Big Data:

Good Servant or Wicked Master ?

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Understand the Big Data

Big Data

extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions

Artificial Intelligence

computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages

Machine Learning

application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed

Computerization of Human Interactions

Transaction Records

- Financial
- Time
- Place
- Professional & Personal
- Governmental

Mathematical / Logical Analysis

Precision capture & measuring

- Tax records
- Bank Transactions
- Shopping Basket / Picture
- Statistics

Computerization of Human Interactions

Communications Content

- Emails
- Social Networks
- Phone calls

Speech Analytics

- Double Meaning
- Slang
- Voice
- Encryption

(eg: “eat chicken “, “ POS “ etc.)

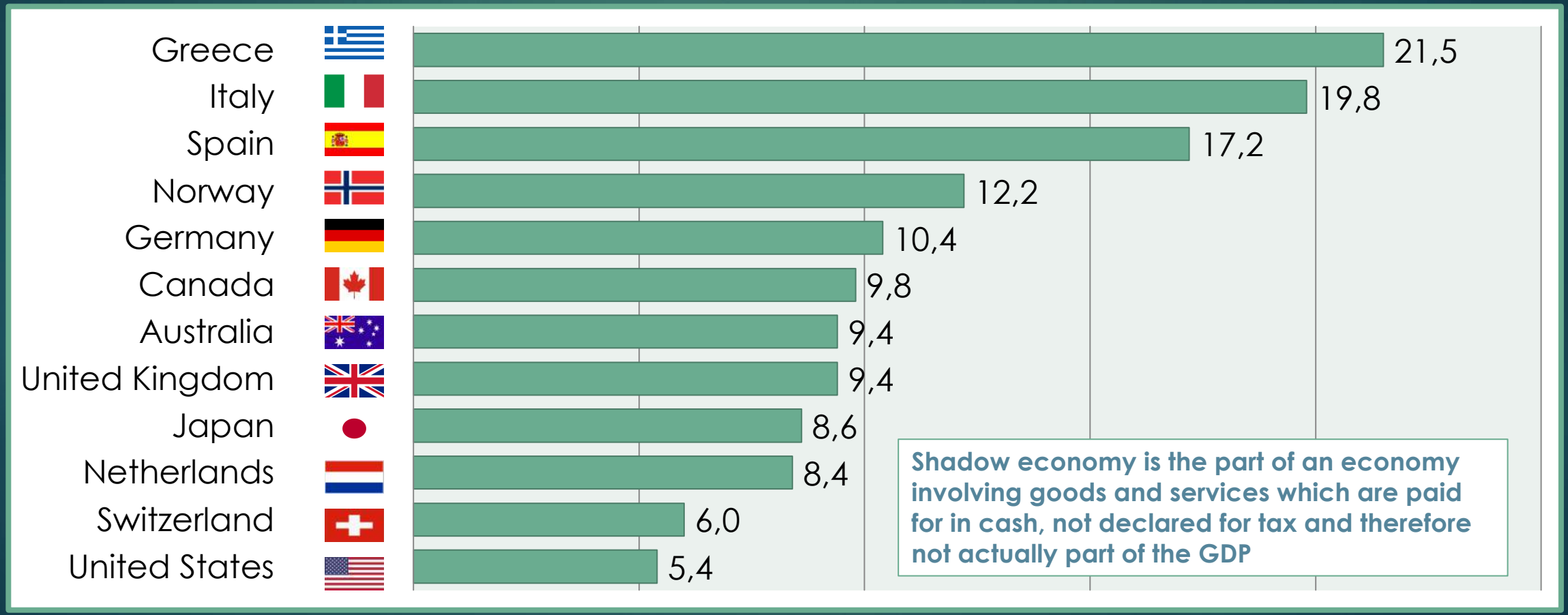
Big Data / Virtual Electronic Traces : Key Issues

- Ethical

- Completeness
- Truthfulness / Objectivity
- /Non/Structure – Processing into Information
- Ownership/Access/Transparency
- Applicability towards future

Considerable Impact of Shadow Economy Is Excluded

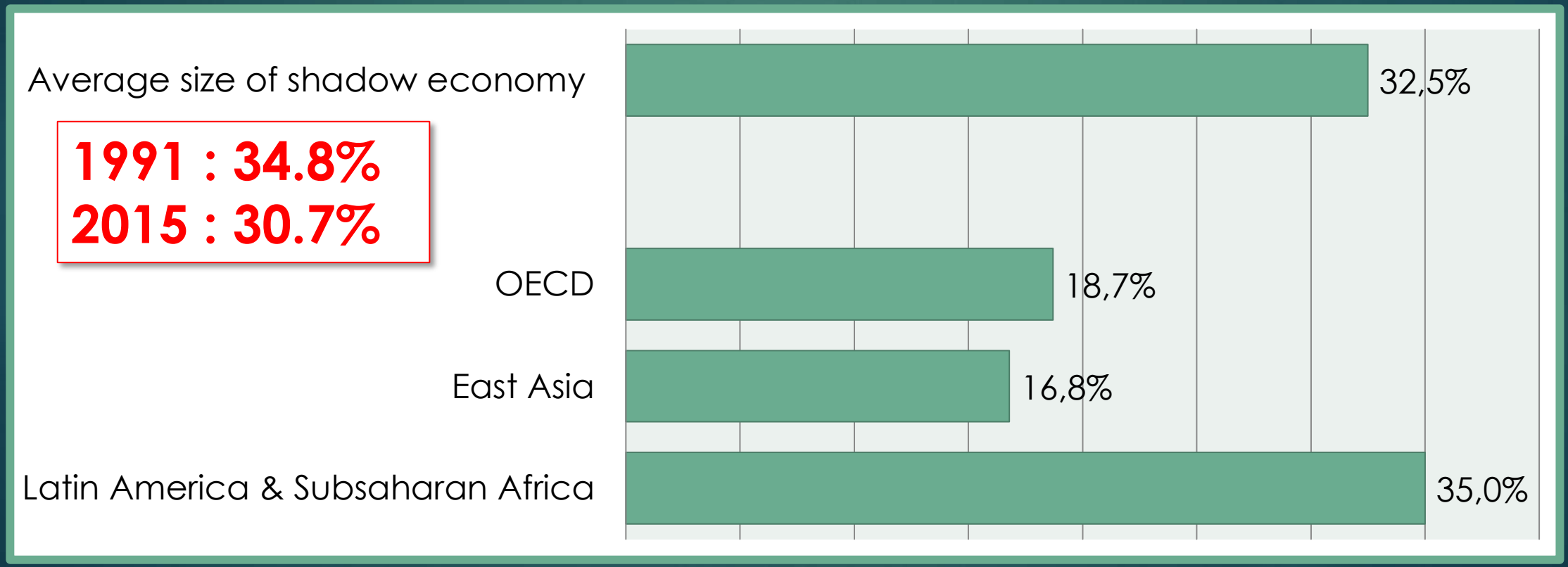
- Shadow Economies : % of GDP in 2017



Source: Institute for Applied Economic Research / IAW/, University of Tubingen.

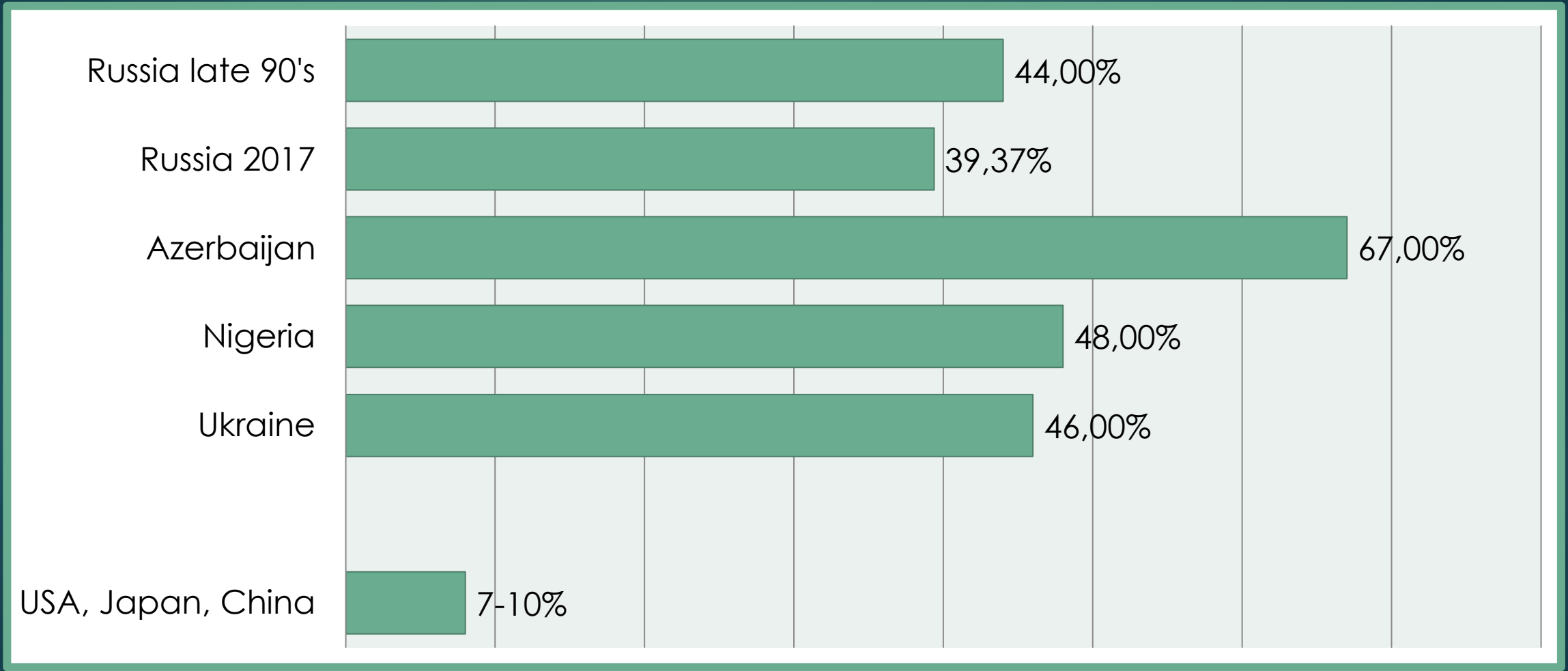
Considerable Impact of Shadow Economy Is Excluded

- 158 countries, between 1991 – 2015, % of GDP.



Source: Dept. of Economics, Johannes Kepler University of Linz & African studies Dept., IMF

Considerable Impact of Shadow Economy Is Excluded



Sources: Association of Chartered Certified Accountants /ACCA / report, 6/2017 & The World Economic Forum's Global Agenda Council on Illicit Trade, 2012-2014 & National Committee on Enterprises in the Unorganized Sector / NCEUS/, India & IMF, World Economic Outlook, 4/2017

Considerable Impact of Shadow Economy Is Excluded

- Top 3 global economies : #1 USA, #2 China, #3 Global Shadow Economy
- US nominal GDP 2017 - $19.4 Tln, China = $11.8 Tln
- Heavy in over-regulated economies with corruption and/or weak administration (black market taxis, smuggling, baby-sitting, prostitution, etc)
- 84.7% jobs in India are in informal / unorganized sector

Sources: Association of Chartered Certified Accountants /ACCA / report, 6/2017 & The World Economic Forum's Global Agenda Council on Illicit Trade, 2012-2014 & National Committee on Enterprises in the Unorganized Sector / NCEUS/, India & IMF, World Economic Outlook, 4/2017

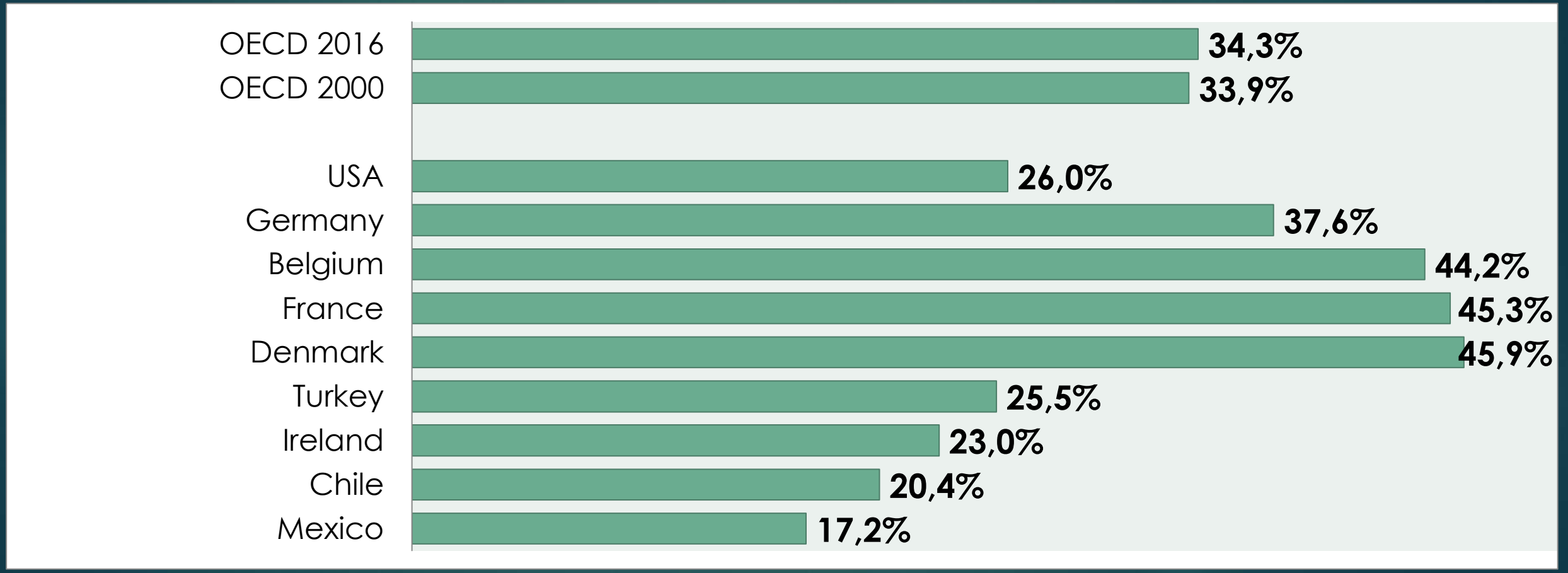
“Legislated Economics” Distort Input

- USA: Food Safety Modernization Act (FSMA)+ 3,000 federal, state , local, tribal agencies + FDA = regulation of retail food and FS industries
- EU: tribal + state harmonized + EU harmonized / General Food Law Regulation (GFLR) 2002 /
- Solar energy subsidies
- Agriculture subsidies
- “ Tail of politics “

Government Footprint in Economy per Country

- CZE : 32.4% in 2000
  34% in 2016

Tax / GDP Ratio



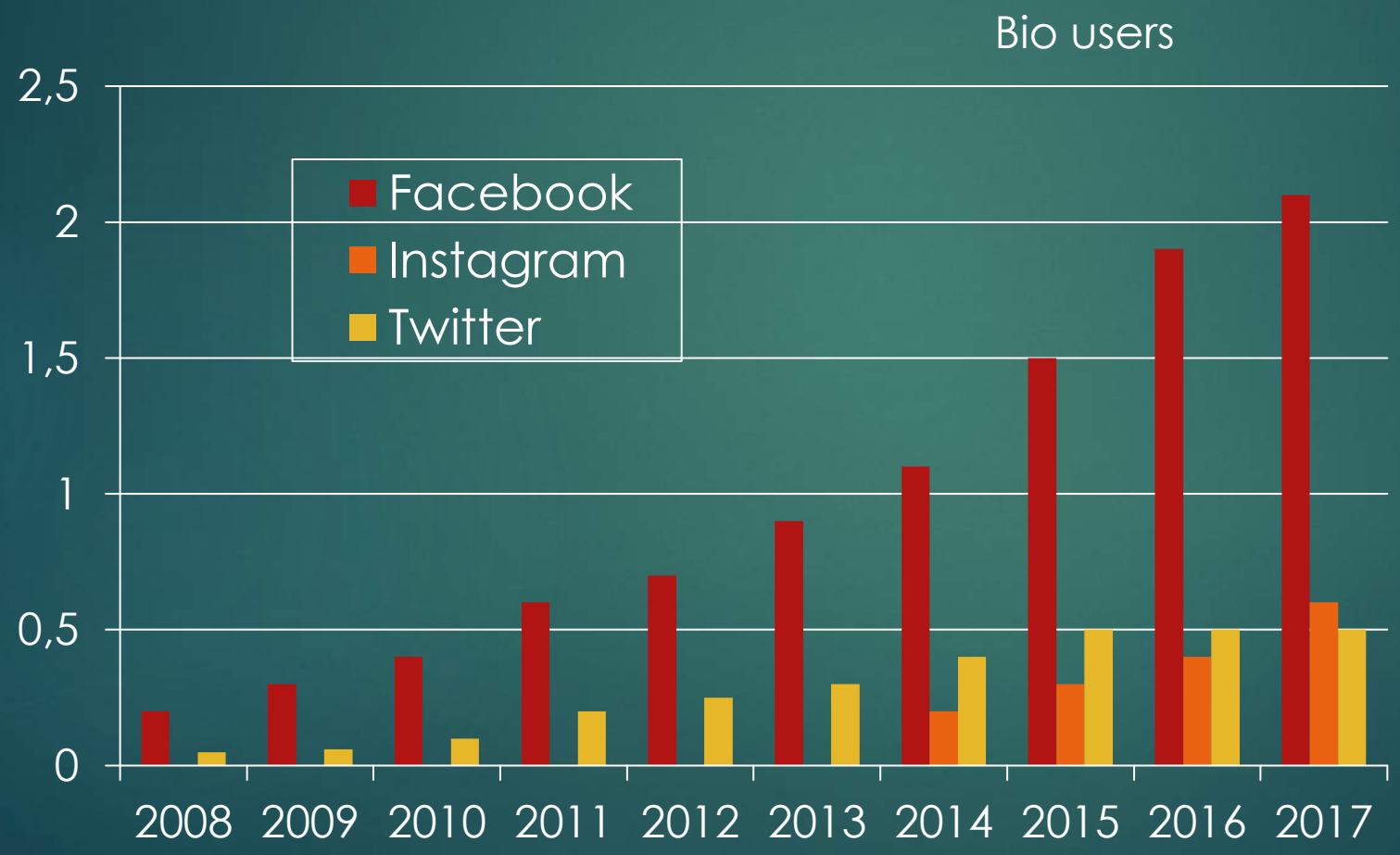
Source: OECO's Annual Revenue Statistics, 2017

Government & Regulation & Manipulation Disqualifies Input

- **Economy "on steroids": U.S. GDP growth 2017 of + 3.5 % vs U.S. debt growth of + 4.5 %**
- Cyberwars : intentional mass production of Fake Big Data
- "Closed" and "Semi-Closed" economies: USSR in 1980 vs China in 2018 ?

Big Data Stirs Up EU Anti-Monopoly Policy

- Competition chief sees digital dominance as potential issue for antitrust review



- Big data = consumers currency / corporate capital
- EU = Hands-on
  - Monopoly can foreclose market access
- US = Hands-off
  - Stemming innovation
- M&A Focus
- Big Data based collusion on prices

Source: The Wall Street Journal, January 3, 2018

Processing Correct Data into False Information

Functional / Correlation Analysis vs Social Complexity Factor >>>

2,4,6,8,10,12,14,16.. 2,4,8,16,32,64.. 3,9,81,6561..

1, 3, 4, 8, 12, 15, 19, 22, 25, 28 ?

Human Intellect & Creativity Based Processing:

Analysis > Deduction > Design > Synthesis

Data Driven Processing:

Patterns > Combinations > Machine learning

Processing Correct Data into False Information

- “Short-cut “: > high income couple shopping regularly at Discount Store rejected when applying for mortgage.

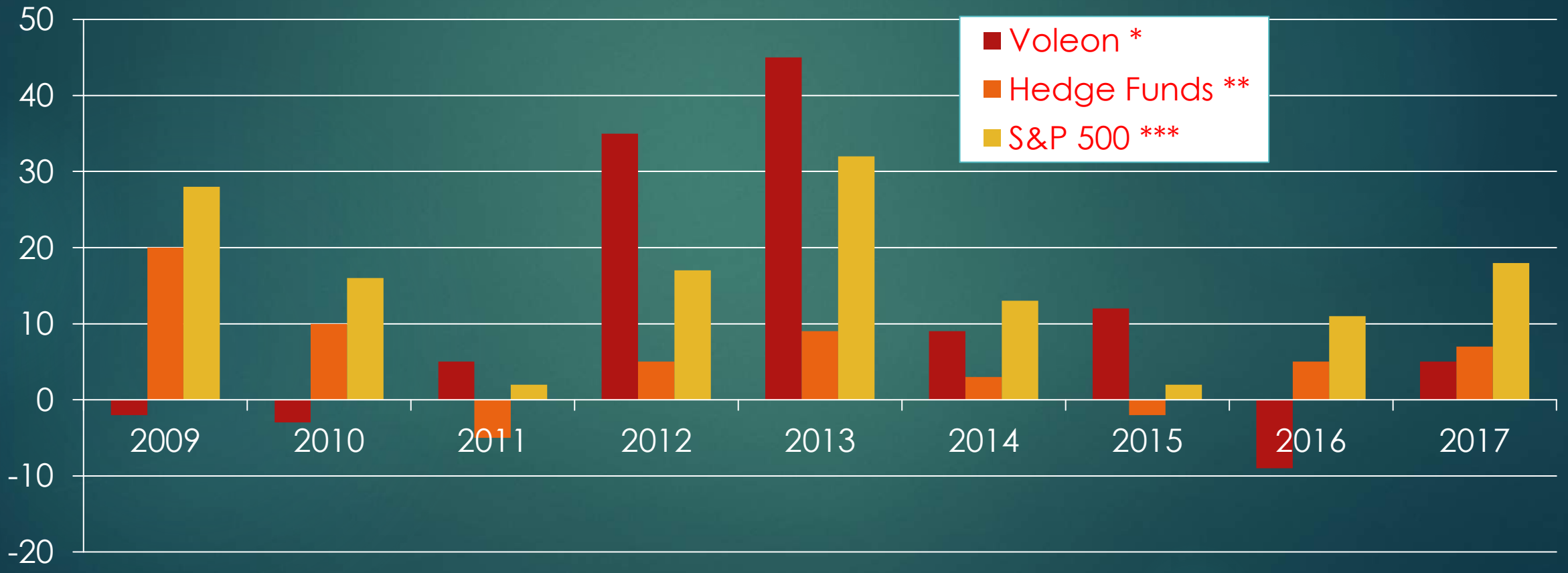
Can Artificial Intelligence solve this issue ?

- Whom would you like to process your Big Data into Information ?
- AI in 20 years est. to replace 83% jobs paying < $ 20/hour and 4% jobs paying > $ 40/hour

Source: Big Data Conference, National Technical Library, Prague, 3/2018

Voleon vs the Market

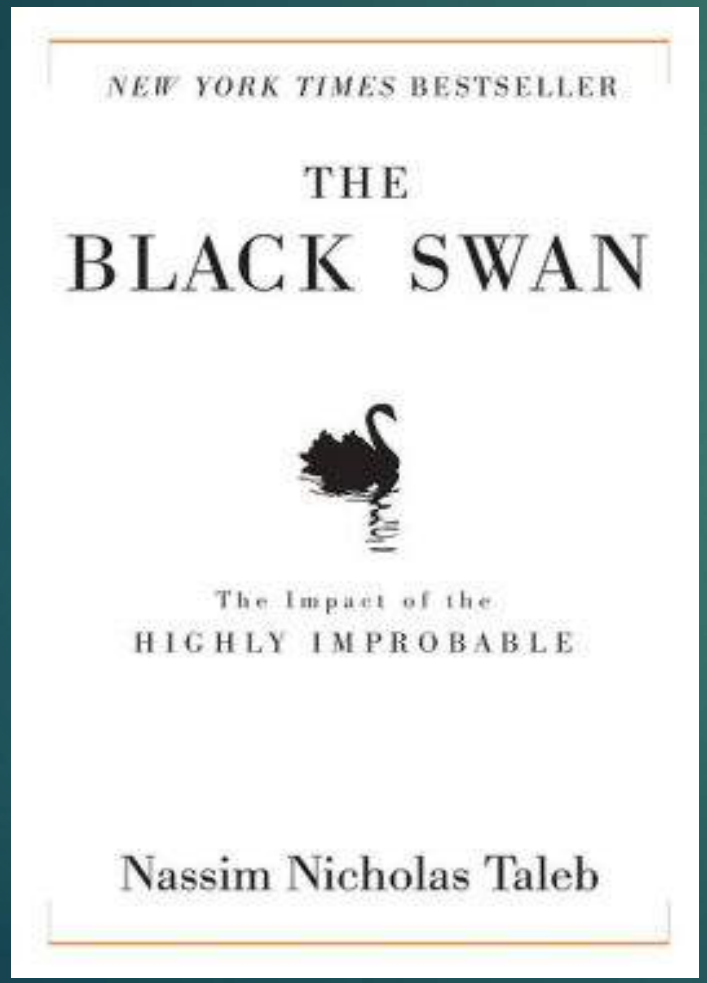
- Results at Voleon, which invests using machine learning, often vary widely from other hedge funds and the overall stock market



Source: Voleon investors; FR Inc; WSJ Market Data Group

* Returns for its flagship fund through October ** Average of hedge funds *** with dividends reinvested

Time Factor Limitations of Big Data Usability



- "There is nothing permanent except change" / Heraclitus /
- "Black Swan" trap

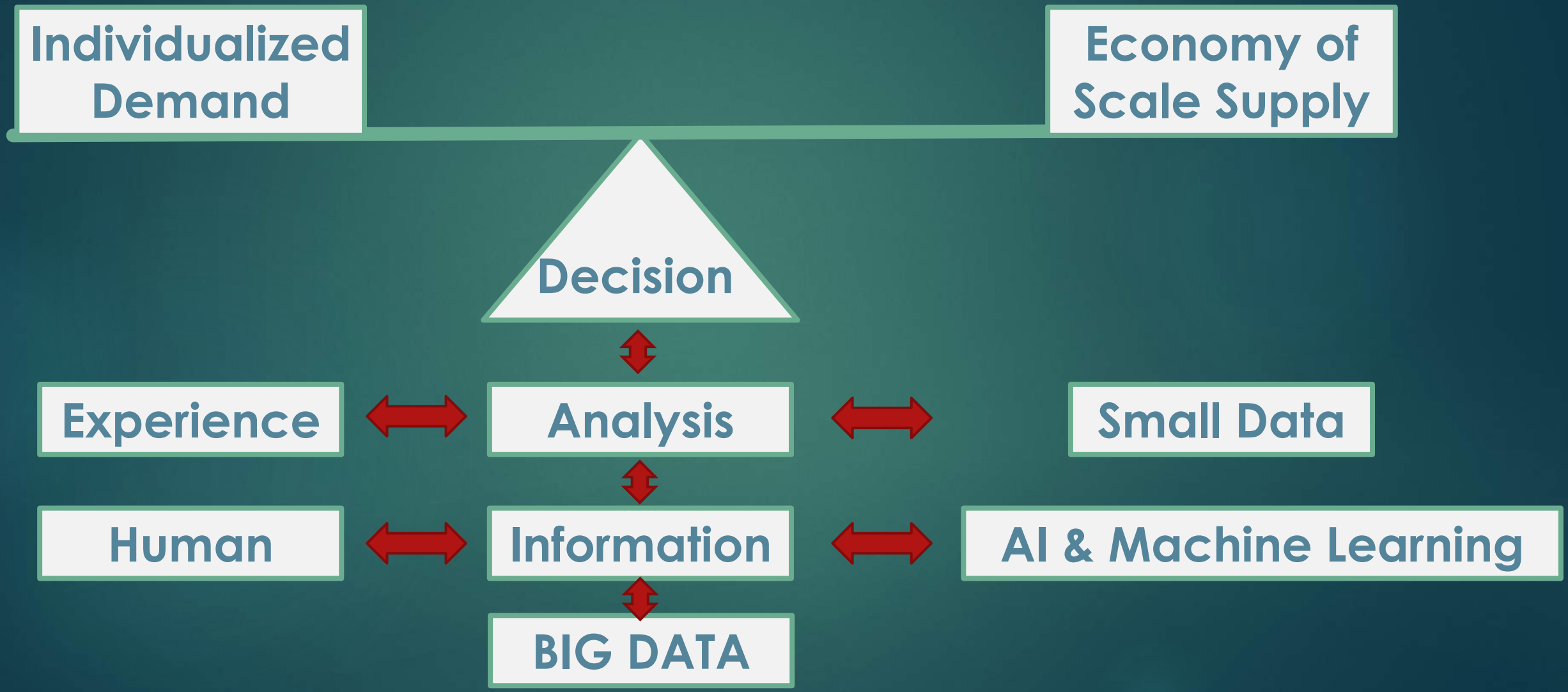
Emotions Based Acting / Cyclical Mass Psychosis / Confirmation Bias

Black Tuesday on October 20, 1929

Dot.com in 90ties

Housing bubble 2008-2009

Big Data on Business Mission: Monetize or Not to Be



Deploying Big Data: Mission /Im/Possible

- Big Data only based conclusions = Guarantee-Free
- Interpretation of Big Data by Machine Learning + Humans, decision making by Humans only
- Interdisciplinary approach during processing Big Data into Information / Conclusion
- Just one tool in the Toolkit, not One-Stop Shop solution
- Both Big Data and Small Data / + individualized analysis / needed = Smart Data
- Selection of social/market segment deadly important
- Not a recipe for business success

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