

**A comparison of productivity
in France, Japan, the United Kingdom
and the United States
over the past century**

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A comparison of productivity in France, Japan, the United Kingdom and the United States over the past century

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1. Goal of the Paper and method

➤ comparison of productivity

- in France, Japan, the United Kingdom, the United States
- over the very long run (i.e. since 1890)
- over the medium run (i.e. over the past 30 years)

➤ based on the traditional “growth accounting” framework

➤ examine and compare

- levels and growth rates
- of labour productivity, both per employee and per hour, and of TFP

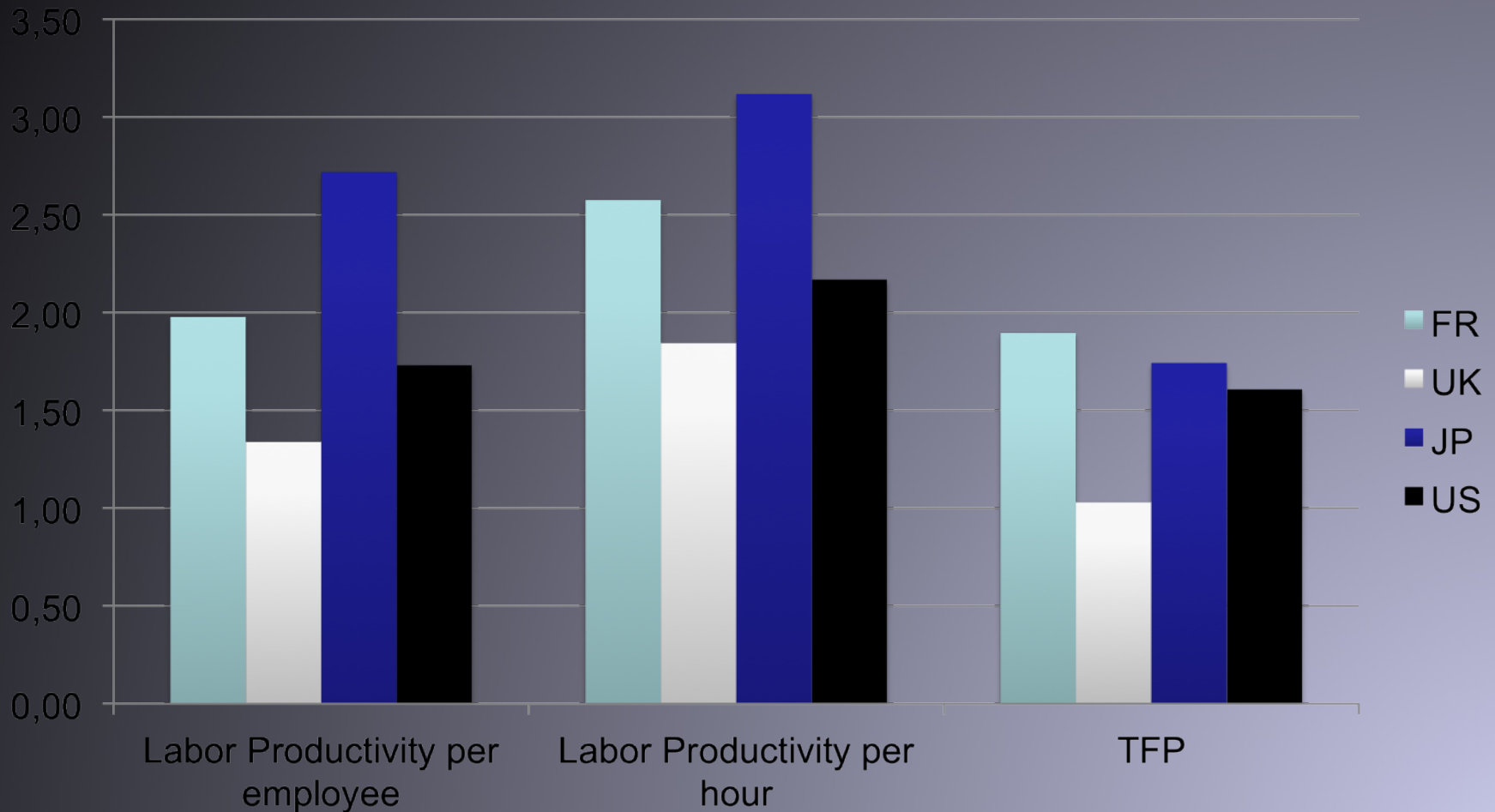
2. Data

- use aggregate historical data series from different sources : Lévy-Leboyer, Villa, Insee, Feinstein, Mitchell, Maddison,...;
- for the past years, we use national accounts available
- re-estimate the capital series for the four countries on the basis of the investment series with same hypothesis (constant depreciation rates per investment product)
- same hedonic price estimates (relative to GDP price indices) for France, Japan and the UK as those in the United States for ICT

3. Long run trends

3.1 Trends over the entire period (1/7)

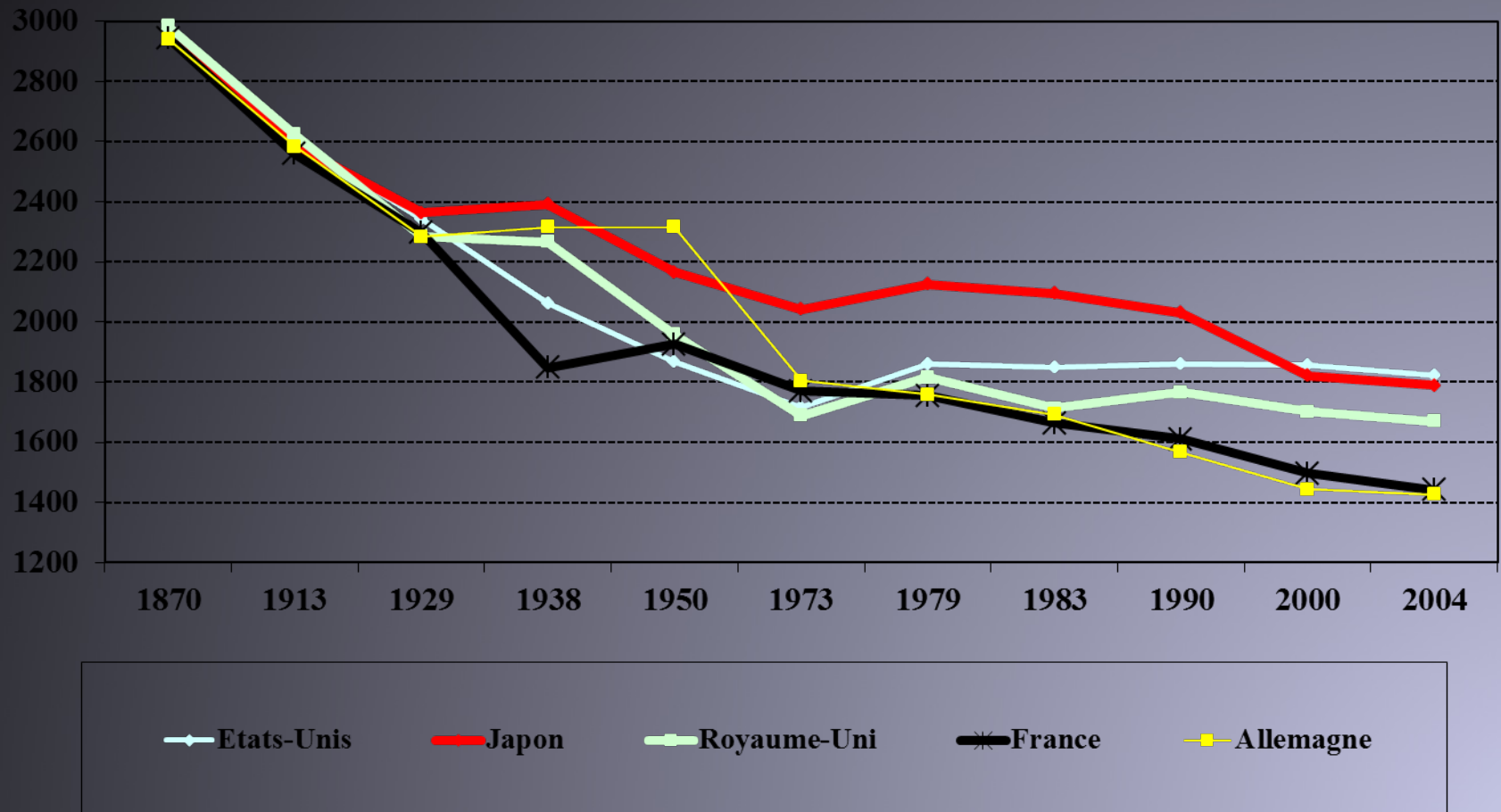
Productivity average annual growth, 1890-2010, in %



3. Long run trends

3.1 Trends over the entire period (2/7)

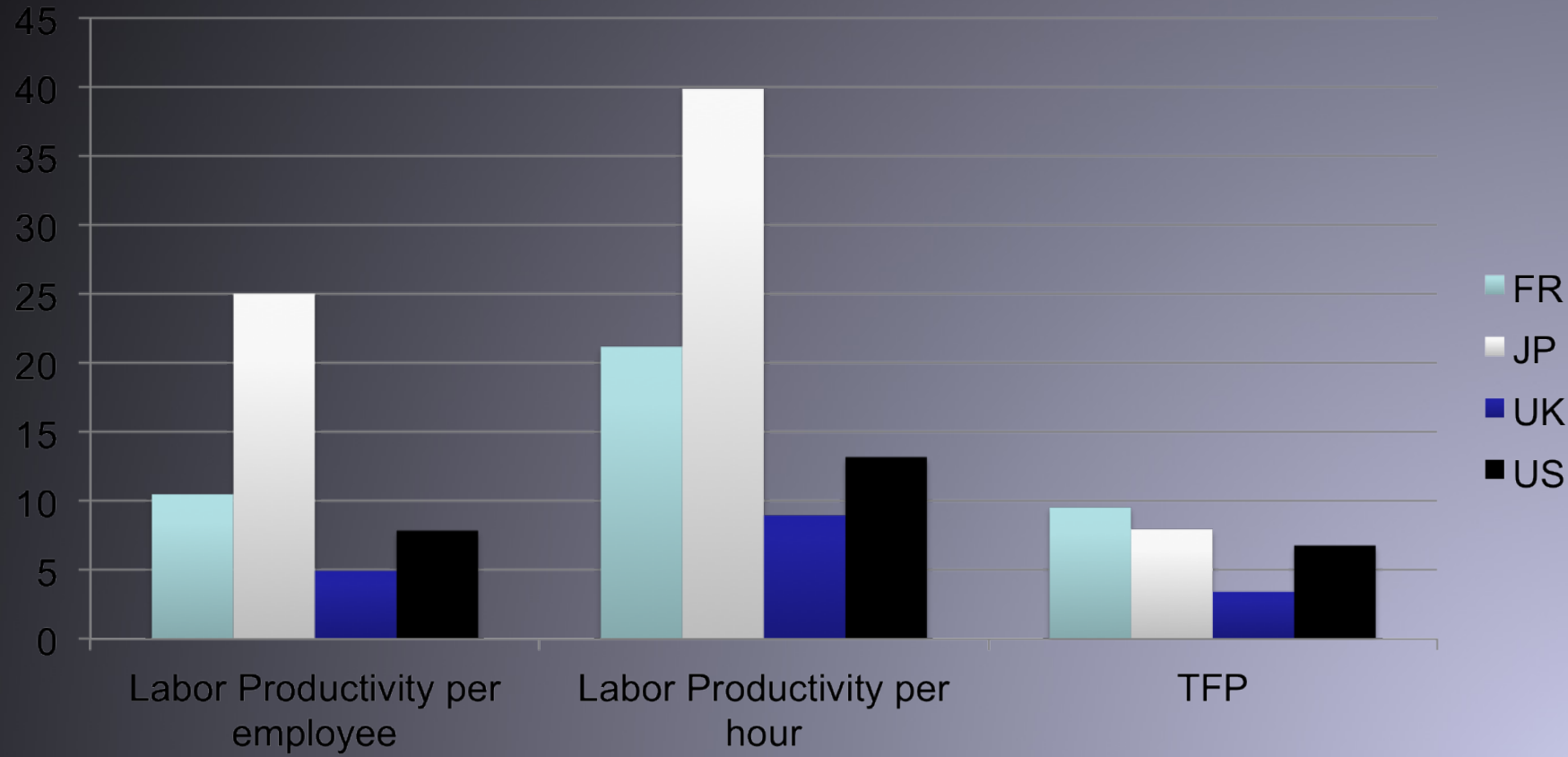
Labor working hours (per year)



3. Long run trends

3.1 Trends over the entire period (3/7)

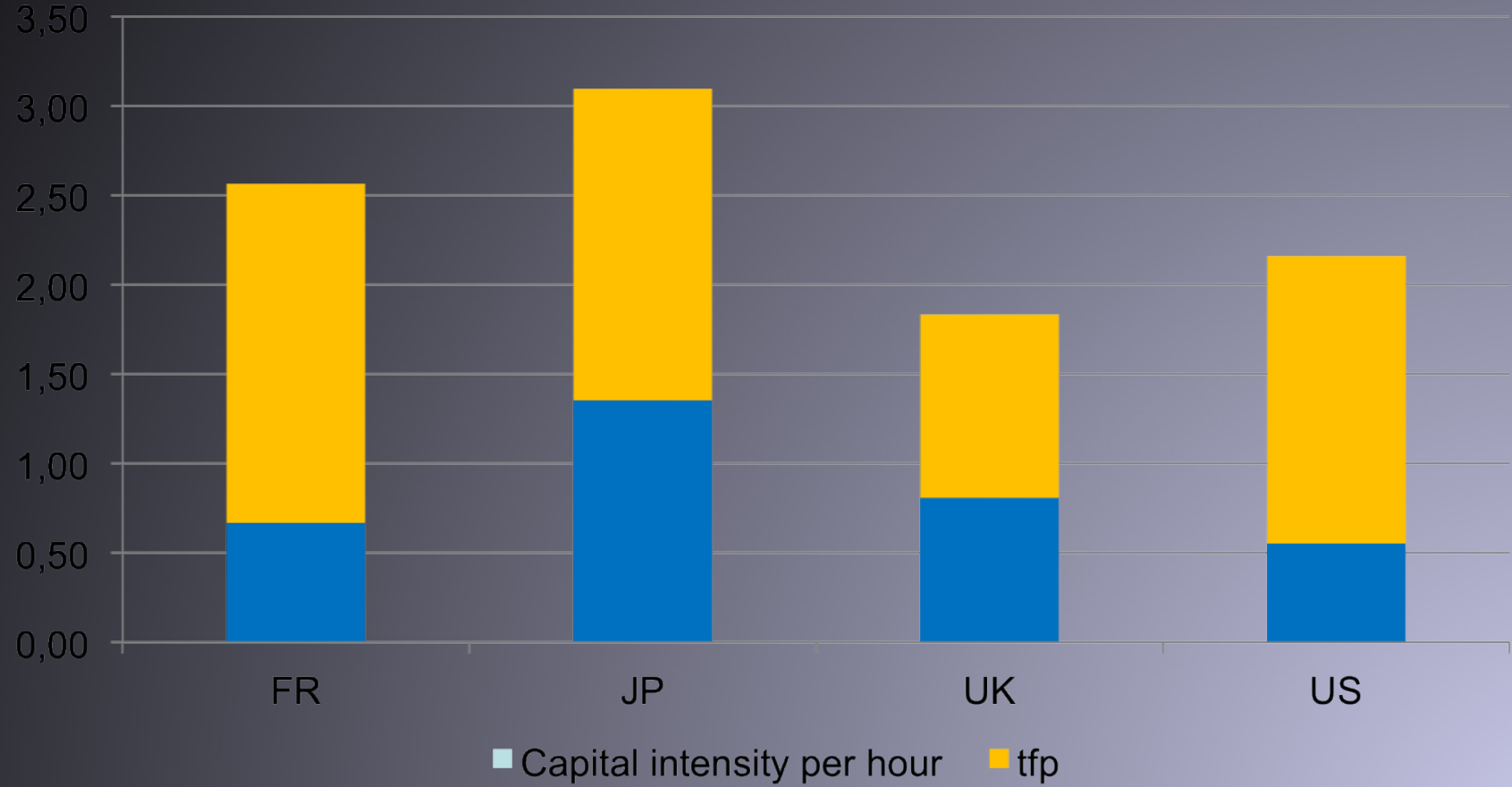
Increase in productivity level from 1890 to 2010
(1890=1)



3. Long run trends

3.1 Trends over the entire period (4/7)

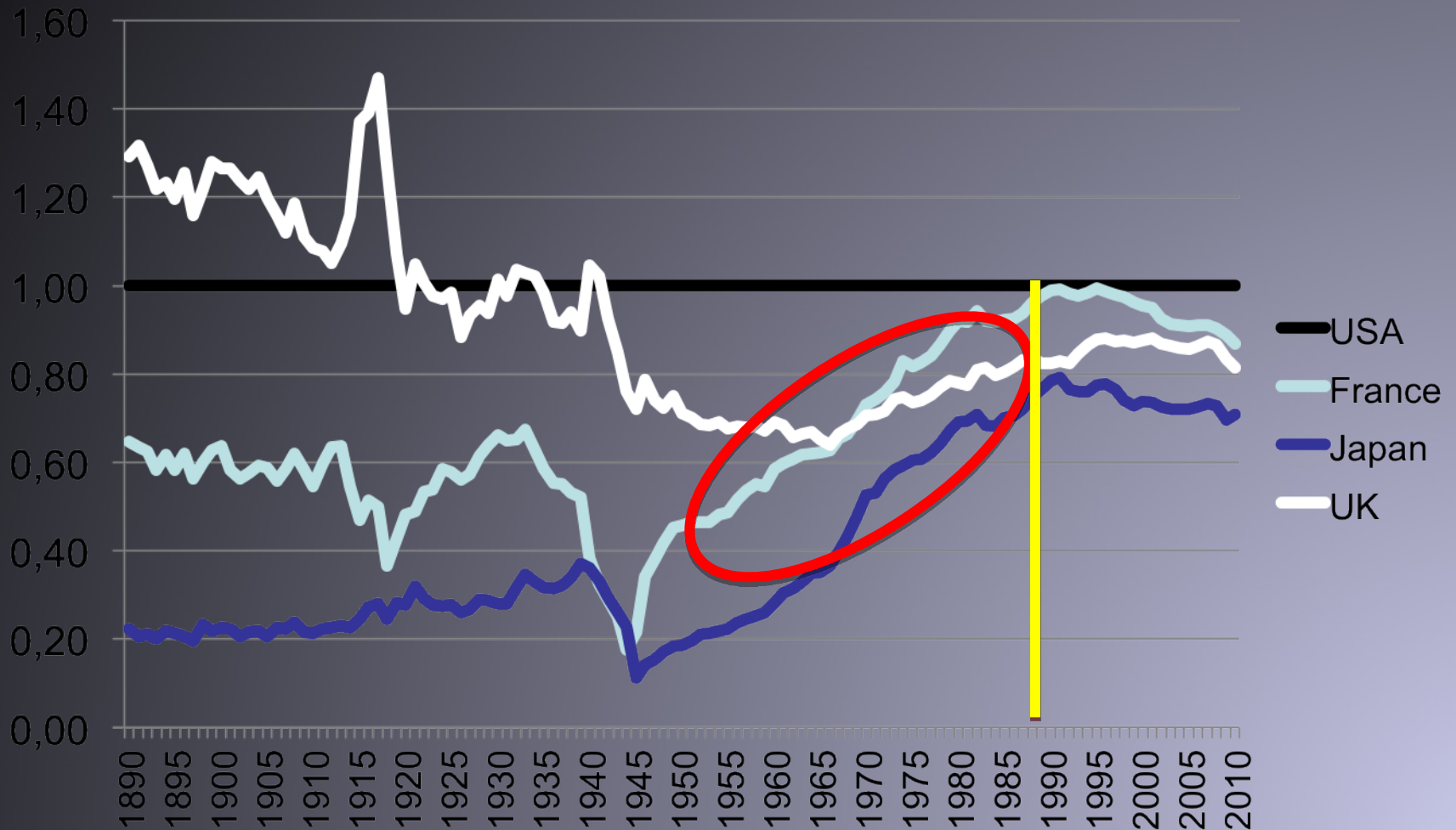
Labor productivity per hour, average annual growth rate from 1890 to 2010



3. Long run trends

3.1 Trends over the entire period (5/7)

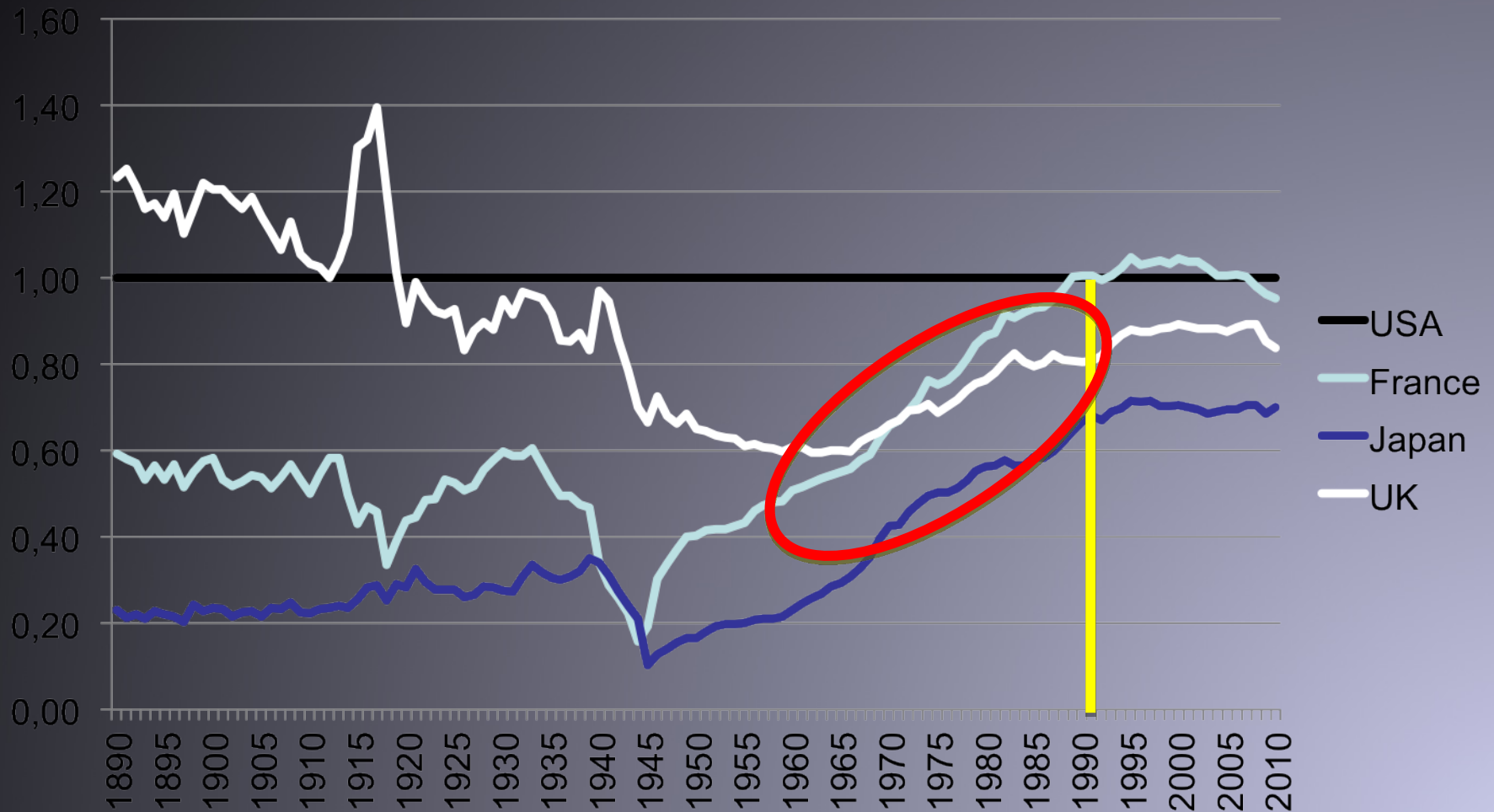
Labor Productivity **per employee**, 1890-2010, USA=1



3. Long run trends

3.1 Trends over the entire period (6/7)

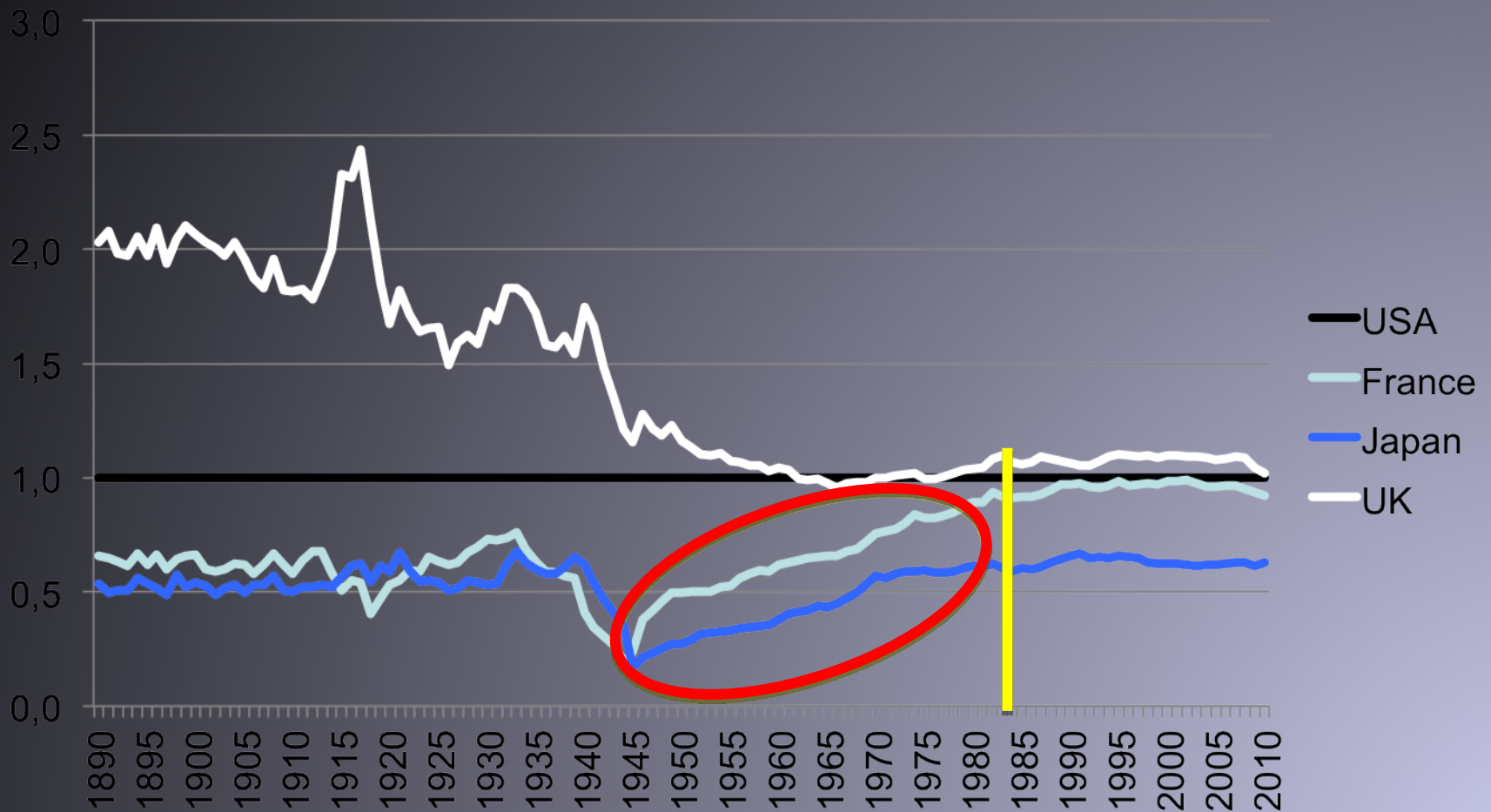
Labor Productivity **per hour**, 1890-2010, USA=1



3. Long run trends

3.1 Trends over the entire period (7/7)

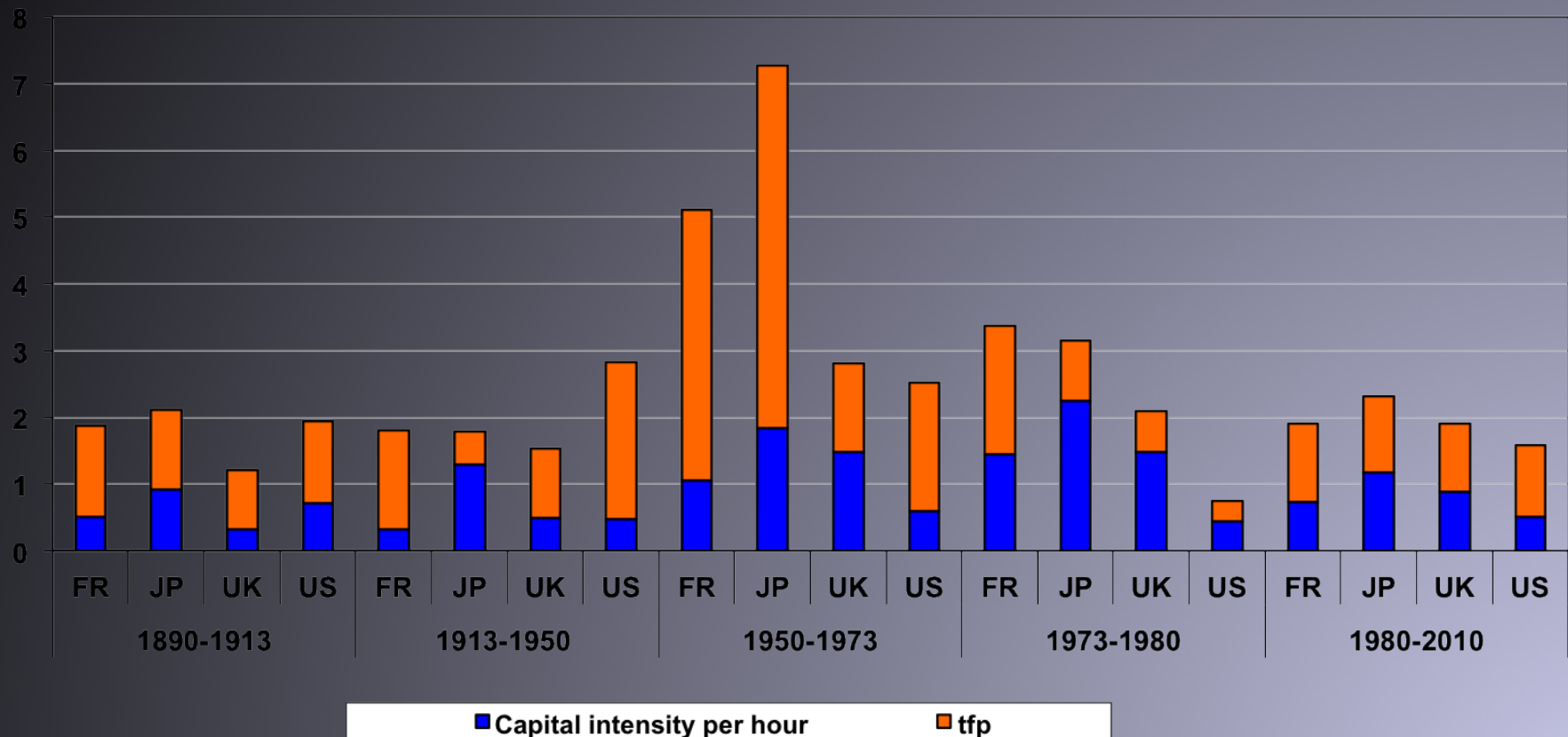
TFP per hour, 1890-2010, USA=1



3. Long run trends

3.2. Trends by sub-periods

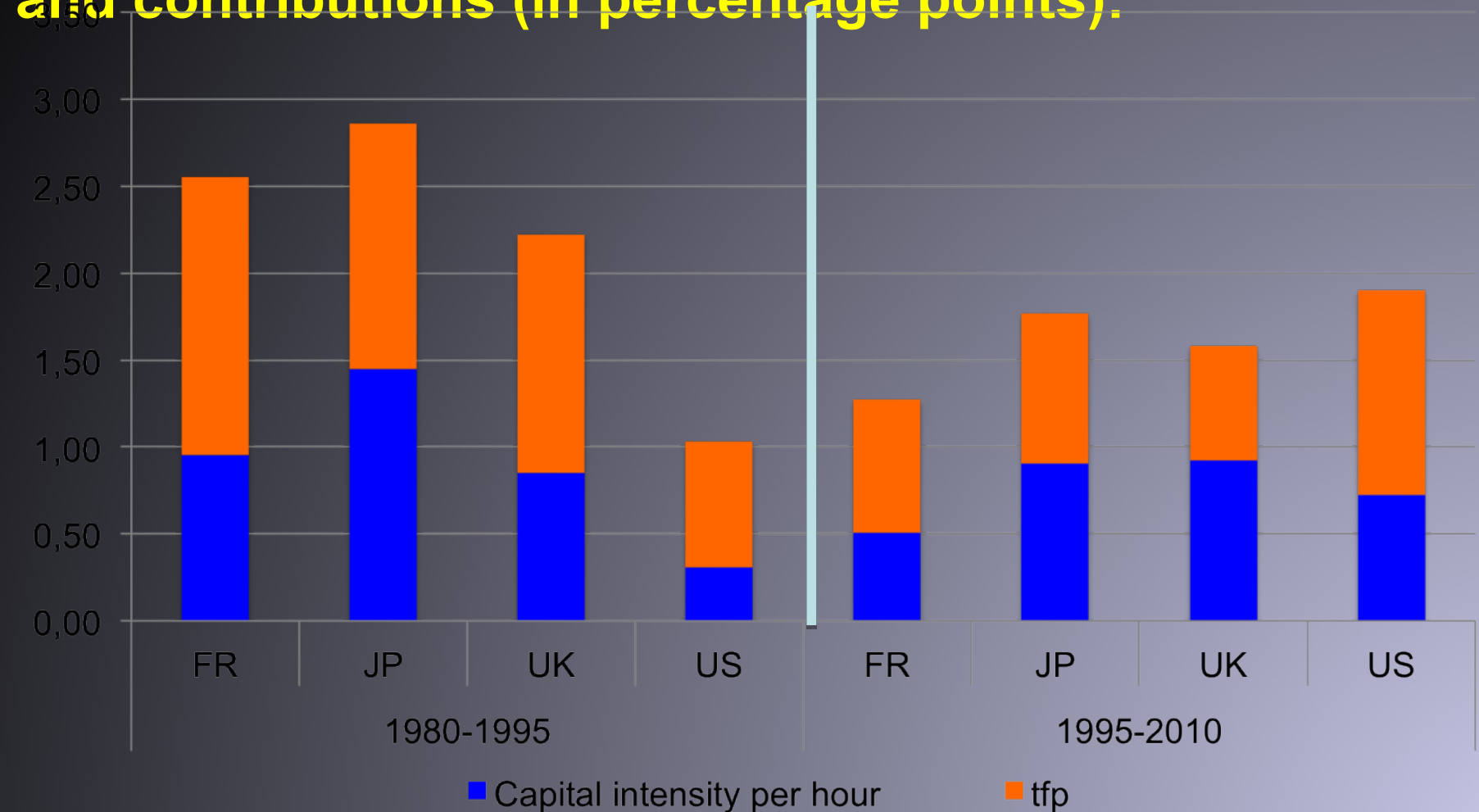
Average annual hourly labour productivity growth (in %) and contributions (in percentage points)



4. Trends over the 1980-2010 period (1/3)

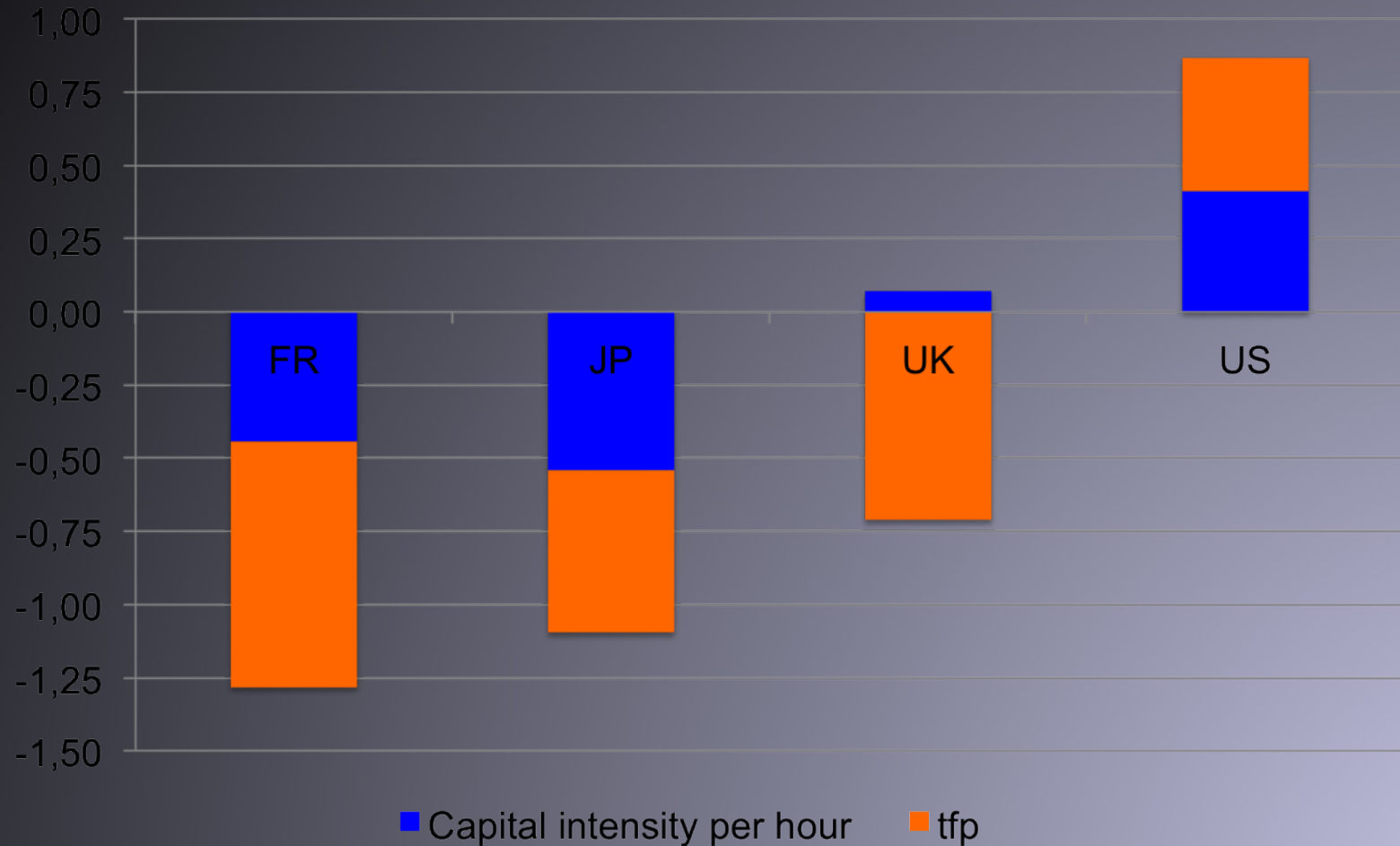
→ The end of catching up process

average annual hourly labour productivity growth (in %) and contributions (in percentage points):



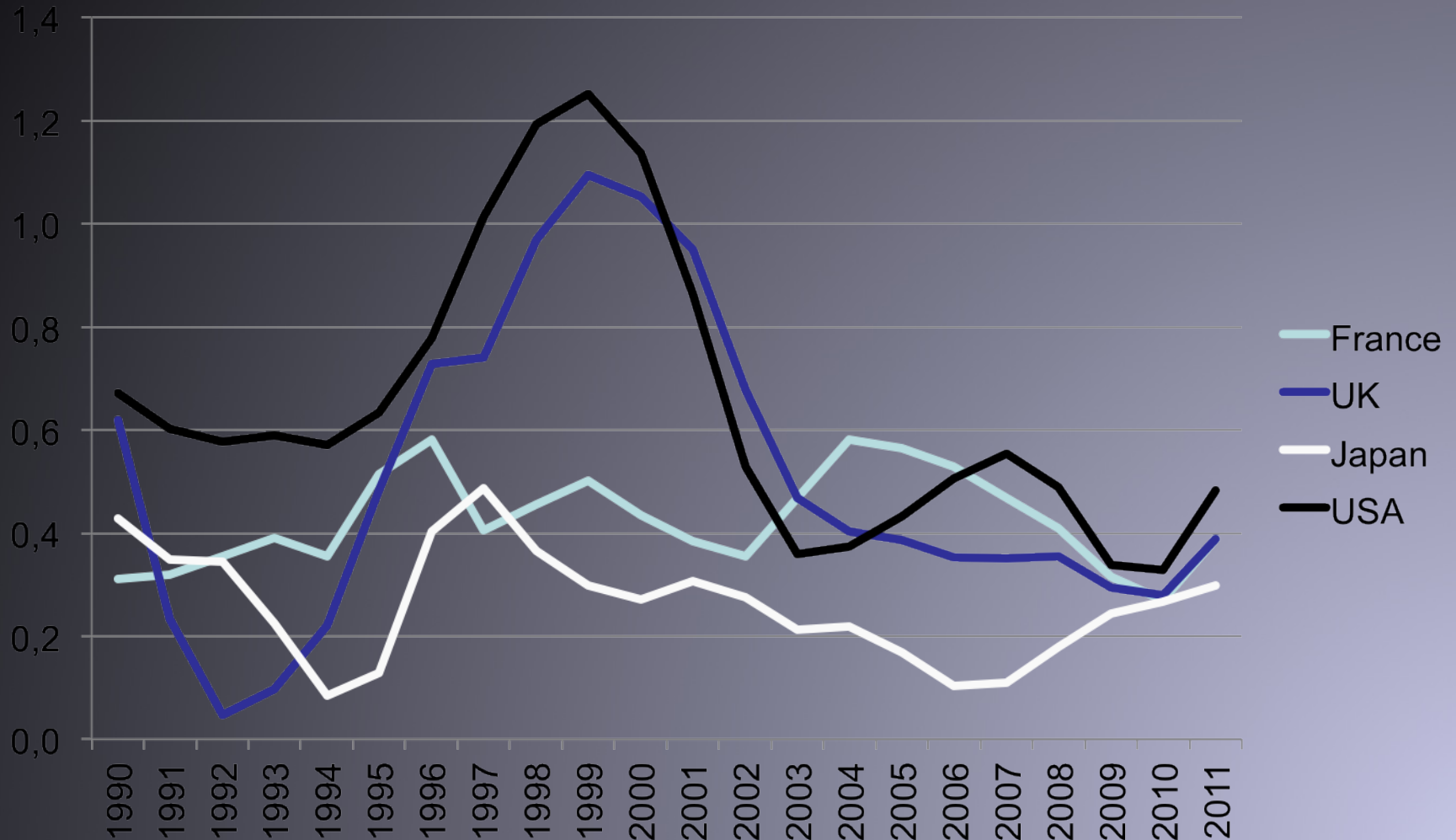
4. Trends over the 1980-2010 period (2/3)

Acceleration (1995-2010 compare to 1980-1995) in average annual hourly labour productivity growth and contributions (in percentage points)



4. Trends over the 1980-2010 period (3/3)

Is ICT investment story ? Contribution of ICT capital services to GDP growth (point of percentage per year)



Source : Conference Board

5. Conclusion (1/2)

Some of the main results :

➤ Over the past 120 years

- substantial economic growth and productivity gains in the four countries
- France : remarkable catching up of the US productivity level, mainly for TFP,
- Japan : impressive catching up process,
- UK : long term decline (1890-1950) followed by a catching up process (1950-1995), mainly for TFP
- Catching process started after WW2 stopped during the 90s

➤ The “Big Wave”

- mainly explained in the four countries by TFP growth
- Top of the big wave : before WW2 in US, after in the three other countries

5. Conclusion (2/2)

➤ Change of productivity leader

➤ In 2010 :

- Hourly labour productivity : US = France > UK > Japon
- Productivity per employee : US > France > UK > Japon
- Total factor productivity : UK \geq US \geq France > Japon

These differences come from capital intensity and working time

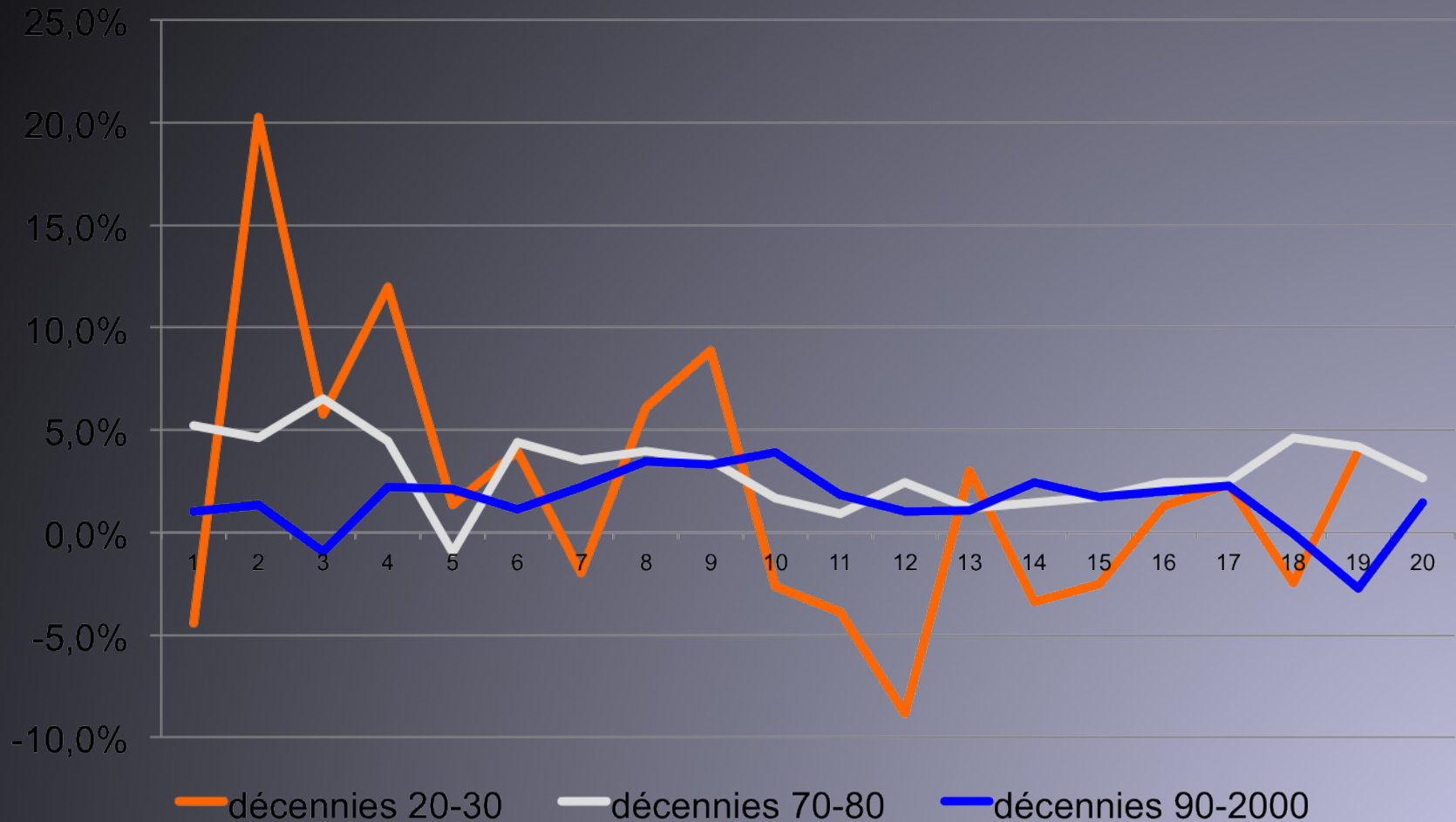
➤ Catching up process from 1950 to 1990s

➤ End of catching up process since 1995

- Acceleration in the USA: both capital intensity and TFP
- Slowdown in three countries : both capital intensity and TFP in France and Japan and mainly TFP in the UK.
- ICT capital deepening is one part of story (especially for the period 1995-2000), need to look more closely to TFP and investment in non ICT capital.

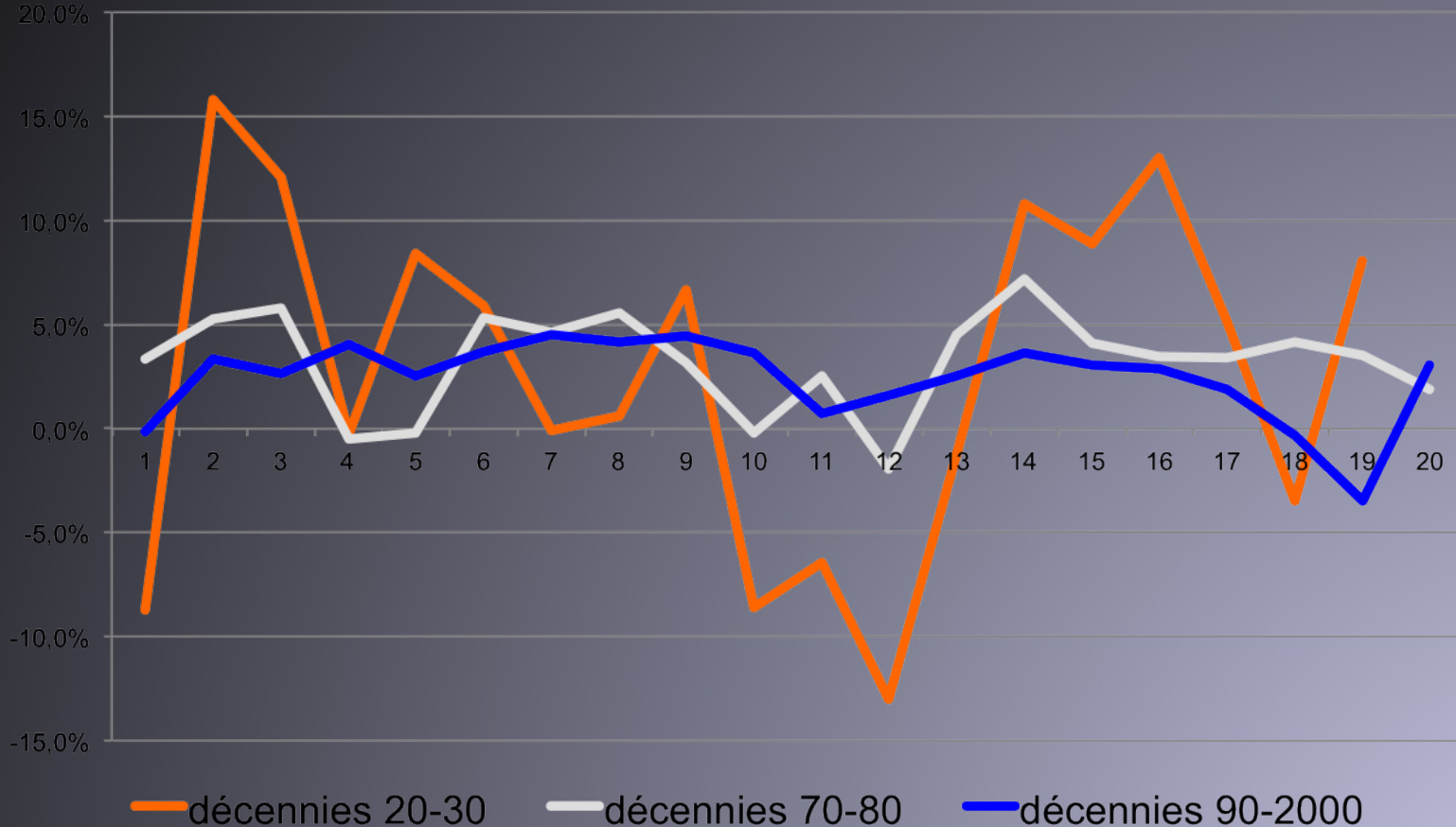
6. Comparing actual crisis and the great depression

GDP annual growth rate (France)



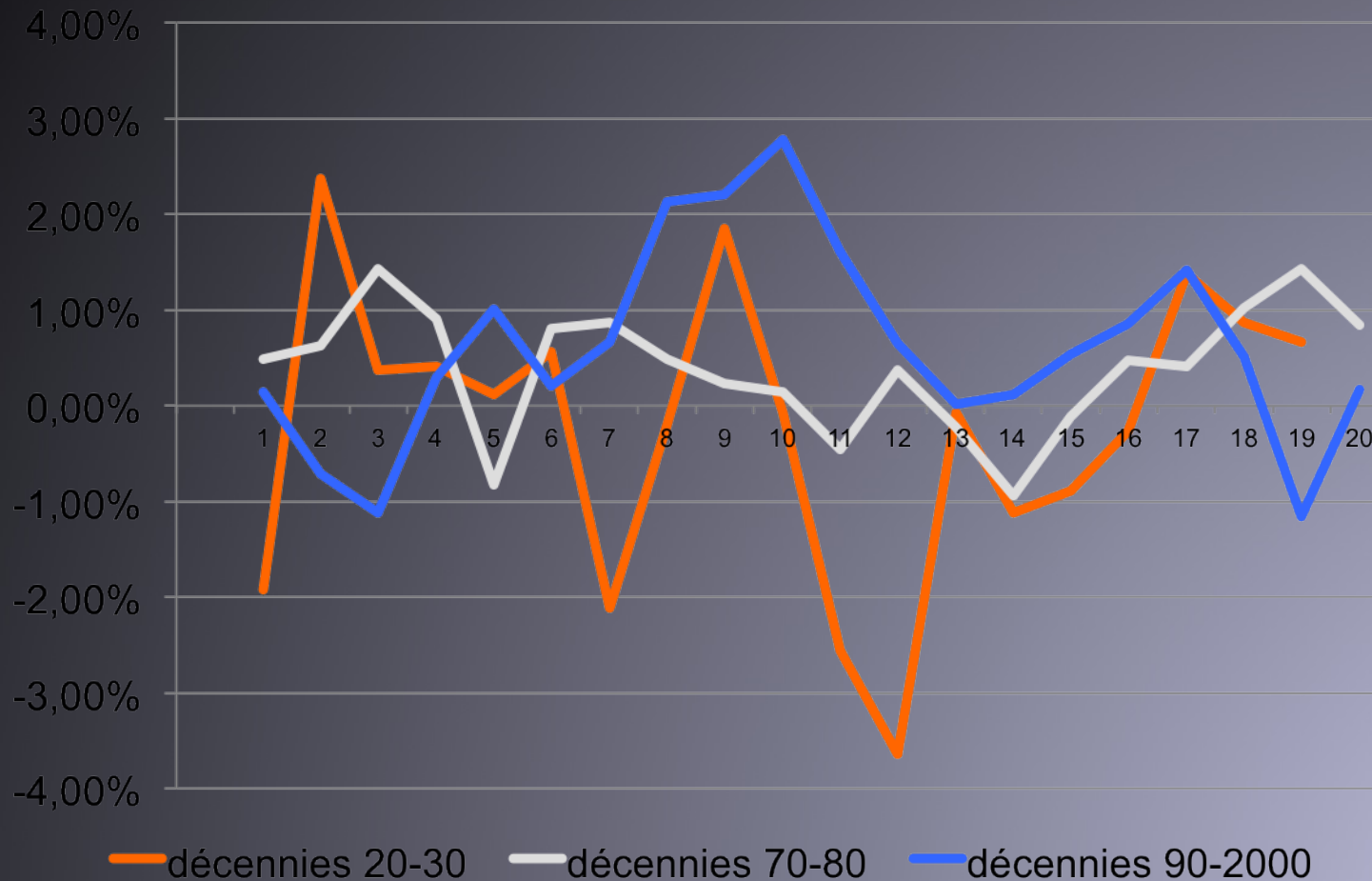
6. Comparing actual crisis and the great depression

GDP annual growth rate (USA)



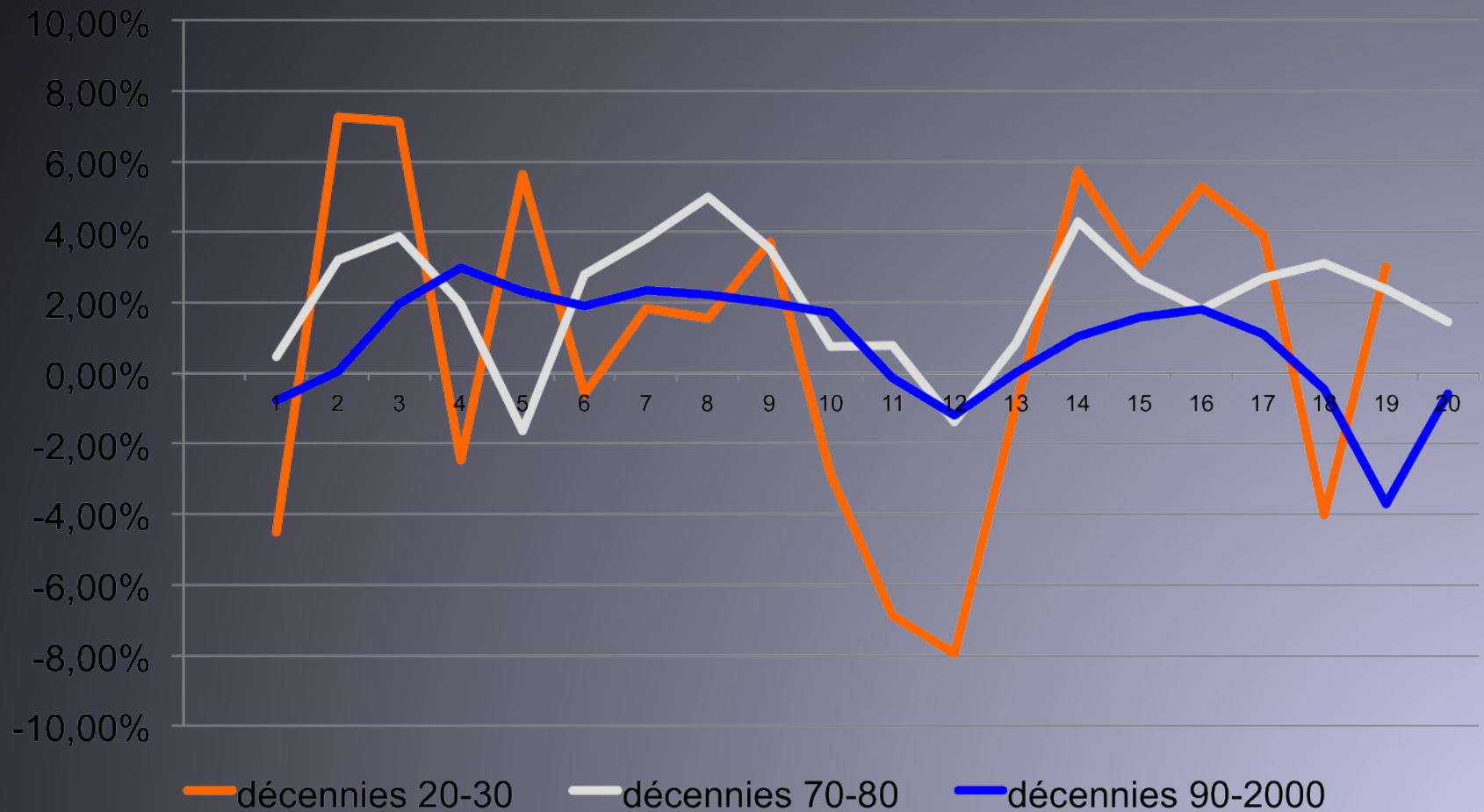
6. Comparing actual crisis and the great depression

Employment annual growth rate, **France**



6. Comparing actual crisis and the great depression

Employment annual growth rate, USA



6. Comparing actual crisis and the great depression : limits

Japan: data available employment : Maddison (1913, 1950), Japan Historical Statistics (1920, 1930)