Grand Challenges in Economics

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Overview

- Where economics has been
- Where it needs to go

Mainstream economics (1)

- Began to be formalised, using the tools of classical physics, in the 1870s

- The core topic became the optimal allocation of a given set of resources

- This was a strange path to take, given that by the 1870s the dynamic, non-ergodic, non-equilibrium system of capitalism was transforming the world in ways without parallel in human history

Mainstream economics (2)

- The theory had two key components

- The concept that the economy is an equilibrium system

- The postulate of 'rational' behaviour: when making a decision, an agent gathers all available information, and then make the optimal choice given its **fixed** set of tastes and preferences

- The main theme in economic theory was to establish the most general set of conditions under which, given the behavioural postulate, an existence proof could be demonstrated of equilibrium in all markets

- 7 out of the first 11 Nobel prizes were awarded for work in this area

Mainstream economics (3)

- Over the past 40 years, the assumption that agents know all relevant information has been relaxed and built into theory

- Behavioural economics has established empirically that agents may not actually behave 'rationally', but this has not been incorporated into theory

Where do we stand?

- Economics, over the past 140 years, has essentially solved all problems where we can reasonably assume a) the system tends to equilibrium b) agents behave as assumed in theory

- **The grand challenges relate to *either* systems where even if a theoretical equilibrium exists, most of the time the system is out of equilibrium *or* non-equilibrium systems**

Practical examples

- Why do we have recessions/financial crises?   In the main 17 economies of the West since 1870, there have been 423 instances of recessions – well over 10 per cent of the total number of data points

- Why do economies grow? Capitalism is the only social/economic system which has delivered steady, slow long-run growth

- How does inequality emerge? Is it intrinsic to complex systems?

- How do we protect the supply of food/energy/water? Value systems seem very important

- How is trust/confidence created or destroyed?

- What is the balance between competition and co-operation needed for resilient social and economic systems?

- If we knew, policy makers would have many more levers

Theoretical considerations: the background

- Consumers now face a stupendous proliferation of choice – over 10 billion – billion! – choices are available in New York City alone

- Many of these products are complex, hard to evaluate

- We are **far** more aware than ever before of the behaviour/opinions/choices of others

- In 1900, most of the world's population lived in villages. Now, over half live in cities

- The internet is transforming the world like the printing press did in the 15th century

- The preferences of agents are **not** fixed, they evolve in many ways. Specifically, they can be altered *directly* by the behaviour of other agents

- **We are dealing with systems of interacting agents which are out of equilibrium**

Three grand theoretical challenges

- How agents are connected, who is influenced by whom and under what circumstances – this is a key issue where ICT is vital

- **To what extent are the key features of a problem explained by the topology which connects interacting agents rather than the precise behavioural rules of the agents?**

- Examples: the financial crisis; worklessness

- The economic concept of 'rationality' is *irrational* in systems of interacting agents

- **What constitutes rational behaviour in the world of the 21st century?**

- **How do macro phenomena emerge e.g. Business cycle**

Total private debt in America compared to the size of the economy
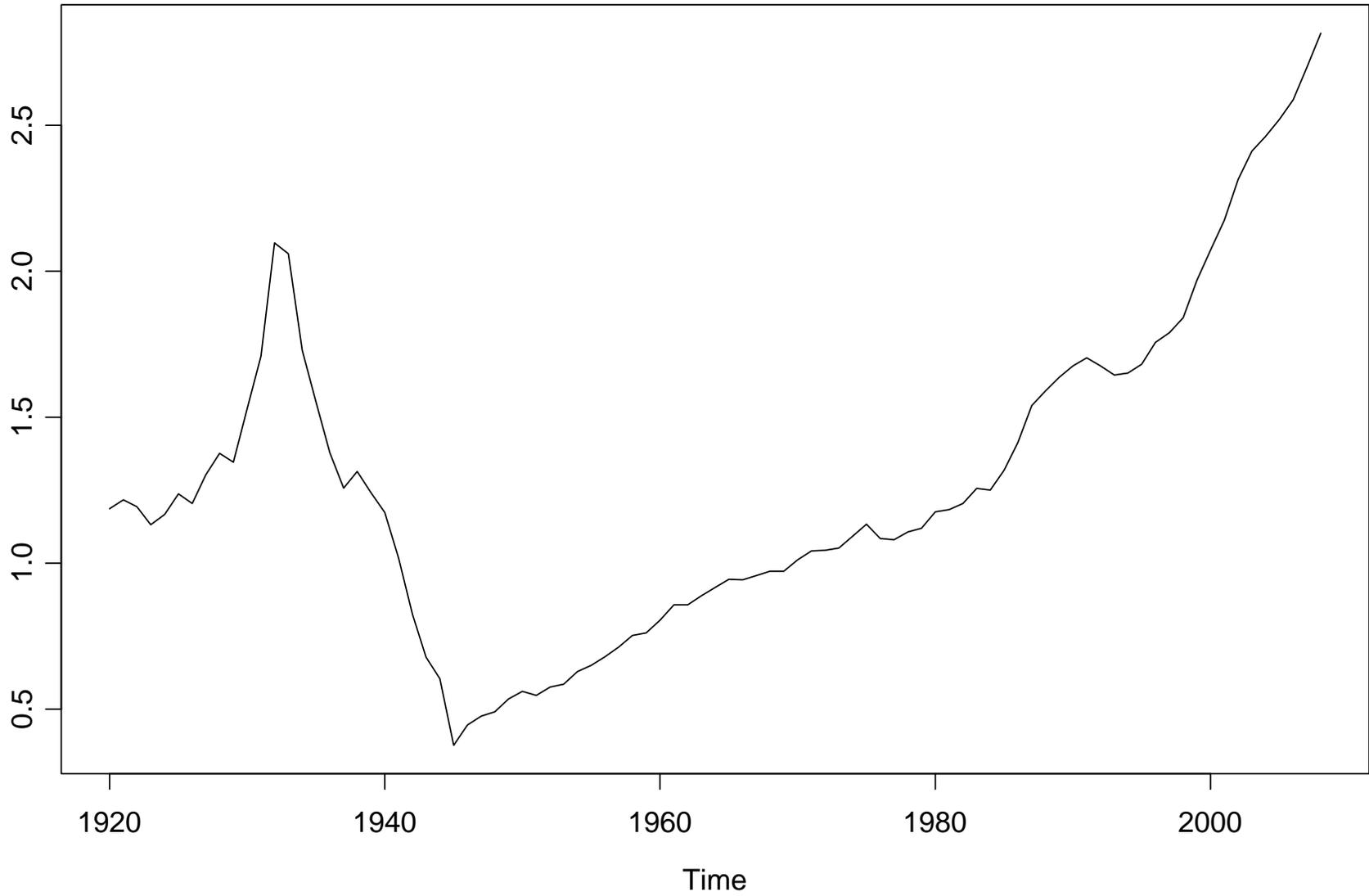
Cumulative fall in GDP, per cent, all recessions since 1871
17 Western countries, excluding war years
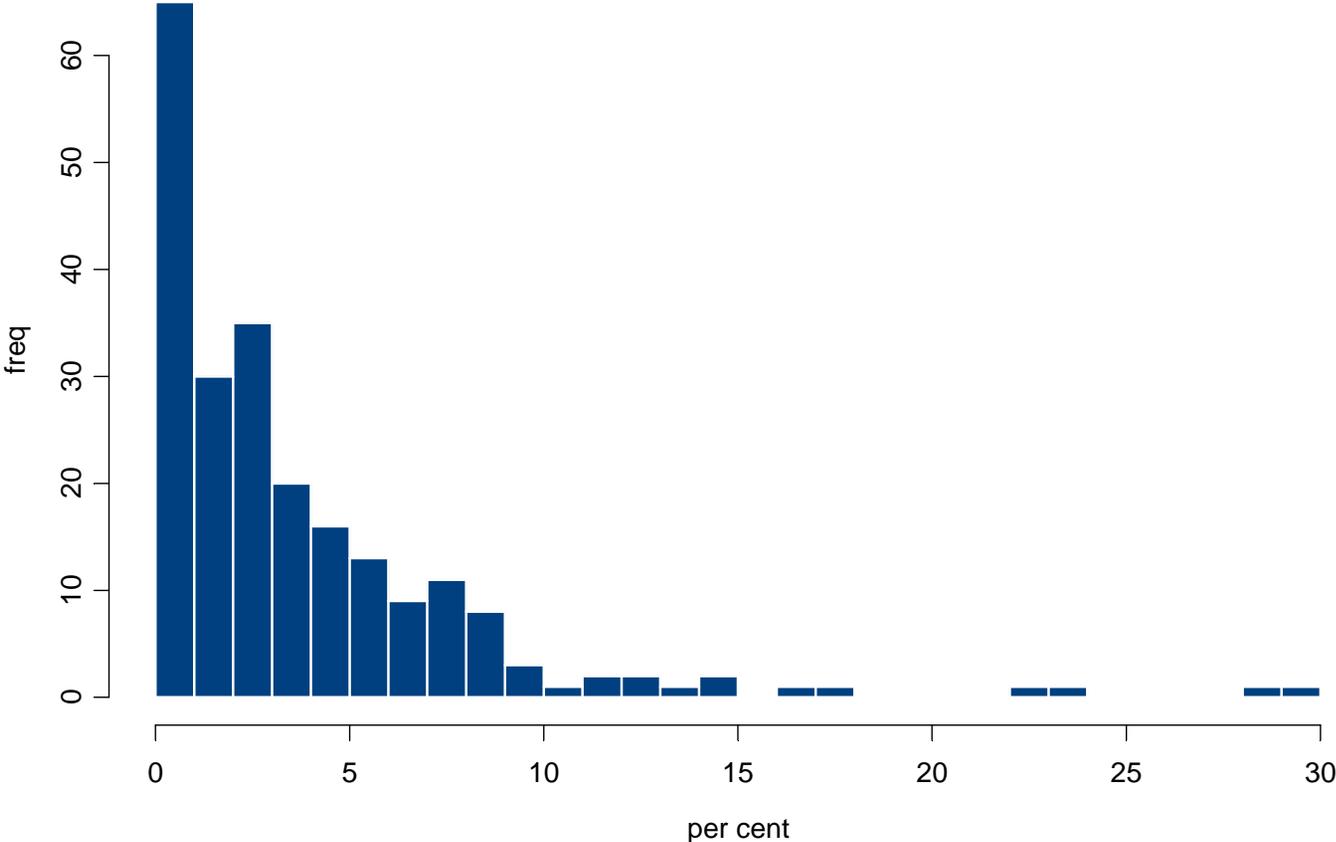
Duration of recessions i.e. number of consecutive years in which real GDP growth is less than zero

- Number which last 1 year   175
- 2 years   63
- 3 years   20
- 4 years   6
- 5 years   5
- 6 years   1
- 7 years   1
- These experiences span a wide range of policy attitudes and institutional frameworks

Duration and size of initial shock

- Percentage lasting 1 year is the same if we split the sample into initial shock < and > 1 per cent

- This is true for all shocks up to and including 6 per cent

- This accounts for more than 90 per cent of recessions