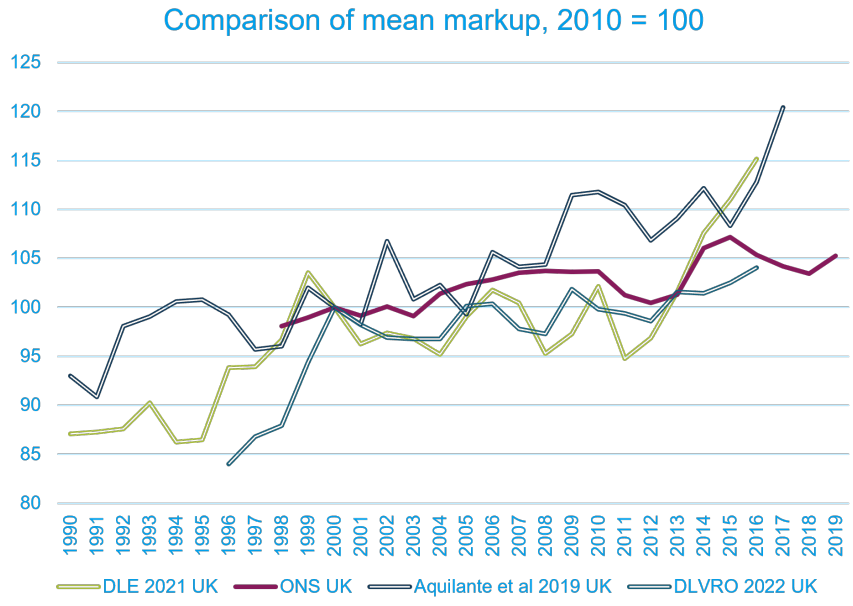


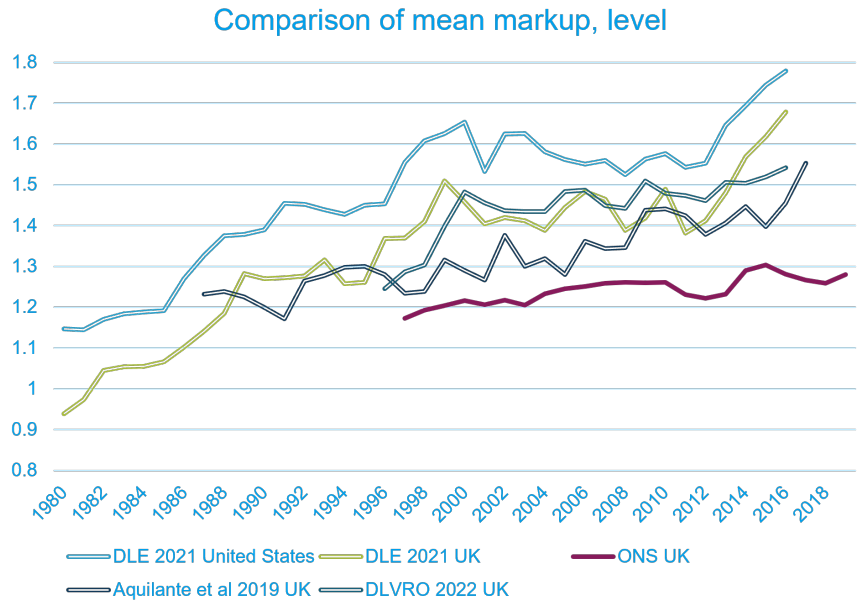
Labour Markup

Intermediate vs Labour Markup

	Intermediate		Labour	
	1998 - 2007	2011 - 2019	1998 - 2007	2011 - 2019
Avg μ growth	0.61%	0.19%	0.95%	0.16%

Comparing Markup Estimates





Comparing to De Loecker and Eeckhout, 2021, Aquilante et al., 2019, and De Loecker, Obermeier, and Reenen, 2022. Not strict apples-to-apples: we use intermediate inputs rather than COGS.

Sectoral Markup Comparisons

Fact #3: Markups Driven by the Upper Tail

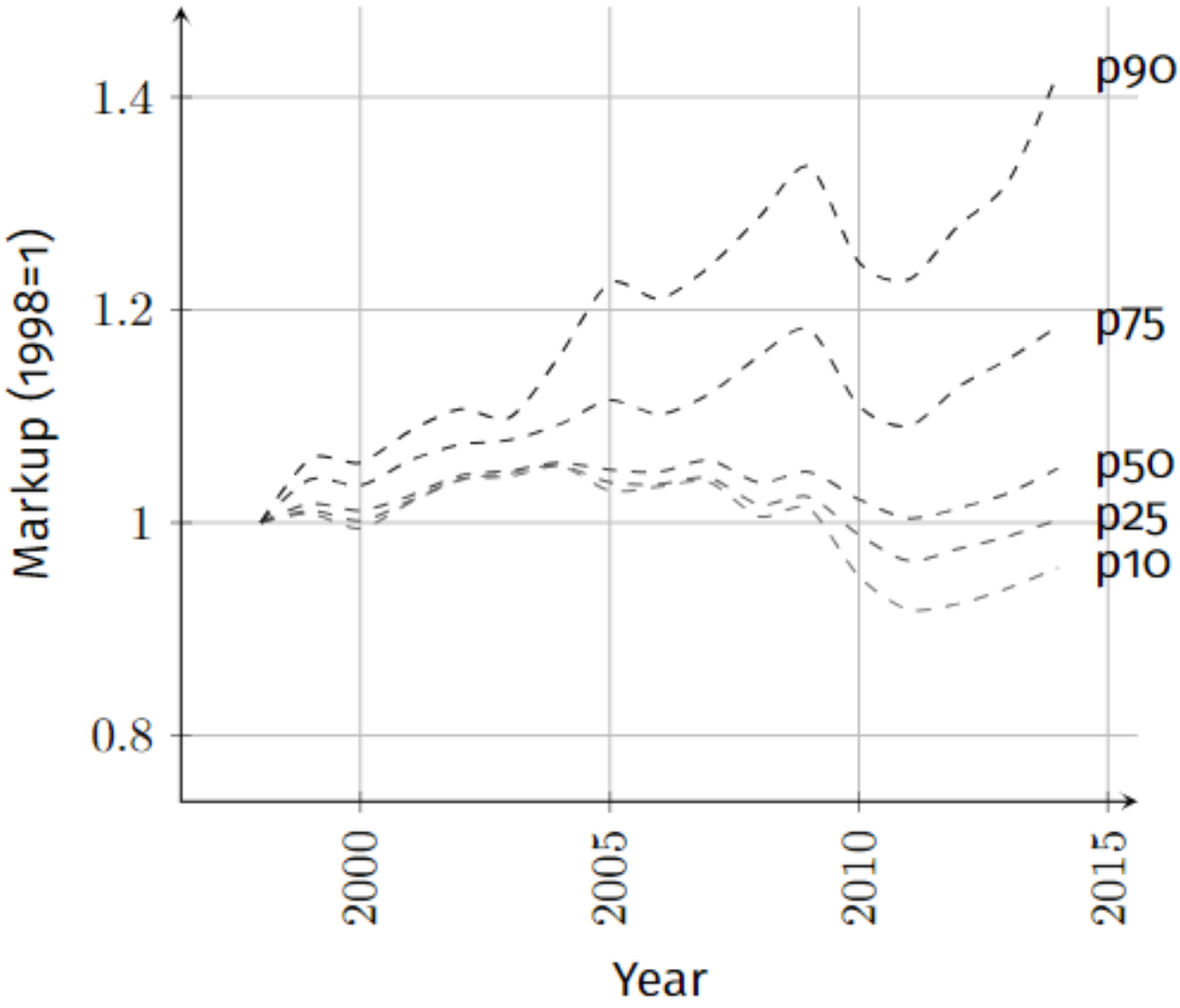


Figure 2 Translog Markup Percentile Trends, 1998=1

Fact #4: Labour Share Flat

Unlike the U.S.!

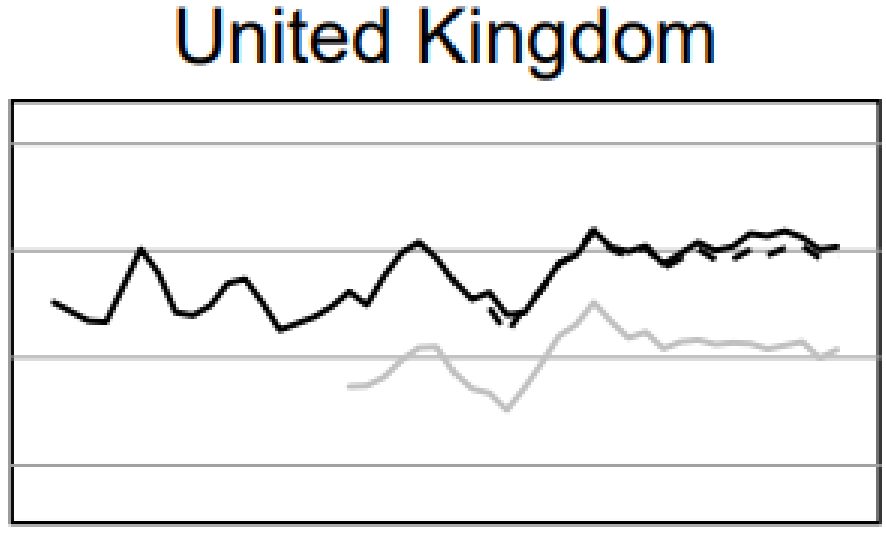
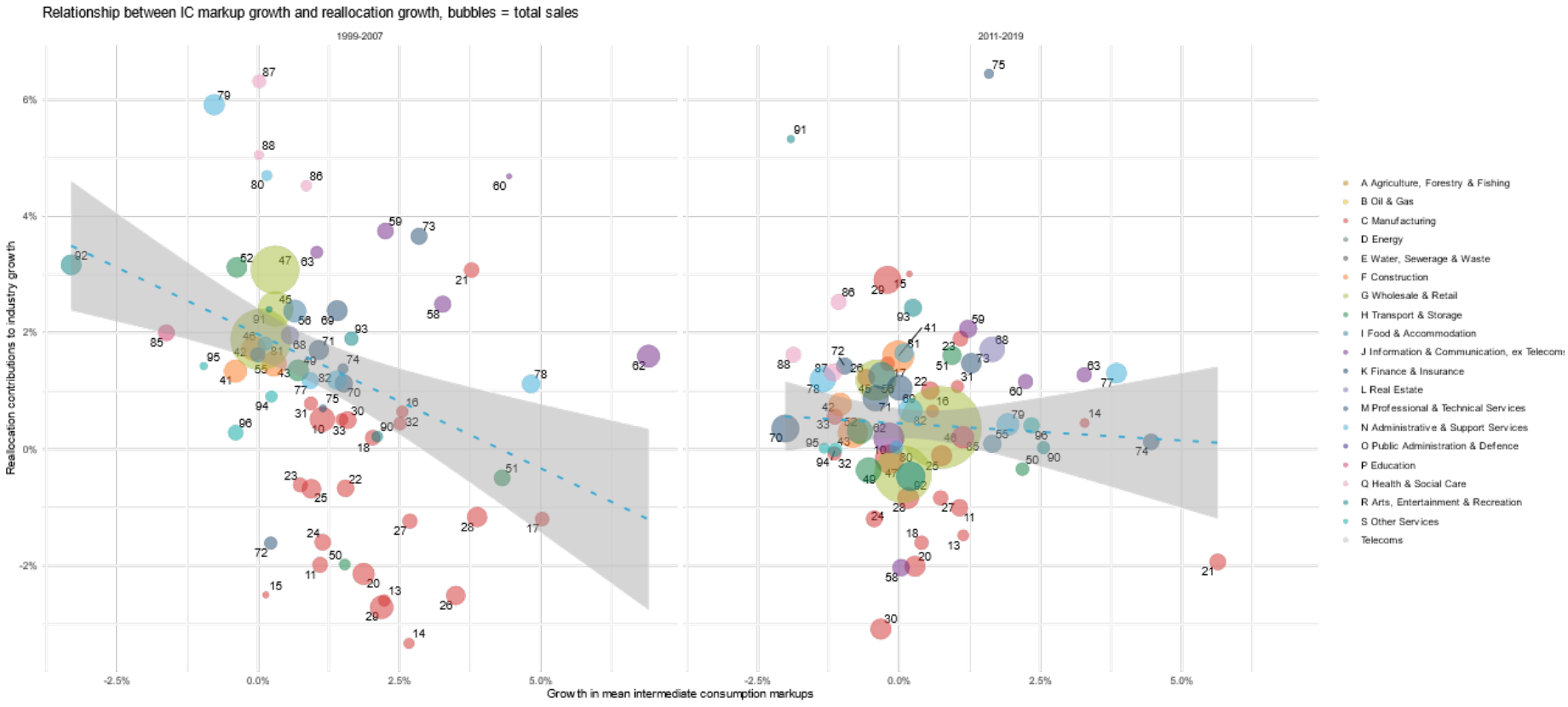


Figure: From Gutiérrez and Piton, 2020.

Fact #5: Markups and Business Dynamism

Sectors with higher markup growth have less reallocation?



Fact #5: Markups and Business Dynamism

Markup levels or growth?

Facts #6 & #7: Firm-level Markup Relationships

- Firm-level markup is positively correlated with firm-level productivity (TFP or labour productivity) $\rightarrow$ evidence for endogenous markups (e.g. nested CES models)?
- Firm-level growth (in sales or employment) is declining in lagged firm-level markups $\rightarrow$ 'bad concentration' of Covarrubias, Gutiérrez, and Philippon, 2020?

Outline

Takeaways

- Markups have risen in the UK, driven by non-financial services and firms in the top 10% of the markup distribution.
  - But lower *levels* and growth (after 2015) than in other research.
- Productivity slowdown decomposition highlights inability to reallocate resources to most-productive parts of the economy.
- Higher markup growth seems to be associated with less reallocation...
  - But not so for markup *levels*.
- More productive firms have higher markups, but subsequent firm growth is slower when markups are higher.

Final Thoughts & Next Steps

- Clearance of results up to 2022!
- Provide companion evidence to examine existing 'grand theories' of rising market power and slowing productivity.
  - Which theories hold in the UK? How do different theories fare across industries?
- Include evidence on imperfect competition in labour markets (e.g. markdowns).

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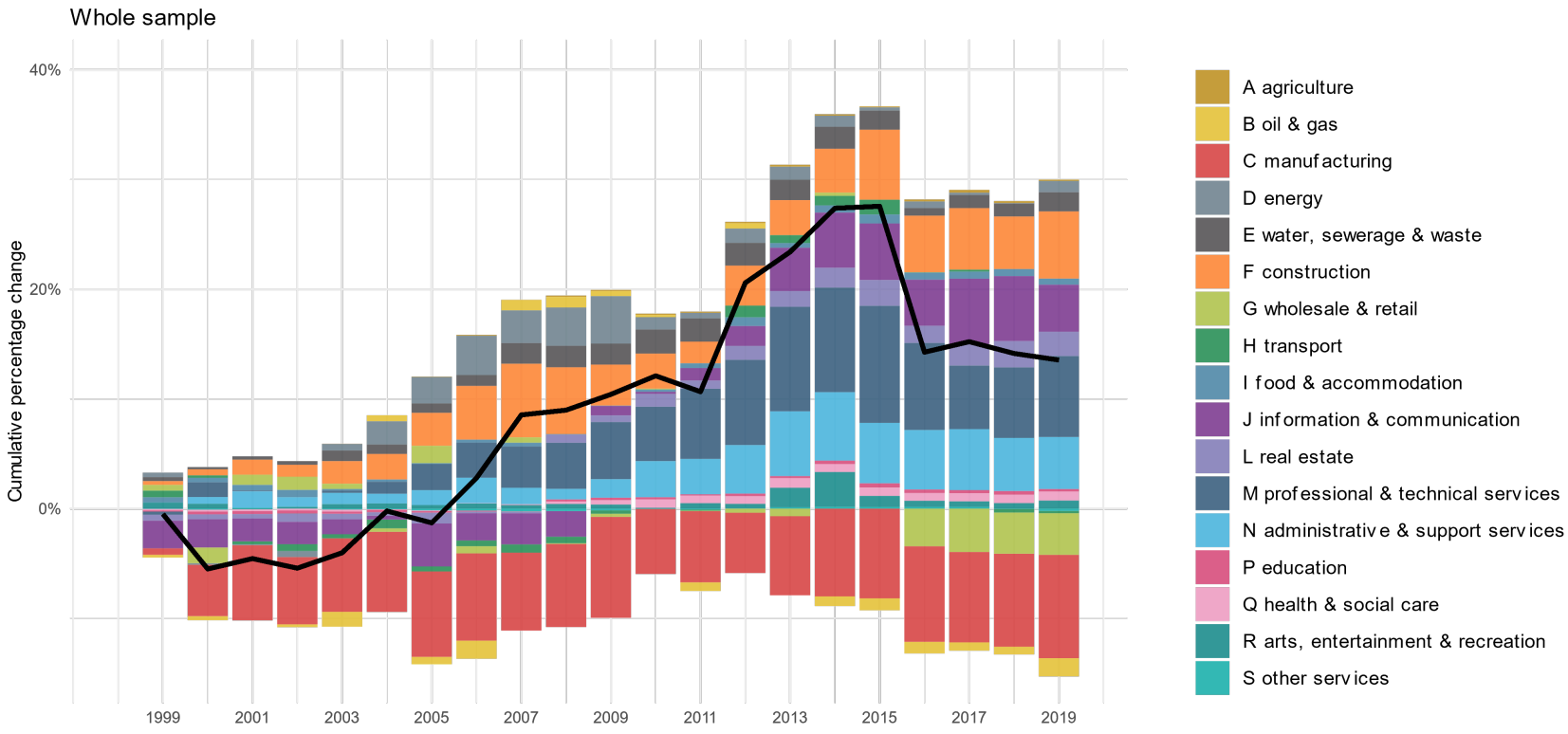
Labour Markups



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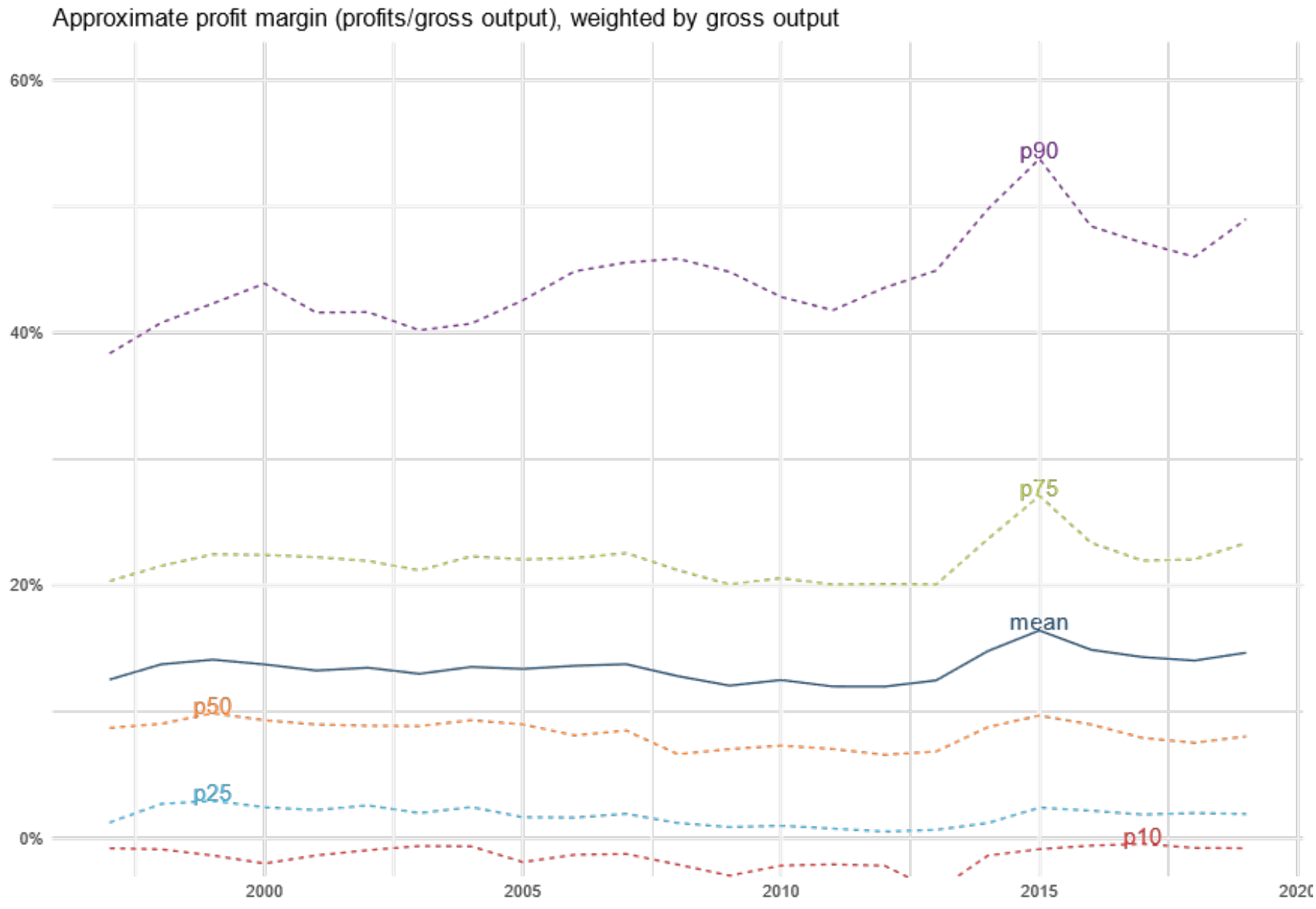
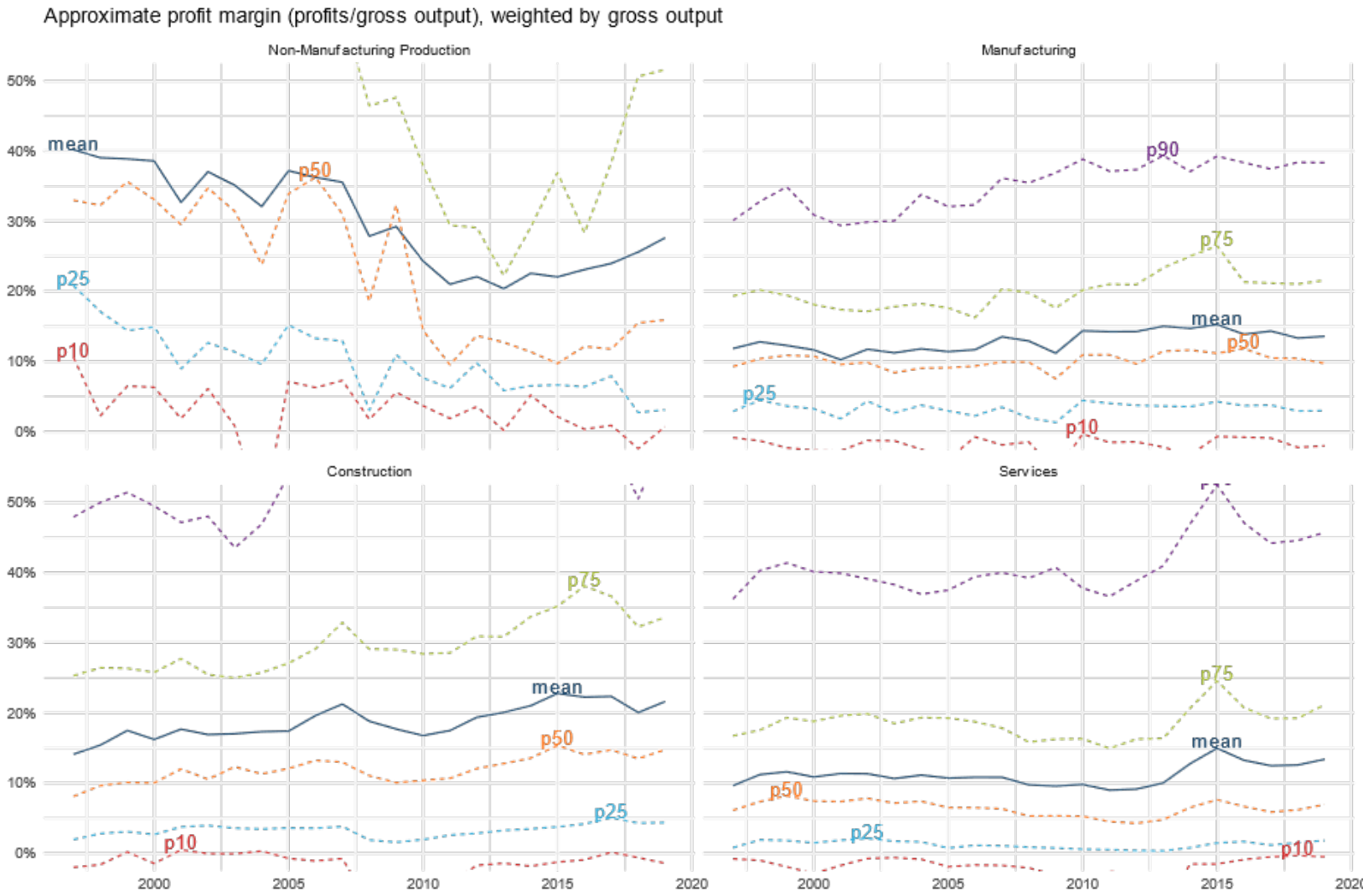
Profit Margin Dispersion



Sectoral Profit Margins



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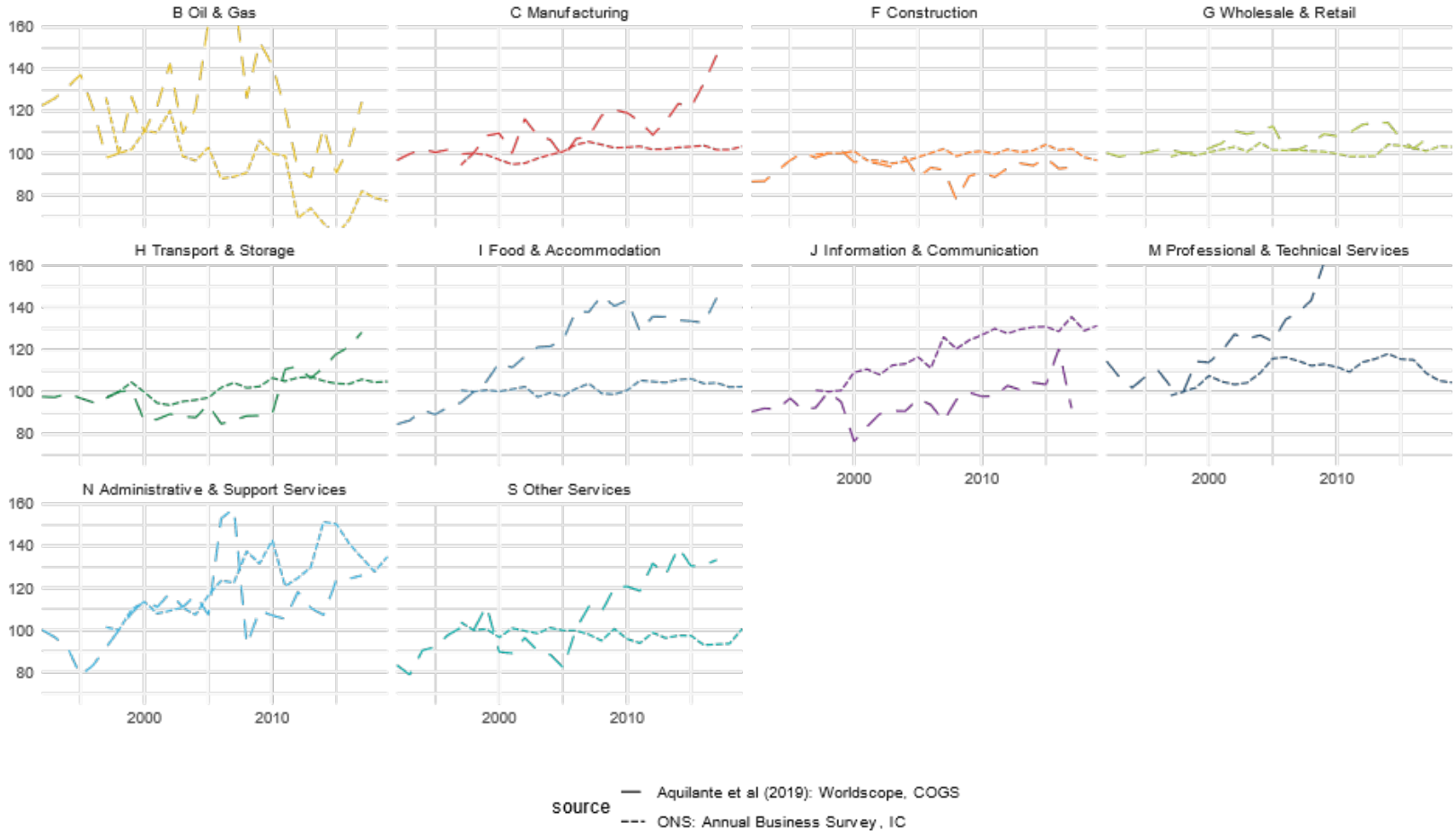
Sectoral Markup Comparisons



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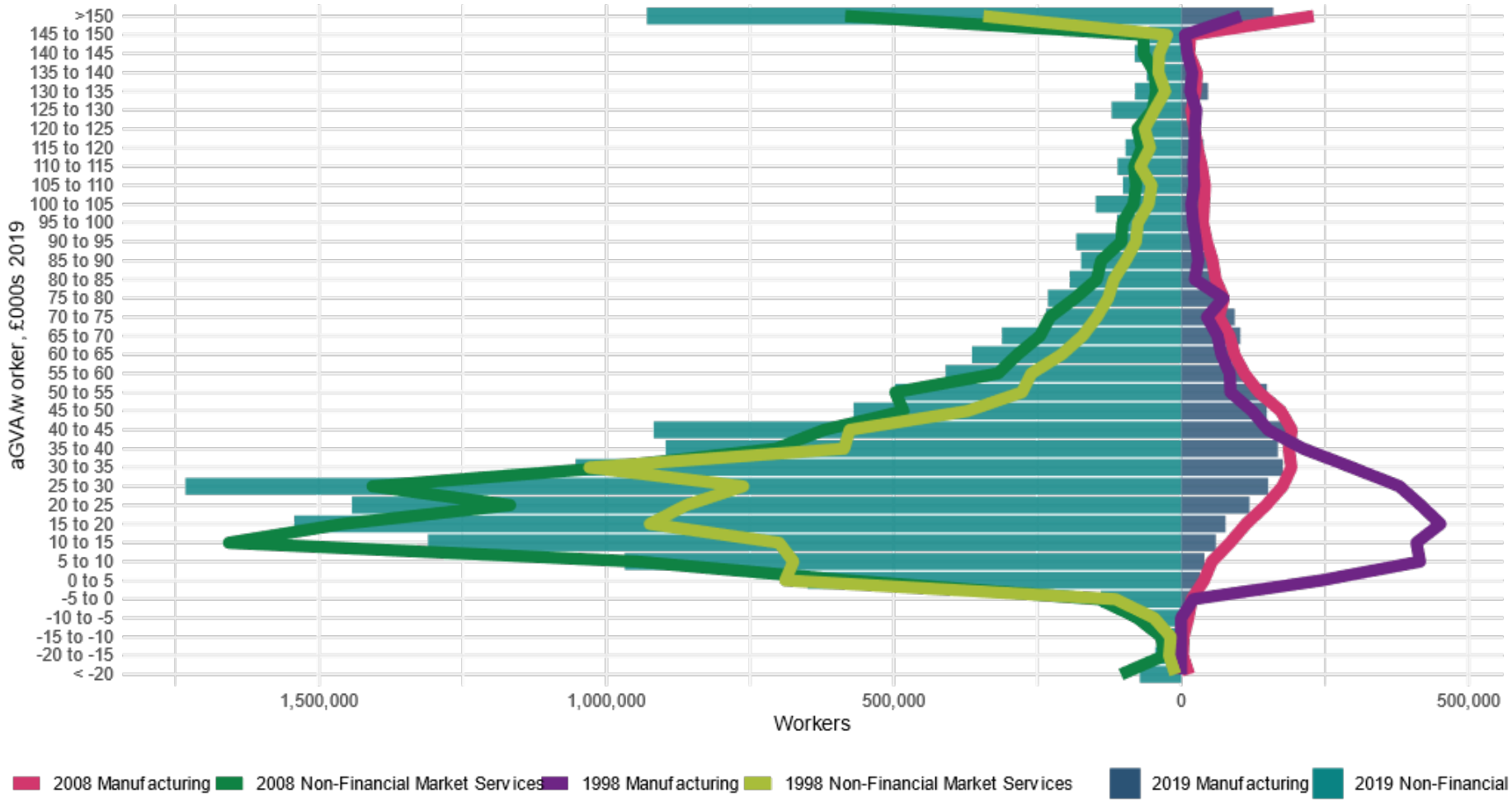
Worker Productivity Distributions



Changing distributions of (non-financial) Services and Manufacturing GVA/worker from 1998 to 2019.