

Big Data: Does the Solow paradox apply?

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Economic and Financial Regulation in the Era of Big Data
Panel 2 - Understanding: Impacts on productivity and the overall economy

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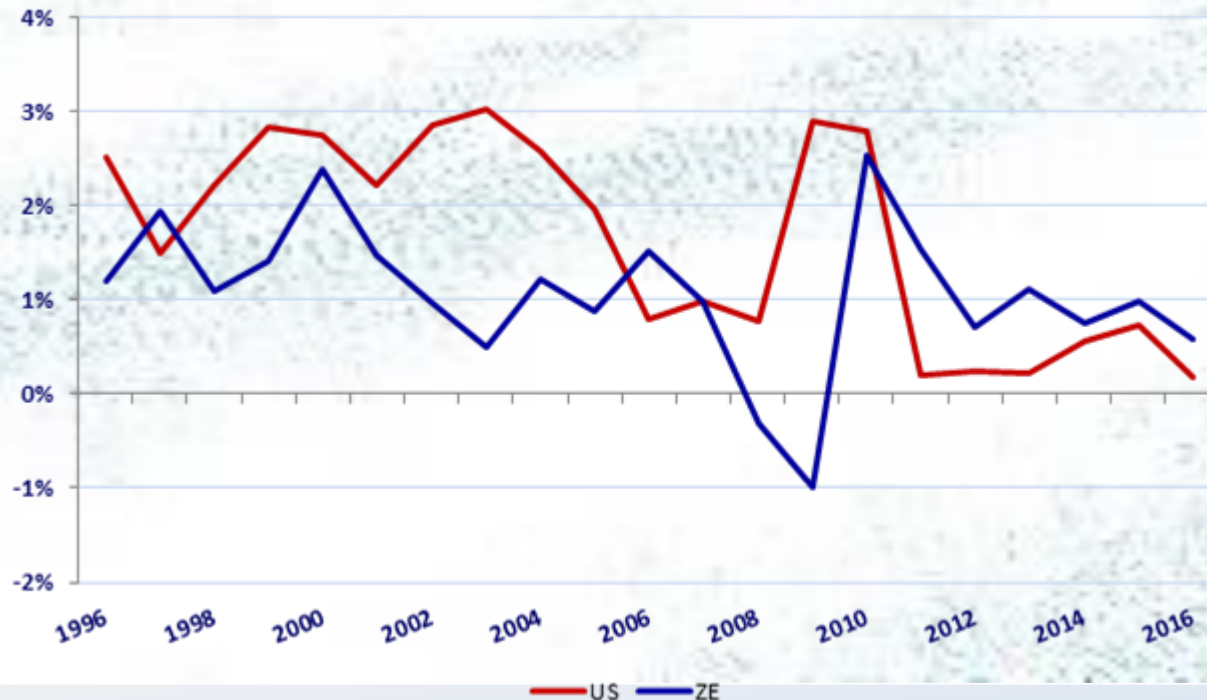
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The Solow paradox in the Big Data context

1987 2017

"You can see ~~the computer age~~ **Big Data** everywhere but in the productivity statistics"

Productivity growth in the U.S. and in the Euro zone (in %)



The economics of Big Data: a supply-driven shock

Data is the new oil of the century

- ✓ *New businesses, new products*
- *But it looks as if there was no impact on GDP*

- ✓ *Productivity in enterprises using Big Data technologies should increase...*
- *...So need for patience at aggregate level, just like for ICTs?*

The two sides of Big Data

The development of models & applications

- ✓ *Based on various sources and a large volume of data*
- ✓ *Using powerful & rapid machines*



The use of black boxes

- ✓ *By end-users*
- ✓ *With no control on the quality or appropriateness of the data used or on the processing they go through*

Some microeconomic and measurement issues (1)

Impact on GDP vs consumer surplus

- ✓ *One source of the current paradox: many digital products are provided "freely", improving consumers' welfare. The resources involved in their making are recorded in GDP, whereas consumers' welfare is not.*
- ✓ *Another source: on top of raising revenue, through advertising or the sale of products, Big Data is about the acquisition of personal data, produced in large part 'freely' by consumers.*
 - *Is this model sustainable? Probably yes: personal information becomes particularly valuable when it can be compared.*
 - *In any case, 1/ The welfare increase could be assessed through the development of a Satellite Account; 2/Public policies aim at raising social welfare.*

Some microeconomic and measurement issues (2)

Impact on employment and labour force composition

- *Downstream, capital-labour substitution at the expense of high-skilled labour force*
- ✓ *But upstream, need for high-skilled labour force for the development of new software*
- *So probably capital-labour substitution but impact on labour force composition and thus productivity is more ambiguous.*