The UK Productivity Shortfall in an Era of Rising Labour Supply

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Two key secular trends

1. The UK's productivity slowdown, large historically and internationally
2. An era of elevated labour force growth that re-shaped the job market incl via migration

- Question(s) addressed Was the large LF expansion a drag on UK productivity growth, pre-Coronavirus? If so, by how much?
- Challenges

  -Diminishing returns: labour supply effect "runs out of steam"

  -Micro-evidence: immigration had small/negligible impact on wages and productivity
- A common factor reconciles an important role for rising labour supply with both these challenges, in the 'medium-run'

Interpretation of the role of migration

- Exogenous (supply shock): UK's policy decision not to apply lengthy transitional controls to A8 migration in 2004 (unlike wider EU).
- Endogenous (demand-led): migration flows were pulled in by demand, albeit at a time when migration was made easier.

Can we shed light on these contrasting views of the role of immigration?

Motivation I (obvious): Productivity growth means wage growth

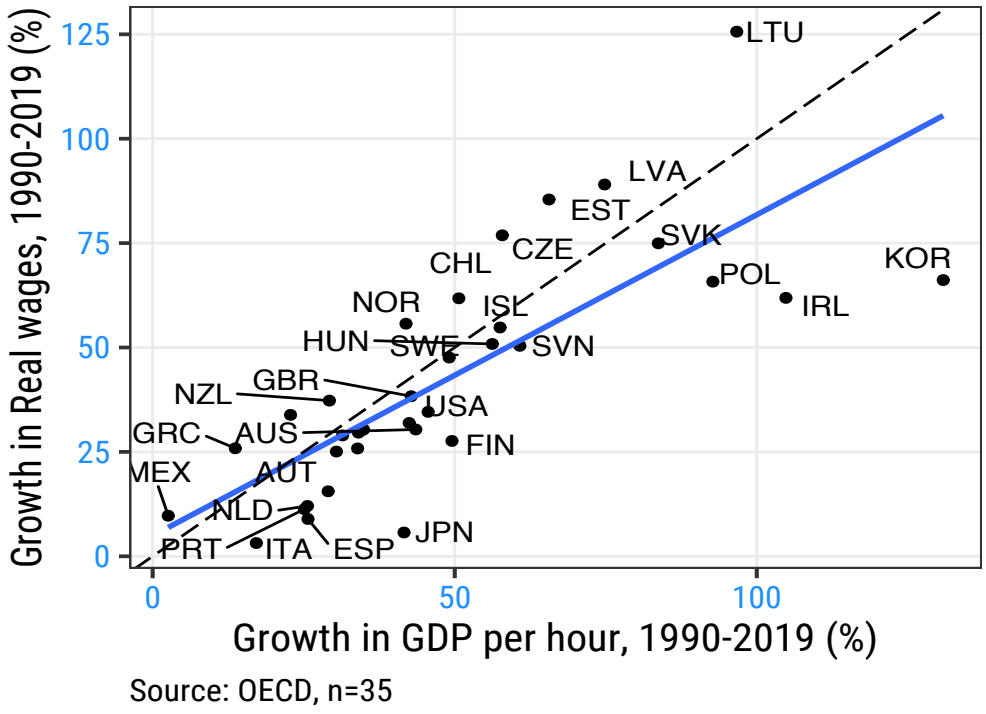


Figure 1: Cross-country productivity and real wages

Motivation II (less obvious): financial markets...

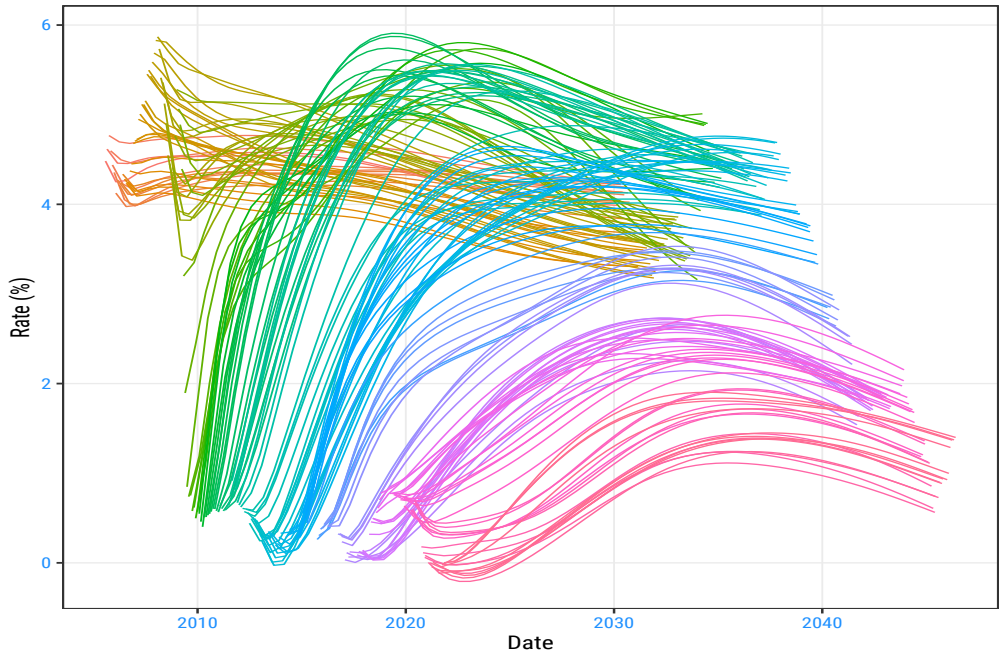


Figure 2: GBP Yield curves

- Level effect (and R-star) relate to productivity slowdown. Here, Central Banks are price-takers
- Slope effect relates slack and how the jobs market adjusts. Central Banks are in the 'slope business' (Clarida, 2021)

Some Growth Accounting

Dates	Δy (%)	Δ*tfp* (%)	Δ($y - l$) (%)	Contr. K/L to Δ($y - l$) (pp)	Δk (%)	Δh (%)
1974-99	1.07	0.52	1.83	1.14	3.02	-0.76
1980-90	2.82	1.46	1.94	0.56	2.46	0.89
1991-2001	2.36	0.79	2.25	1.11	2.94	0.12
2002-07	3.00	1.37	2.58	0.51	1.83	0.42
2008	0.12	-0.87	-0.28	0.52	1.83	0.40
2009	-5.39	-2.61	-0.95	1.61	-0.32	-4.49
2008-19	1.44	-0.01	0.36	-0.07	0.88	1.07
1971-2019	2.30	0.92	1.84	0.63	2.22	0.45

- Reduced capital deepening key for the post-crisis slowing in productivity growth, associated with strong growth in hours worked (h)

The UK productivity shortfall was unprecedented

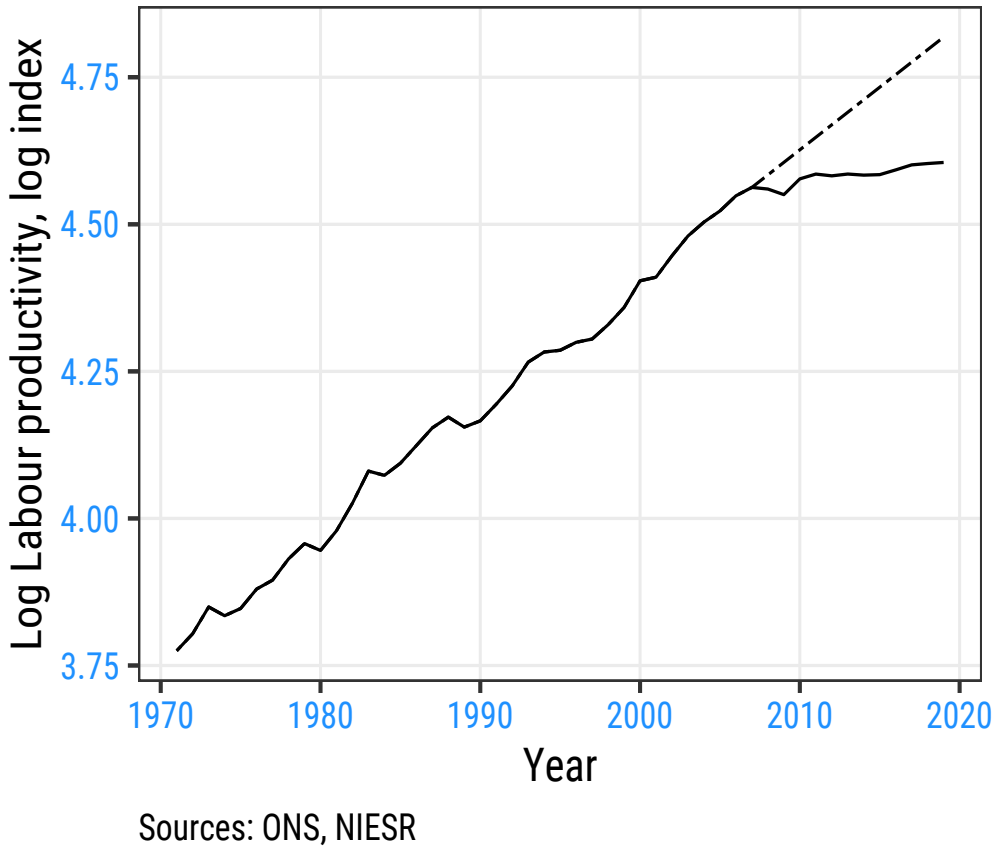


Figure 3: The productivity shortfall: 21 log points

Labour force growth became the mainstay of UK growth

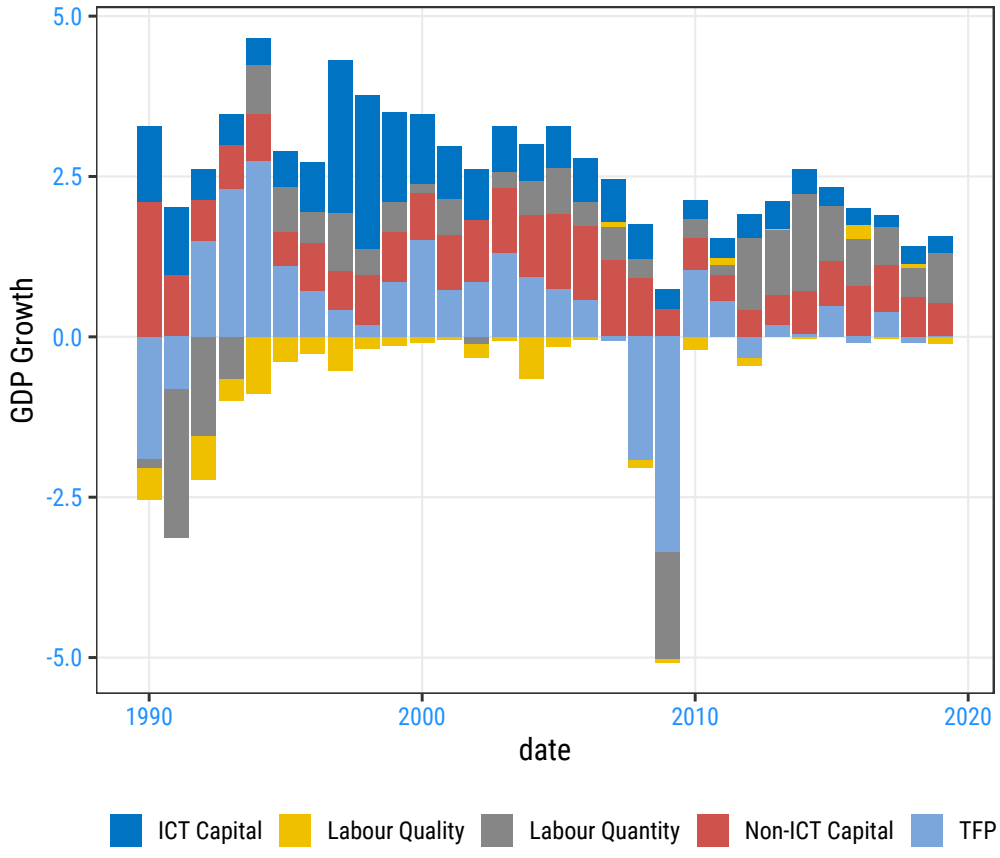
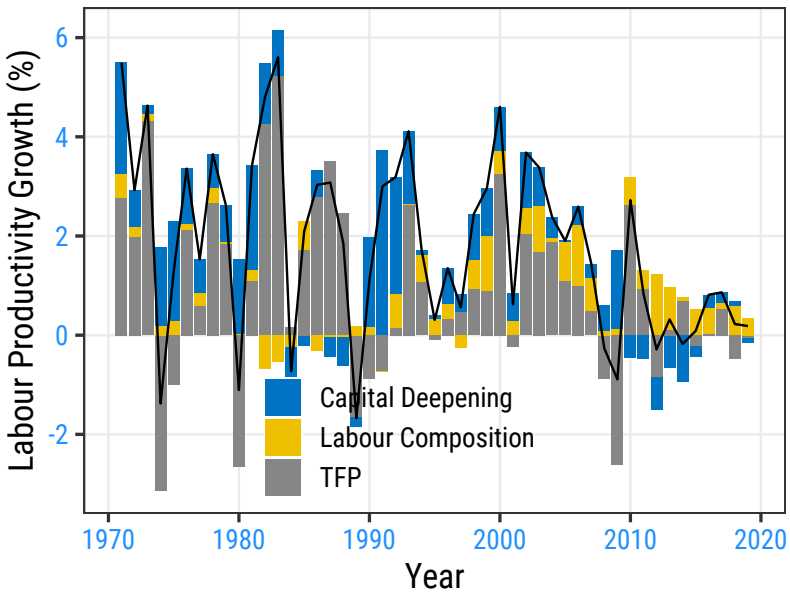
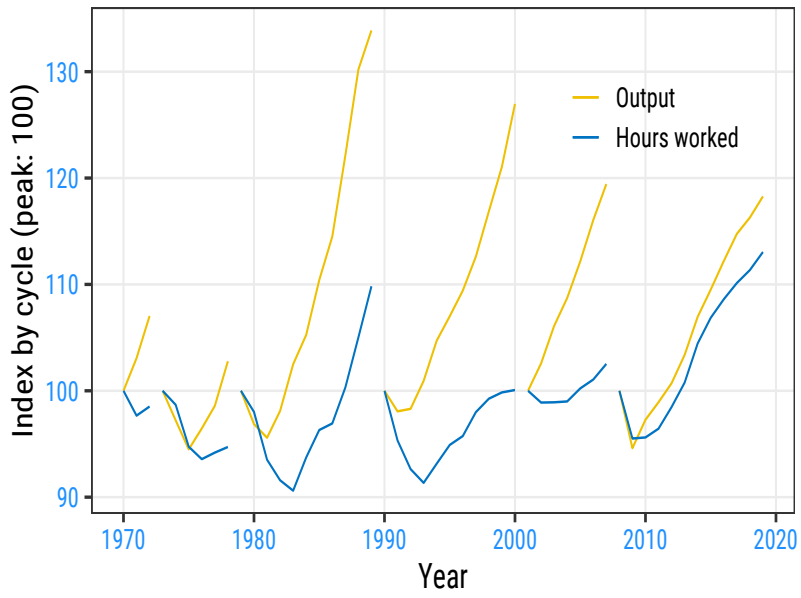


Figure 4: The composition of UK GDP growth

The composition of the productivity slowdown



Sources: ONS, NIESR



Sources: ONS, NIESR

Figure 5: The slowdown and its composition

In International comparisons, UK stands out

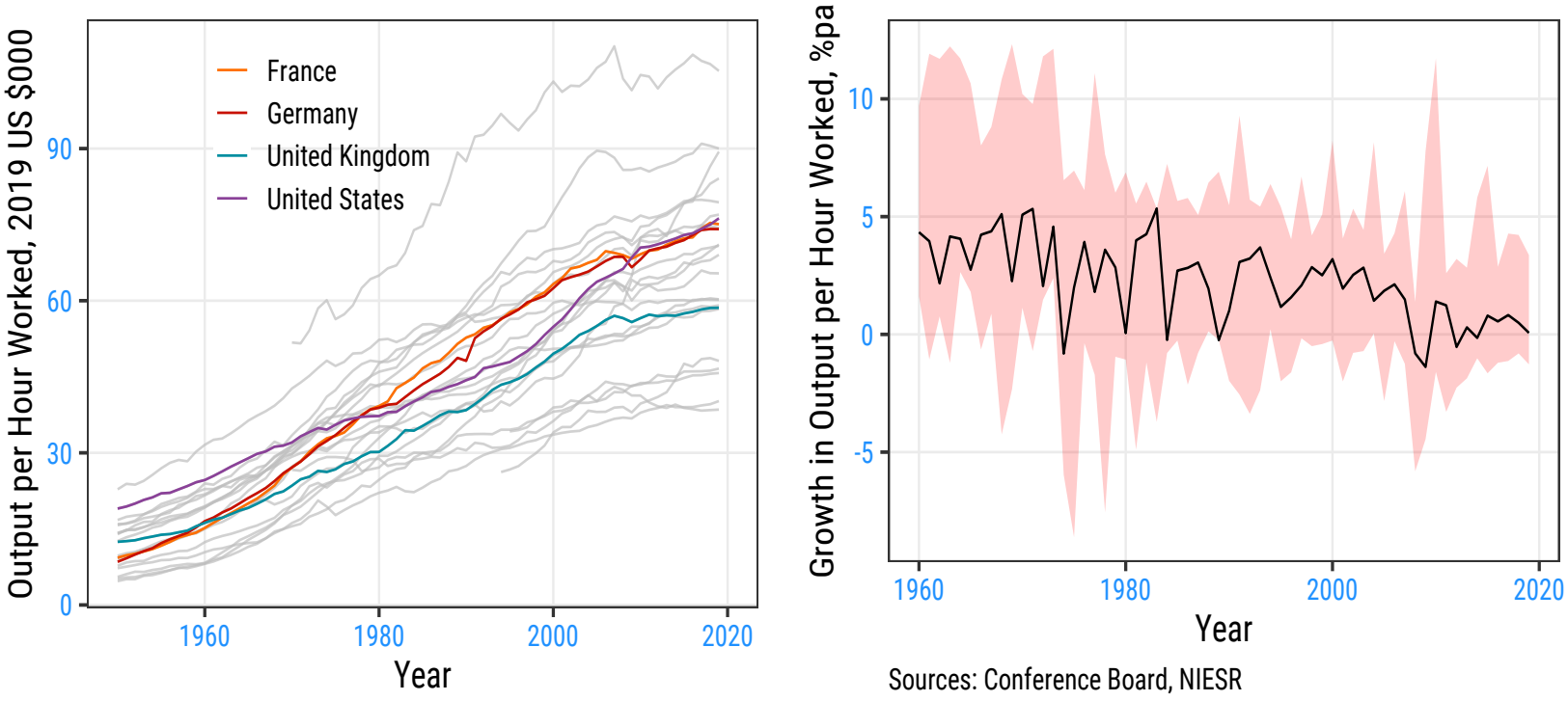


Figure 6: How the UK Compared, Internationally

- The UK's slowdown was also large by international standards

Sectoral productivity: Some sectors are bigger than others

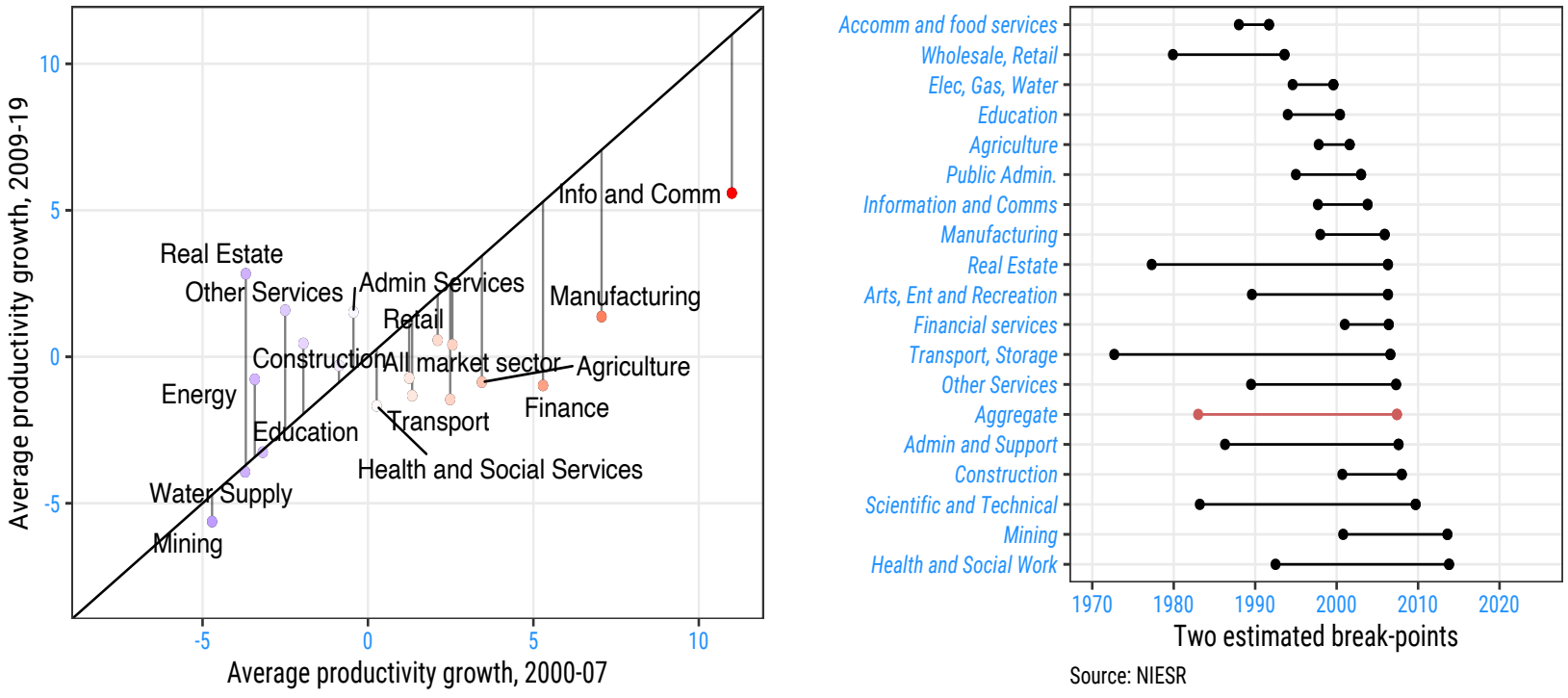


Figure 7: The slowdown across sectors

Relative prices, labour expansions and sector-level productivity

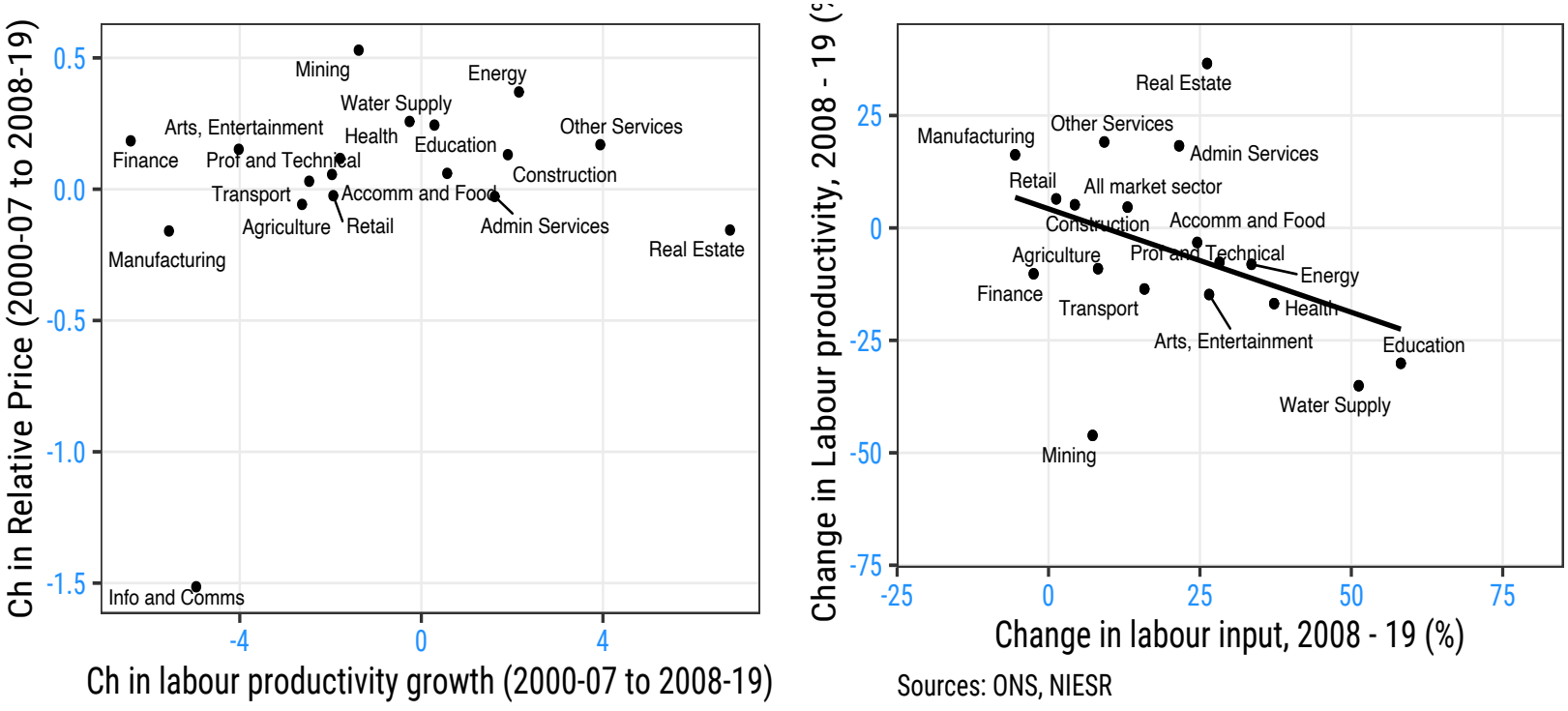
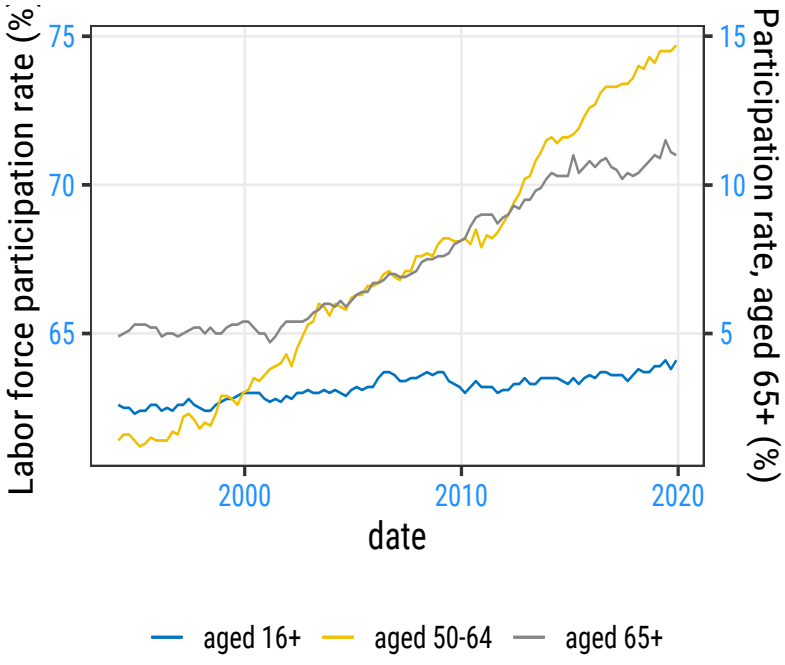


Figure 8: Sector Productivity, Relative Prices and Labour Expansions

A Summary

- $\Delta(y - l)$ slowed by 1.5pp pa pre- versus post-GFC.
- Reduced capital deepening accounted for one-third of that. Reduced TFP growth was the larger factor.
- The lower K/L contribution was associated with a falling relative price of labour and a particularly rapid rate of growth in hours worked.
- Consistent with a labour supply shock. It is hard to reconcile stronger employment and hours growth with a TFP shock and/or risk premium shock, though these are likely needed to be consistent with pattern of output growth.

An Era of Rising Labour Supply I: Participation (at older ages)



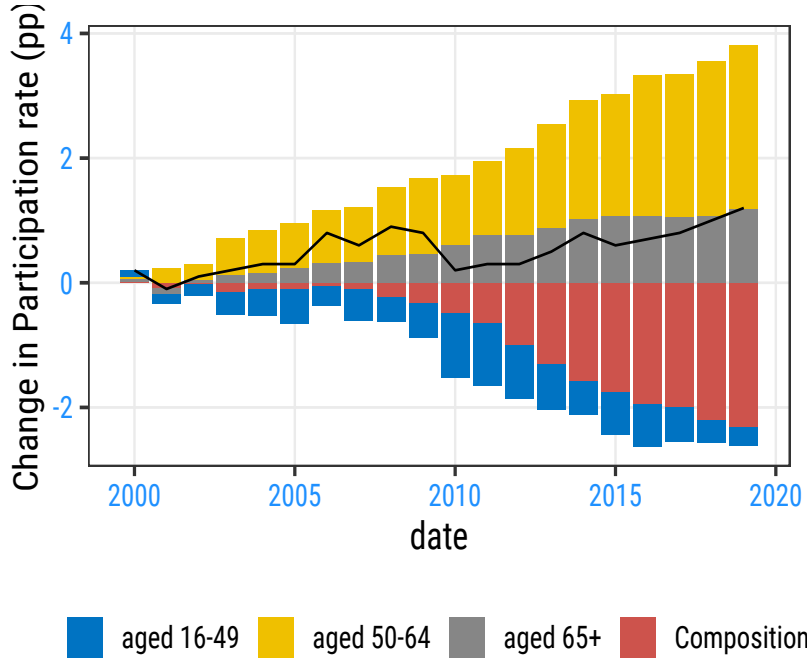


Figure 9: Participation rates

Rising labour supply II: Inward migration

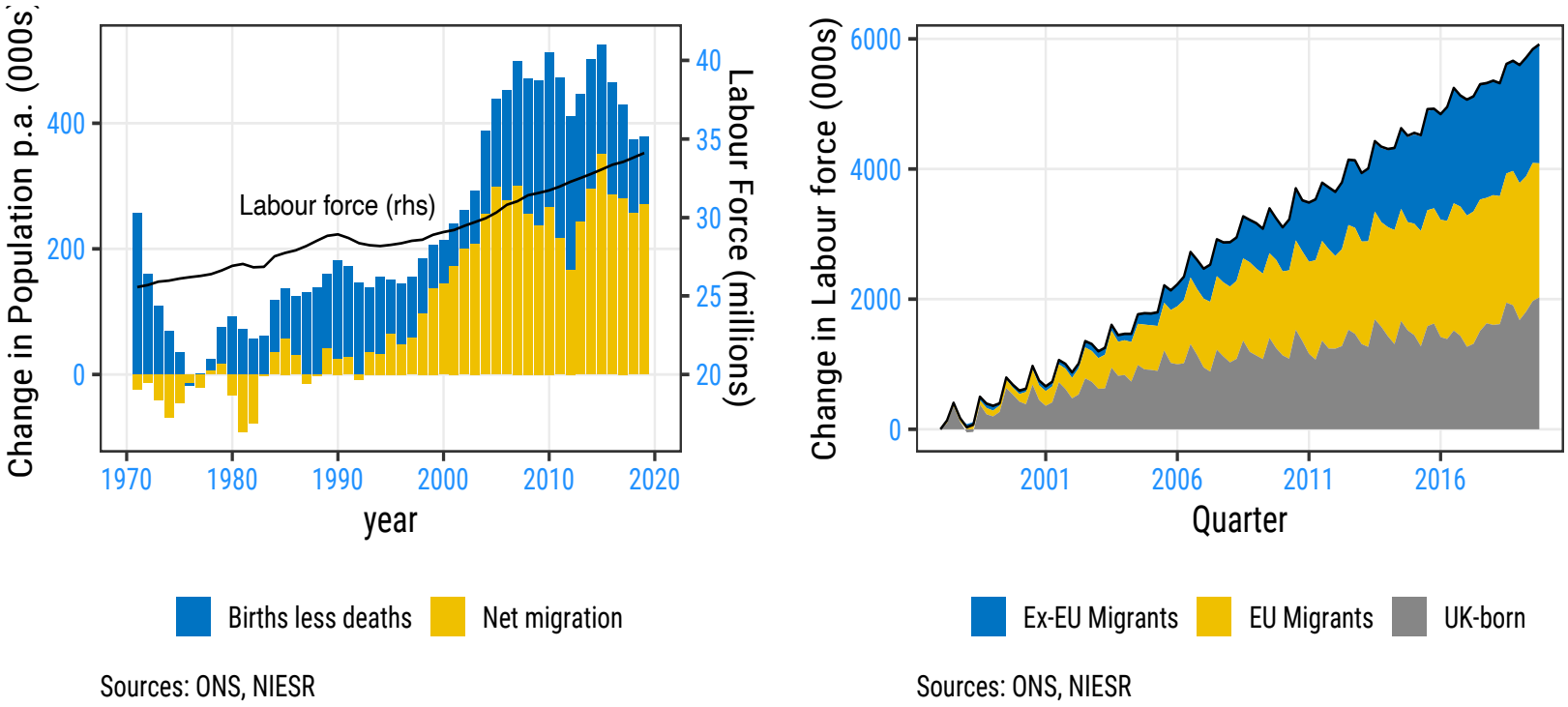


Figure 10: Population growth, the labour force and migration

Challenge I: Diminishing returns

Cobb-Douglas implies:

$$y - l = a + b(k - l) \tag{1}$$

where b is capital share. with the following first-order condition:

$$(1 - b)(l - k) = log(r/b) - a \tag{2}$$

with r = discount rate. This leads to:

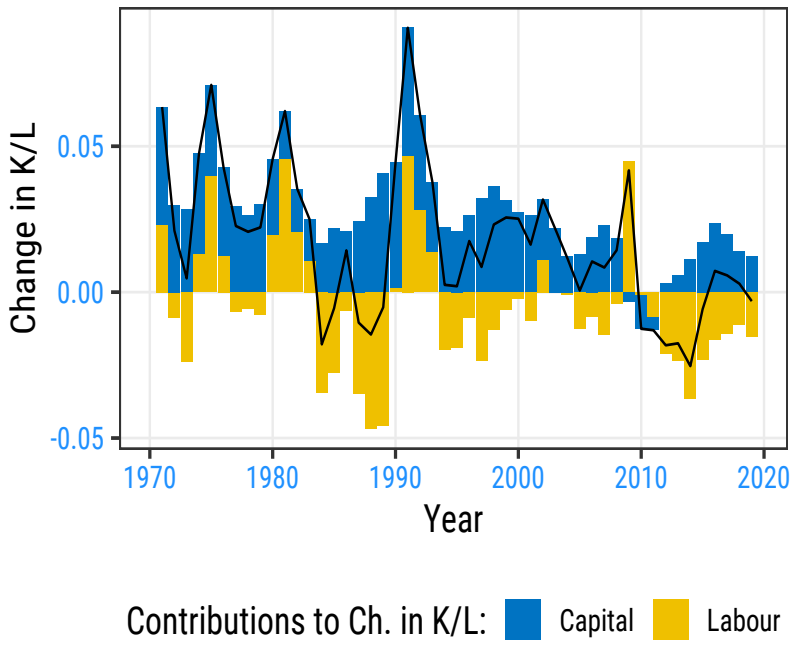
$$y - l = a + [b/(1-b)].[a - log(r/b)] = a/(1-b) - [b/(1-b)].log(r/b) \tag{3}$$

$(y - l)$ is independent of l.

Challenge II: Migration has only negligible effects on Wages?

- A consensus that inward migration has only a small aggregate effect on wages of natives
- Whether migrants are substitutes or complements to natives is key, as is the speed with which capital adjusts.
- Dustmann *et al* (2008), "this adjustment speed (10% pa) means that, instead of reducing the capital/labour ratio by 11% and consequently average real wages by 3.6%, the immigrant inflows to the US between 1990 and 2004 only reduced the capital/labour ratio by 3.4%, which in turn implies a much smaller negative effect of only 1.1% on average wages in the economy. Basically, the faster capital is able to adjust, the smaller will be the effect on average wages in the economy."
- Micro-based studies implicitly hold constant the macro-channel of reduced capital deepening that we highlight. Ottaviano and Peri (2012) is an exception, emphasising slower capital adjustment that weighs on real wages in the short-run.

Capital/labour substitution



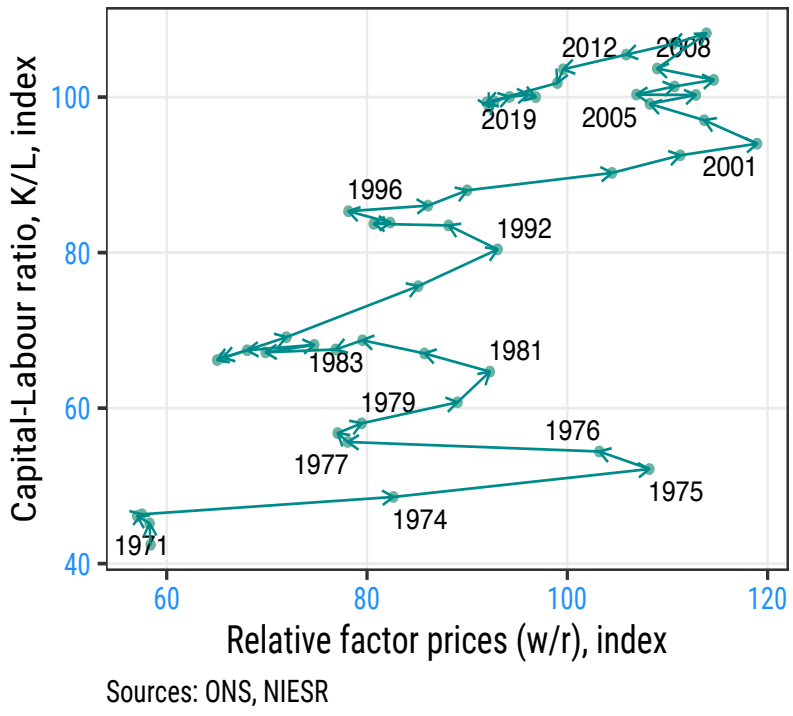


Figure 11: Reduced capital deepening and relative factor prices

Investment

$$I_{it}/K_{it-1} = \beta_{i0} + \beta_{i1}(\partial Y_i^V/\partial K_i - u_{it} - \phi_{it}) + \beta_{i2} I_{it+1}/K_{it}$$

$\partial Y_i^V/\partial K_i - u_{it} - \phi_{it}$: MPK less the user cost, adj. for time-varying premium reflecting uncertainty and borrowing restrictions.
$\beta_{i2} \approx 1 - \delta_i = 0.9$: the fraction of K that survives the period.
$\beta_{i1} = 0.013$: capital stock adjustment costs

Macro simulations I

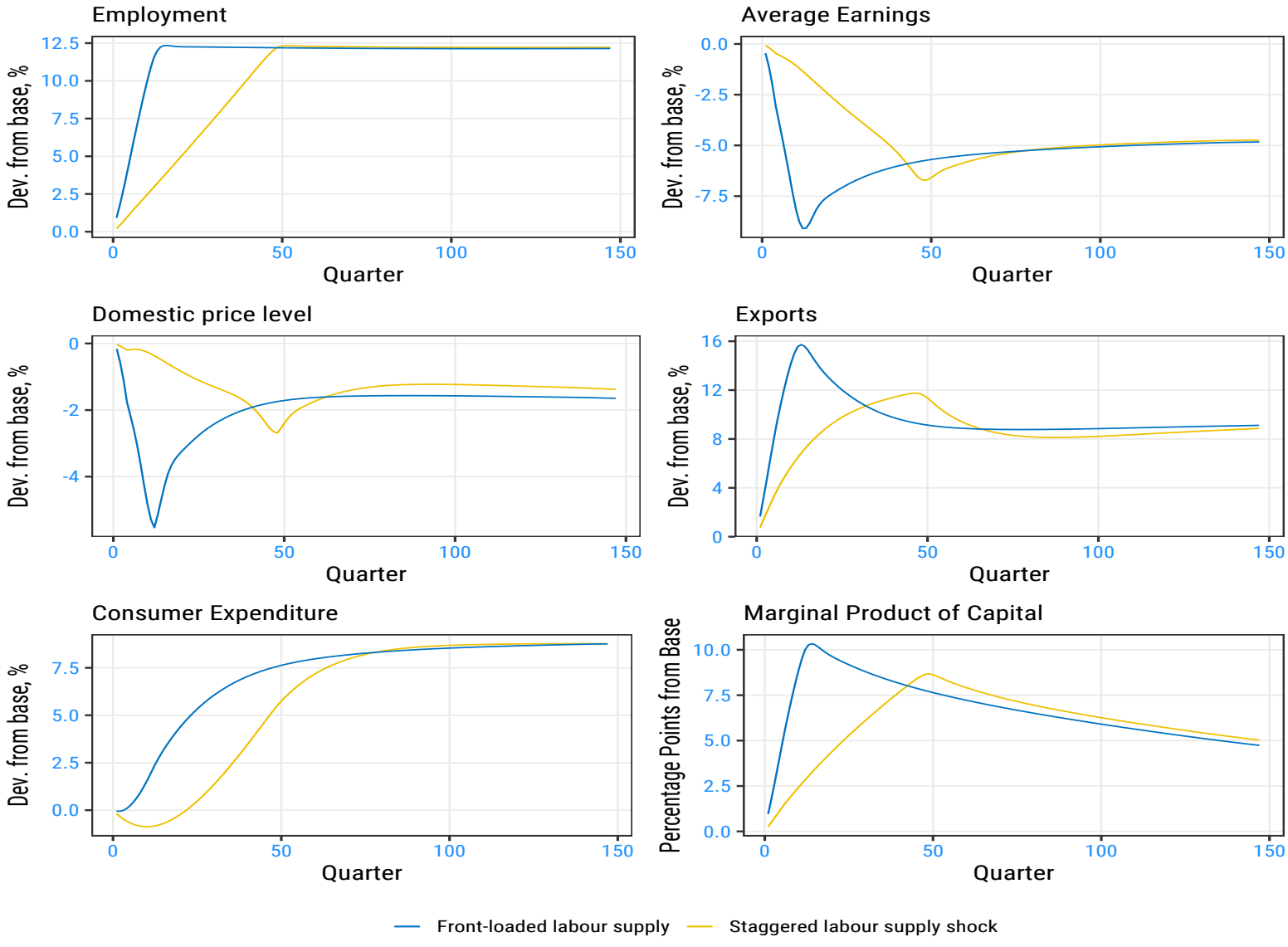


Figure 12: Simulation results [1]

Macro simulations II

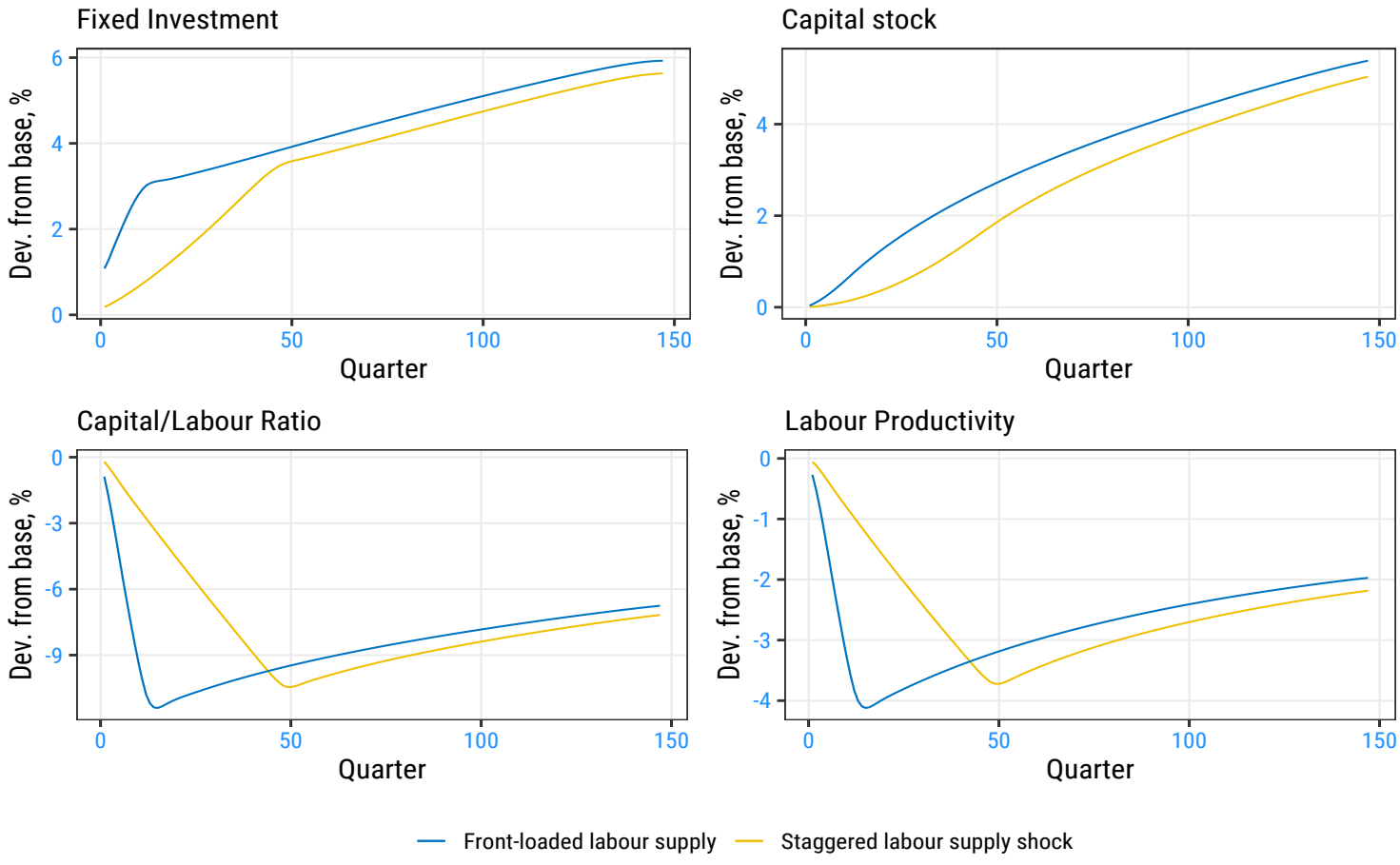


Figure 13: Simulation results [2]

Macro simulations III

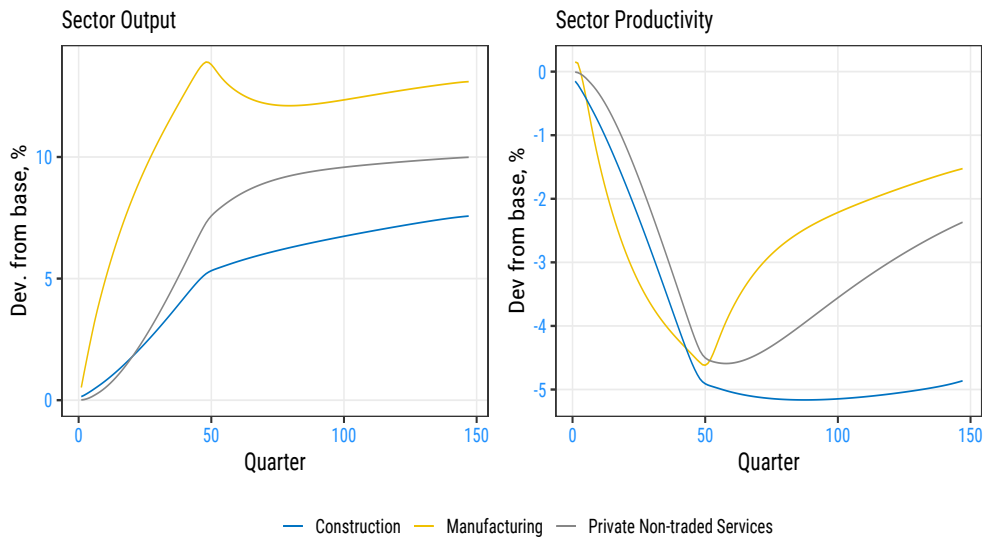


Figure 14: Simulation results [3]

Cross-country evidence: Productivity and population growth I

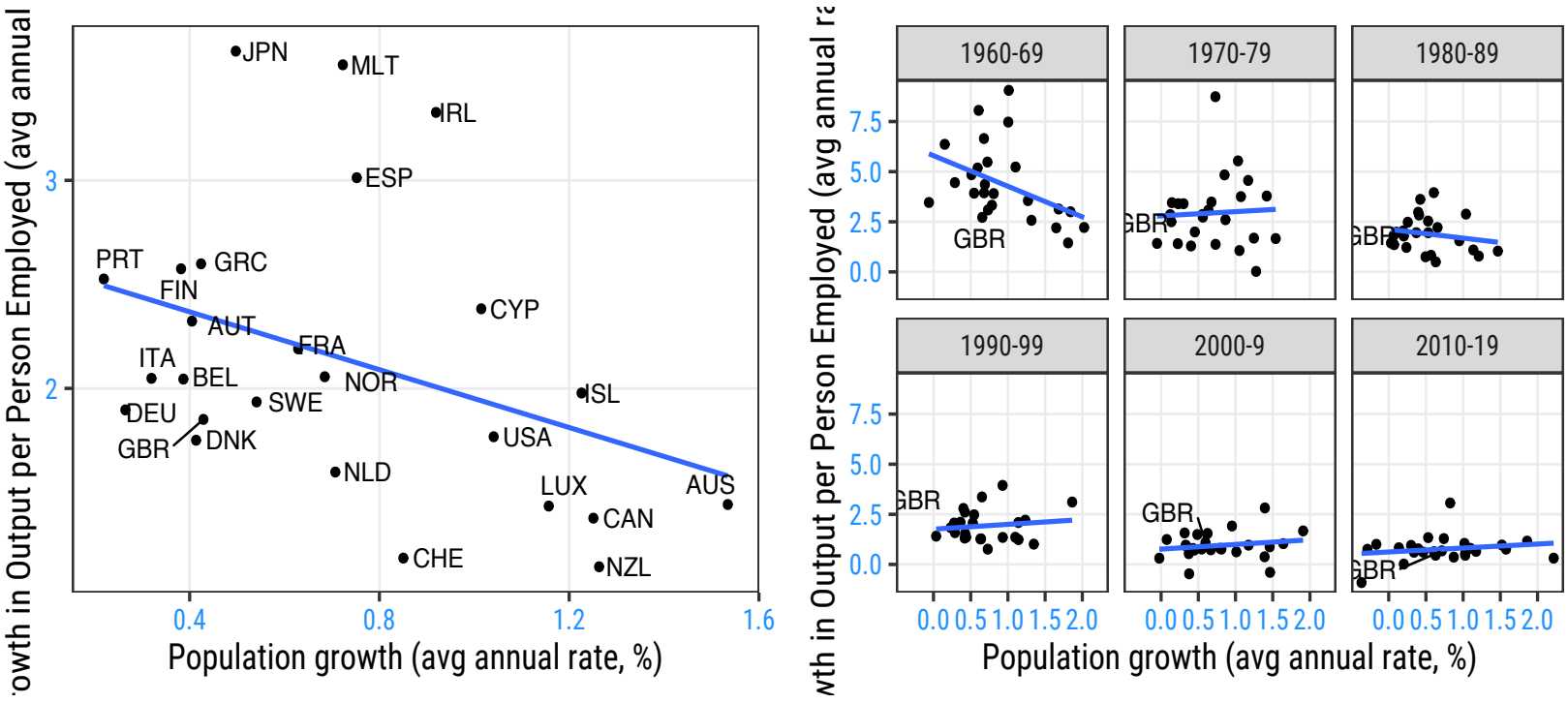


Figure 15: Cross-country evidence: Productivity and Population growth

Cross-country evidence: Speed of productivity convergence has slowed

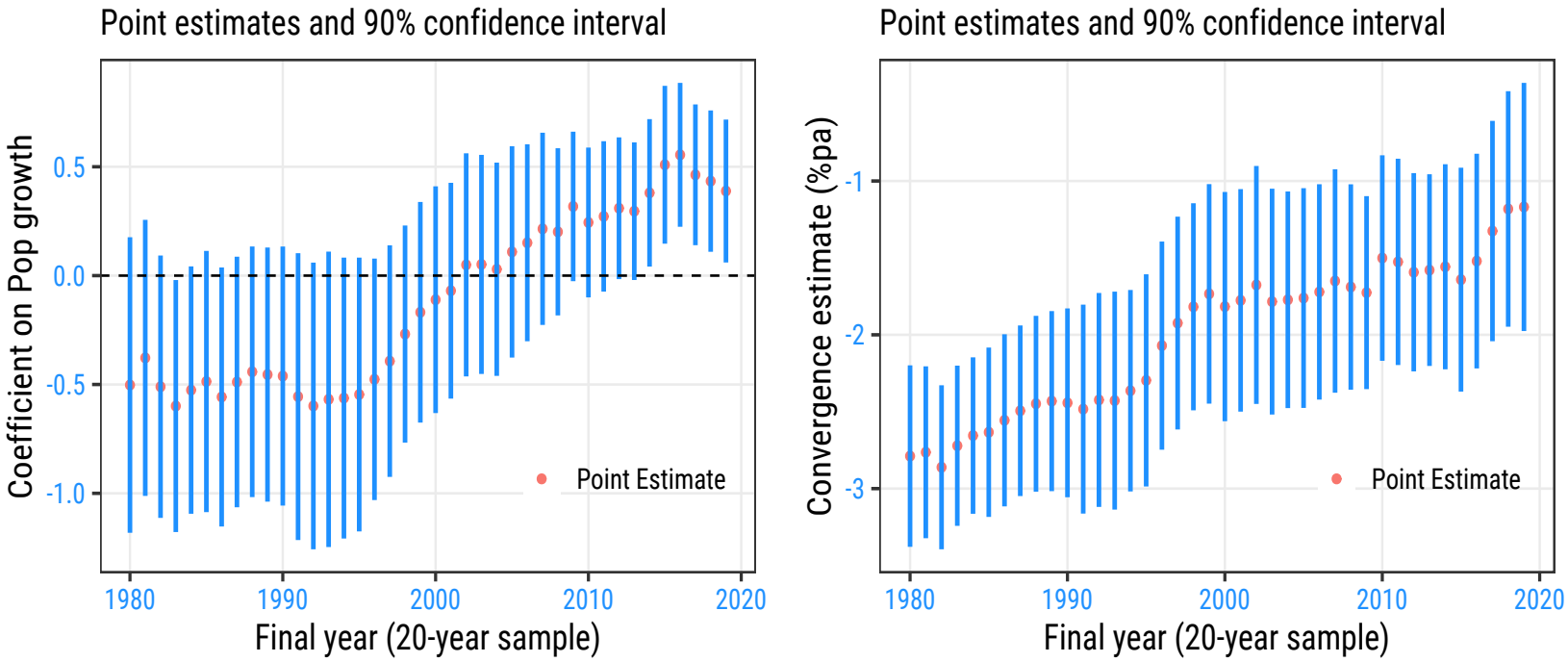


Figure 16: Estimated Effects from Population Growth and Speed of Convergence

Conclusions

- Quantification: Increased labour supply incl inward migration accounted for one-fifth of the 21 log point UK productivity shortfall since the mid-2000s
- TFP shock the bigger factor and necessary to explain weakness in GDP. But weak TFP cannot explain strong employment growth, where labour supply shock is needed. Nor can risk premium shock explain strong employment growth.
- The persistent effect occurs through capital stock being slow to adjust which was likely exacerbated by the financial crisis. . .
- . . . reconciling this finding with diminishing returns in the long-run, and with micro studies that find a small effect of migration on wages but hold capital stock constant.
- Post-Brexit and post-Covid, idea that migration didn't weigh on wages may be hard to sustain