The drivers of productivity growth over the last 15 years

Diego Comin

Dartmouth College

Why is there a slowdown in productivity post-2000s?

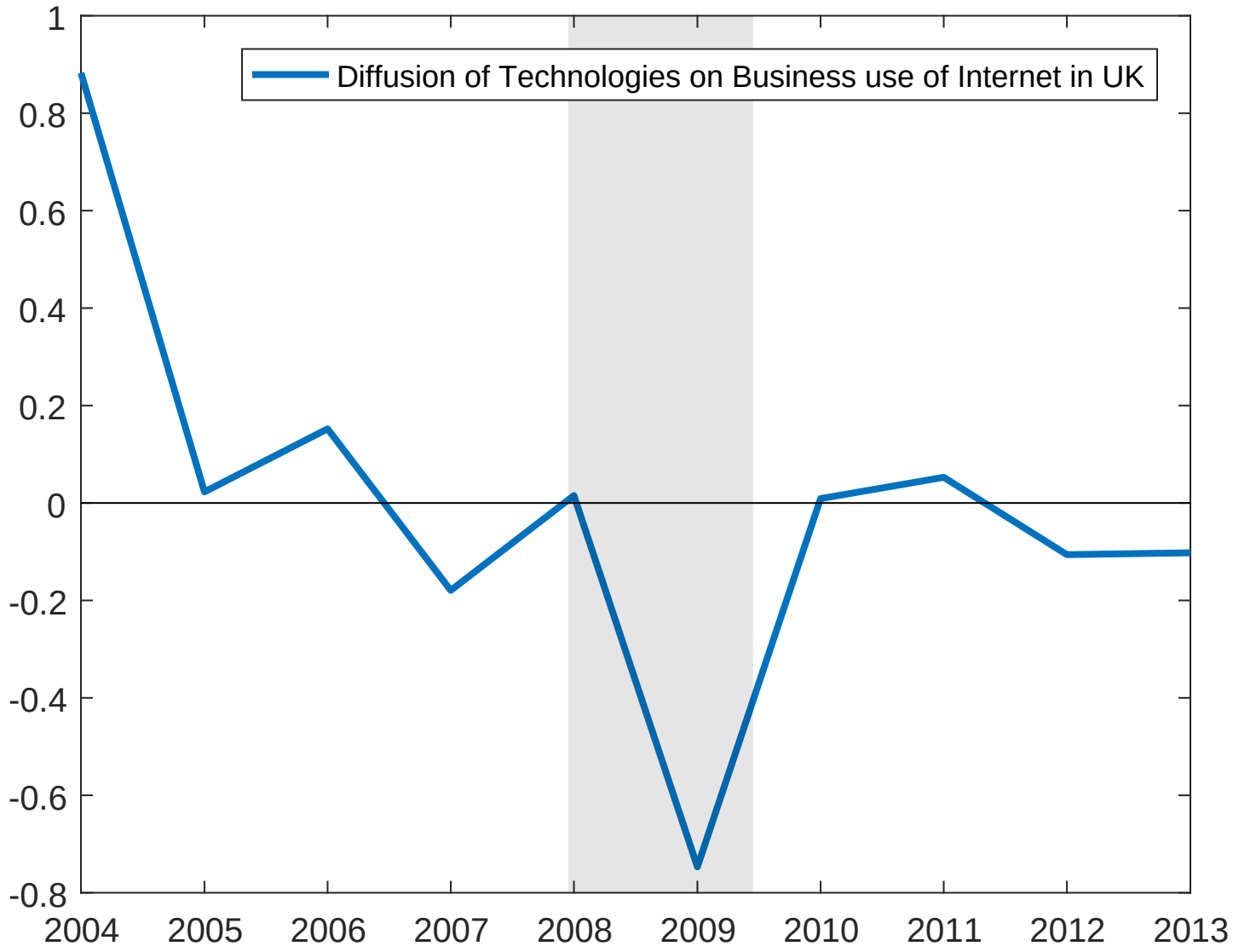
- Two hypotheses:
  - Bad luck: Slowdown in productivity for reasons others than the financial crisis
  - Endogenous response to business cycle conditions:
    - Reduction in investment to implement new technologies

Table 1: Cyclicality of the Speed of Technology Diffusion

	I	II	III	IV
$\widehat{y}_t$	3.73	3.7	3.64	4.12
	(3.59)	(2.81)	(3.94)	(3.17)
$\widehat{y}_t$ * US		0.07		-0.74
		(0.04)		(0.53)
lag_{it}	-0.057	-0.057		
	(5.22)	(4.76)		
lag_{it}^2	0.001	0.001		
	(2.52)	(2.12)		
$ln(lag_{it})$			-0.29	-0.29
			(6.68)	(6.65)
R2 (within)	0.11	0.11	0.13	0.13
N technologies	26	26	26	26
N observations	327	327	327	327

Notes: (1) dependent variable is the speed of diffusion of 26 technologies, (2) all regressions include technology specific fixed effects. (3) t-statistics in parenthesis, (4) $\widehat{y}_t$ denotes the cycle of GDP per capita in the country and represents the high and medium term components of output fluctuations, (5)$\widehat{y}_t$*US is the medium term cycle of GDP per capita times

Figure 4: Diffusion of Technologies on Business use of Internet in UK, 2004-2013




Share of sales from new or improved products
40
35
30
25
20
15
10
5
2000
2003
2006
2009
2012
Year
Weighted by yearly share of sales

TFP decomposition

- Decompose TFP between exogenous and endogenous components
- How? Combine:
  - A DSGE model with endogenous technology
  - observations on cyclicality of adoption
  - actual R&D series

Figure 8: Endogenous TFP, TFP and Labor Productivity

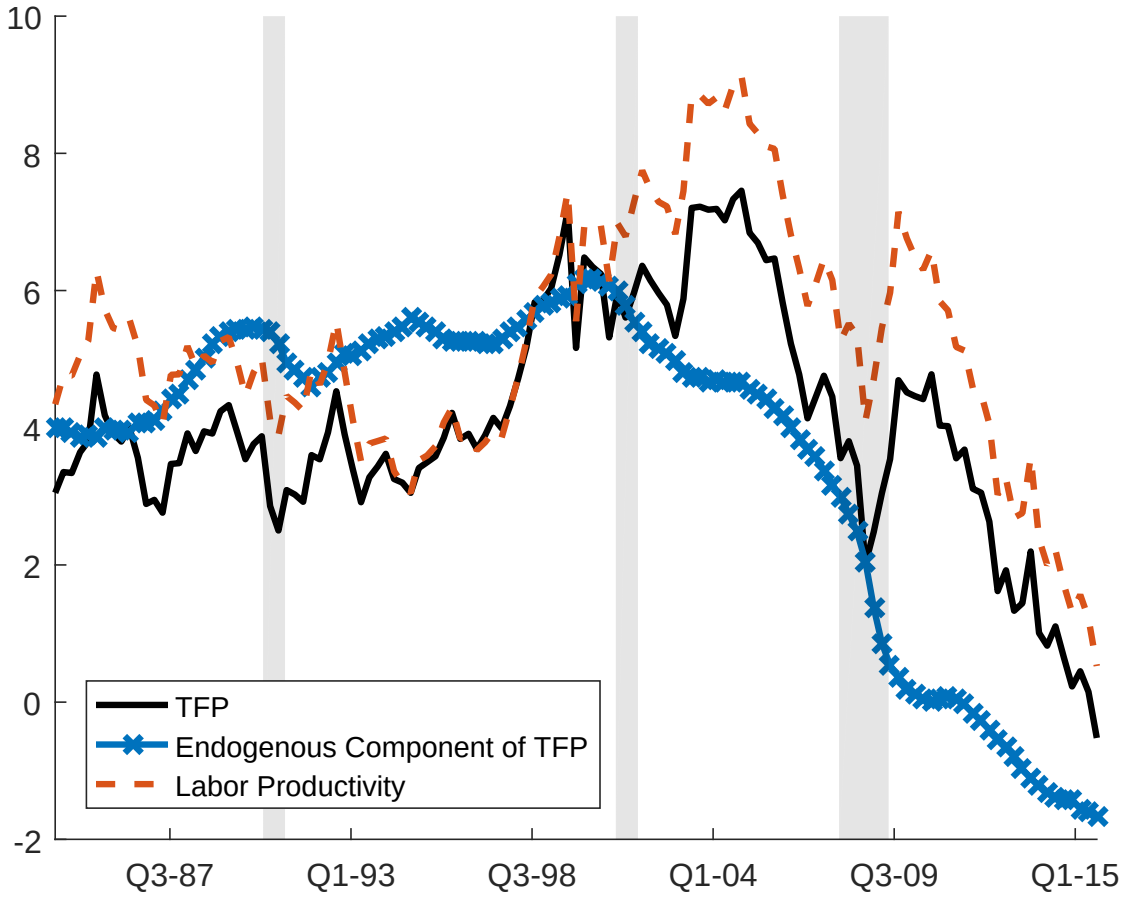
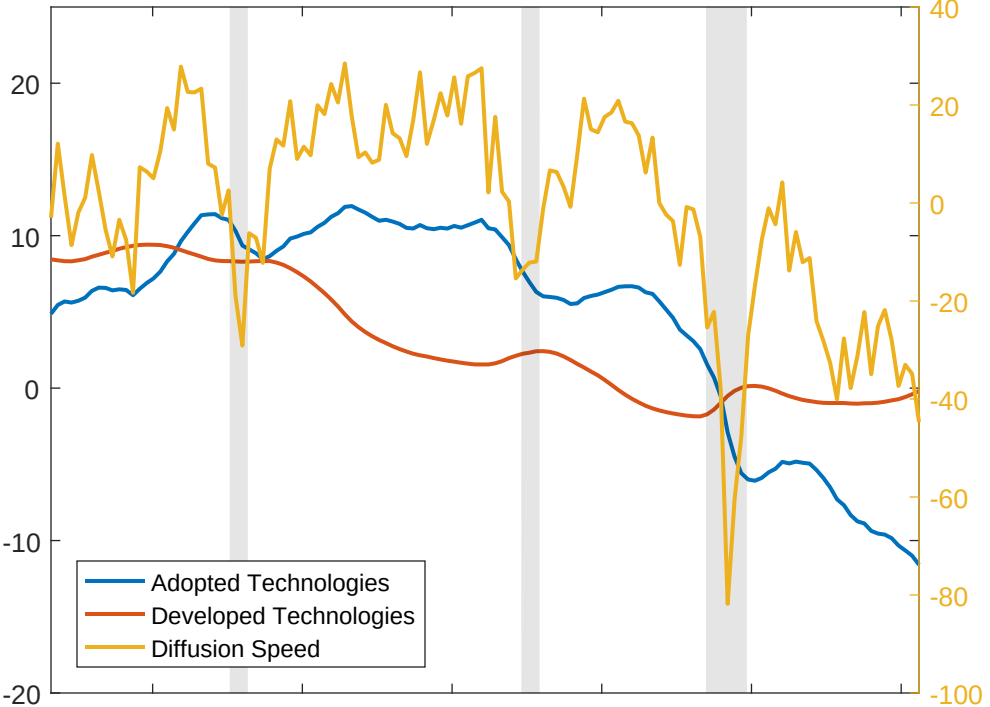


Figure 11: Sources of Endogenous Technology



Conclusions

- The decline in productivity during and after the GR is due to an endogenous response of companies to financial and business cycle conditions.

- The pre-GR decline in TFP growth is surely a reflection of the lower productivity in R&D

Figure 9: Endogenous TFP Decomposition