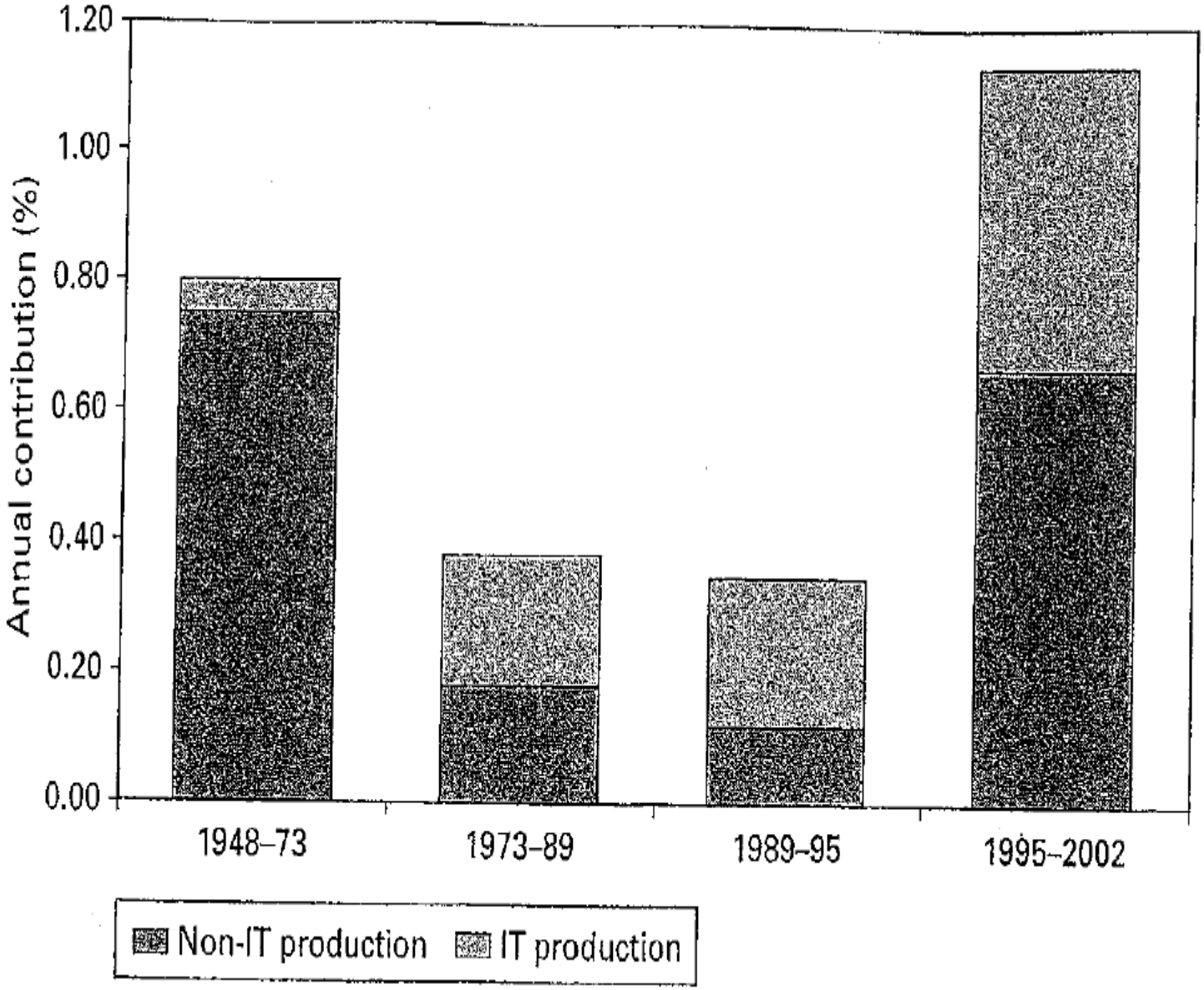
Vagues Schumpétériennes

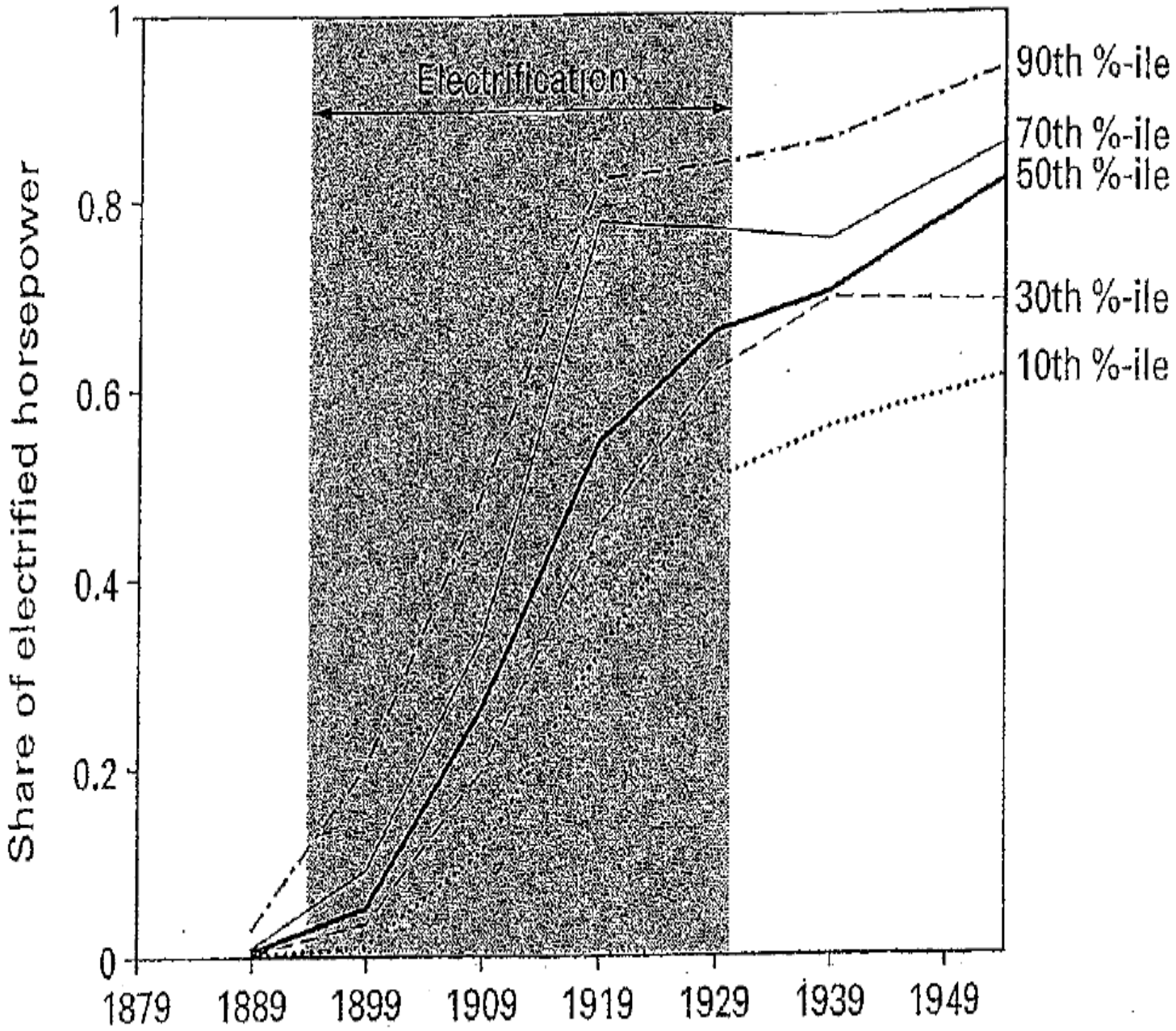
Technologies génériques

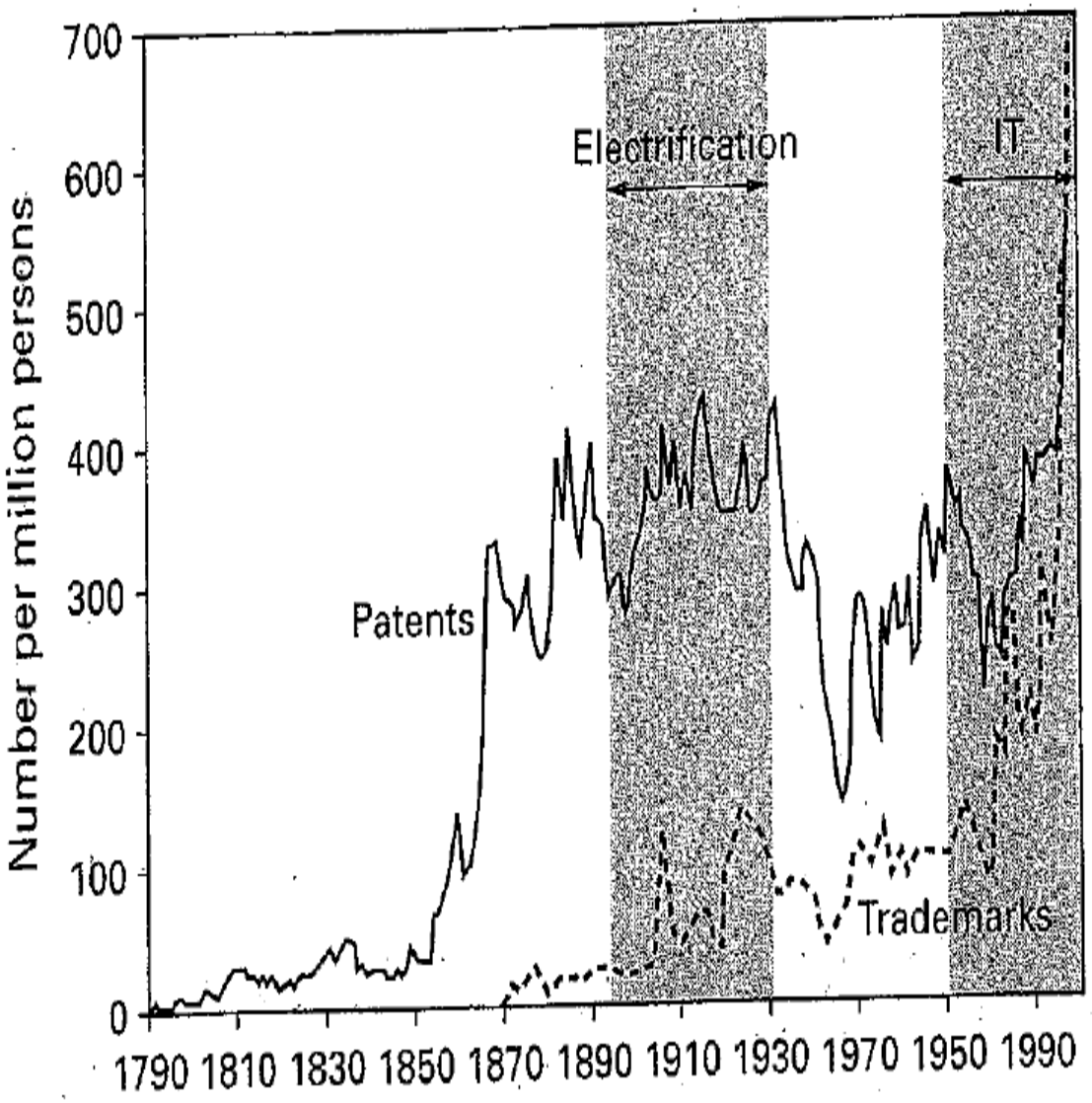
- Source des cycles de long-terme, ou “cycles de Kondratieff”?
- Notion de technologie générique
  - Utilisées dans tous les secteurs de l’économie
  - Les technologies génériques sont “sous-performantes” au début, mais apprentissage ensuite
  - Les technologies génériques induisent des innovations secondaires

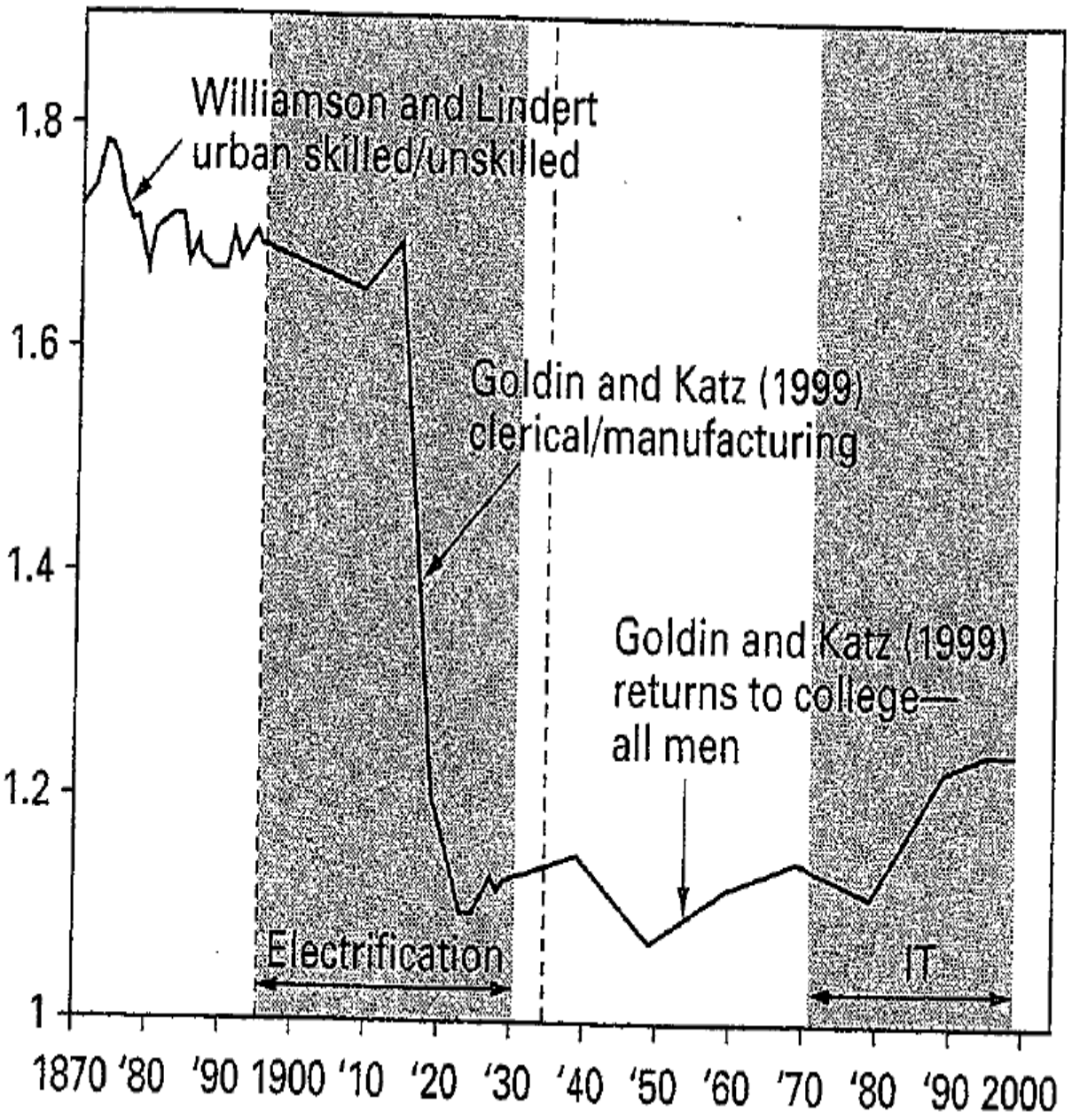
Technologies génériques

- Quelques effets de l'arrivée de nouvelles technologies génériques:
  - Ralentissement initial de l'économie
  - Augmentation du skill-premium
  - Augmentation du taux de destruction créatrice
  - Déclin initial des prix sur le marché boursier


1.20
1.00
0.80
0.60
0.40
0.20
0.00
Annual contribution (%)
1948–73
1973–89
1989–95
1995–2002
Non-IT production
IT production


Share of electrified horsepower
1
0.8
0.6
0.4
0.2
0
1879
1889
1899
1909
1919
1929
1939
1949
Electrification
90th %-ile
70th %-ile
50th %-ile
30th %-ile
10th %-ile


Number per million persons
700
600
500
400
300
200
100
0
Electrification
IT
Patents
Trademarks
1790 1810 1830 1850 1870 1890 1910 1930 1970 1950 1990


Williamson and Lindert
urban skilled/unskilled
Goldin and Katz (1999)
clerical/manufacturing
Goldin and Katz (1999)
returns to college—
all men
Electrification
IT
1.8
1.6
1.4
1.2
1
1870 '80 '90 1900 '10 '20 '30 '40 '50 '60 '70 '80 '90 2000

Tendances et ruptures

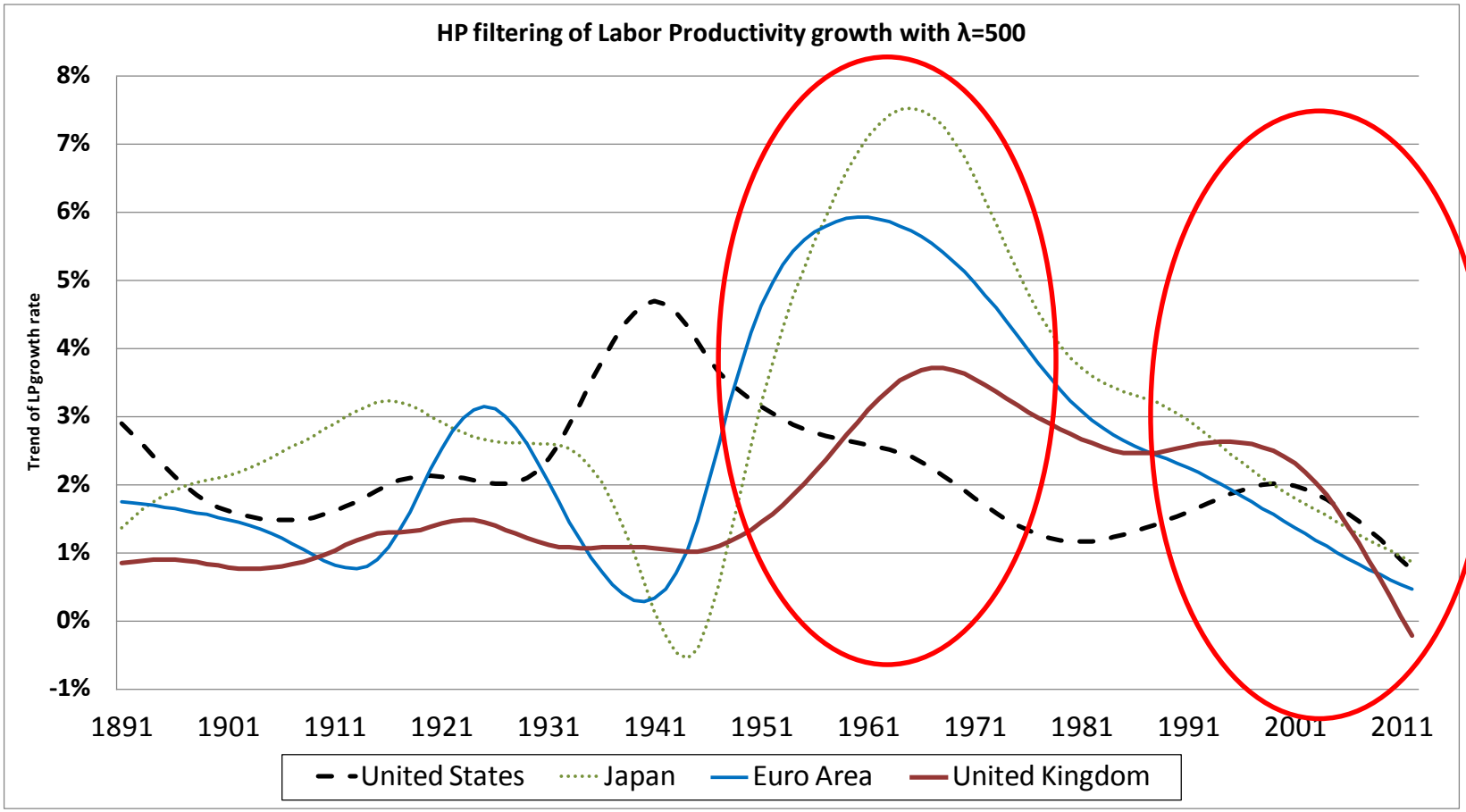
Two productivity growth waves

- 1st productivity growth wave:
  - 2nd industrial revolution: electricity, internal combustion engine, chemistry, communication (Gordon, 2000)
  - But also production organization and financial markets (Ferguson and Washer, 2004)
  - Long lag in diffusion: cf. electricity (David, 1990)

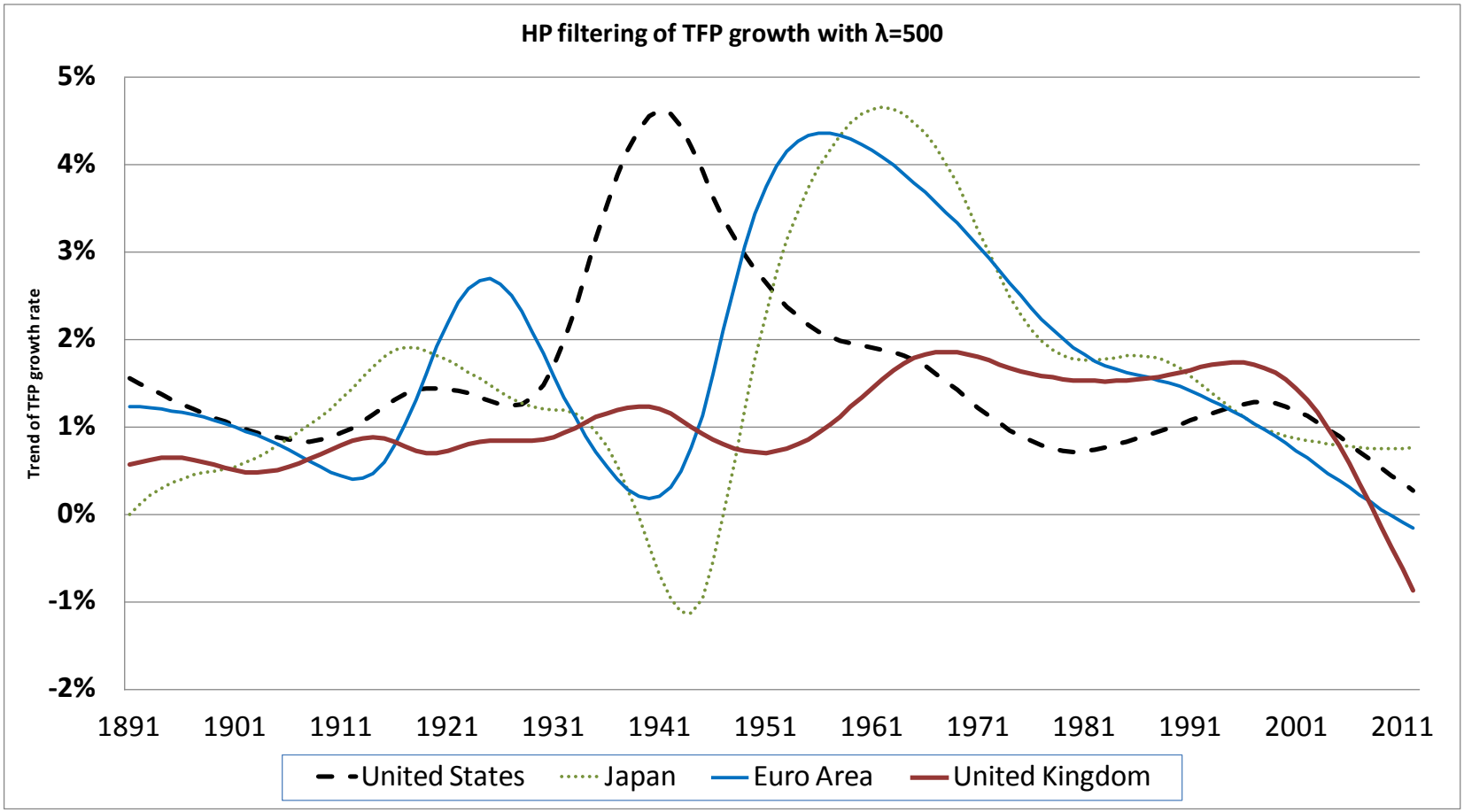
- 2nd productivity growth wave: ICT
  - Smaller wave
  - Ended?

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

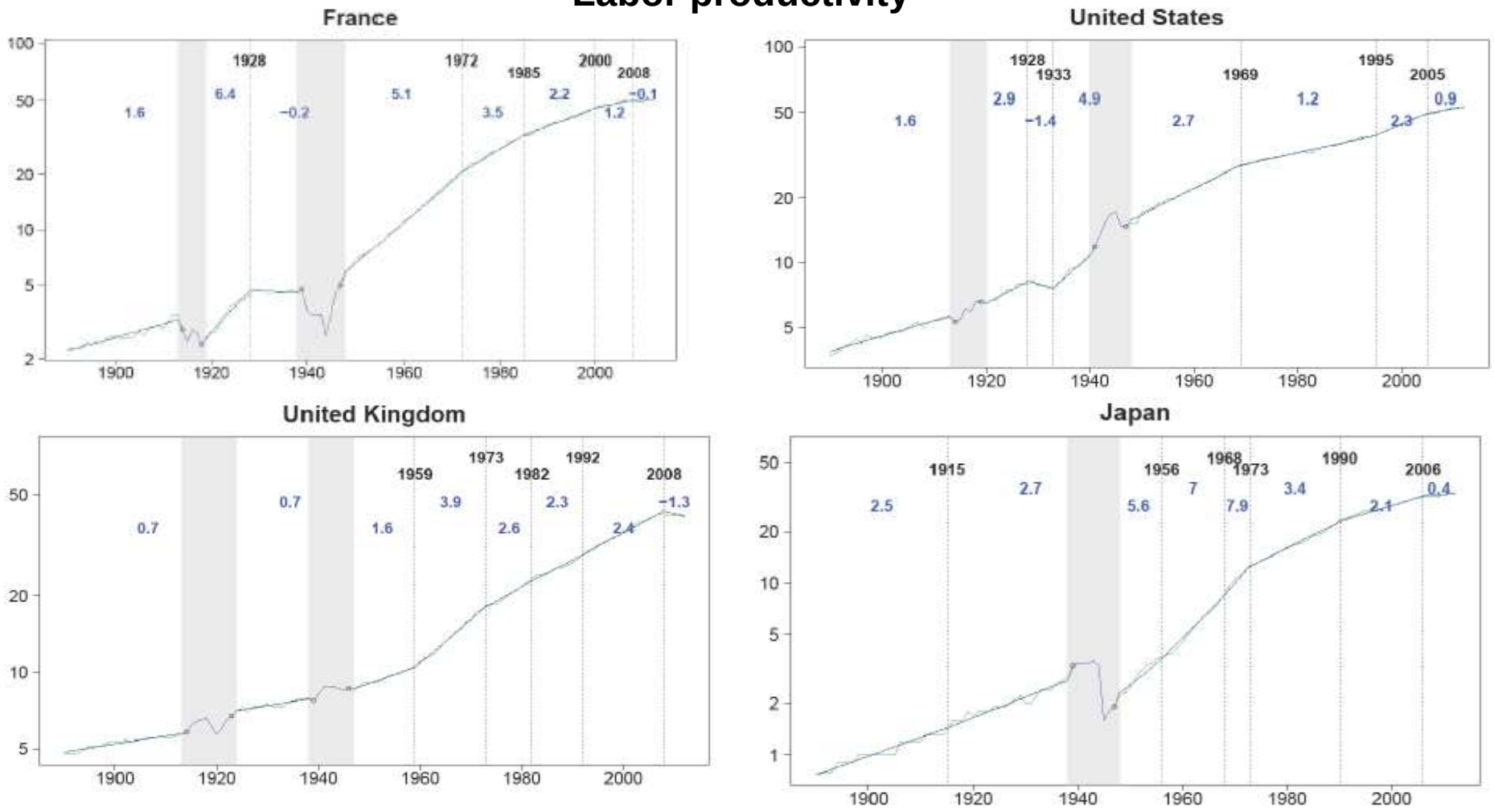
- 1st productivity growth wave:
  - Hitting the euro area, Japan and UK after WWII
  - Different amplitude but from different productivity levels

- 2nd productivity growth wave:
  - Absent so far in the euro area and Japan
  - Low productivity growth in the 1990s: Role of labor market policy
  - Low ICT diffusion: Role of market rigidities / education
  - A delayed wave?

3. Global productivity breaks due to global shocks

Productivity breaks: global shocks

Labor productivity



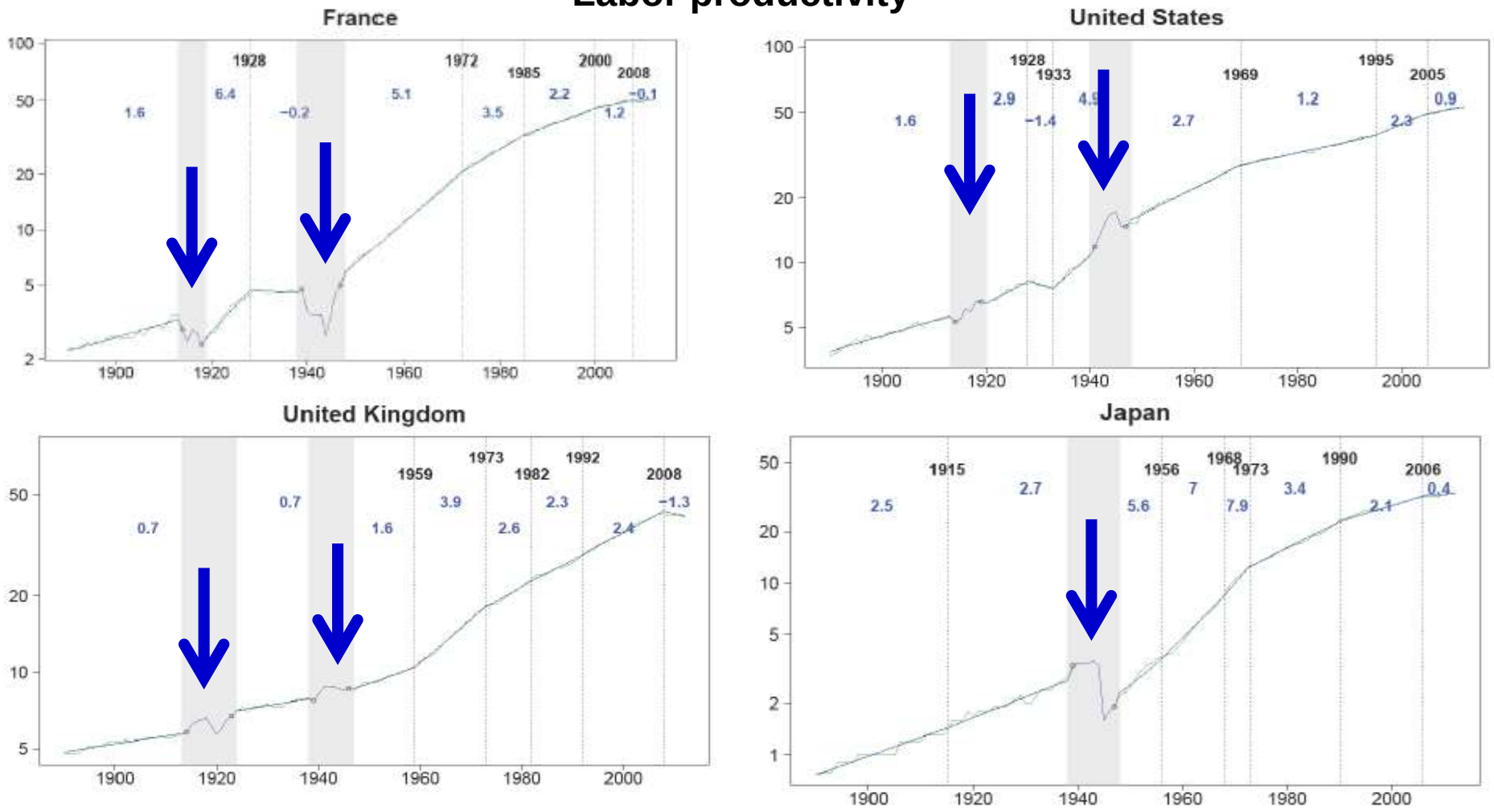
US$ PPP of 2005 (log scale)

Areas in grey: war periods

Productivity breaks: global shocks

Wars

Labor productivity



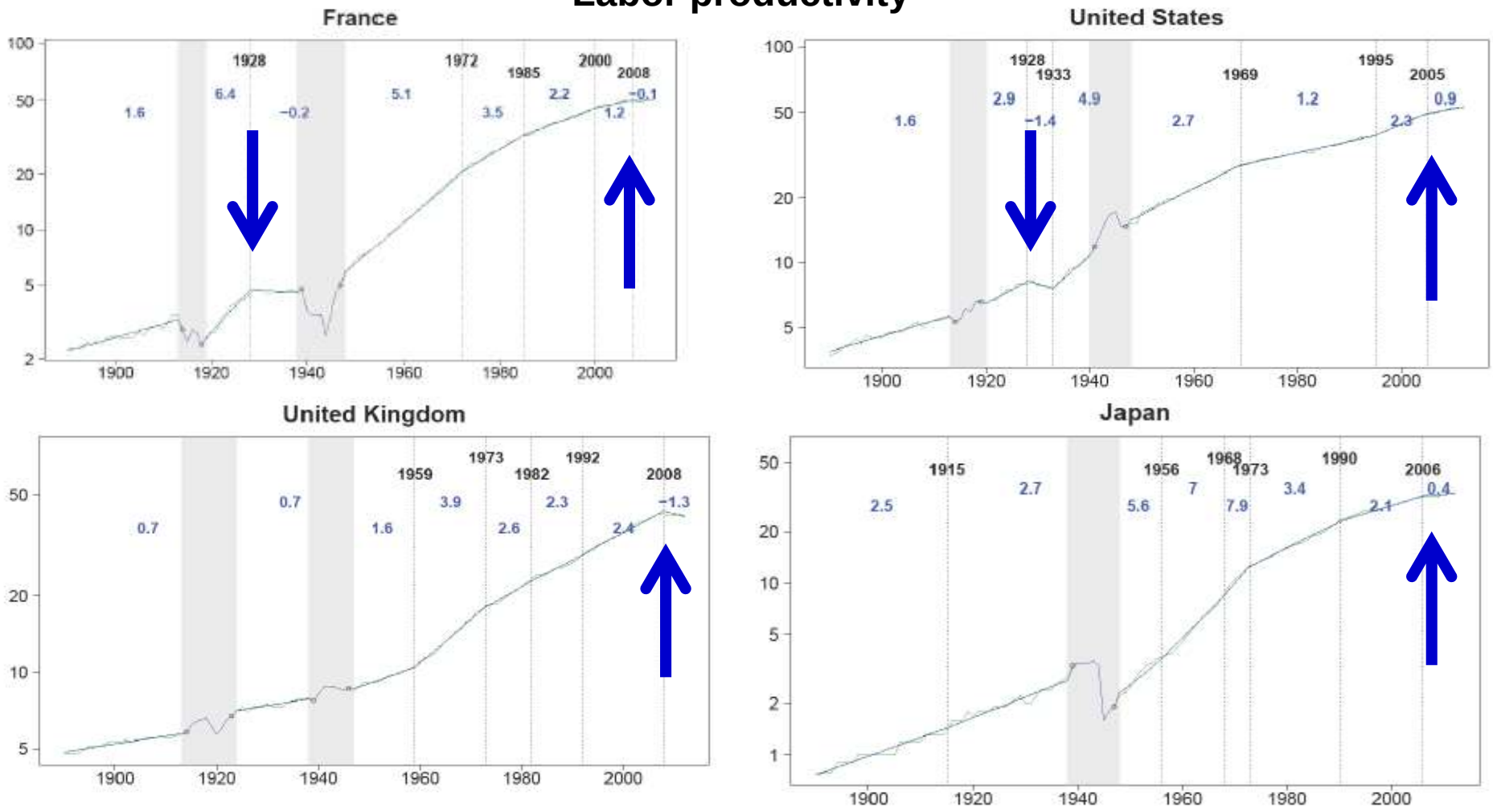
US$ PPP of 2005 (log scale)

Areas in grey: war periods

Productivity breaks: global shocks

Global financial crisis

Labor productivity



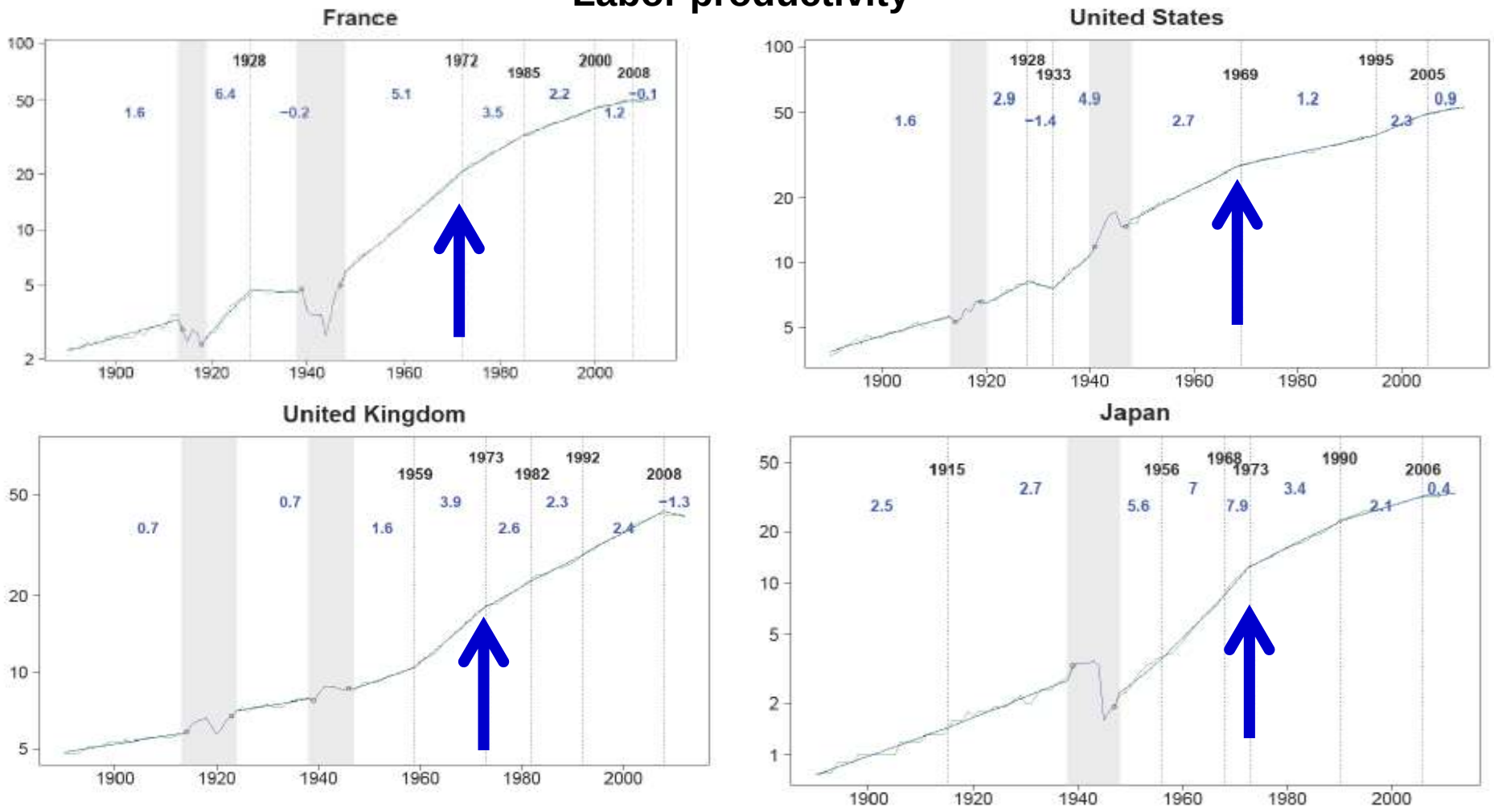
US$ PPP of 2005 (log scale)

Areas in grey: war periods

Productivity breaks: global shocks

Global supply shocks

Labor productivity



US$ PPP of 2005 (log scale)

Areas in grey: war periods

Global Productivity breaks

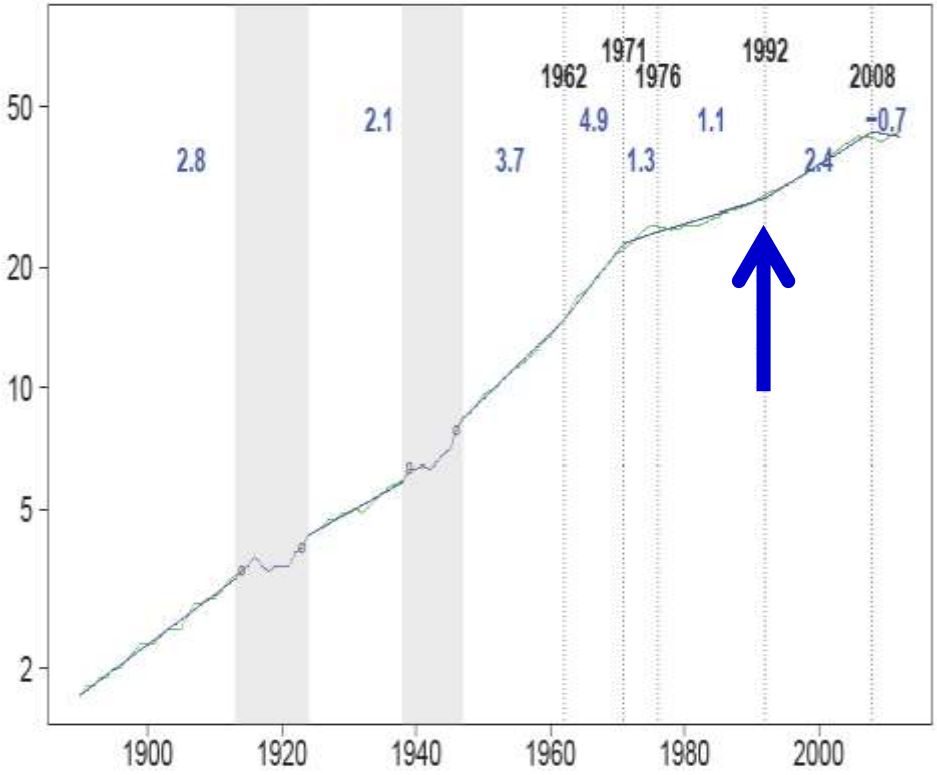
- **Due to wars, but in a divergent way:**
  - Upward level break for the United States
  - Downward for France, Germany and Japan
- **Due to the Great Depression, but very different recovery:**
  - Most countries affected, except Japan, Italy and the UK
  - Exit through war for most countries
  - But strong rebound in the US and Canada
- **Due to global supply shocks**
  - Generalized impact of the first oil shock
  - But different timings: US 1966/69
- **Due to the financial crisis**
  - Early break in the US?

4. Country-specific productivity breaks due to idiosyncratic shocks

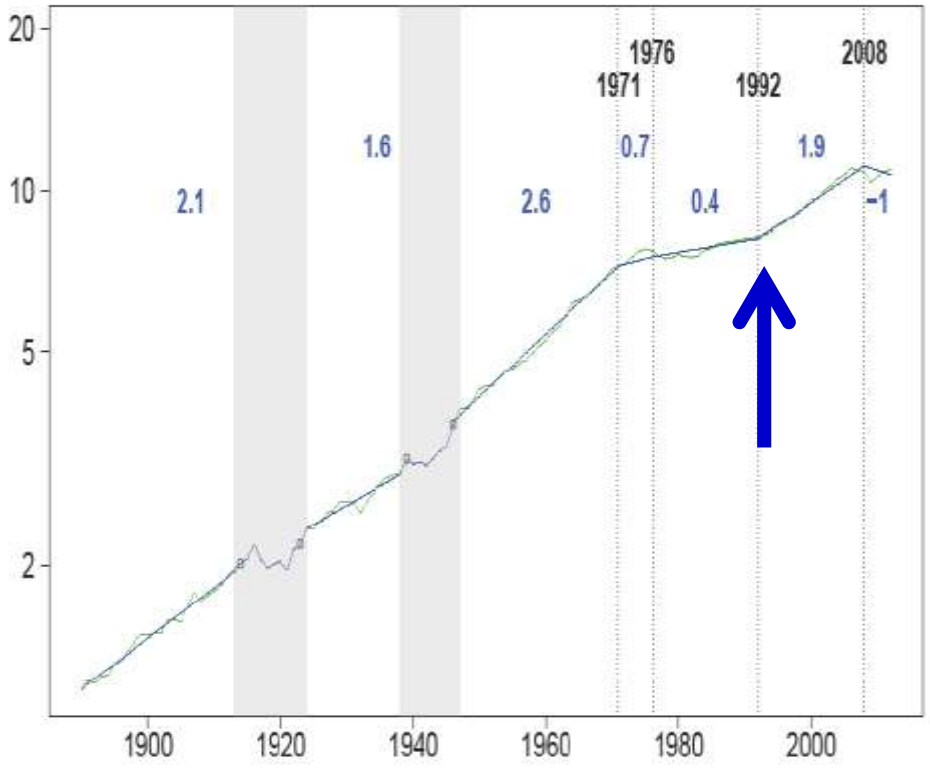
Productivity breaks: country-specific shocks

Sweden

Labor productivity



Total Factor Productivity

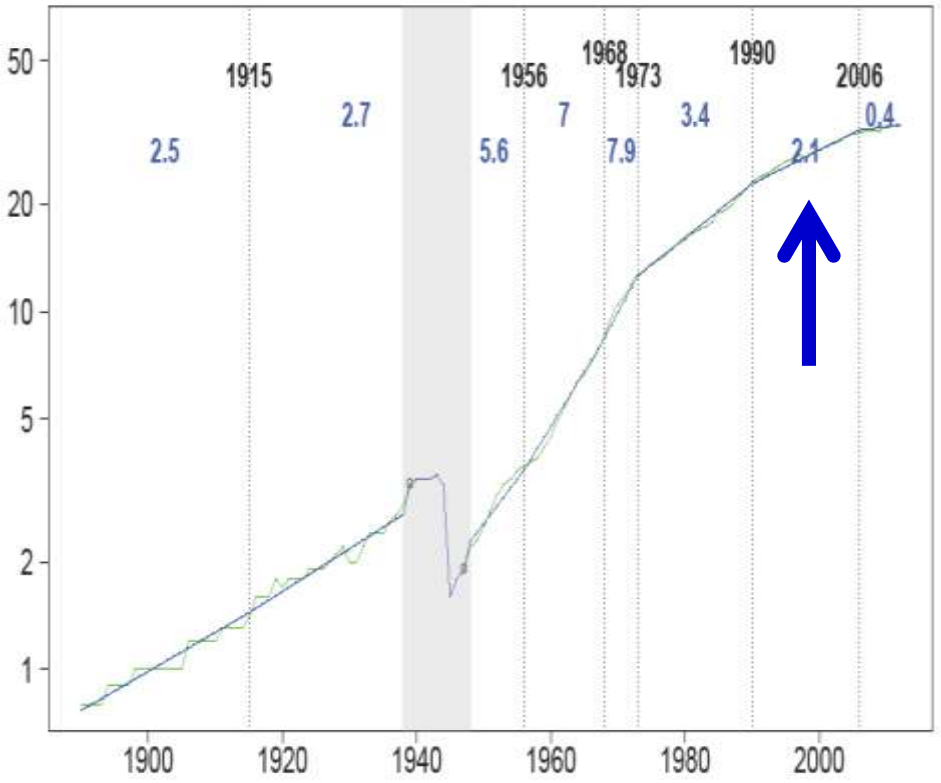


US$ PPP of 2005 (log scale)
Areas in grey: war periods

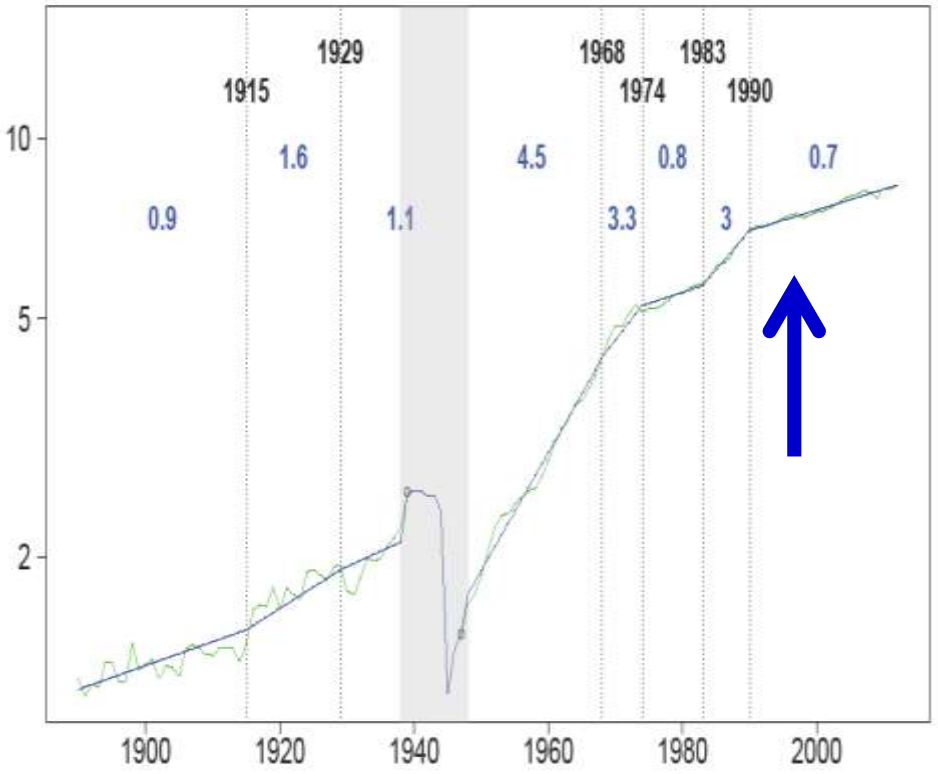
Productivity breaks: country-specific shock

Japan

Labor productivity



Total Factor Productivity



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

Country-specific productivity breaks

- Due to localized innovation clusters:
  - US 1933: 2nd industrial revolution
  - US 1995: ICT (Jorgenson, 2001)

- Due to policy shocks/structural reforms:
  - Canada or Sweden 1990s
  - The Netherlands, 1983
  - Japan, 1990
  - Thatcher shock in the United Kingdom?

Reformers

- **Reformers**
  - **Netherlands:** Wassenaard 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

- Waves
  - Two main waves
  - Major role of wars and supply shocks
  - Interaction with structural reforms