



Enhancing productivity growth in advanced countries



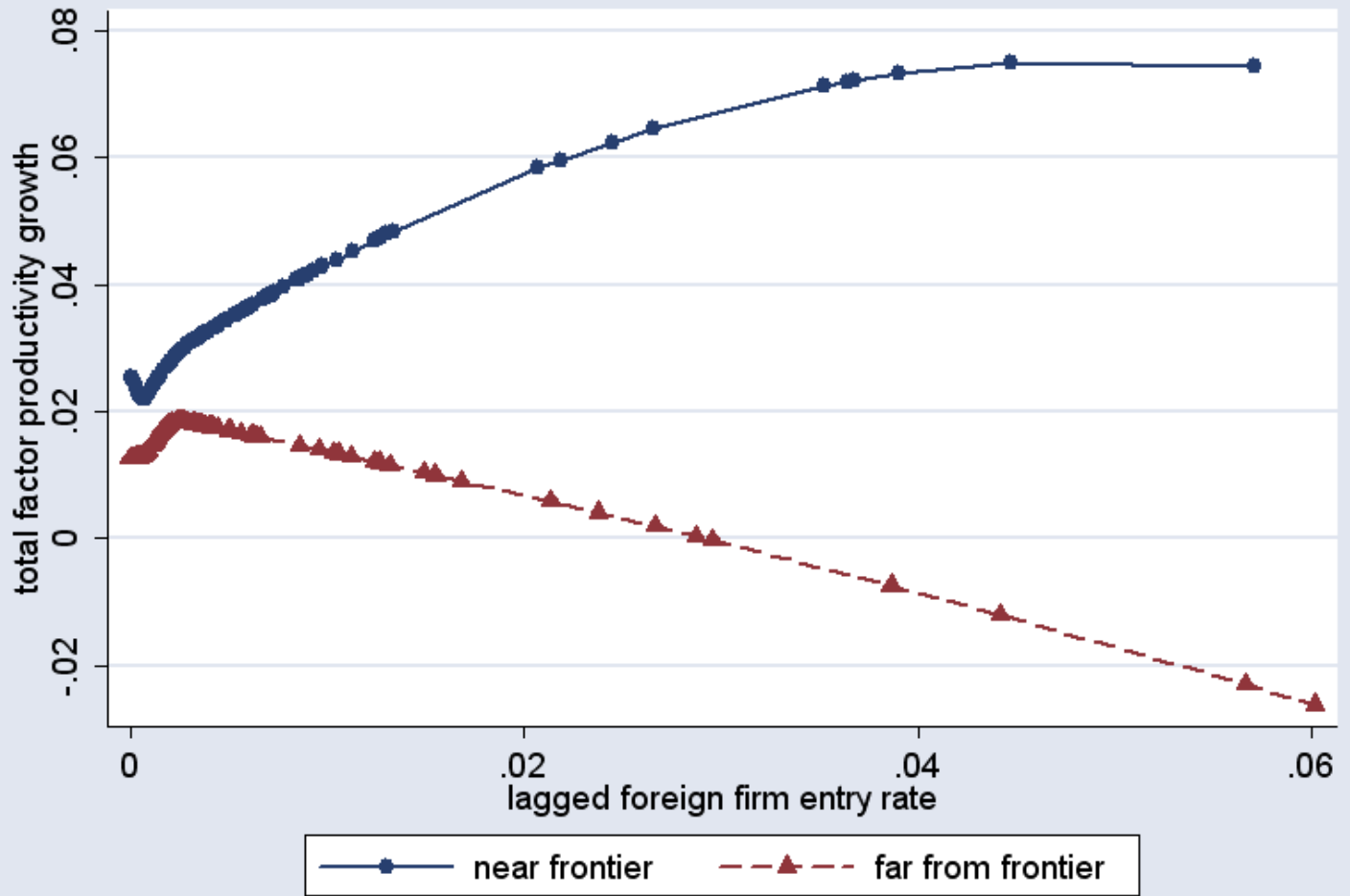
Enhancing productivity growth in advanced countries

- Liberalization of product market
- Investment in higher education
- Liberalization of labor market
- Equity financing



First pillar: Competition

- Competition/entry is more growth-enhancing for countries or sectors that are closer to technological frontier





Three fallacies about competition policy

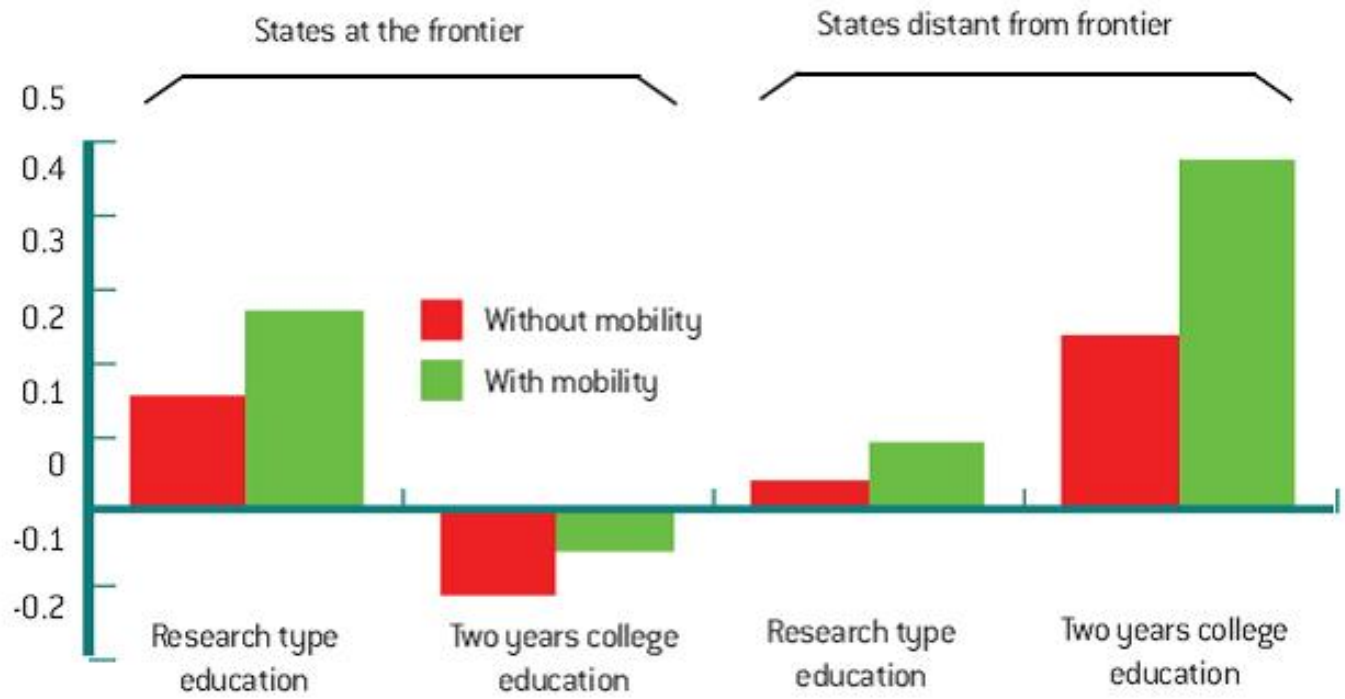
- Competition policy would counteract effects of patent policy: in fact the two policies are complementary
- Competition policy goes against any form of industrial policy: in fact the two are complementary
- Competition policy works independently of institutions: in fact corruption limits competition



Second pillar: education and universities

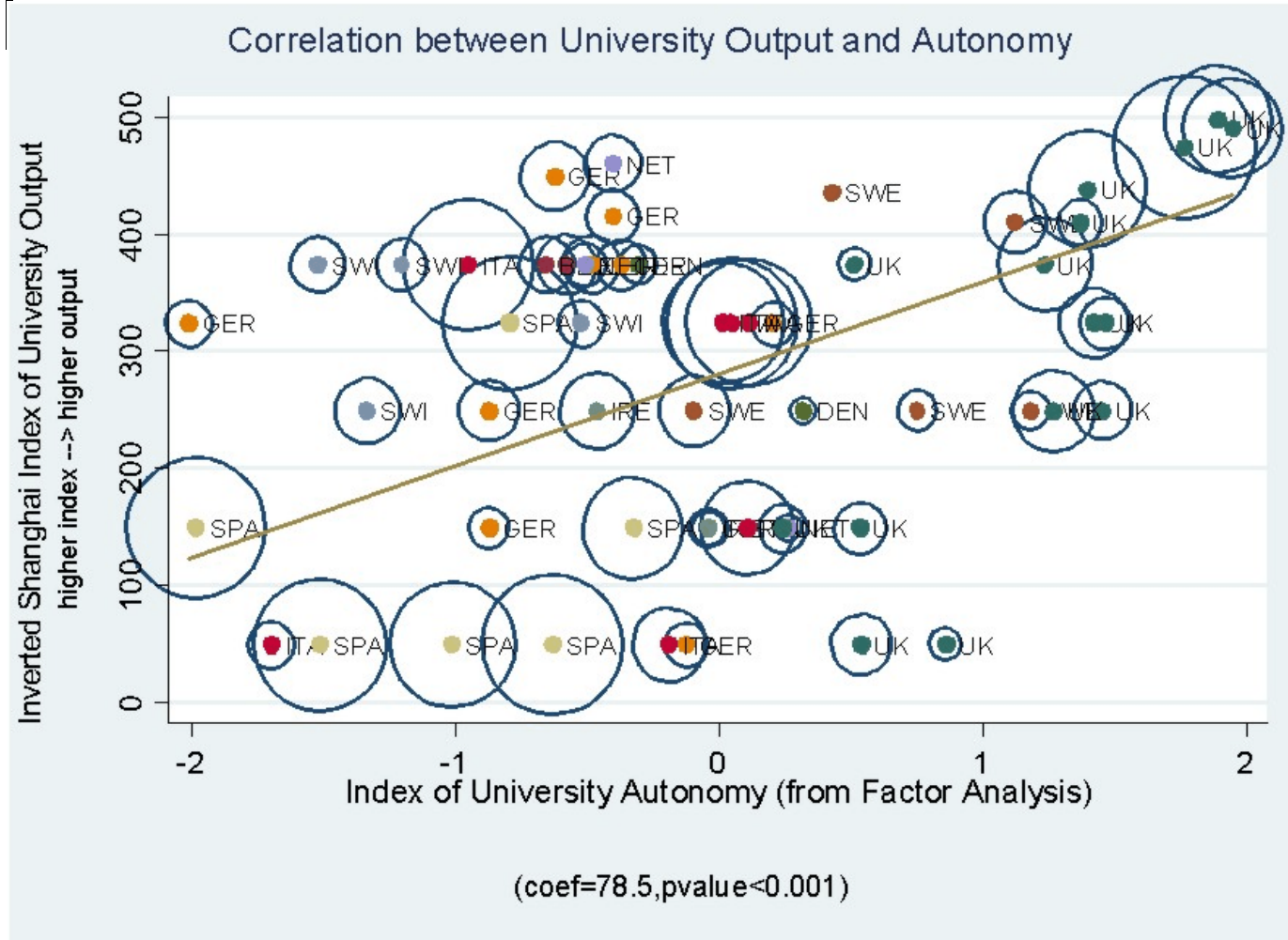
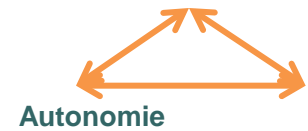
- Complementarity between funding and governance

Fig. 3
Long-term growth effects of \$1000 per person spending on education, US States



Source: Aghion, Boustan, Hoxby and Vandebussche (2005)

Autonomy of universities





Third pillar: Labor market flexibility: “flexsecurity”

- Labor market flexibility is more growth enhancing the closer a country is to the technological frontier
- Need to combine labor market flexibility with reasonable unemployment benefits conditional upon training for new jobs: flexsecurity!



EPL

Variable	eq1	eq2	eq3	eq4	eq5
Leader MFP growth	0.02949	0.02996	0.02830	0.02813	
Gap to Leader	-0.00858***	-0.00836***			
EPL	-0.00000				
EPL, for highest tercile		0.00002	-0.00009**	-0.00011**	-0.00015***
EPL, for middle tercile		0.00004*	0.00002	0.00001	0.00001
EPL, for lowest tercile		0.00004	-0.00005	0.00002	0.00003
MFP Gap, for highest tercile			-0.01261***	-0.00816	-0.00547
Gap, for middle tercile			-0.00276	-0.00174	-0.00210
Gap, for lowest tercile			-0.00901***	-0.01095***	-0.01173***
EPL*Gap, for highest tercile				-0.00017	-0.00029*
EPL*Gap, for middle tercile				-0.00004	-0.00003
EPL*Gap, for lowest tercile				0.00012*	0.00014**
Leader growth, for highest tercile					0.13600***
Leader growth, for middle tercile					0.00817
Leader growth, for lowest tercile					-0.02597

legend: * p<.1; ** p<.05; *** p<.01



Fourth pillar: Finance

- As country moves closer to frontier, needs to rely more on equity finance and stock markets
- Reason is that innovative investments are more risky and therefore investors require both, to get a share of upside returns and to get control rights (Aghion-Bolton, 1992; Kaplan-Stromberg 2002).

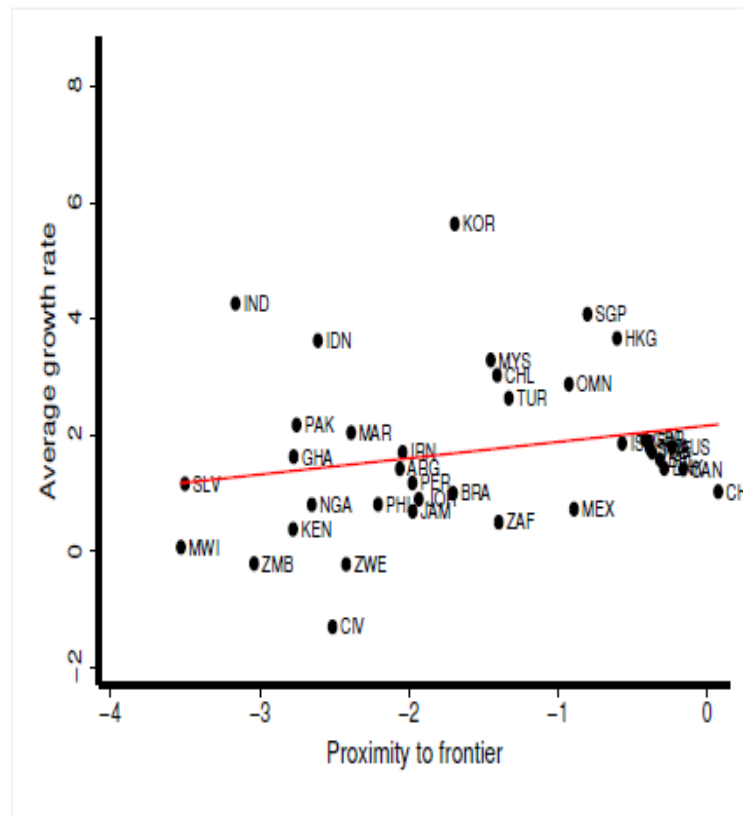
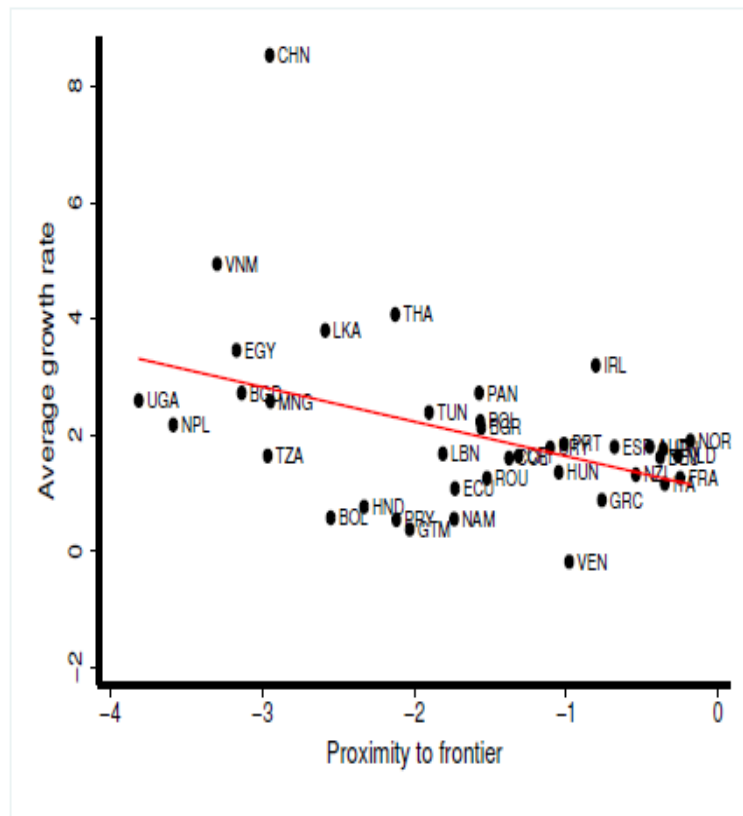


Figure 1: Average growth rate and Proximity to the frontier for the Bank-Based (left) and Market-Based (right) countries (per capita GDP growth rate)

Panel : Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Iceland, Italy, Japan, Korea, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States.

Times period : 1995-2007

Dependant variable : Hourly labour productivity growth (instrumental variables method)

	(1)	(2)	(3)	(4)	(5)
Changes in capacity utilization rate	0.00200*** (0.000622)	0.00190*** (0.000499)	0.00161*** (0.000475)	0.000908 (0.000648)	0.000634 (0.000702)
Growth in working time	-0.583*** (0.170)	-0.787*** (0.138)	-0.797*** (0.138)	-0.784*** (0.157)	-0.698*** (0.172)
Changes in the employment rate	-0.529*** (0.177)	-0.641*** (0.165)	-0.653*** (0.160)	-0.878*** (0.203)	-0.809*** (0.217)
Share of ICT production in total VA	0.930*** (0.261)	0.344* (0.195)	0.372** (0.179)	0.0614 (0.164)	0.170 (0.178)
Share of pop. (>15) w/ some higher educ.		0.0808** (0.0348)			
EPL			-0.00726** (0.00307)		
PMR(t-2)				-0.0103** (0.00486)	
EMPL* PMR(t-2)					-0.00368*** (0.00130)
Constant	-0.0376** (0.0160)	-0.0199 (0.0153)	0.0107 (0.0118)	0.0296** (0.0137)	0.0197* (0.0113)
Observations	163	149	142	95	95
P-value of the Durbin-Wu-Hausman endogeneity test	0.00066	0.02912	0.03388	0.02966	0.01112
P-value of Baumann test of overidentifying restrictions	0.6354	0.2581	0.4140	0.2075	0.7716

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

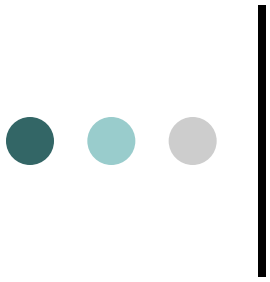


Schumpeterian waves



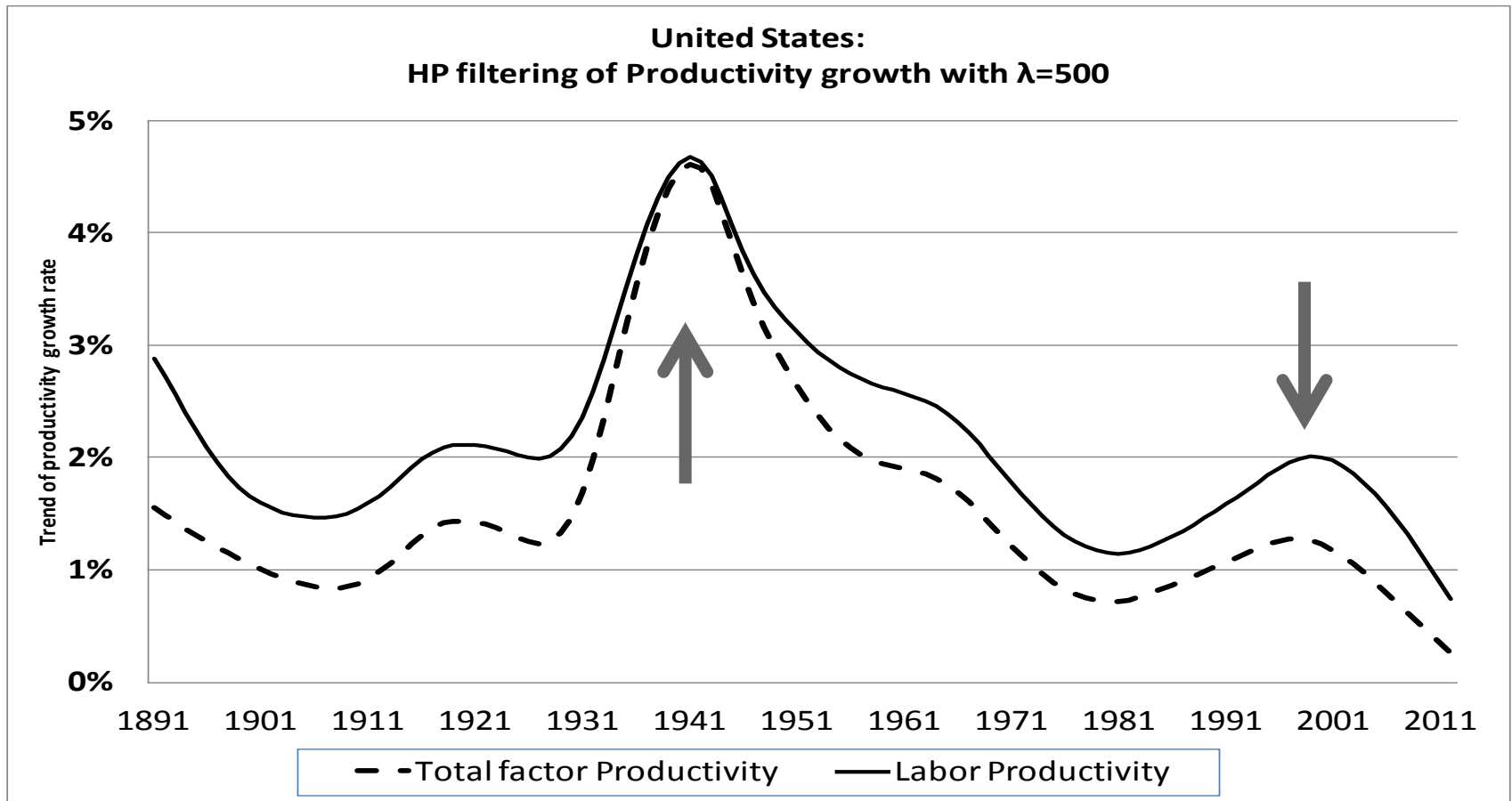
Schumpeterian waves

- ● ● |
- Drawn from Gilbert Cetto et al (2014)
- Productivity over the period 1890-2012
 - Using annual and quarterly data
 - From the end of the Long Depression to the Great Crisis
- 13 advanced countries
 - G7: US, UK, Japan, France, Germany, Italy, Canada
 - + Spain, The Netherlands, Finland, Australia, Sweden, Norway
 - + reconstituted Euro area
- Labor Productivity and TFP



1. Two productivity growth waves in US

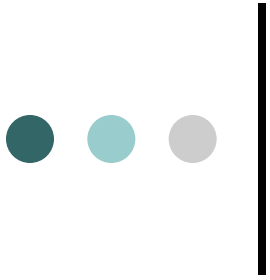
Two productivity growth waves





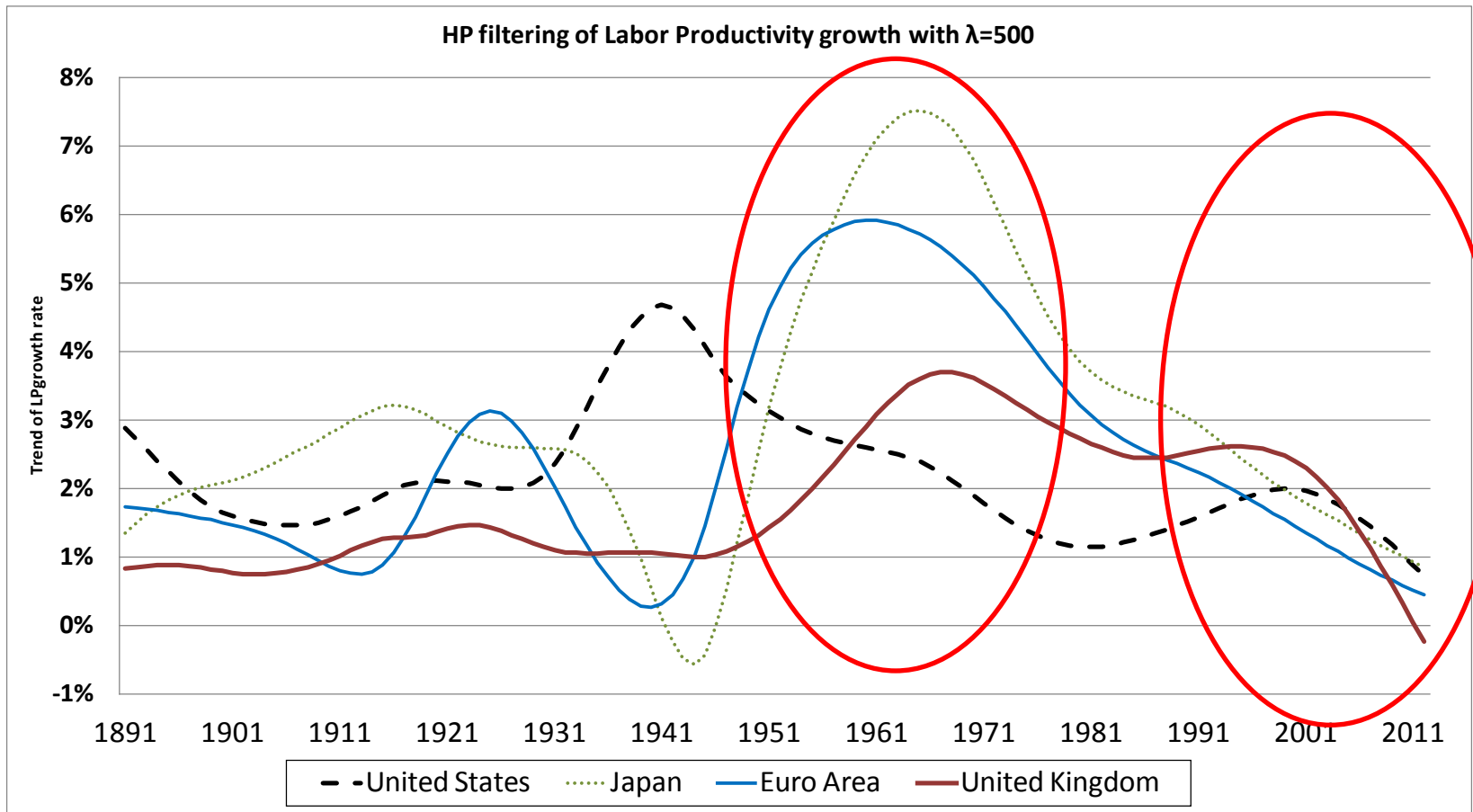
Two productivity growth waves

- 1st productivity growth wave:
 - 2nd industrial revolution: electricity, internal combustion engine, chemistry, communication (Gordon, 2000)
 - But also organizational change and financial development (Ferguson and Washer, 2004)
 - Long lag in diffusion: cf. electricity (David, 1990)
- 2nd productivity growth wave: ICT
 - Smaller wave
 - Ended?

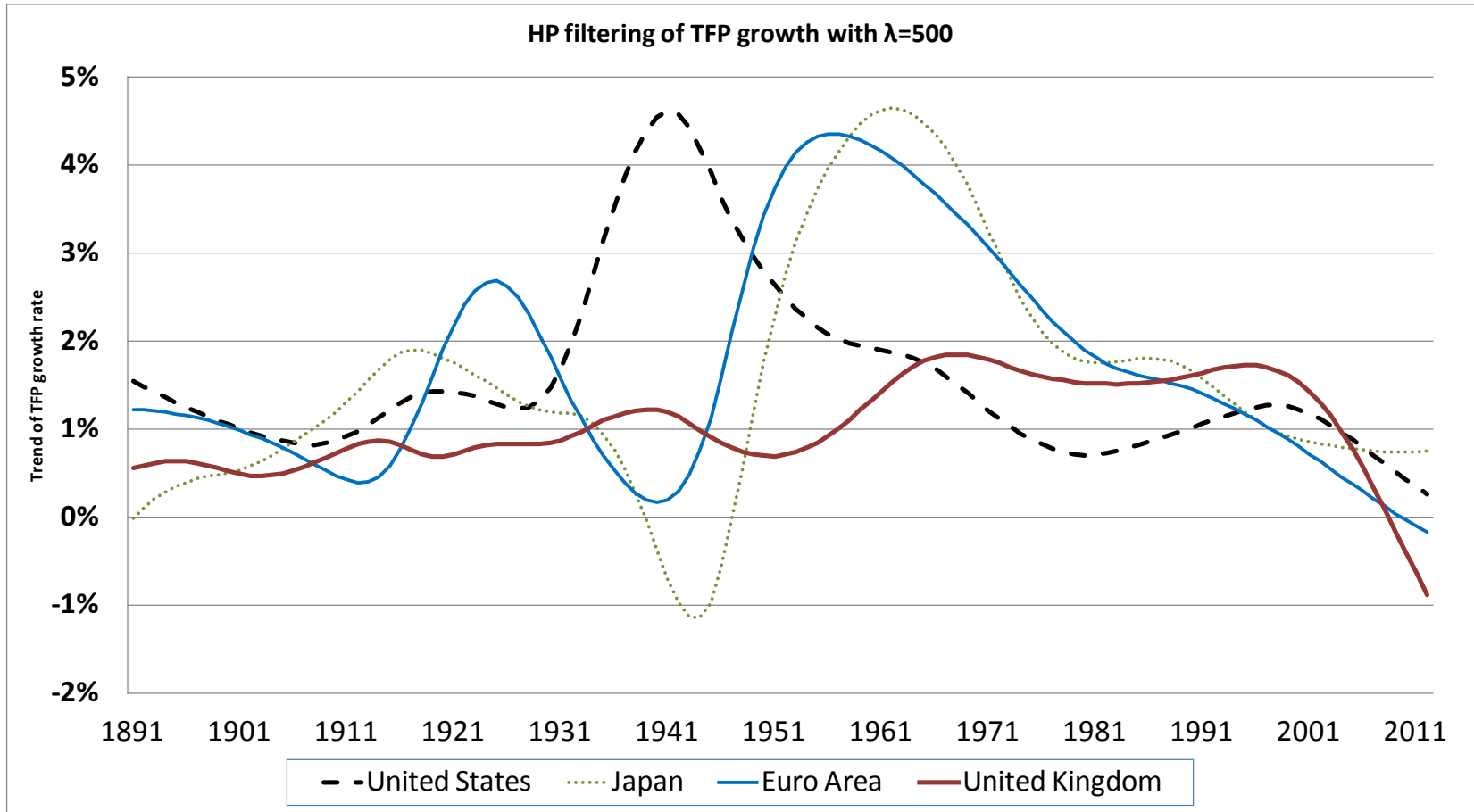


2. In other countries, delayed productivity growth waves (if any)

Delayed productivity growth waves in other countries



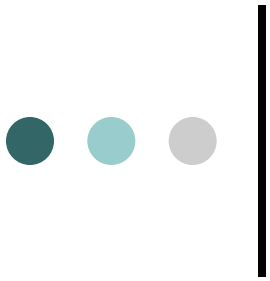
Delayed productivity growth waves in other countries





Delayed productivity growth waves in other countries

- 1st productivity growth wave:
 - Hitting the euro area, Japan and UK after WWII
- 2nd productivity growth wave:
 - Absent so far in the euro area and Japan
 - Slow ICT diffusion: Role of market rigidities / education?

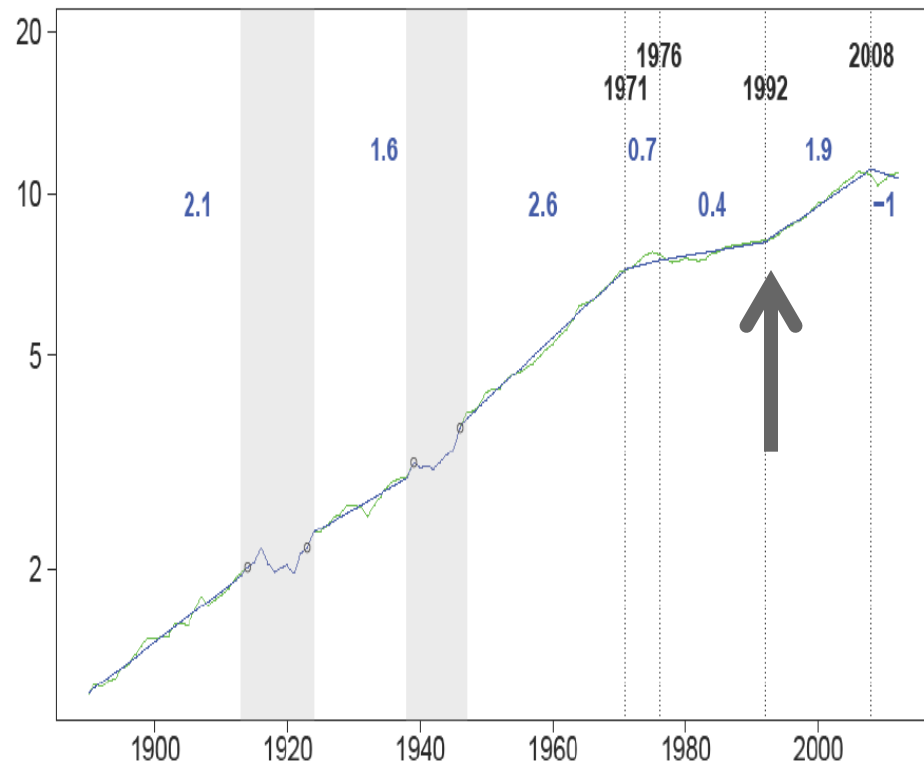
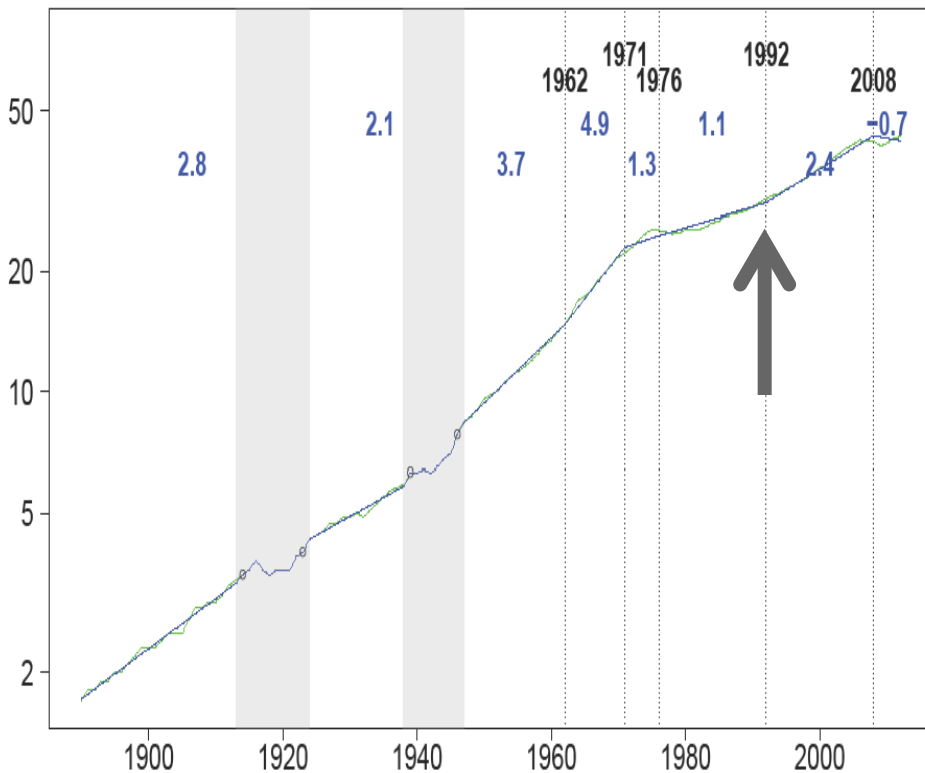


3. Country-specific productivity breaks due to idiosyncratic shocks

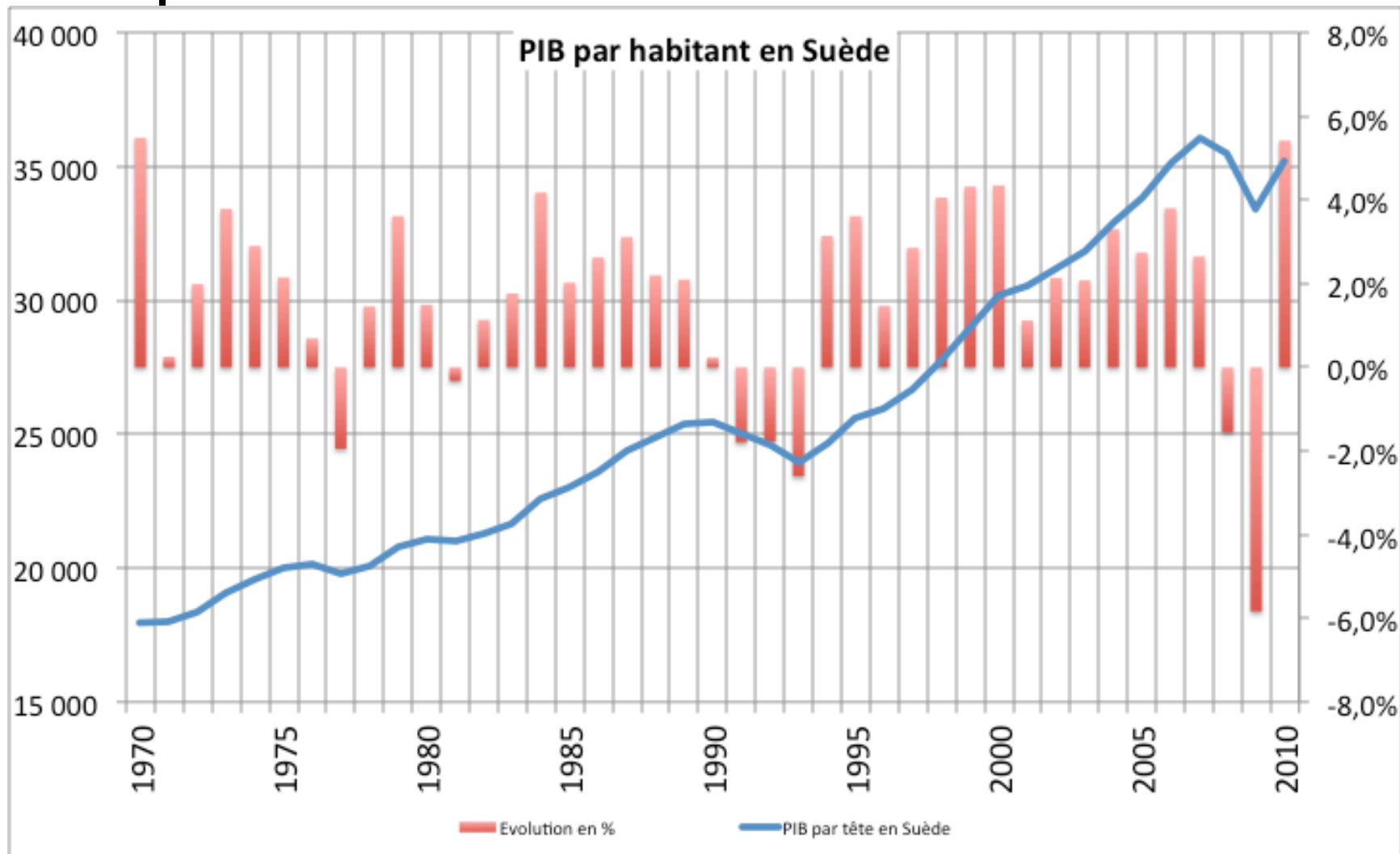
Productivity breaks: country-specific shocks Sweden

Labor productivity

Total Factor Productivity

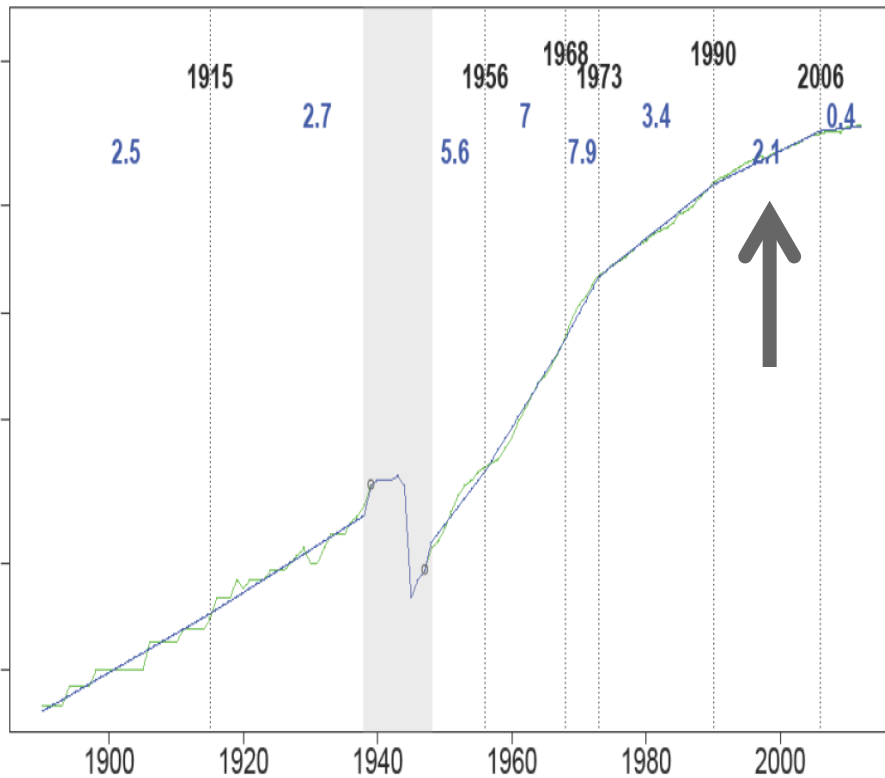


US\$ PPP of 2005 (log scale)
Areas in grey: war periods

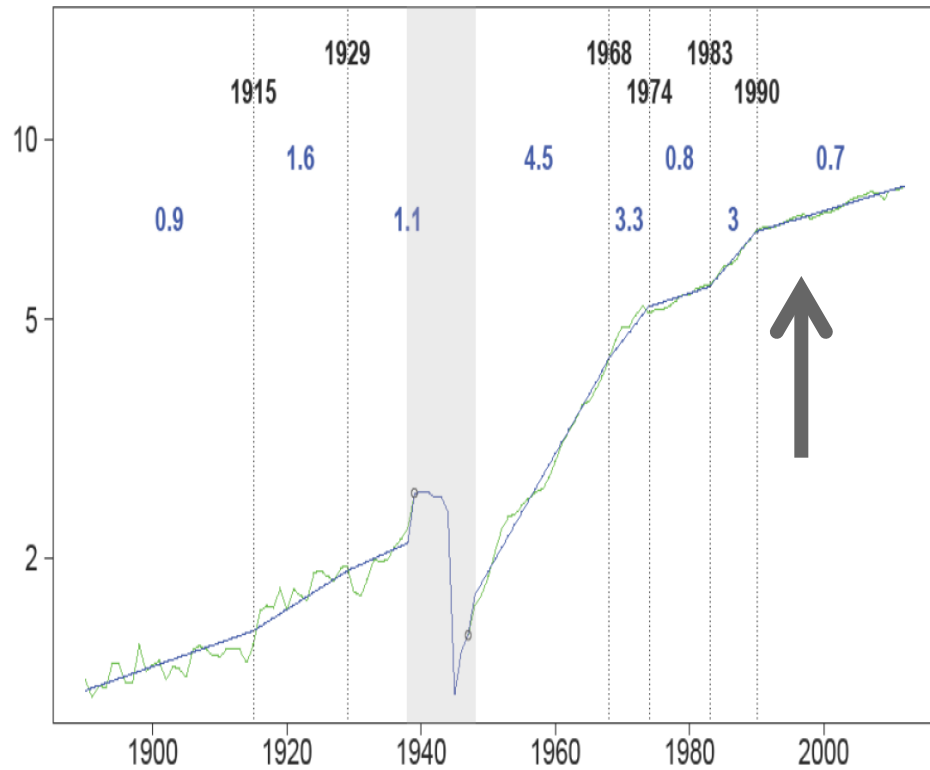


Productivity breaks: country-specific shock Japan

Labor productivity



Total Factor Productivity



US\$ PPP of 2005 (log scale)
Areas in grey: war periods



Country-specific productivity breaks

➤ Reformers

- **Netherlands:** Wassenaar agreement, 1982
 - TFP growth : 1977-1983 0,5 %, 1983-2002 1,5 %
- **Canada,** reforms initiated in early 1990s
 - TFP growth: 1974-1990 0,3 %, 1990-2000 1,1 %
- **Australia,** reforms initiated in early 1990s
 - TFP growth: 1971-1990 0,4 %, 1990-2002 1,4 %
- **Sweden,** reforms initiated in early 1990s
 - TFP growth: 1976-1992 0,4 %, 1992-2008 1,9 %



Conclusion

- Enhancing innovation requires
 - Investment and good governance in higher education
 - Structural reforms



Conclusion

- Making growth sustainable
 - Redirect technical change toward clean technologies
 - Make growth inclusive

● ● ● | Conclusion

○ Reforming the State



Conclusion

- A new Growth Pact for Europe:
 - Structural reforms in exchange for more macroeconomic flexibility
 - Use structural funds to encourage structural reforms
 - New European industrial policy