

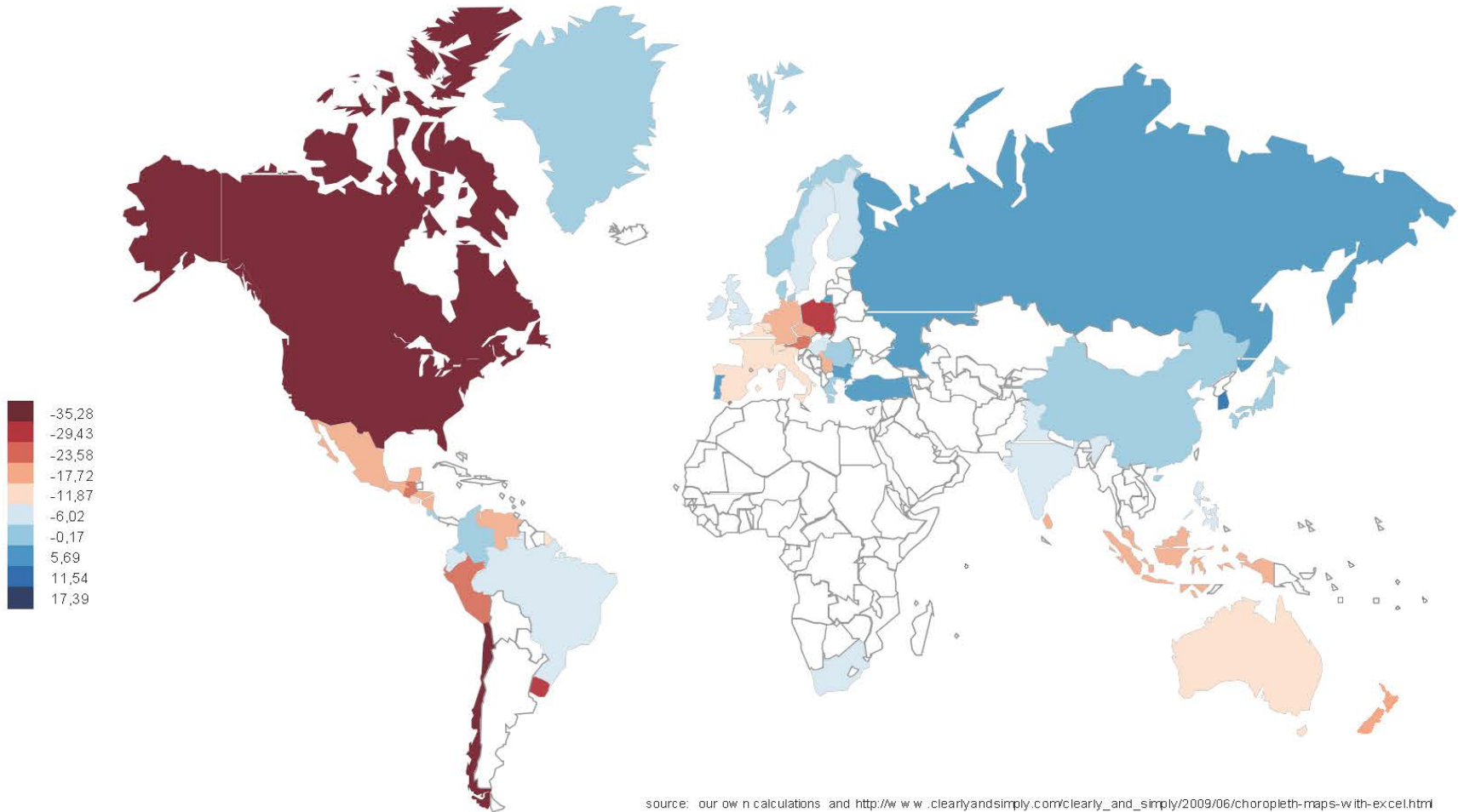
Detecting endogenous changes in  
the economy: **from Frisch's pendula  
to Freeman's long swings**

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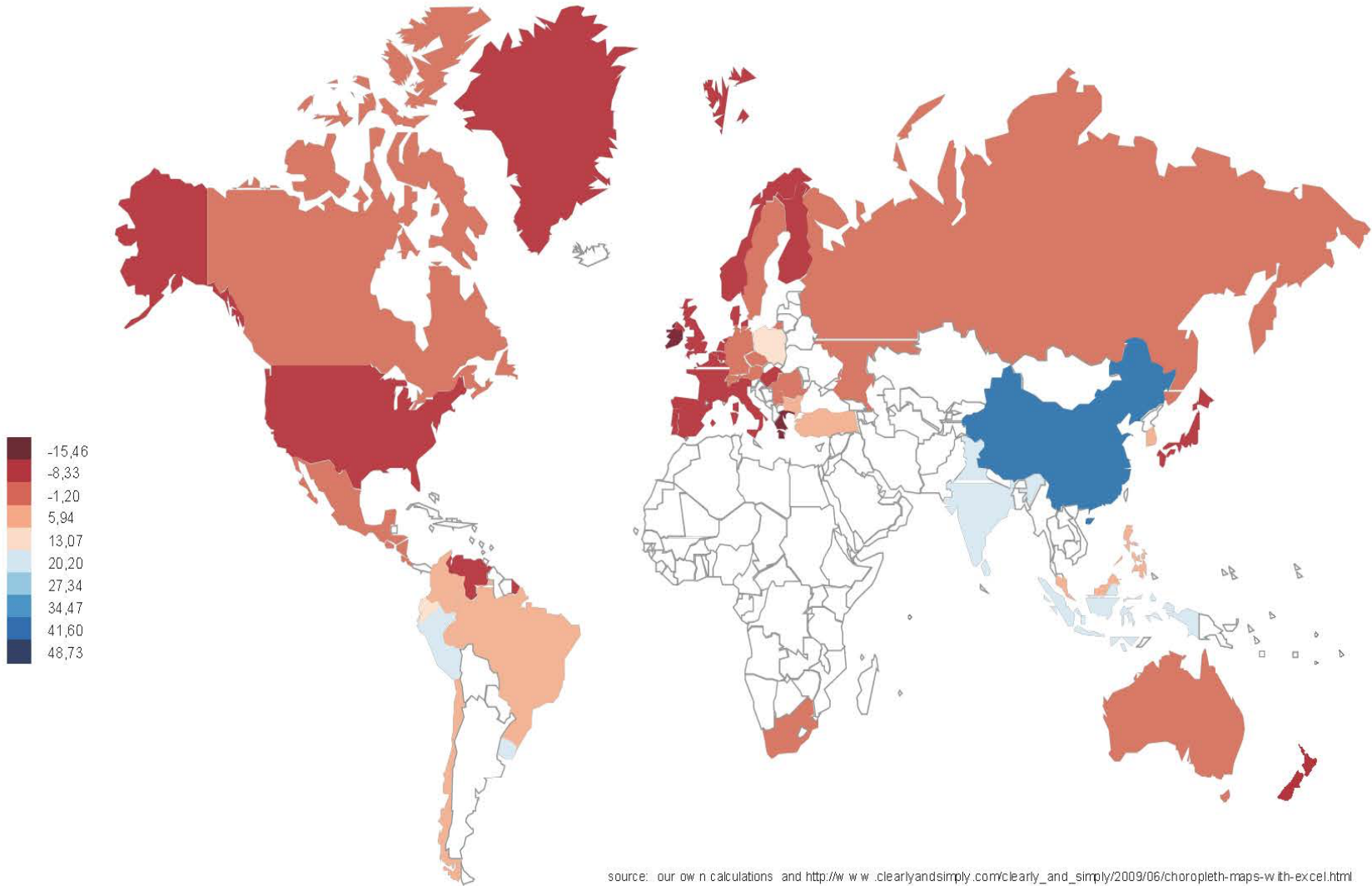
5 November 2015

**1.** The cause of the recession is prosperity (Clément Juglar)

**Map 1: The severity of the Great Depression 1929-1934**

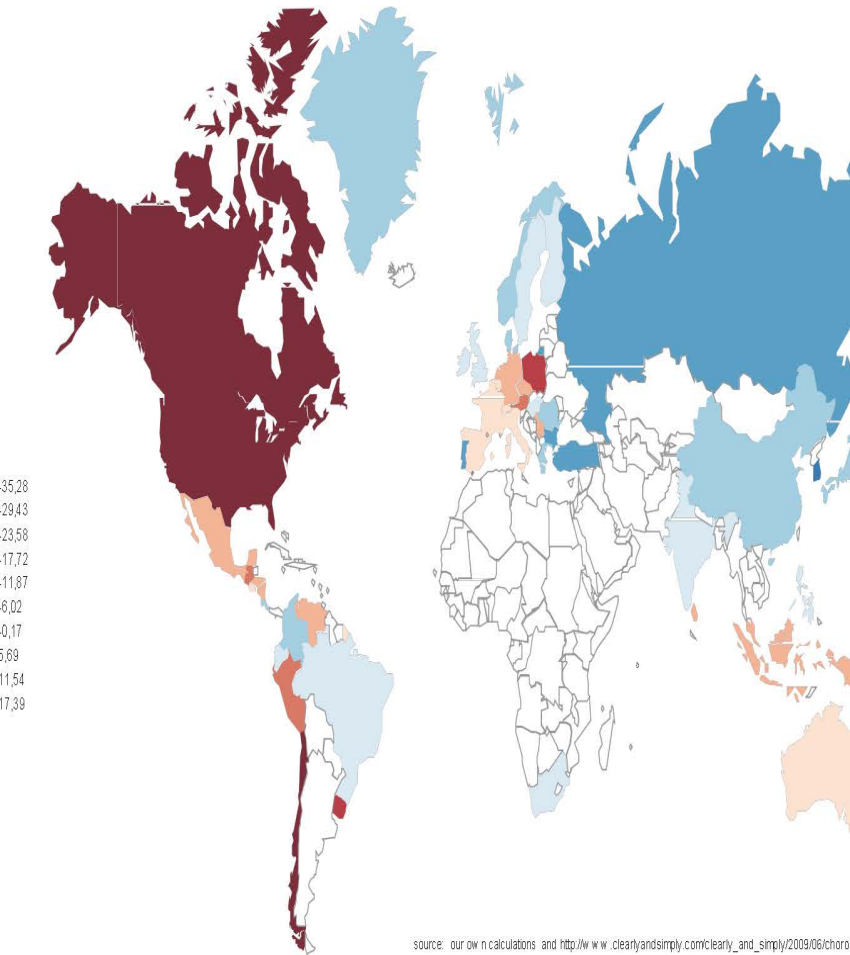


**Map 2: The severity of the Great Depression 2008-2011**

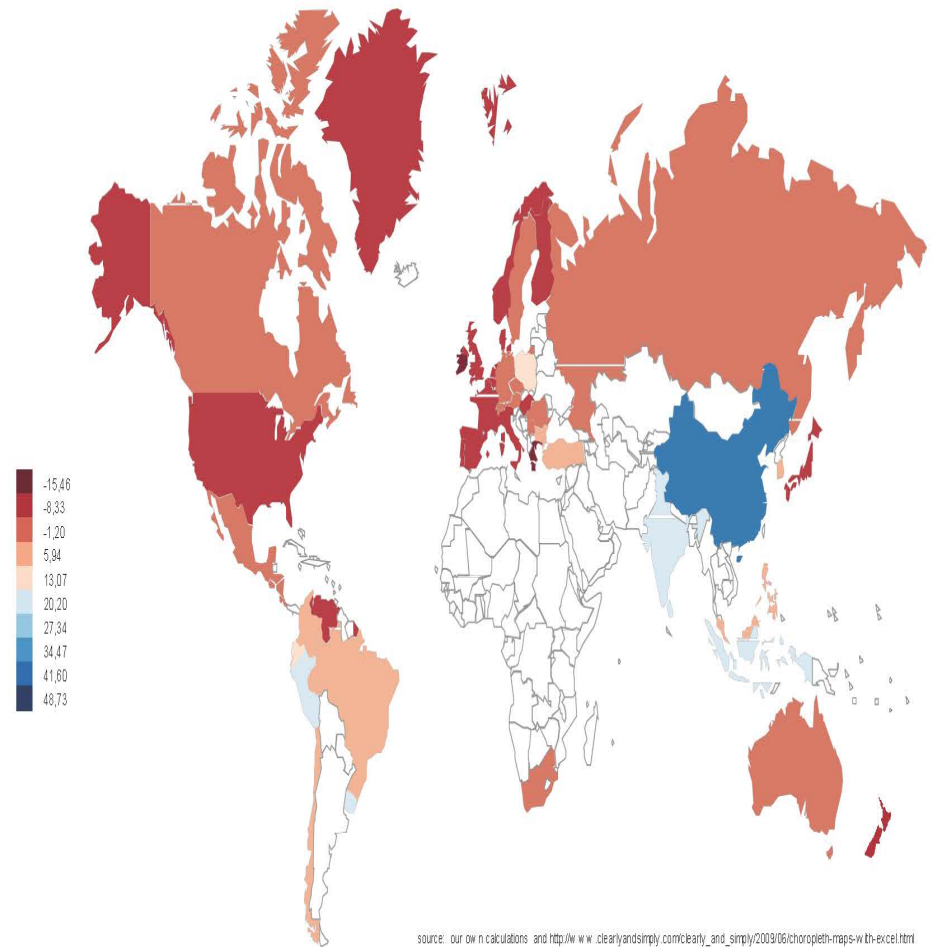


source: our own calculations and [http://www.clearlyandsimply.com/clearly\\_and\\_simply/2009/06/choropleth-maps-with-excel.html](http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html)

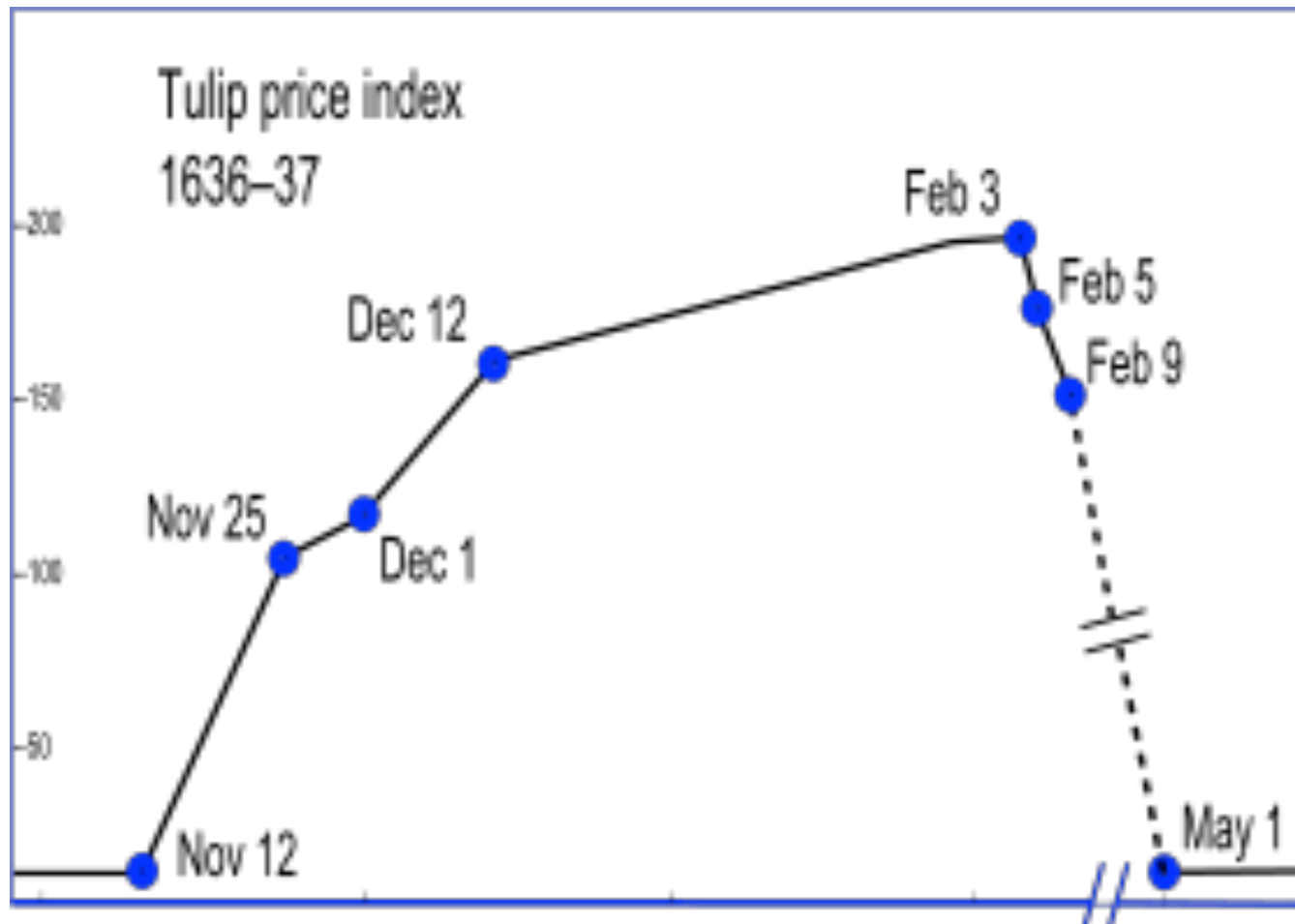
Map 1: The severity of the Great Depression 1929-1934



Map 2: The severity of the Great Depression 2008-2011



# Tulip mania and crash (1636-7)



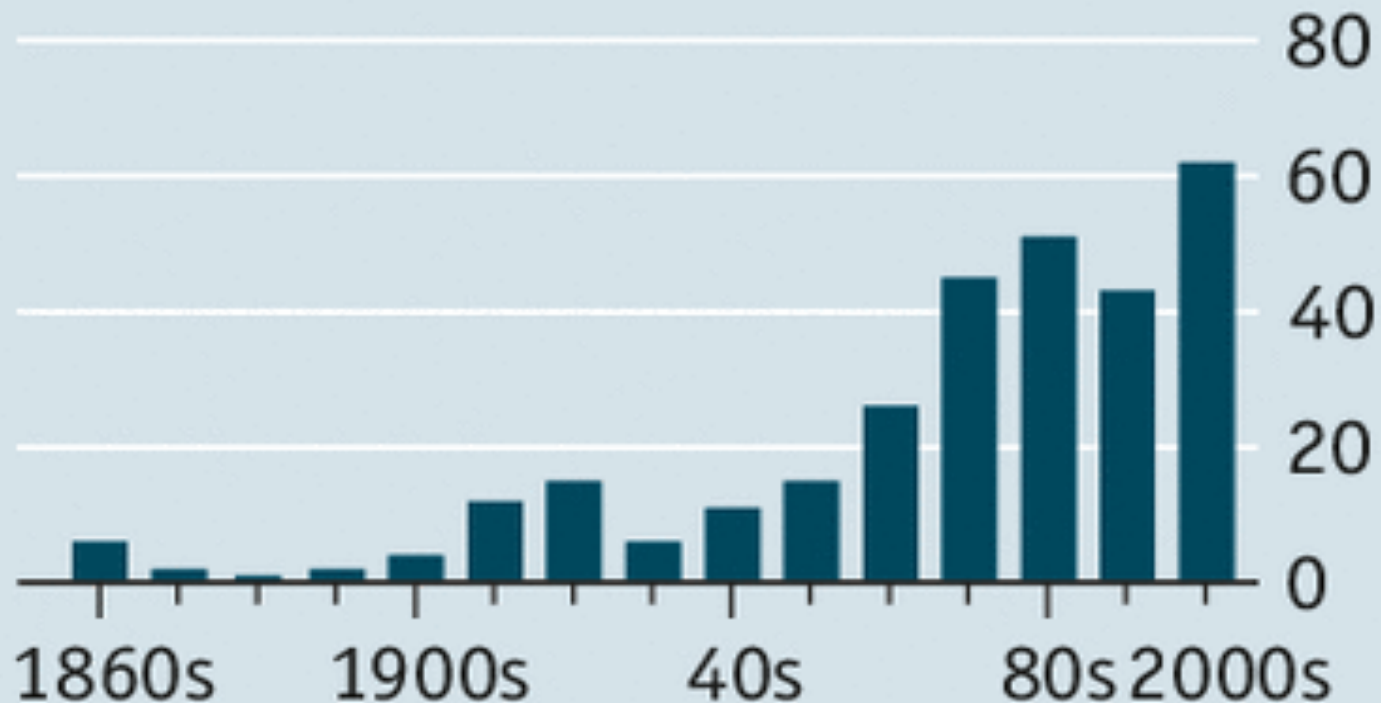
# Brueghel on the tulip mania (c. 1640)



# Financial bubble since 1860

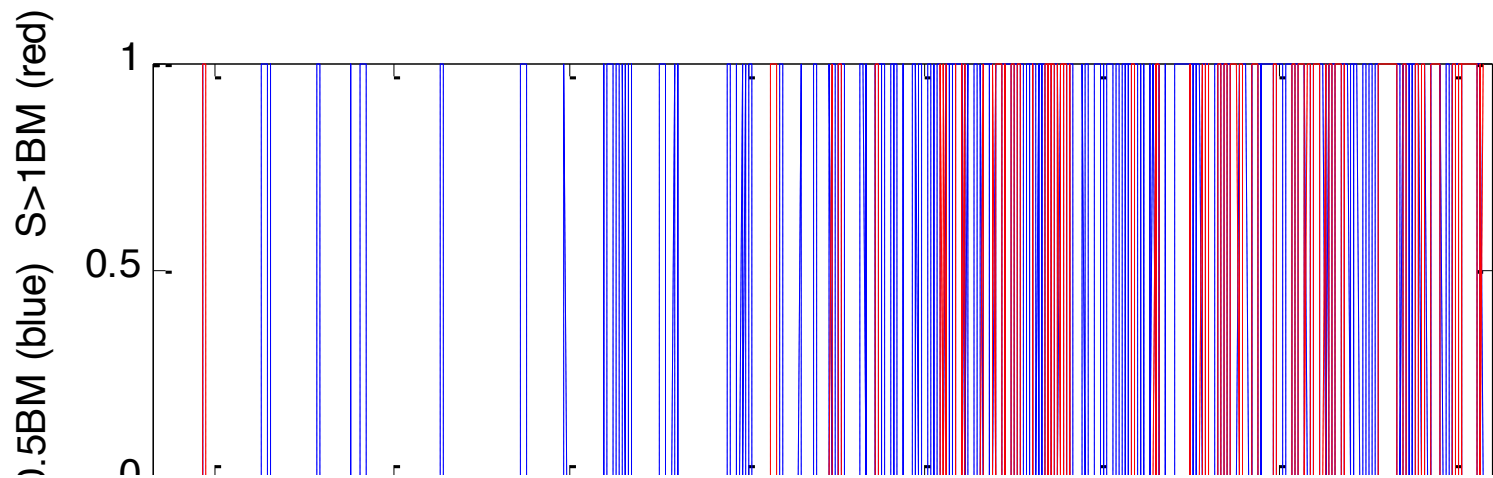
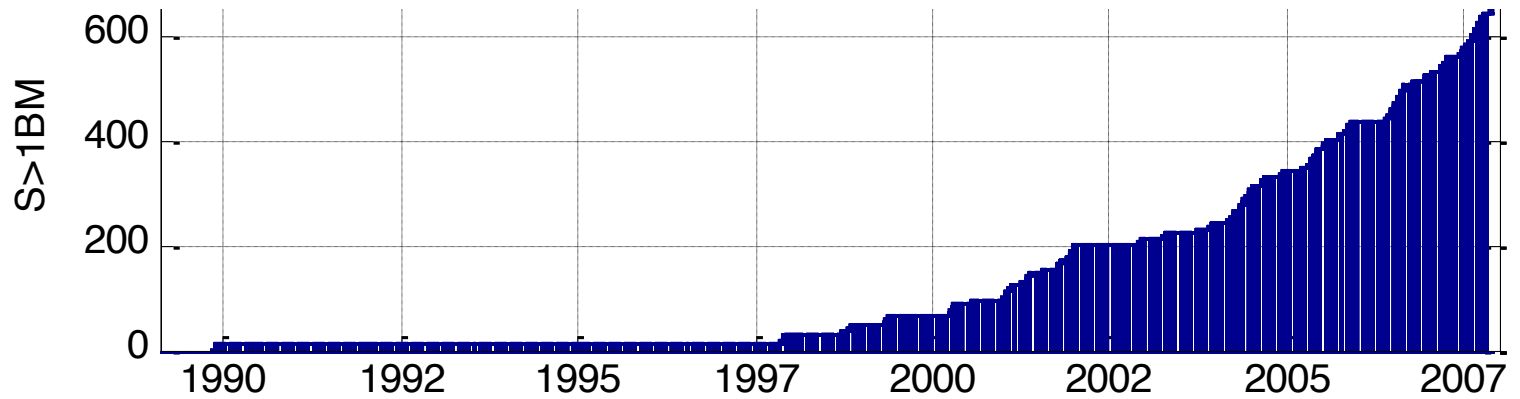
## Financial bubbles

Around the world, number per decade





# Measure of crashes

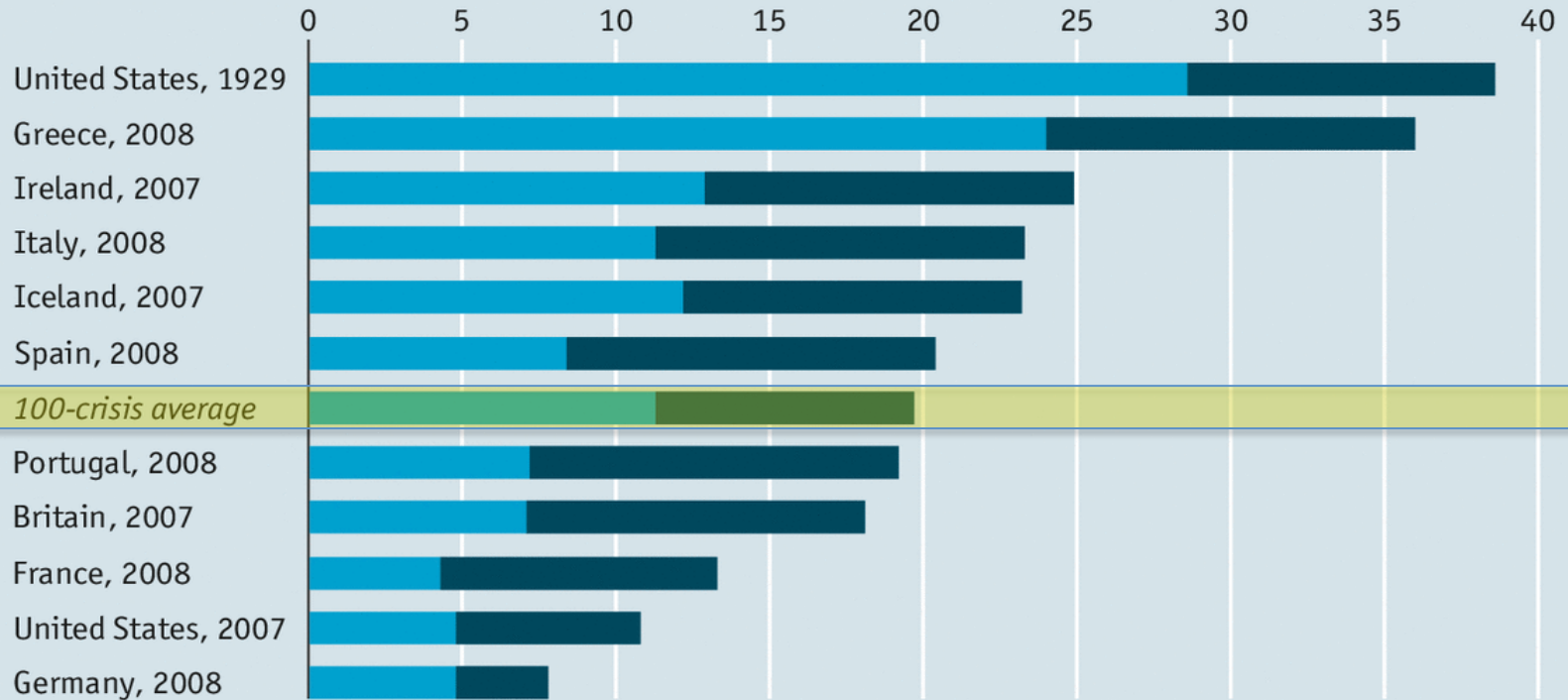


# Crises of the 20<sup>th</sup> century compared to 1929

## Les misérables

Severity index, selected financial crises:

- Real GDP per person, % decrease from peak to trough
- Number of years to regain pre-crisis level of output\*



Source: Carmen Reinhart and Kenneth Rogoff

\* Forecasts, except for US and Germany

**2.** So, why are you so surprised?

# Daddy, why didn't you get it?

“My daughter called me up from school and said ‘Daddy, what’s a financial crisis?’ And without trying to be funny, I said, ‘It’s something that happens every five to seven years’. And she says ‘So why is everyone so surprised...?’”

(Testimony at the US Financial Crisis Inquiry Commission, 13 January 2010, Jamie Dimon, chairman of JP Morgan)

# Crash (November 2008)

At an inauguration at the *London School of Economics*, the Queen asks:

"Why did nobody notice it?"



# Seven months after (July 2009)

Some known British economists:

*"In summary, Your Majesty, the failure to foresee the timing, extent and severity of the crisis and to head it off, while it had many causes, was principally a **failure of the collective imagination of many bright people**, both in this country and internationally, to understand the **risks to the system as a whole.**"*

**3. The theory: the problem of depression prevention is solved for decades?**



**“the level of the water always looking (sic!)  
for equilibrium...”**

**“Just as a lake is in some days deeply agitated  
by tempests, so is the market violently agitated  
by crises” (Walras, 1883)**

**“I felt strongly that this was wrong”  
(Schumpeter, 1937)**



# Robert Lucas: cycles no more



“My thesis in this lecture is that macroeconomics in this original sense has succeeded: its **central problem of depression prevention has been solved**, for all practical purposes, and has in fact been solved **for many decades**” (Lucas, 2003)

# Robert Lucas' critique of DSGE

“(...) there's a residue of things they [DSGE models] don't let us think about.

They don't let us think about the **US experience in the 1930s** or about **financial crises** and their real consequences in Asia and Latin America; they don't let us think very well about **Japan in the 1990s**”

(Lucas, 2004)

# 4. The foundation of the theory: Frisch's pendulum or rocking- horse and the discussion with Schumpeter

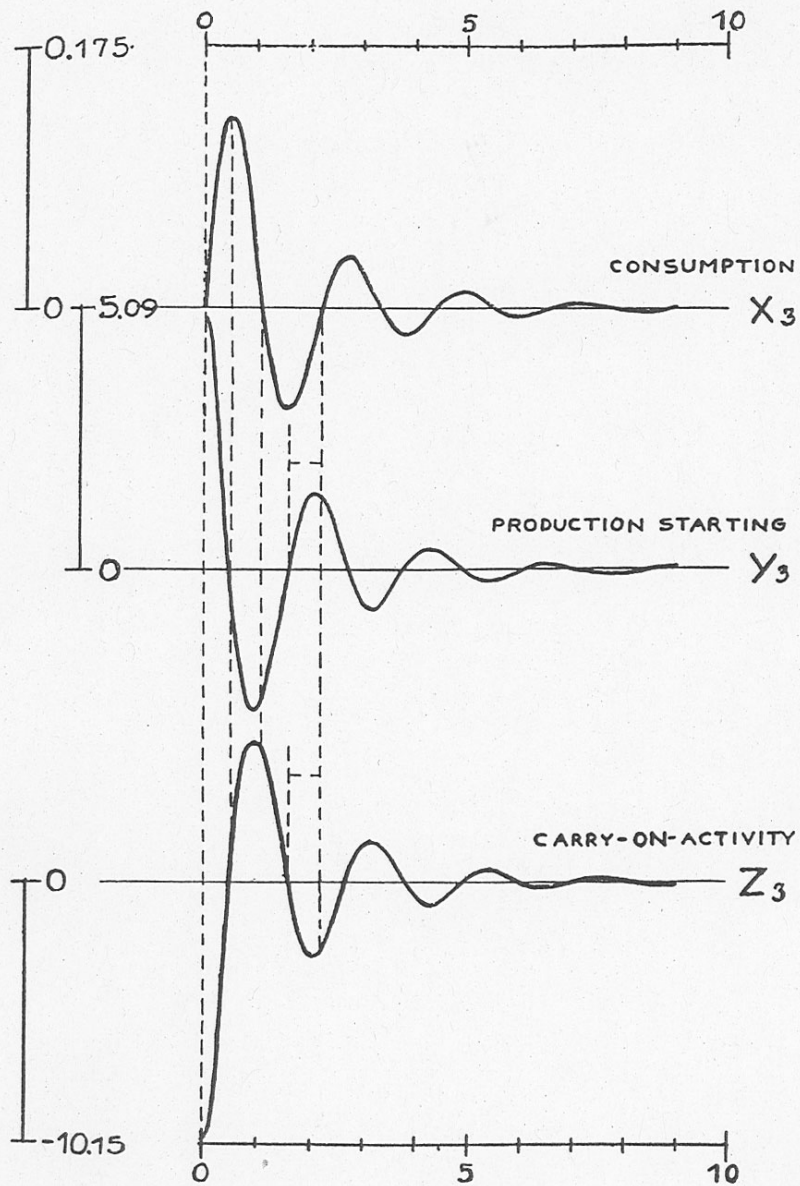
# Ragnar Frisch (1895-1973)



1933: “Impulse and propagation” paper, a mixed nonlinear system of difference and differential equations

**A rocking horse:**  
impulse with friction, or **change plus  
equilibrium**





(FIGURES ON SCALE INDICATE AMPLITUDES)

# Frisch's model of cycles (1933)

<i>Metaphors</i>	<i>Literary and heuristic treatment of the metaphor</i>	<i>Formal treatment of the primary or secondary subject</i>	<i>Comment</i>
Pendulum driven by purposeful human action	Marshall, 1890	-	Complicated or chaotic movement
Simple Pendulum, hit by shocks	Fisher, ??, Yule, ??, Frisch 1933	Frisch, 1933	Maintained oscillation
Rocking horse	Wicksell, 1907, then Ackerman, 1928, then Frisch, 1933	Frisch, 1933	Maintained oscillation
Stream of fluid flowing in an uneven river bed	Ackerman, 1928	-	Chaos
Double Pendulum	Frisch, manuscript notes, 1928???	-	Chaos
Forced Pendulum	Frisch, interpreting Schumpeter, 1933	-	Chaos
Violin	Schumpeter, posthumously 1954	-	-
Triple Pendulum	Frisch, interpreting Marshall, 1950	graphical treatment in Frisch 1950	Chaos

# Schumpeter, June 1931

“This [the discussion of the nature of statics] would be all, if data did not vary except by influences which we could call influences “**from without**” or by “growth”.

But **there is an agent**, within the economic world which alters data and with these the economic process: **entrepreneurial activity**, which I have elsewhere given the reasons for considering as something sui generis.

(...) It not only **destroys existing equilibrium**, but also that circuit-like process of economic life, it makes economic things **change** instead of making them **recur**.”



# Schumpeter on innovations

“I am not quite satisfied by your classification of the ‘innovations’ as part of the impulse problem, because this seems to coordinate them with events, which **come from outside** the economic system such as chance gold-discoveries.

Now as I look at it, **any innovations are something different to impulses in this sense. They come from inside.**”

# Schumpeter on capitalism

**“industrial mutation – if I may use the biological term – that incessantly revolutionises the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism.”**

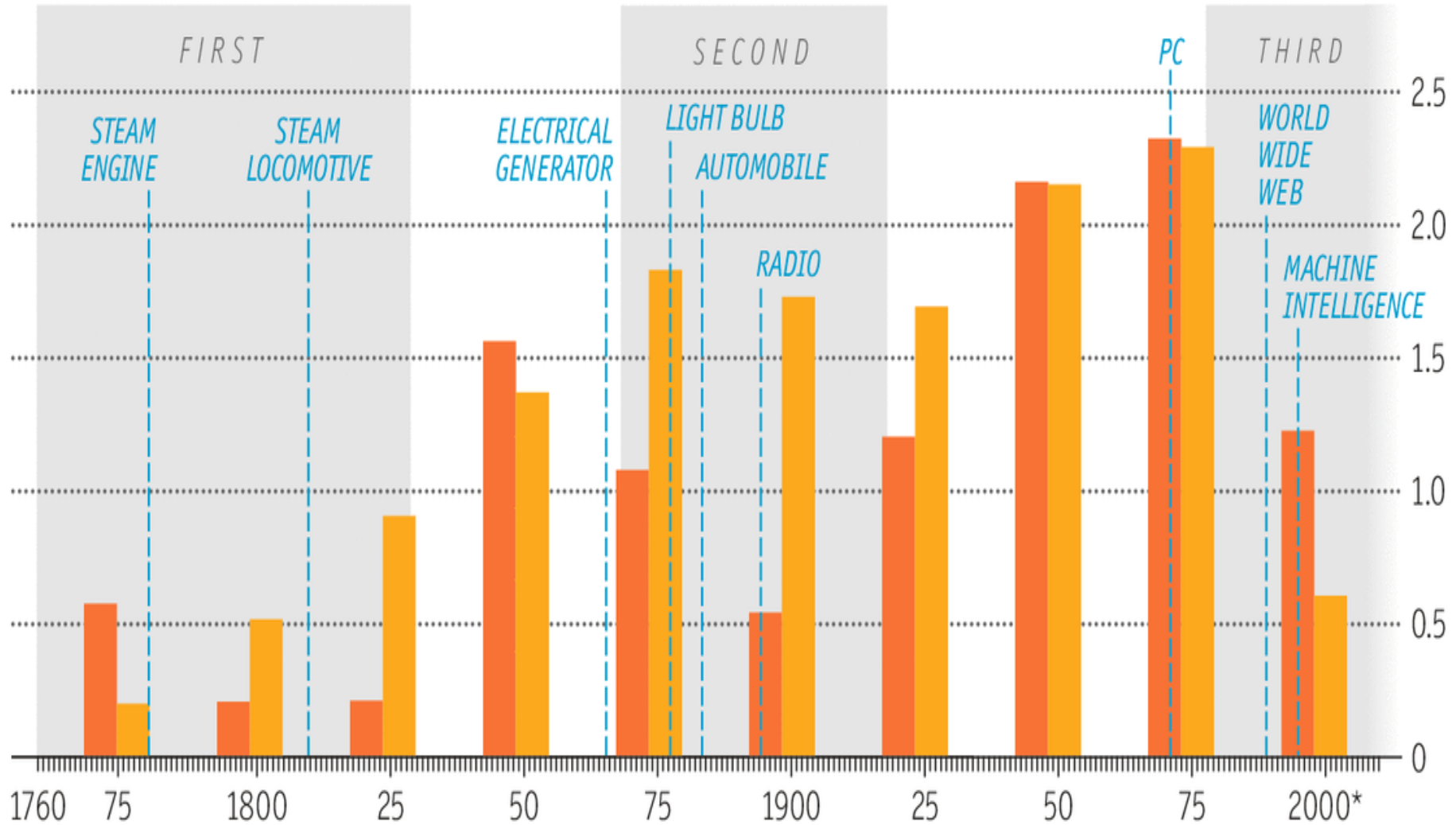
(CSD, 1942: 83)

**6. Chris Freeman's theory: the mismatch between the techno-economic paradigm and the socio-institutional system**

# For richer, for poorer

GDP per person, average annual % change over 25-year periods

■ Britain    ■ United States  
■ Industrial revolutions

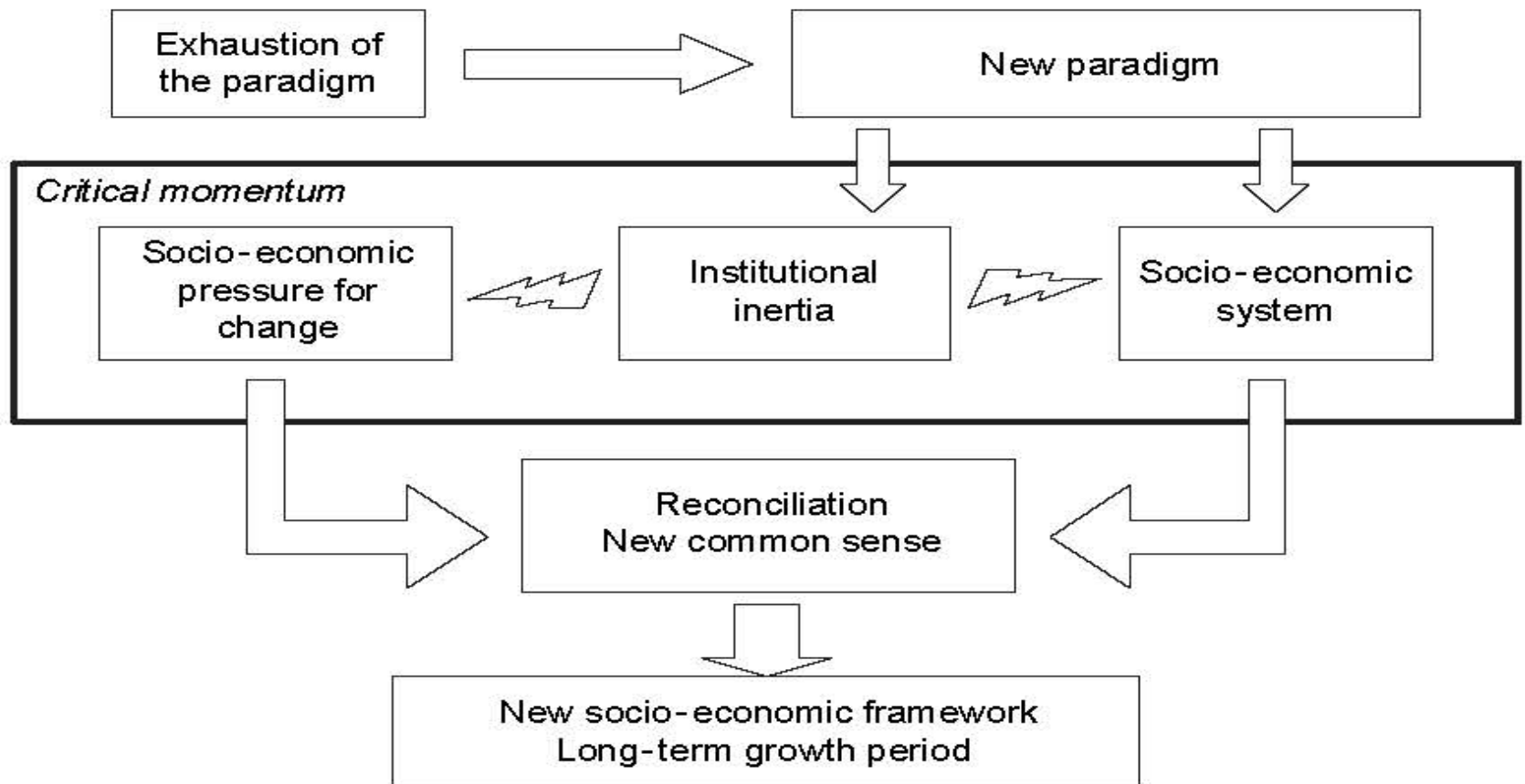


Sources: Maddison Project; *The Economist*

\*To 2010

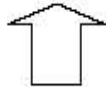
# TEP and Socio-institutional framework

**Figure 19.1.** Time Lag Between State and Industry Evolution

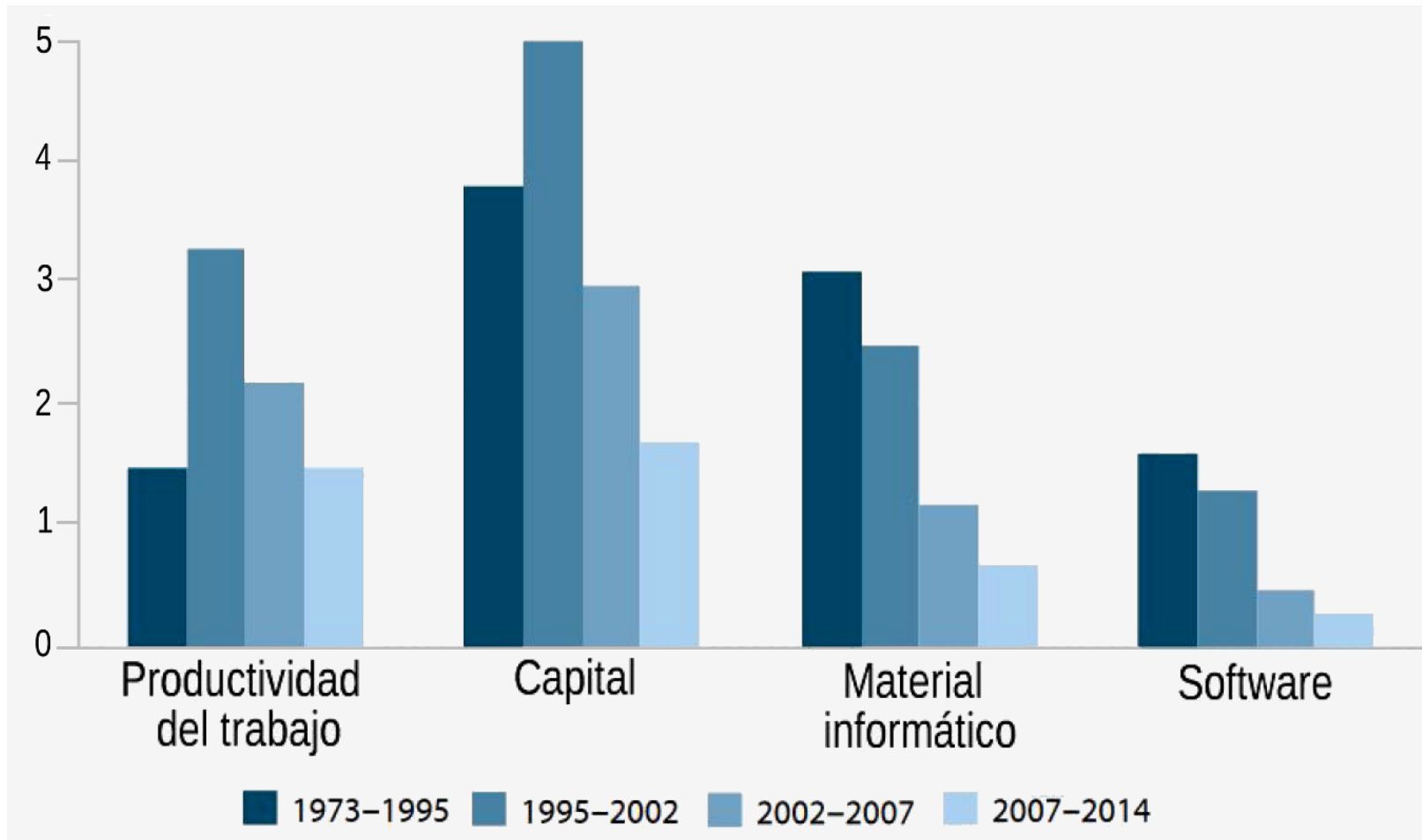


# Perez's version of LW dating

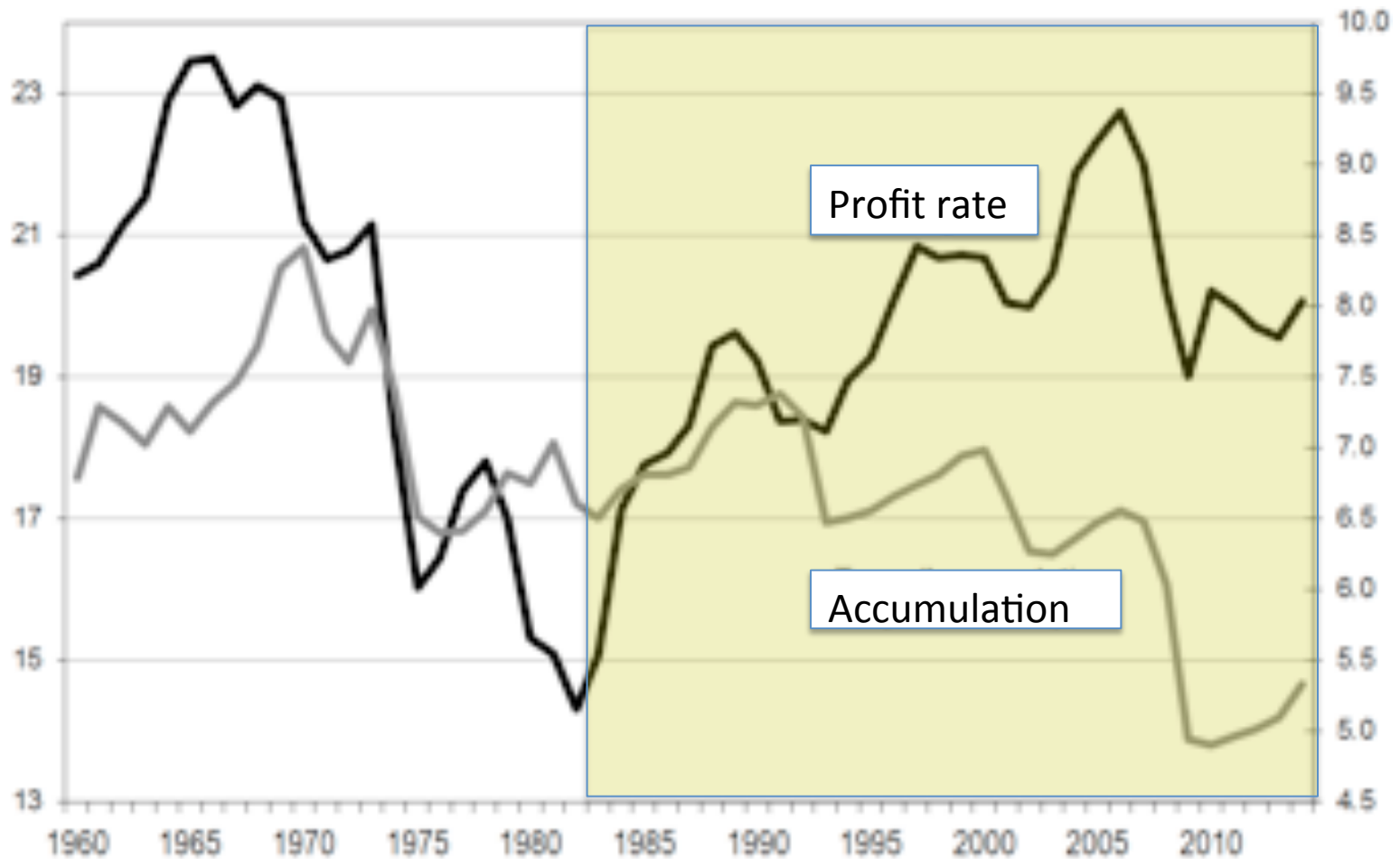
GREAT SURGE	Date	Technologies	Core country	Bubble prosperity	Recessions	"Golden Age" prosperity
1 <sup>st</sup>	1771	The Industrial Revolution	Britain	Canal mania	1793-97	Great British leap
2 <sup>nd</sup>	1829	Age of Steam and Railways	Britain	Railway mania	1848-50	The Victorian Boom
3 <sup>rd</sup>	1875	Age of Steel and heavy Engineering	Britain / USA Germany	London funded global market infrastructure build-up (Argentina, Australia, USA)	1890-95	Belle Époque (Europe) "Progressive Era" (USA)
4 <sup>th</sup>	1908	Age of Oil, Autos and Mass Production	USA	The roaring twenties in USA Autos, housing, radio, aviation, electricity	Europe 1929-33 USA 1929-43	Post-war Golden age
5 <sup>th</sup>	1971	The ICT Revolution	USA	Emerging markets dotcom and Internet mania real estate and financial casino	2000-8 2007-08 -???	Sustainable global Golden Age?

  
 We are here

# Labor productivity and investment, US



# Profit rate and accumulation (US+EU +Japan 1960-2013)



S: Ameco, data weighted by GDP

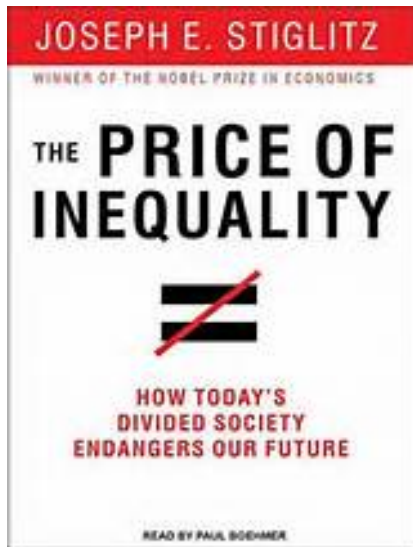




# Joseph Stiglitz

Externalities of **financial pollution**  
(mortgages)

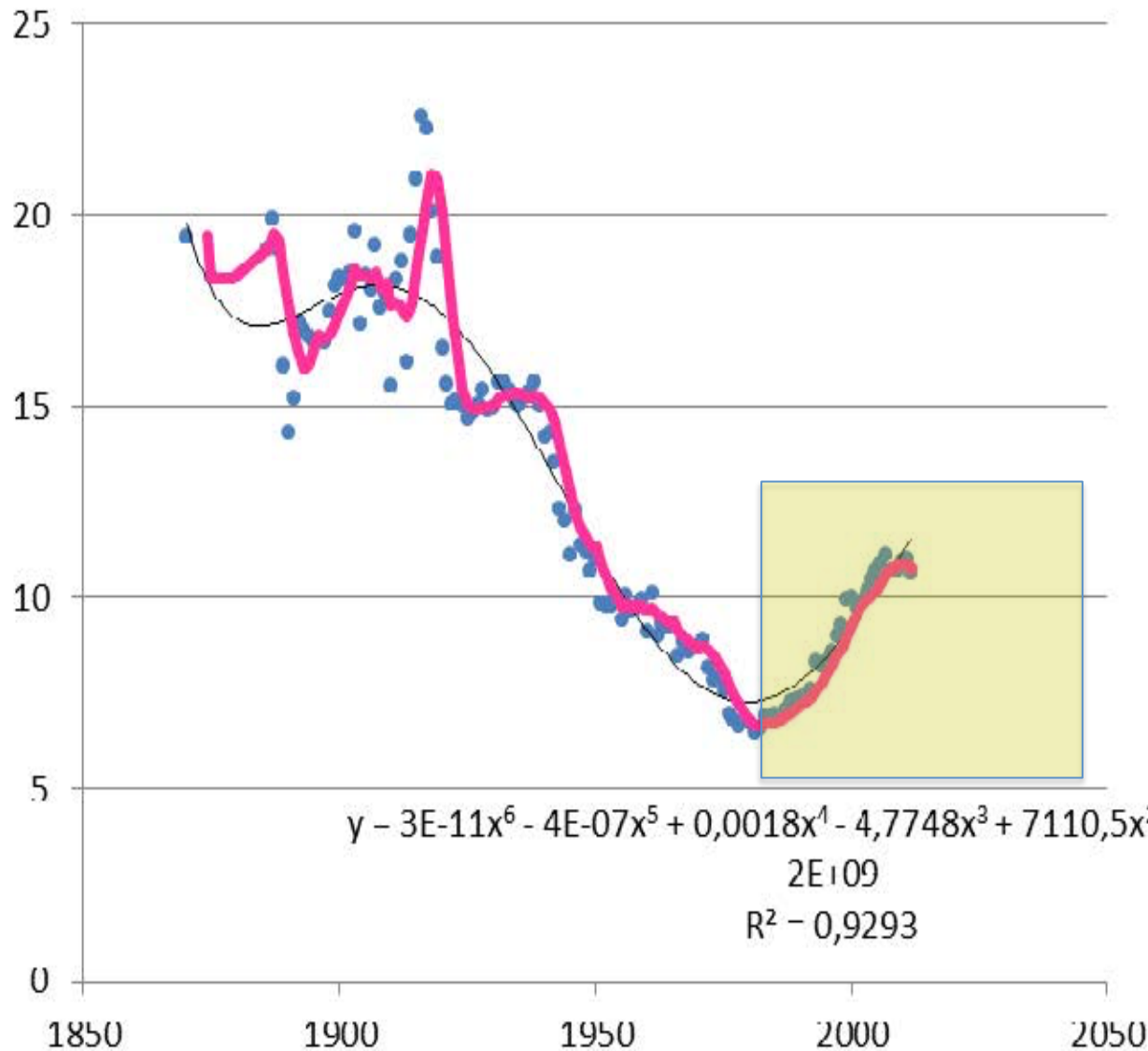
The **price of inequality**: efficiency and  
fairness



Liquidity is not enough, a reform is needed:

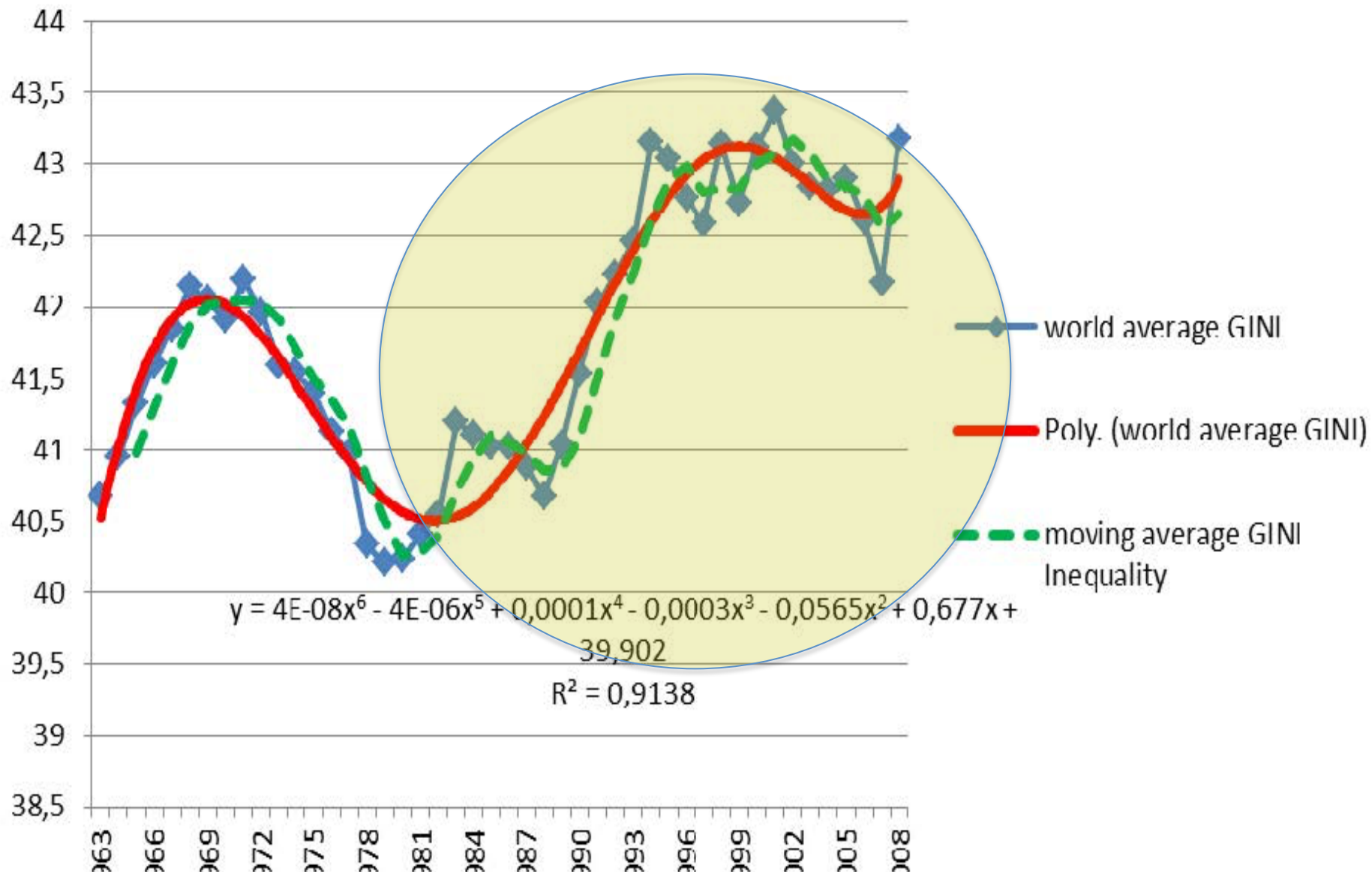
- Regulation
- Change in the structure of demand
- Redirect investment for saving resources
- Fiscal renewal

# average unweighted global share top 1%



- average unweighted global share top 1%
- Poly. (average unweighted global share top 1%)
- 5 Periode gleit. Mittelw. (average unweighted global share top 1%)

# world average GINI



# Chris Freeman's agenda

- Innovation as a driving force of endogenous evolution, contrary to Walras and Lucas
- The economic context for innovation (Schumpeter+Keynes...)
- The socio-institutional framework (...they meet Marx), inequality and strategic choices