



# Research and Innovation in the EU: Challenges and Policies

**Dominique Guellec**

Head, Science and Technology Policy  
OECD

EARTO -- Oslo, March 22 2018



# The grand questions

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What strategic narrative should Europe follow in the preparation of FP9?

⇒ The world is changing: Why invest in Science and Innovation (S&I)?

⇒ S&I is changing: What does it mean for policies?

⇒ Policies are changing: How should the EU adapt?



## Five strategic issues

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- Grand challenges
- Globalisation of S&I
- Digitalisation of science
- Digital innovation
- Government budgets for R&D



# 1. Grand Challenges

Source: STI Outlook 2016

## 8 Megatrends for STI





# Grand challenges: Policy Challenges

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The world needs more growth, better environment, health etc.

❖ Science and innovation are part of the answer

⇒ The world needs more science and innovation

⇒ Research and innovation policies need be stronger and more challenge oriented [see latest G20 Heads of States Communiqué]



# What this means for Europe

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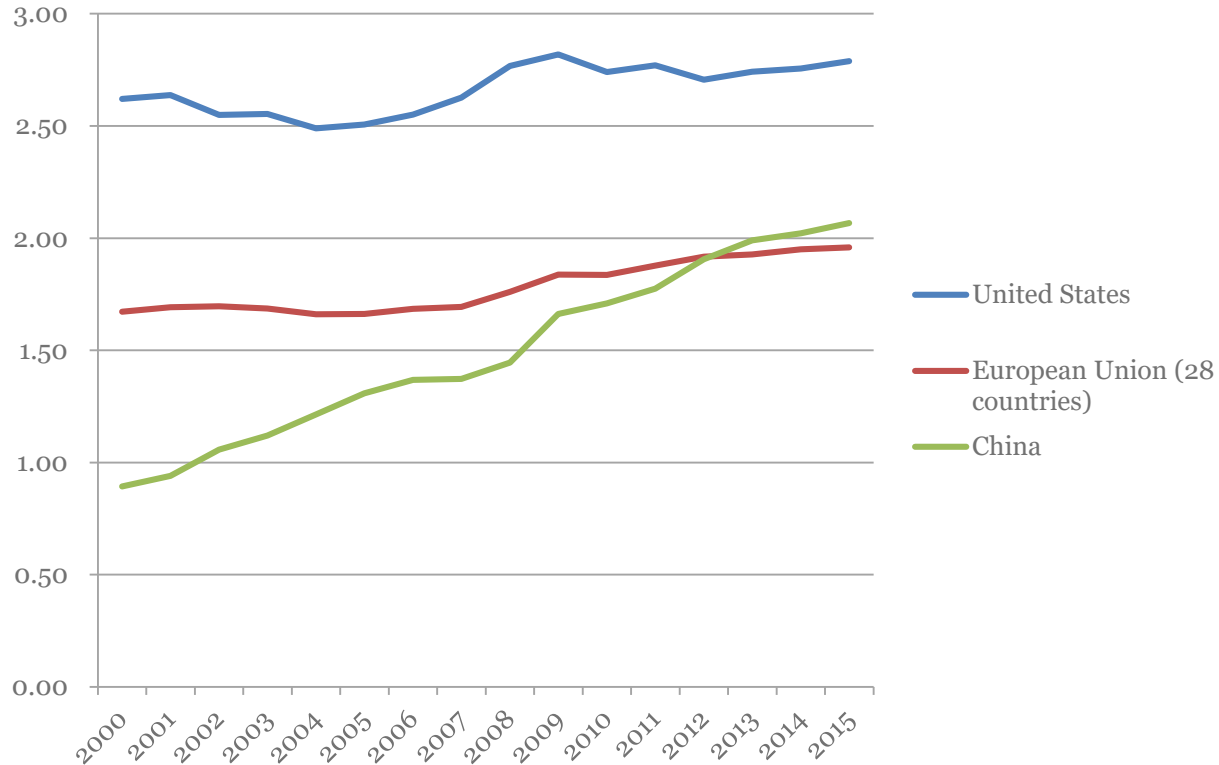
## Europe:

- investment in science & innovation should be more explicitly targeted towards addressing grand challenges;
- challenge driven research requires 1) targeted basic research; 2) more interdisciplinarity; and 3) more cooperation between universities, businesses and civil society



## 2. Globalisation

GERD as % of GDP (Source: OECD MSTI)





# Globalisation: New players

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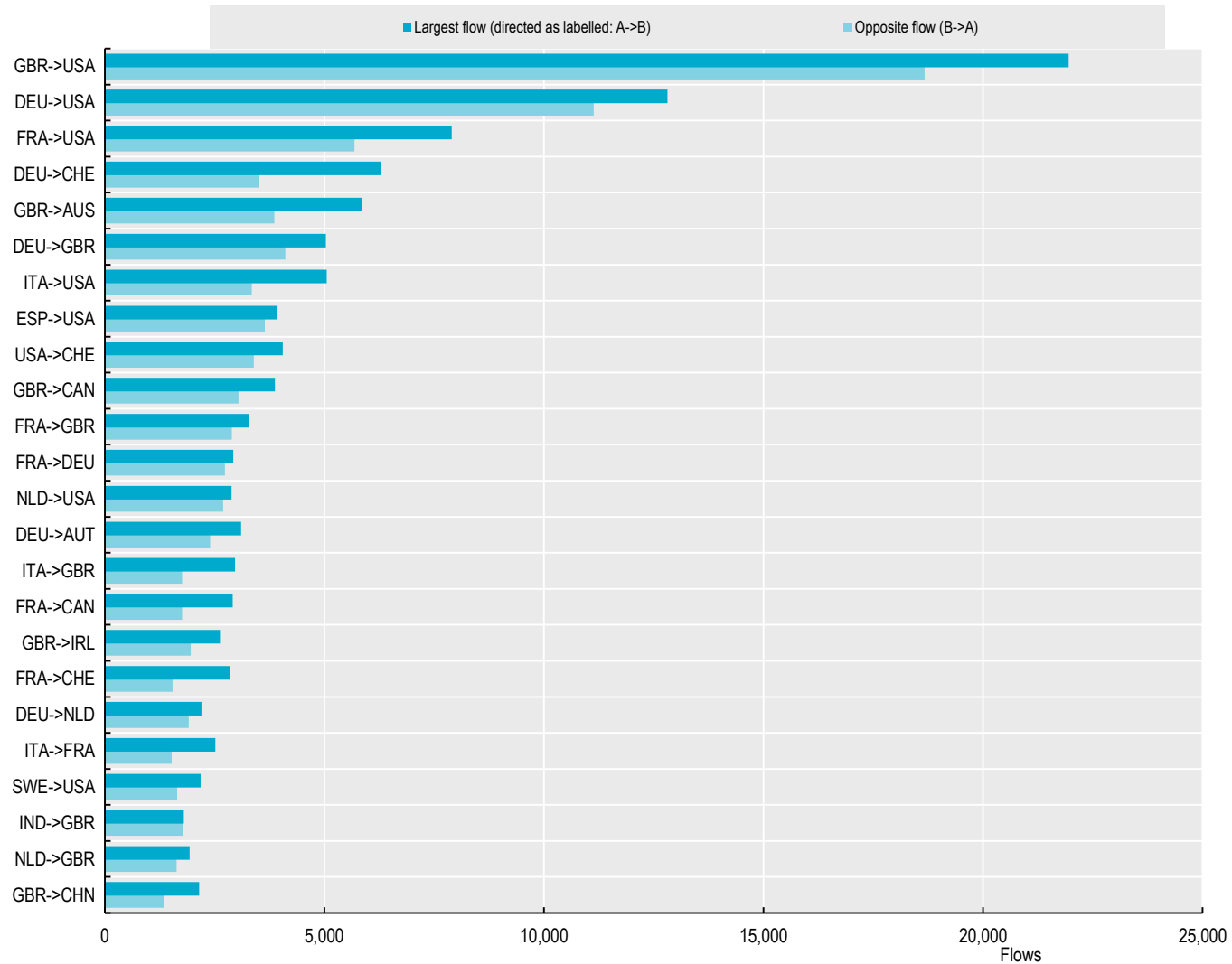
- New players (China)
- competition is innovation-based and becoming more global (beyond Western world),
- Europe is a large player... among others:
  - ⇒ it needs putting higher priority on innovation;
  - ⇒ and develop further internal integration in order to better exploit cross-country synergies.





# International flows of researchers

(2013; Source: OECD STI Scoreboard)





# Globalisation: International linkages

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- International linkages are key to innovation
  - International linkages have been growing over the past decades
- ⇒ Cross-country circulation of knowledge/people is a key issue
- ⇒ Europe needs to develop internal links, but also links with all other large players (China)



### 3. Digitalisation of science

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Open Science

Open Data


Research Collaboration

Openness to Society



# Digitalisation of science: New Opportunities

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- To cooperate among scientists.
  - To share & reuse data.
  - To increase the productivity of research (AI).
  - To involve more citizens in agenda setting.
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# What this means for Europe

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- Develop the European Science Cloud (an integrated digital platform for science)
- Encourage cross-country access to data (harmonise data regimes)
- Train scientists in all disciplines to master digital tools



## 4. Digital innovation

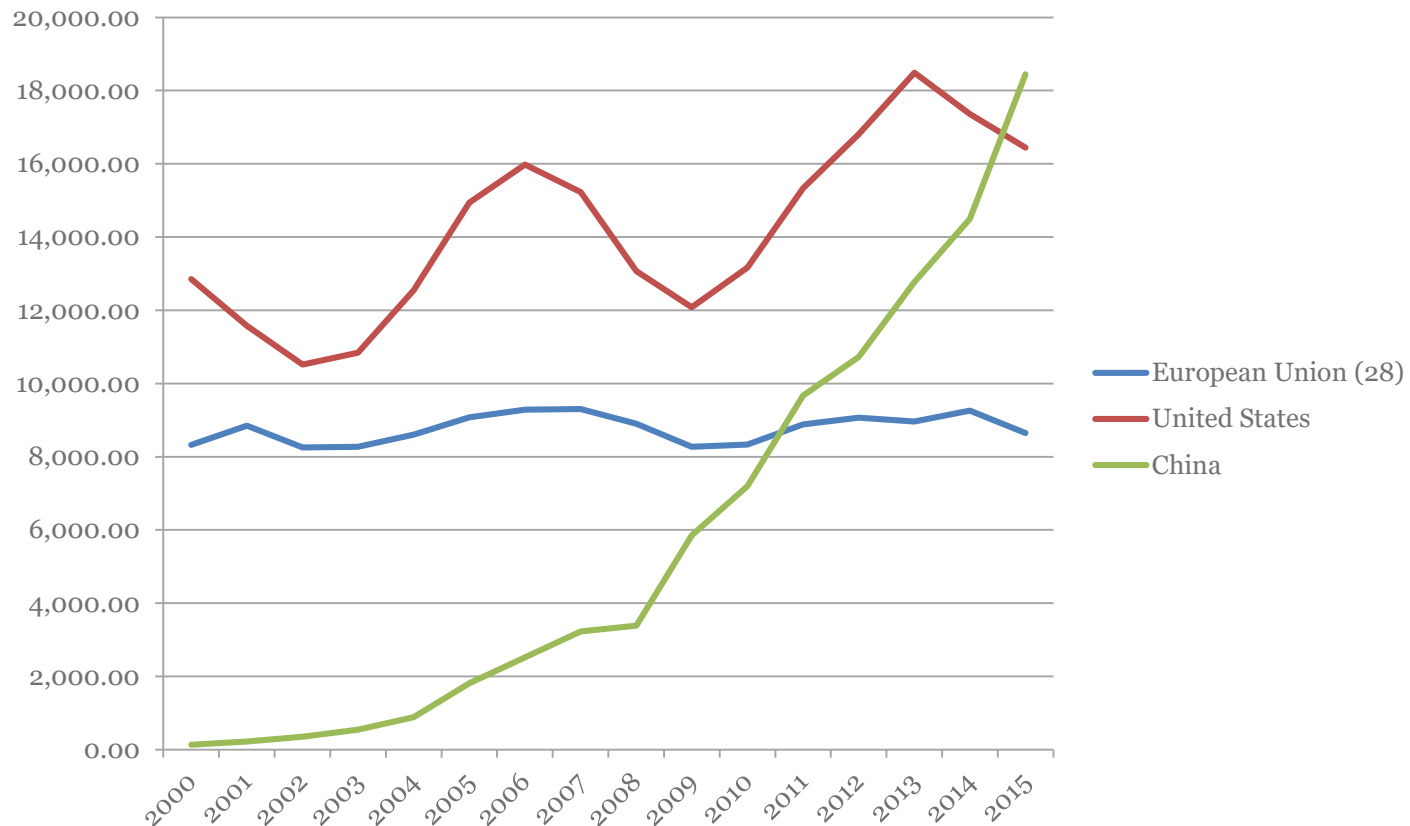
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- Innovation is increasingly based on digital => Internet of Things, robots, autonomous vehicles, 3D printing, simulation etc.
- The economics of digital innovation = polarised markets: global superstar companies (most from US and China) and vibrant entrepreneurship



# Europe is weak in innovation in ICT

Patents in the ICT sector (PCT, priority year; source: OECD MSTI)





## What this means for Europe

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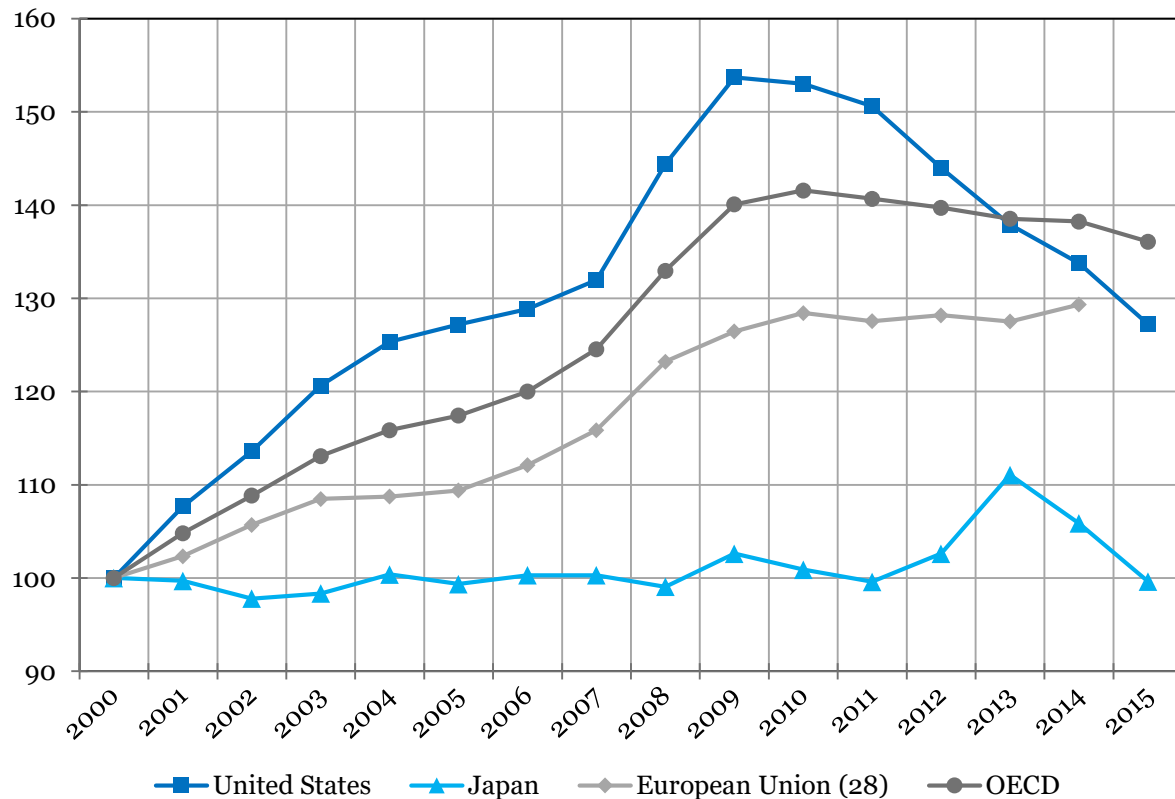
- Facilitate access to data within and across countries (health etc.)
- Need more global superstars and allow startups to grow more => complete the internal market (services, capital including VC)
- Support the digitalisation of SMEs





## 5. Government financed R&D has been stagnating for 8 years

R&D financed by government, constant PPPs, index 2000=100, source: OECD  
MSTI





# The budgetary challenge

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Budgetary pressures (government resources for S&I are plateauing or even declining in many countries) because

1. sovereign debt needs to be limited;
2. priority given to S&I is not high enough in many countries (there are exception, notably in Northern Europe)



# What this means for Europe

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- In most countries national government need to make a bigger effort for research
- A higher EU budget for research is warranted (Lamy Commission's report) – for the coming FP9
- Need to make research more efficient (digitalisation, thematic choices, management)
- Must mobilise funding from other sources: regions, charities, businesses etc.



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Thank You

[Innovationpolicyplatform.org](http://Innovationpolicyplatform.org)

[Dominique.guellec@oecd.org](mailto:Dominique.guellec@oecd.org)