



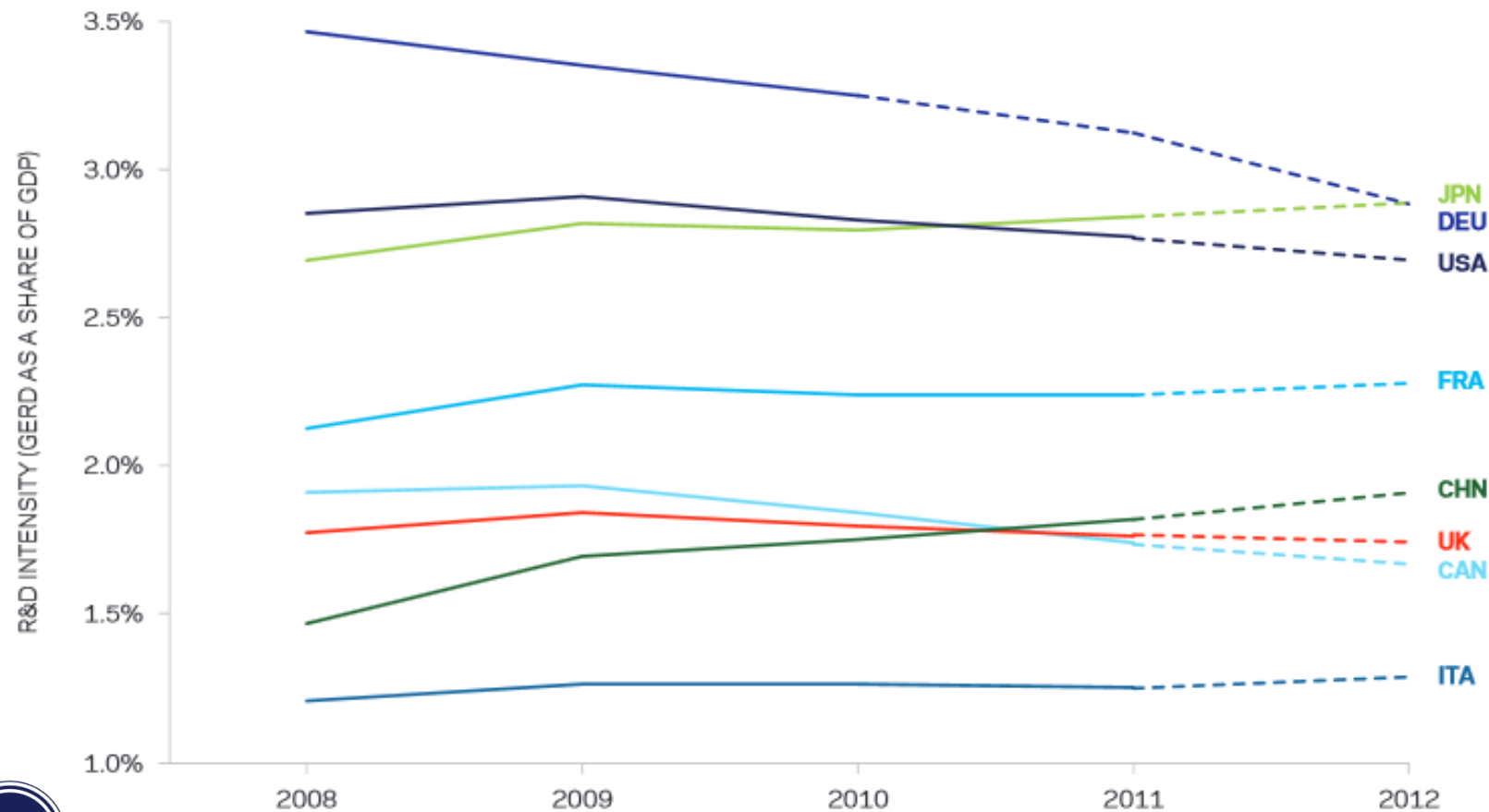
Sant'Anna
Scuola Universitaria Superiore Pisa

The Italian Paradox: myths and facts about science and innovation in Italy

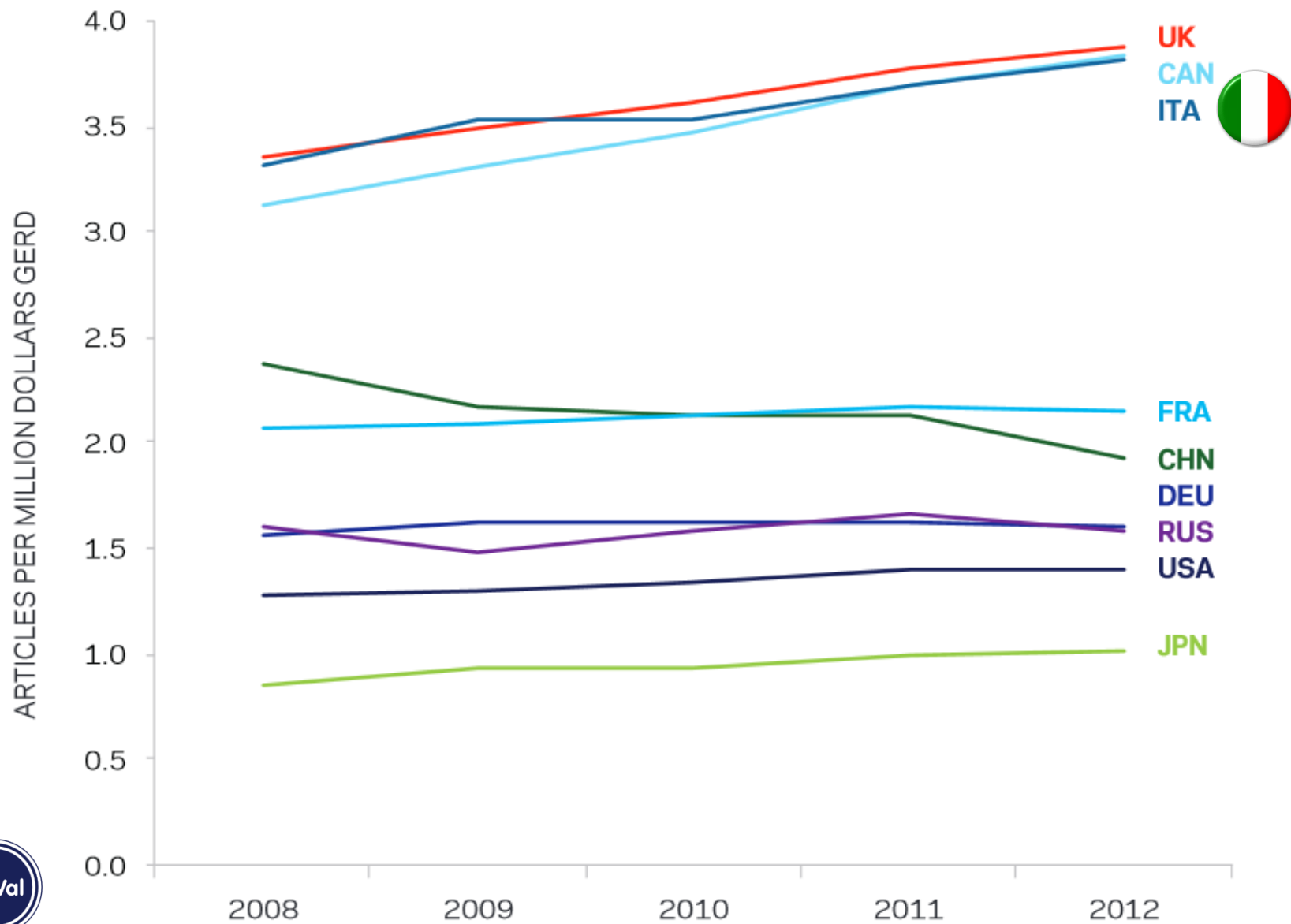
Pierdomenico Perata



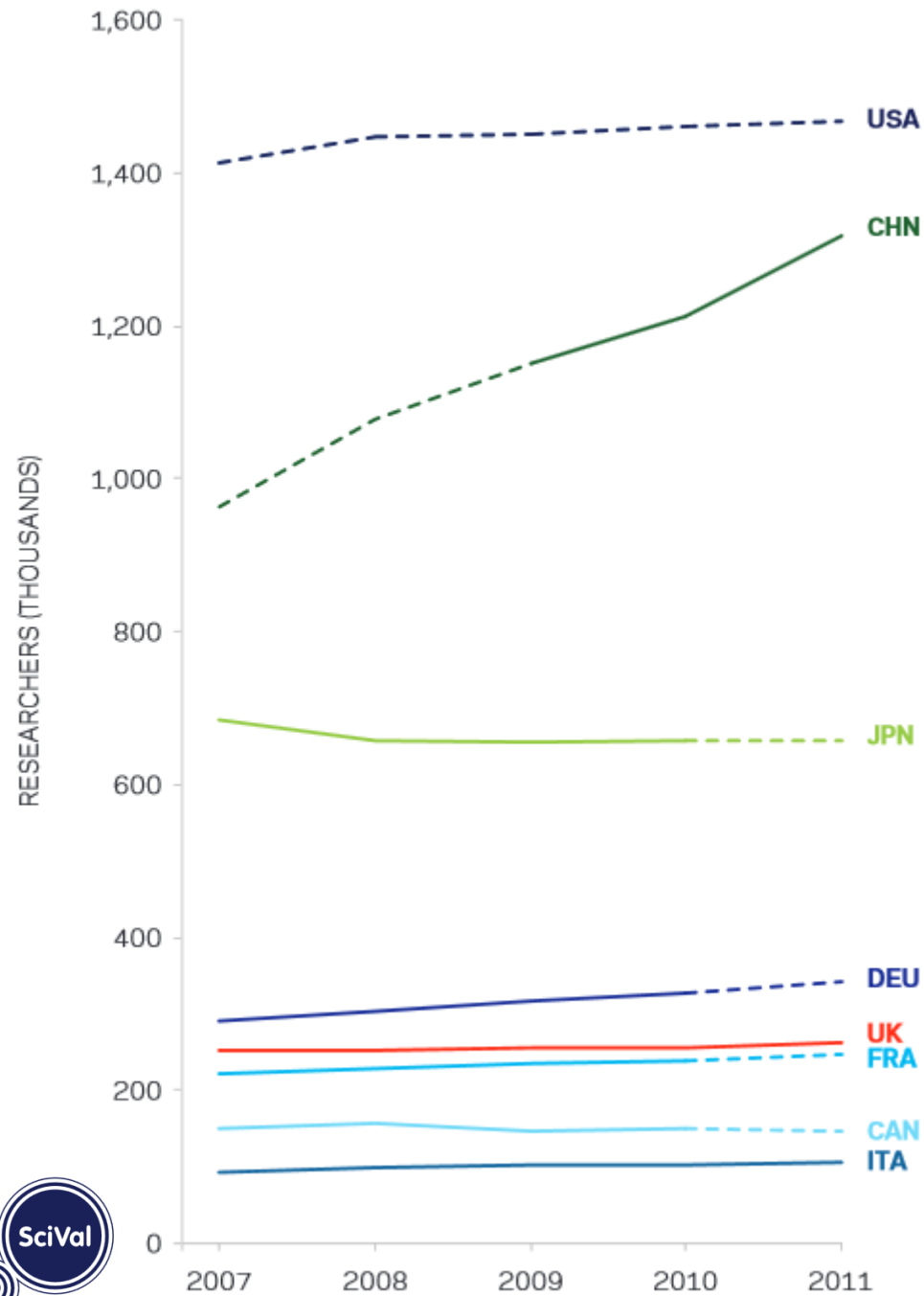
Gross domestic expenditure on R&D (GERD) as % of GDP



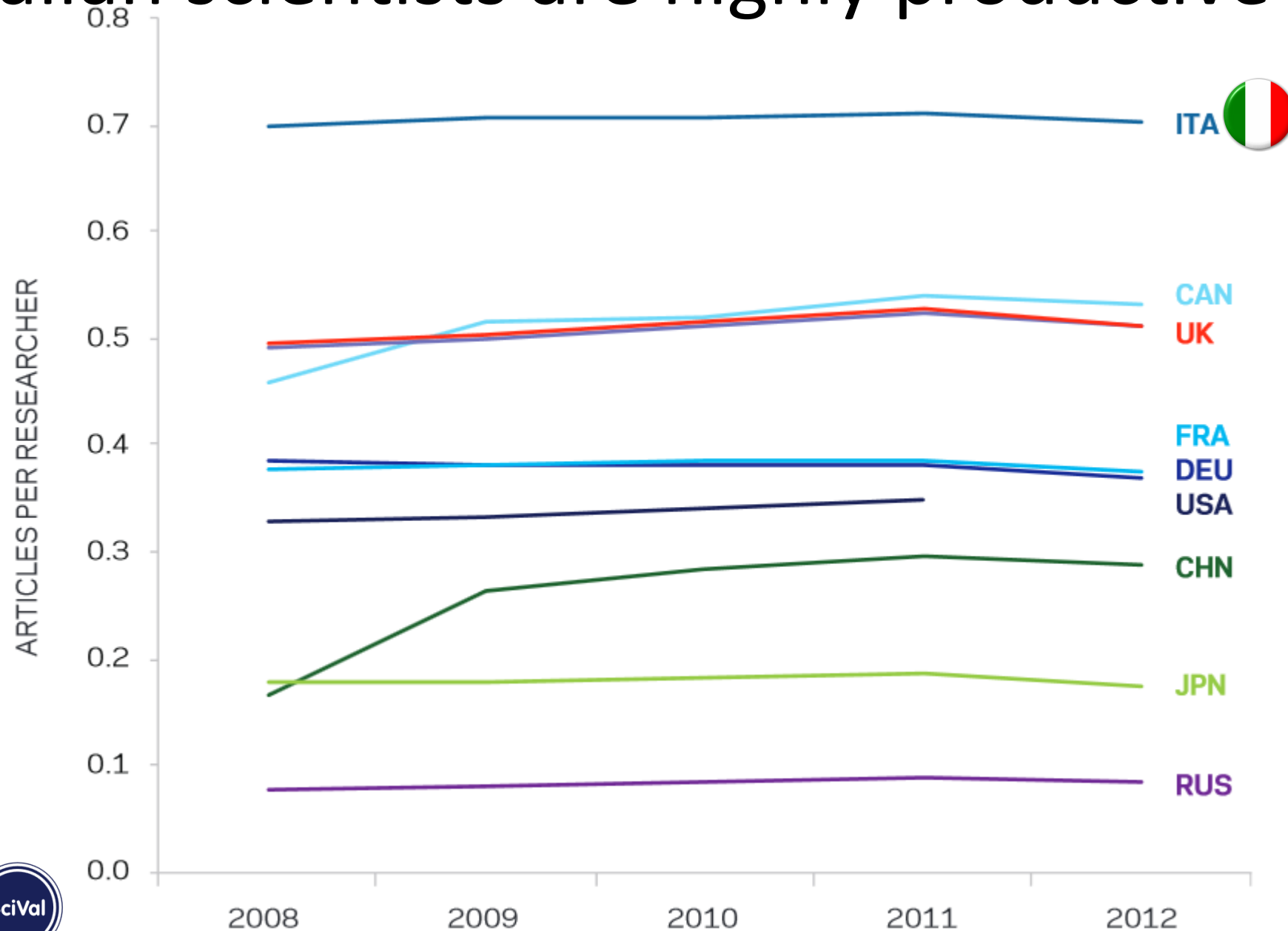
Articles/million \$ GERD



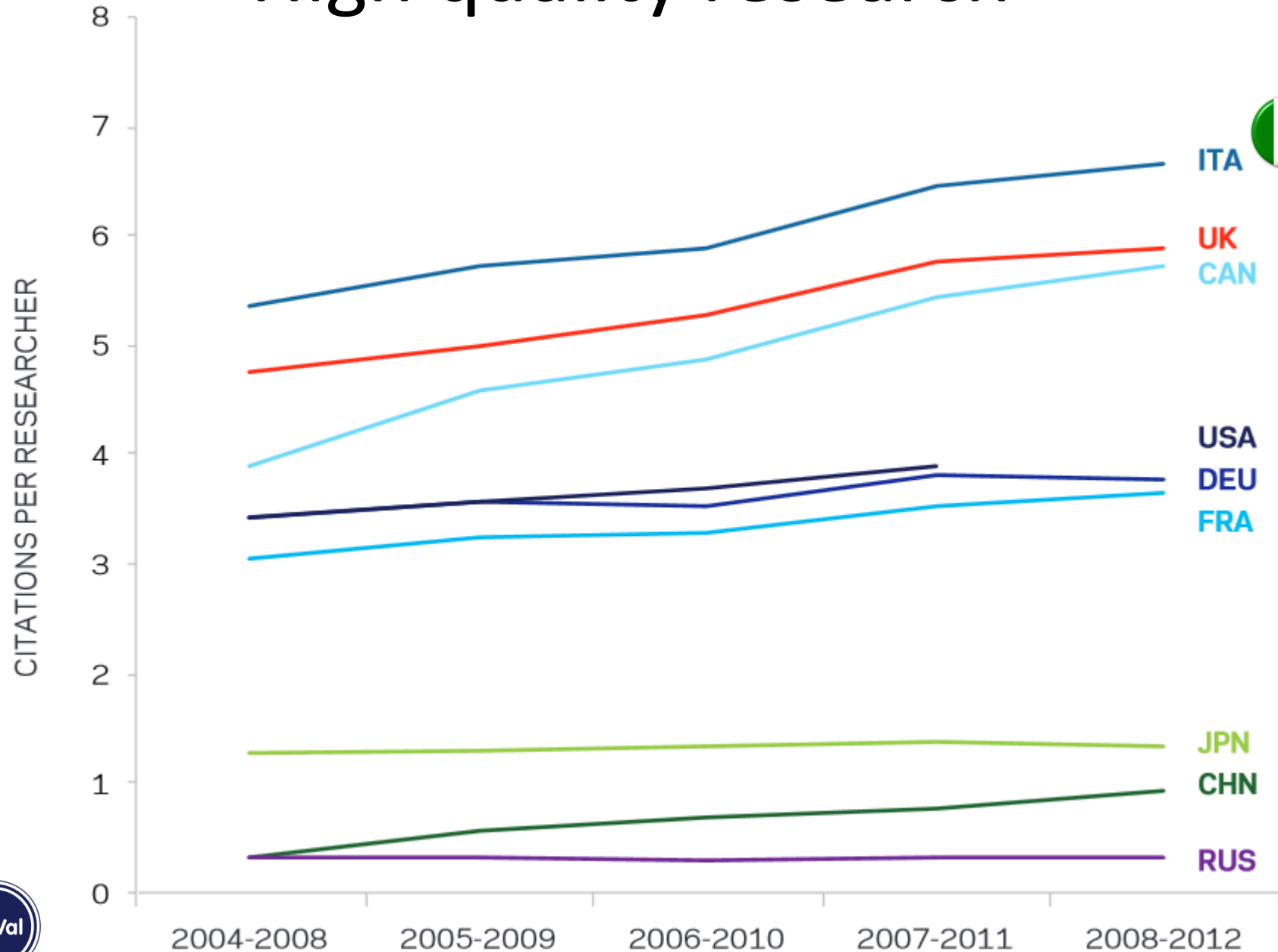
Researchers



Italian scientists are highly productive



High quality research





Italy's Science is alive!

Brain drain



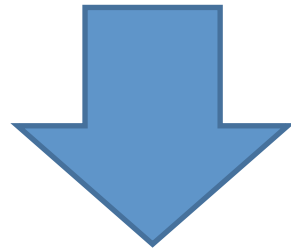
Brain drain?

<u>Comparator</u>	<u>Sedentary</u>	<u>Total Transitory</u>	<u>Total Outflow</u>	<u>Total Inflow</u>	<u>Net Total Outflow</u> (Total Outflow less Total Inflow)
UK	28.4%	49.5%	12.7%	9.4%	3.3%
France	36.7%	46.8%	8.6%	7.9%	0.7%
 Italy	51.9%	36.7%	5.9%	5.5%	0.4%
Germany	36.3%	44.8%	10.7%	8.2%	2.6%
Japan	60.0%	29.4%	5.5%	5.1%	0.4%
US	46.8%	35.6%	9.7%	7.9%	1.8%
Canada	27.0%	50.0%	12.5%	10.5%	2.0%
China	71.1%	17.8%	4.1%	7.0%	-2.9%



Italy's brain drain is much lower than Germany's one

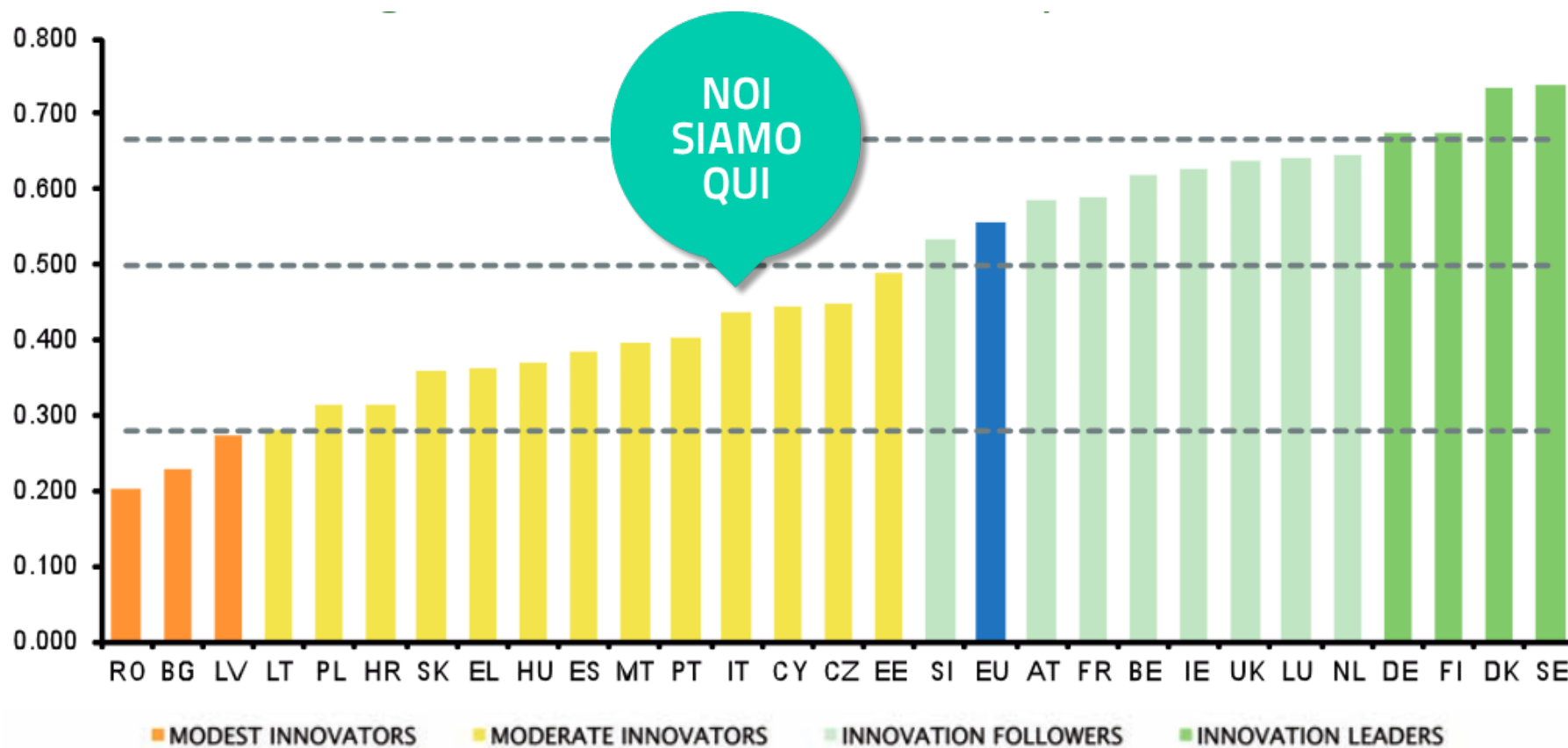
Knowledge



Innovation



Where we are

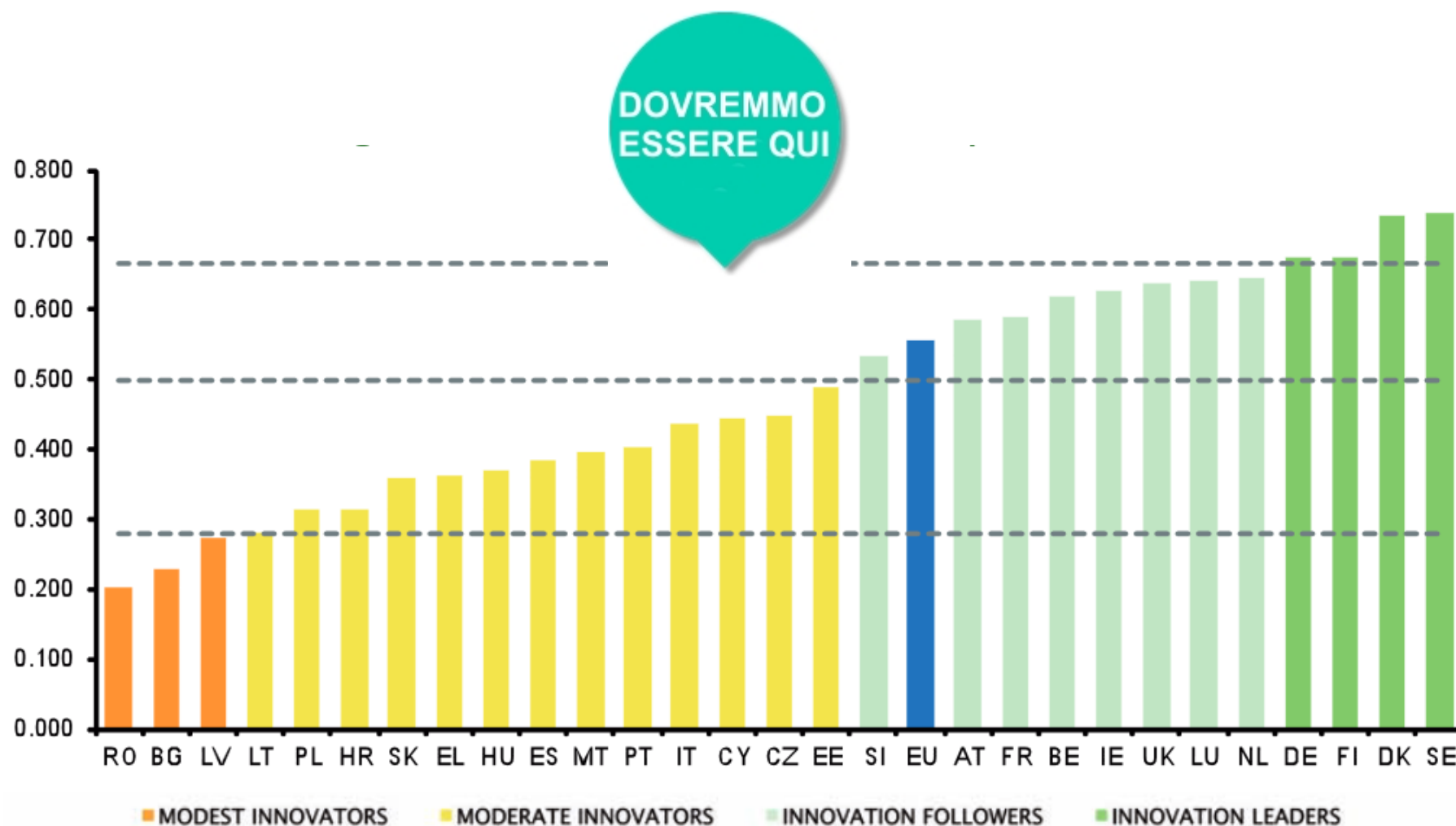


Innovation **Union**
Scoreboard 2015



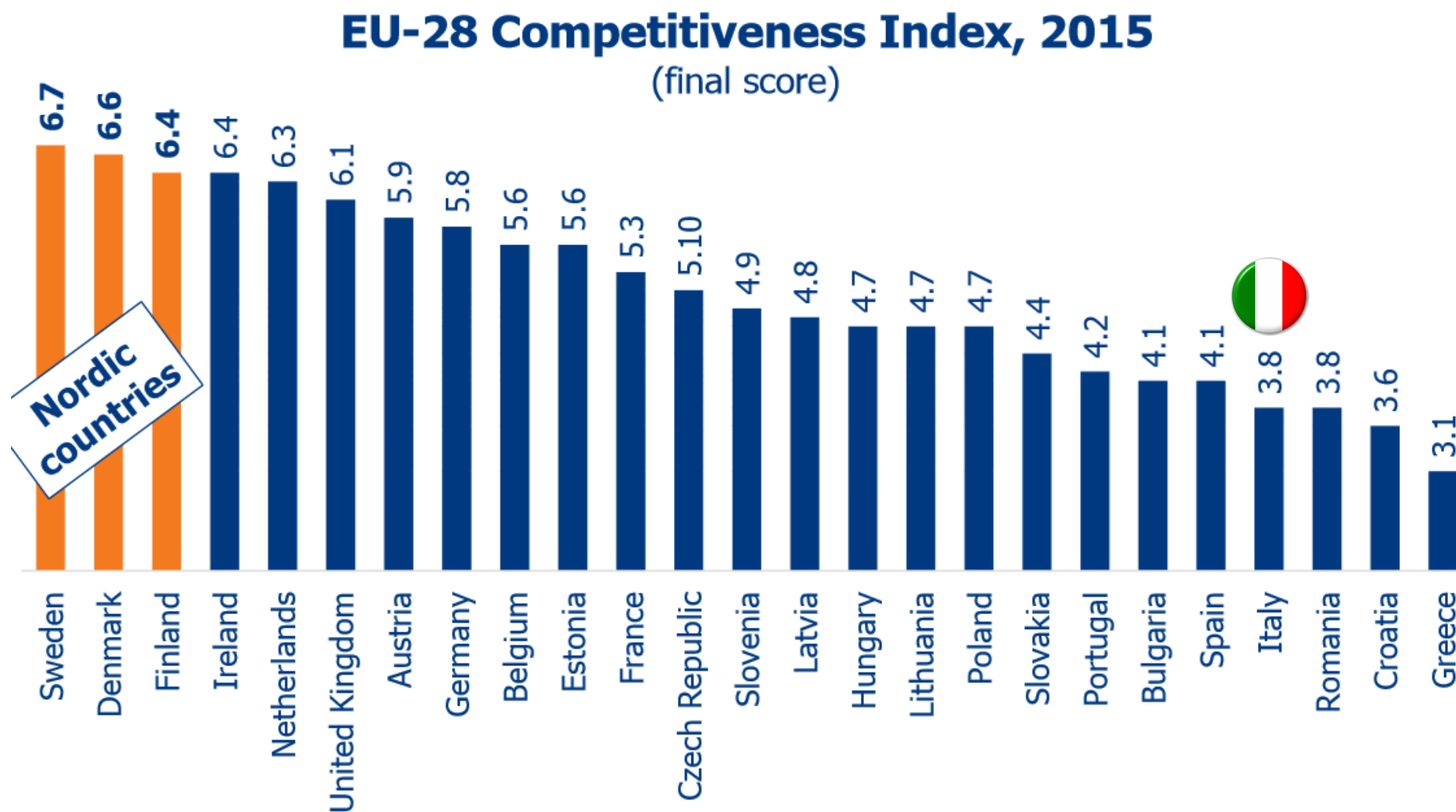
Italy is a moderate innovator
country

Where we should be

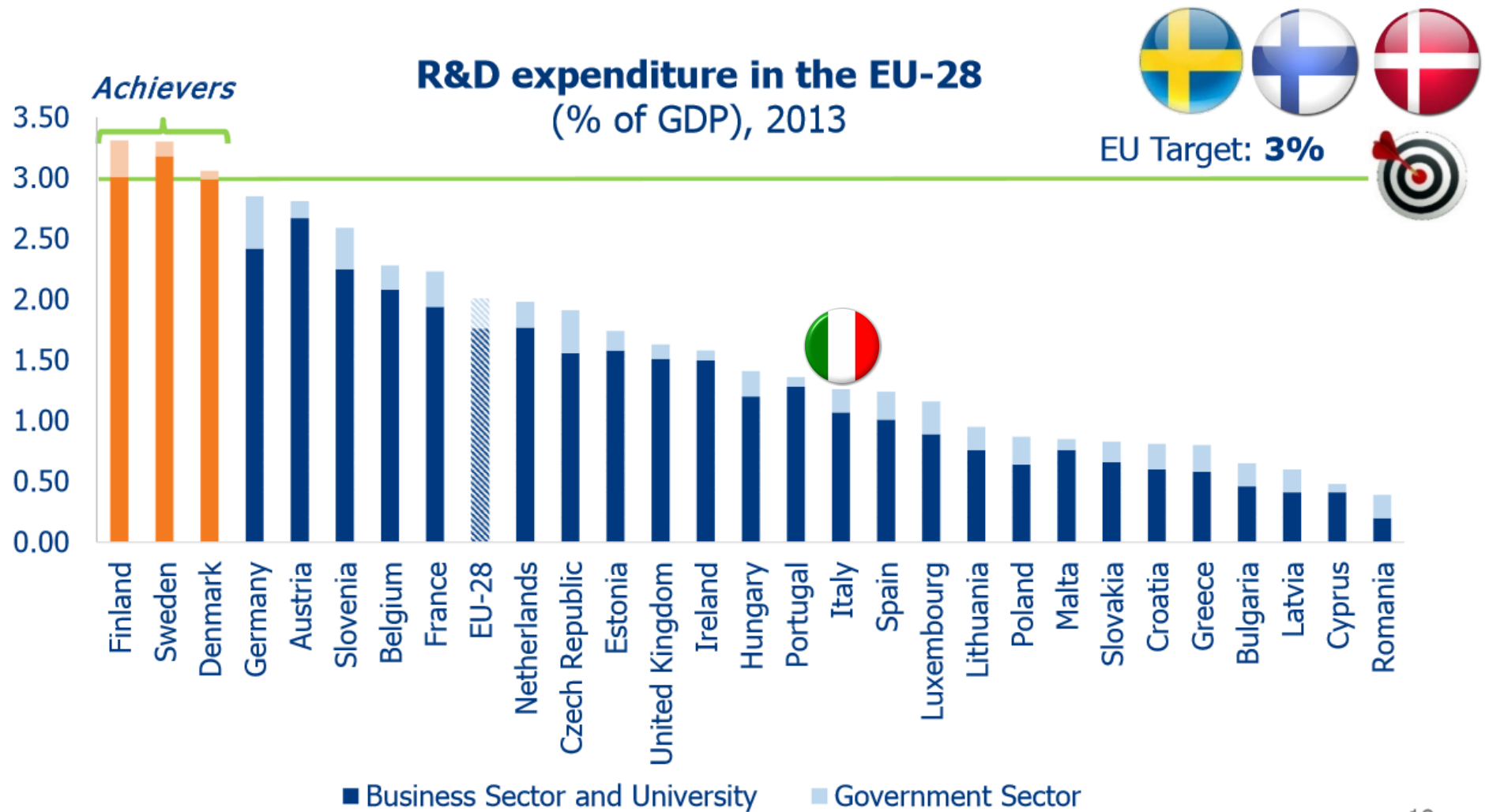


Innovation **Union**
Scoreboard 2015

The success of Nordic Countries



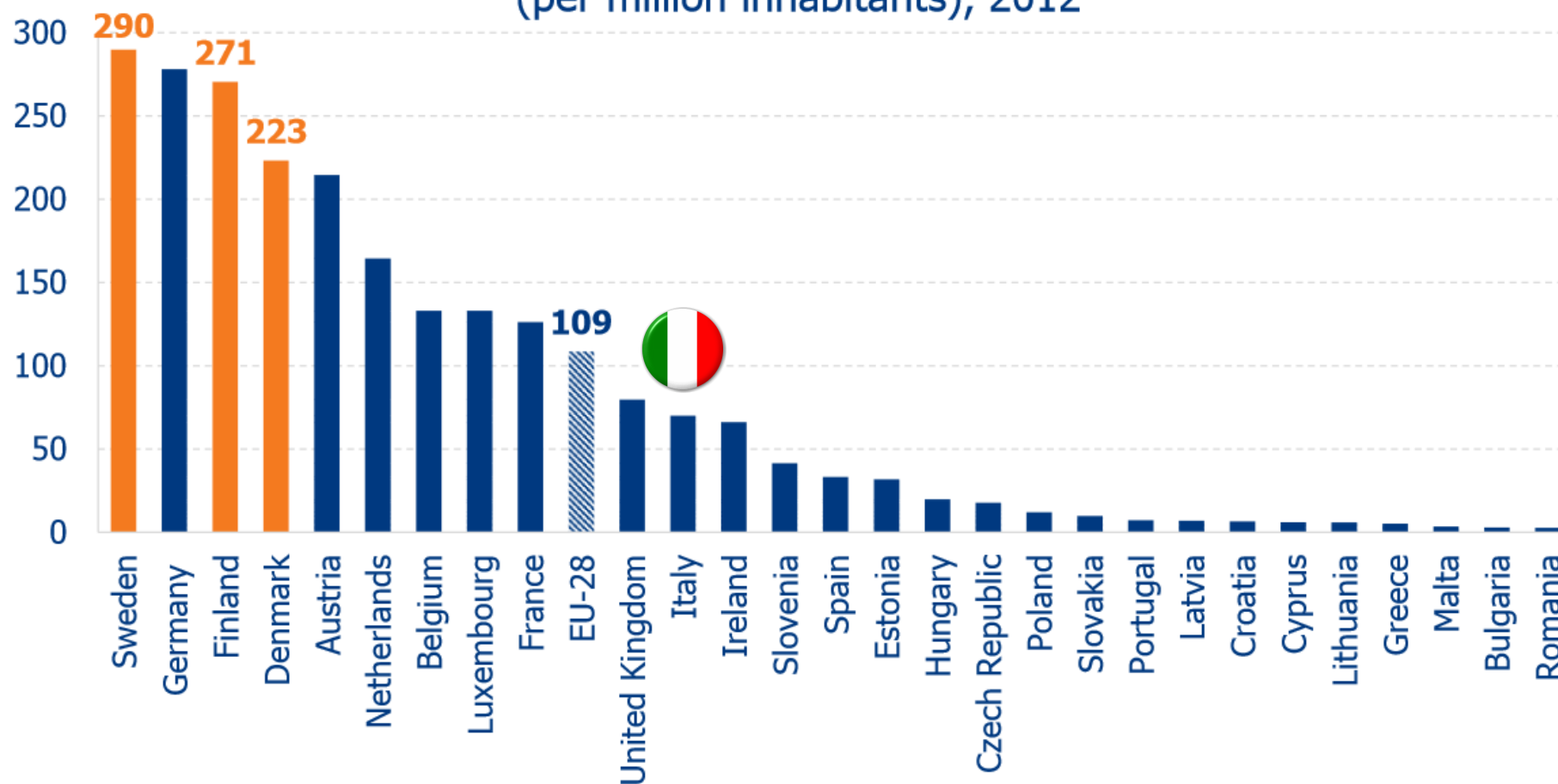
High vs. low R&D expenditure



Patents!



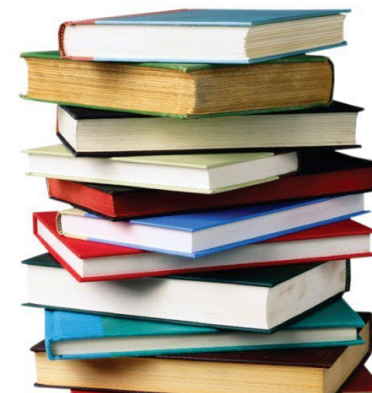
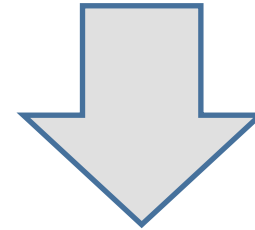
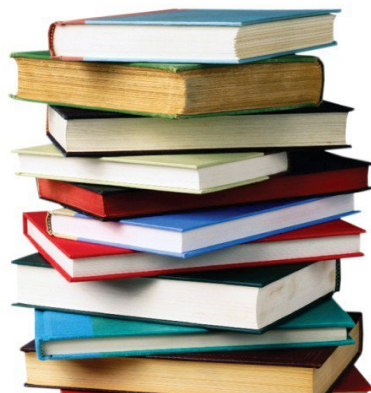
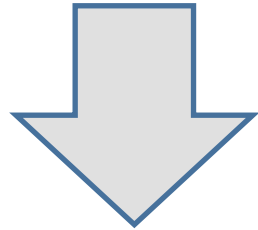
Patent applications to the European Patent Office
(per million inhabitants), 2012





Italy is unable to translate
Science into Innovation

The Italian Paradox



High R&D Expenditure



High Risk Science



**Breakthrough
Discovery**



Low R&D Expenditure



Low Risk Science



**Confirmatory
Science**



High risk, High gain

Gates Foundation backs high-risk science for big wins

Nick Garnham

Agricultural research is experiencing a renaissance. The Gates Foundation is leading the charge in the hopes of solving food security in the developing world.

The Bill and Melinda Gates Foundation based in Seattle, Washington has funded nearly \$100 million in agricultural research projects since 2006. The foundation's top priority is finding possible ways to increase the food supply and food security in the developing world, including how to improve yields in crops such as rice and wheat. The foundation is also looking for ways to improve the lives of farmers and their families.

The foundation's research is focused on three main areas: crop production, crop protection and crop storage. The foundation's research is also focused on the health and nutrition of the people who eat the food. The foundation's research is also focused on the environment and the climate change. The foundation's research is also focused on the social and economic aspects of agriculture.

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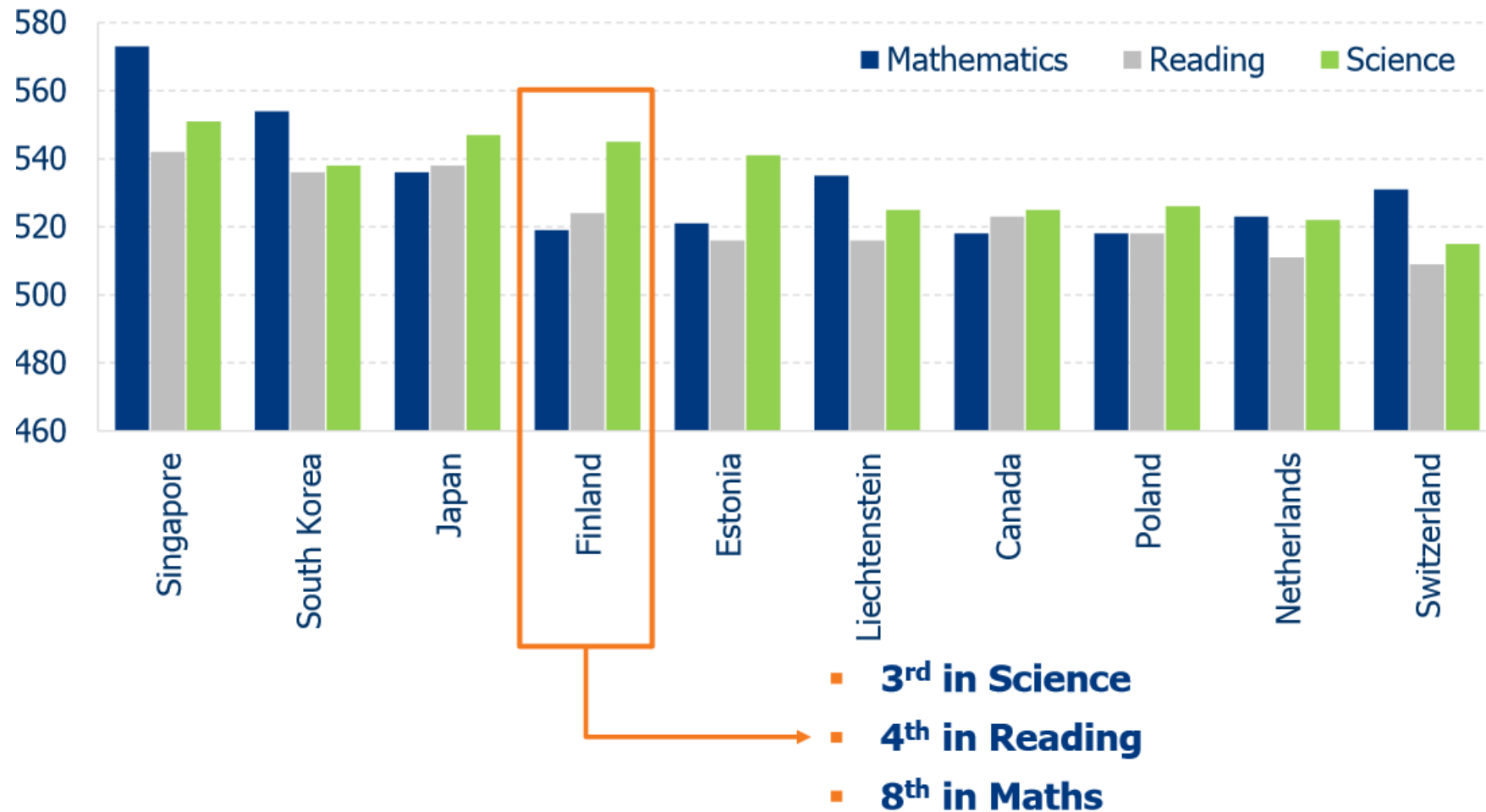


Italy low investment in R&D
results in low risk science

Education



PISA score in OECD countries (top 10), 2012



Source: The European House - Ambrosetti on OECD data, 2015

Mathematics performance among PISA 2012 participants



Finland is among the world leaders in education

- Finland built its **outstanding, efficient, and equitable educational system** in a few decades from scratch.
- Only 11% of **applicants to the teaching profession** are accepted, which means that the only **most motivated are selected**.



**I nuovi docenti:
"Ho detto sì, ma
mi sento
deportata".
"Troppe
incertezze, io ho
rinunciato"**



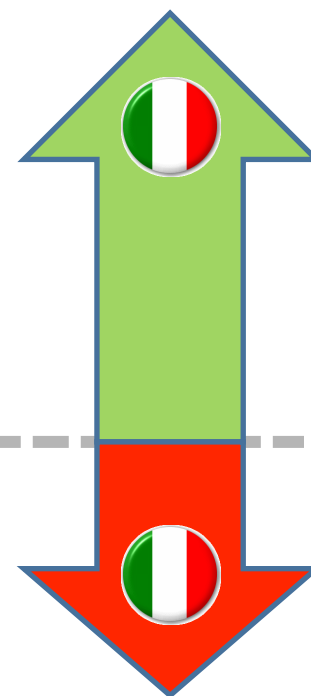


Italy's School system is
unable to meet the
innovation challenge

The university- industry connection

International
Scientific
co-publications

158

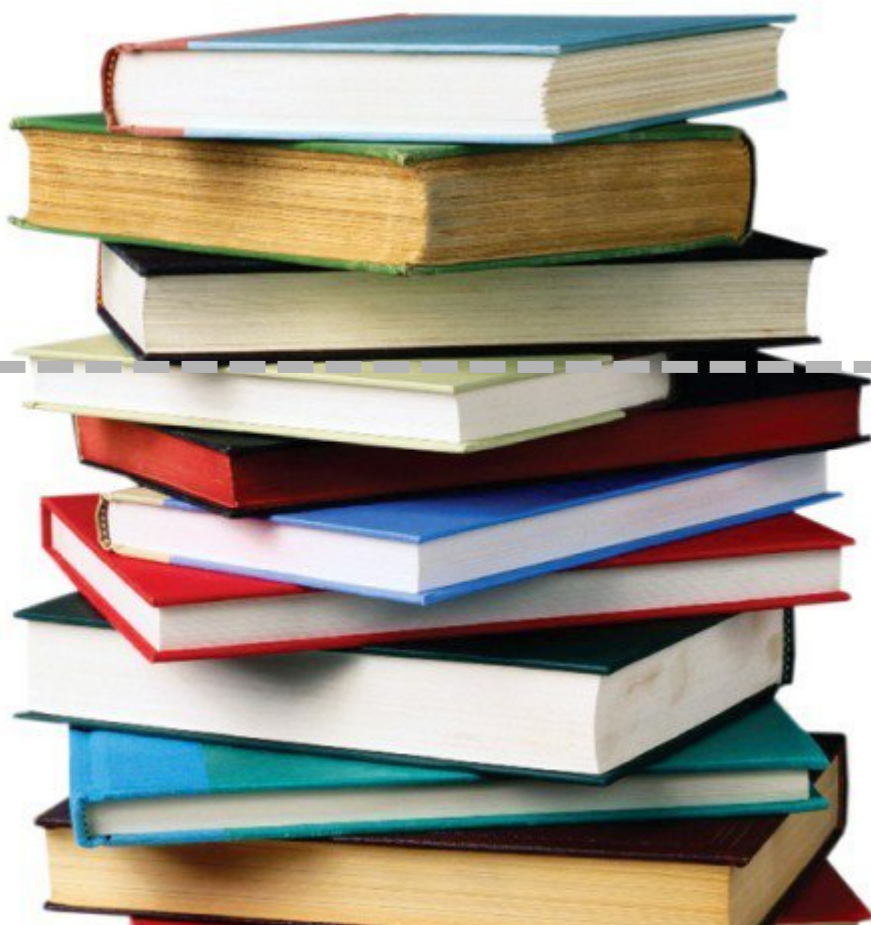


100



Publis-Private
co-publications

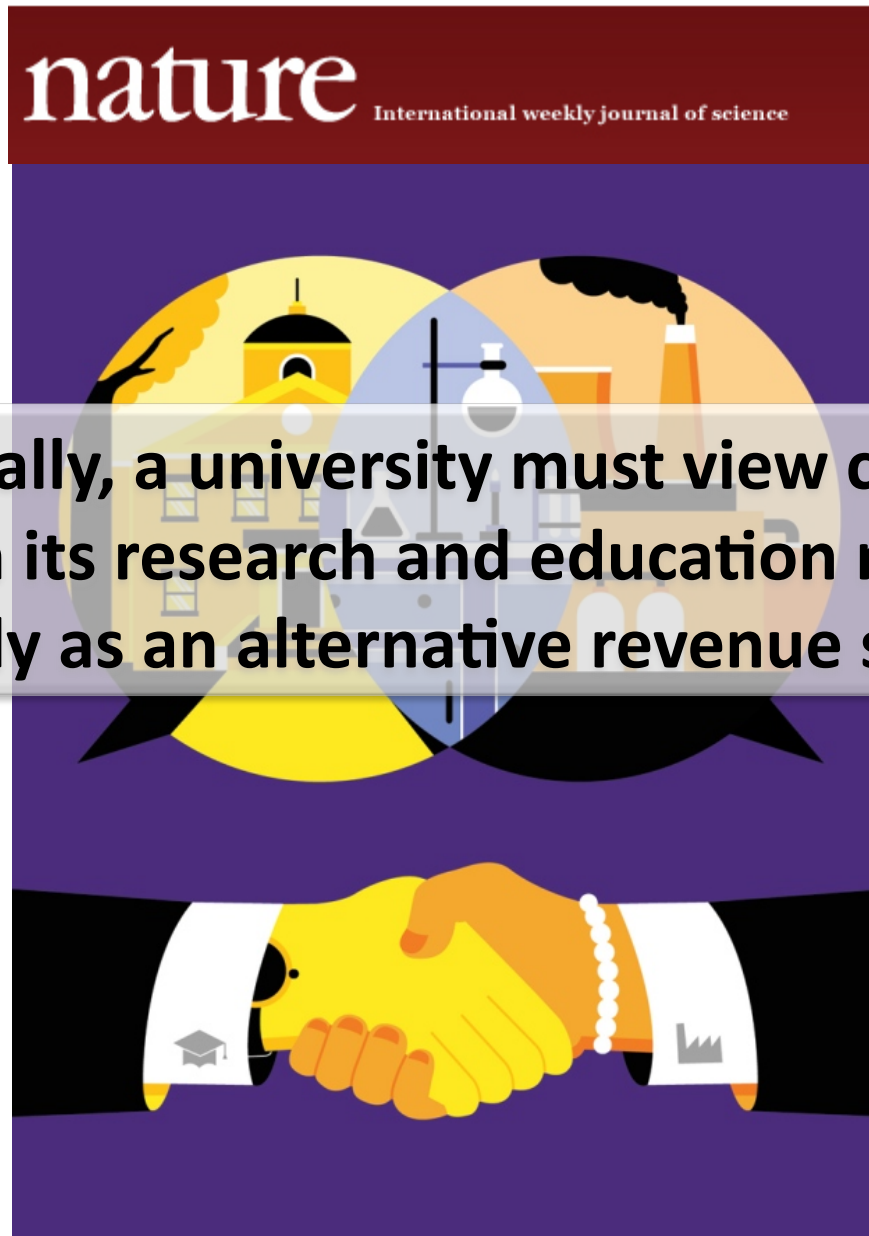
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Academia and industry: Companies on campus



Academia and industry: Companies on campus



Fundamentally, a university must view companies as partners in its research and education mission, not simply as an alternative revenue source

Academia and industry: Companies on campus



Successful academia–industry partnerships require:

Common interests

Trust

Good communication

For each of these, proximity helps



University-Industry in Italy
needs more reciprocal trust

Recipe for: INNOVATION

School= better STEM education
+ public & private R&D Investments
High Risk, High Gain Research!
More PhDs in Industry
Academia-Industry partnerships

thank
you!



@theplantlab