The data dilemma: a risk or an asset?

10 November 2017
The Westin Zagreb Hotel
Zagreb, Croatia

Data and control – risks and possibilities in the financial domain

Tove Engvall (Mid Sweden University)

Data as a strategic asset for central banks policies

Per Nymand (ECB)

Does more data make better economic policy? A view from HM Treasury, the UK's economics and finance ministry

Mario Pisani (HM Treasury) & **Jan Booth** (DEFRA – former HM Treasury)

The 'Big Data Revolution' in banking and financial history. Some French experiments.

Angelo Riva (Paris School of Economics)

Secure long-term preservation of banking and financial records

Djordje Hinic (Piql AS)

Privacy, confidentiality, security and consumer protection

Kertész Ákos (Central Bank of Hungary)

What happened in the Daily Gold Fixings Auctions: 1919-1968 - The missing data

Fergal O'Connor (University of York)

A tale of rain and bank runs. From small to big data and back

Anton Comanescu (National Bank of Romania)

Calling all archivists - the five grand challenges of the digital environment

Michael Moss (Northumbria University)

The data dilemma: who is in control?

**Tove Engvall, Mid Sweden University,
eabh workshop**

2017-11-10, Zagreb

"The data dilemma: a risk or an asset?"

- The amount of data about the finance sector is growing exponentially and storing it is becoming easier. Businesses are excited about the commercial possibilities of 'Big Data'; academics are relishing the research potential of deep data archives and regulators are hoping for a fuller view of systemic risk and stability.

- Will it all turn out well though? The current reality of massive data stores is often no more than massive cost and complexity. The workshop will explore how we got here with data and where we go next. Ultimately, can a meeting of business, academics and regulators resolve the data dilemma and find a way to turn a risk into an asset?

- ???

Challenge of departure

Digitalization challenge traditional institutional practices of accountability and citizens rights, with risks at a wider scale and higher speed

The online environment make it easy to perform fraudulent activities, cyber crime is growing, and escape in the online environment is quite easy.
Individuals and businesses are vulnerable. Who can be trusted?

Can Big Data analysis be a way to meet these challenges?

Challenge of departure

- Lack of control was part of the reason for the financial crisis 2008 (internal governance, insufficient records management, liberalized regulation & market patterns) (Coleman, Lemieux, Stone & Yeo, 2011).

- Records provide evidence of activities.
  Much information are in hte form of data.
  Challenges to ensure trustworthiness, long-term preservation and usability

- New regulation of the financial market (MiFID2 & MiFIR) requires of financial firms to provide transaction data.
  Can this be a way to manage risks and market abuse?

Research objective & Method

- As digitalization challenge traditional institutional structures for accountability, what are the possible use of Big Data?

  What means for democratic control can it be, and what risks are there with increased means for control?

Method

- Literature

- Semistructured interviews;
  the European Systemic Risk Board
  National Financial Supervisory Authorities in 3 EU countries
  National Company Registration Office

Literature

- Big data, data mining, machine learning and Visual Analytics

- Computational Archival Science

- eDiscovery and Digital Records Forensic

Big data, data mining, machine learning & VA

- **Big data:** Big volume, variety and velocity, which requires more than commonly used tools to capture, manage and analyse the data (Lemieux, Gormly, Rowledge, 2014)

- **Data mining:** automated extraction of useful information from data, seeking regularities and patterns (Witten, Frank, Hall & Pal, 2017)

- **Machine learning:** computers ability to answer questions, can also include prediction for decision making (Witten, Frank, Hall & Pal, 2017)

  "the capacity of computers to learn without being explicitly programmed" (Humphries, 2017)

- **Visual Analytics (VA):** Combines computational capabilities with graphical representations and interactive analysis

Key findings

- Data mining techniques can be used to extract useful information from data & recognize patterns

- Cyber security, fraud detection, tax evation, credit assessments, prediction of bankruptcy, financial market monitoring, risk management, facilitate informed decisions

- Challenges of quality, interpretation, management and heterogeneity of data

- Monitoring systems; address the entirety, frequent change, interrelations and unpredictable behaviors. Both economic and behavioral analysis.

- Data is biased, risk for discrimination

- Transparency

CAS (Computational Archival Science)

- Long-term preservation, quality, trustworthiness, means for analysis and interpretation

- Transdiscipline; Computational Archival Science
  Computer processing techniques for data management
  Archival methods to ensure authenticity & reliability and long term preservation
  Ethical, security and privacy issues and organizational and societal concerns
  Conceptual knowledge field

- Different machine learning techniques can/have
  been used in the archival field
  classification & disposal,
  arrangement & description, search facilities

- Mindset

eDiscovery & Digital Records Forensics

- Readiness for risk, as well as to facilitate investigations

- Cybercrime increases, fraud is common,
  Western Europe second worst (PwC, Global Economic Crime Survey 2016)

- Big data analytics can be useful,
  Important is also: valuebased organizational culture, ethical alignment
  of decision making, governance etc

- Big Data can be useful in police work, but risks of discrimination.
  Advanced technologies are also used by criminals

- Digital Records Forensic; combine archival knowledge and means for
  authenticity of records with digital forensics methods and concepts.
  Means for investigation of digital material, as well as proactive design

Interviews - ESRB

- **the European Systemic Risk Board**

- "oversee the financial system of the European Union (EU) and prevent and mitigate systemic risk" (ESRB, 2017).

- Collaborate with ESMA (European Securities and Markets Authority) which works for protection of investors and to promote stability of EU financial markets, avoid market abuse and market manipulation

- EMIR & AIFMD datasets will be analysed with Big Data tools
  EMIR: data about transactions in derivative markets
  AIFMD: regulation of speculative funds. Market operations

- Not anymore a black box

- Concerns of data quality, completeness of data & correction of bad reporting

Interviews – National Financial Supervisory Authority

- **Authority country A**: detect violations of regulations
  Use Big Data analytics for transaction data and other purposes.
  Maybe they will use machine learning

  Challenges: System performance, developments at the market, complex information management

- **Authority country B:** detect and prevent market abuse, manipulation and crime, properly working market.
  Investments in data accuracy
  New regulations (MiFID2 & MiFIR) will provide more data, which they will keep up to 15 years
  Challenges: trustworthy long term preservation and management of data, several old databases

  Tools: data mining for different analysis and alerts

- **Authority country C**: focus on banking sector
  Banks provide big volumes of data that is analysed related to indicators, Identification of risks
  Different validation steps
  Follow trends

Interviews – National Company Registration Office

- Registration of companies and annual reports

- Electronic reporting and standardized format (ixbrl) – will improve transparency and control, and enable exchange of information.

- Fundamental data and annual report data – possibilities for Big Data analysis
Would make it more difficult for criminals

- Look at possibilities to increase control of the accuracy of reports, to prevent crime

- Possibilities for more accurate credit scoring & lower interest rate.

- Improved means for analysis. Suspicious activities and risks can be detected earlier & increased transparency to the public

- Exchange of information between public authorities can improve crime prevention
Important to consider risks

Reflections

- Big data analysis can increase democratic control, accountability, crime prevention, risk management and more.

- Collaboration can improve information management and promote transparency

- New EU-regulation will improve means for Big Data analysis, but also challenges in management of data

Challenges

- Fast technological development

- Capture, management, quality, control and longterm preservation of data

- Democratic innovation & implementation of regulations

- Actors outside regulation

Discussion

Ethical considerations:

- Surveillance, concentration of power, control, privacy and vulnerabilities,

- Algorithmic discrimination, AI society, propaganda, values & intentions?

Possible further research:

- Implementation of MiFID2 & MiFIR,

- CAS & eDiscovery,

- means for user assessment of authenticity,

- further interviews with stakeholders,

- trustworthiness online

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What else is possible?

Per Nymand-Andersen
Adviser, European Central Bank

Data: A strategic asset for central banks policies

Source: prompt cloud

"Progress lies not in enhancing what is, but in advancing towards what will be" (Khalin Gibran)

1	**Pretty Big Data - Reflections for policy purposes**

2	**Paradigm shift - Moving to micro level and granular data**

3	**Discovery, collaboration and partnership**

Ref.: **"Big data: The hunt for timely insights and decision certainty - Central banking reflections on the use of big data for policy purposes**, IFC working Paper No 14, 2016, Per Nymand-Andersen

Disclaimer: The opinions expressed in this presentation are not necessarily those of the European Central Bank (ECB) or the European System of Central Banks (ESCB)

Source: IBM: http://www.ibmbigdatahub.com/sites/default/files/infographic_file/4-Vs-of-big-data.jpg

2017 This Is What Happens In An **Internet Minute**

facebook

Google
3.5 Million Search Queries

900,000 Logins

16 Million Text Messages

You Tube
4.1 Million Videos Viewed

Google play
App Store
342,000 Apps Downloaded

NETFLIX
70,017 Hours Watched

$751,522 Spent Online

46,200 Posts Uploaded · Instagram

1.8 Million Snaps Created

452,000 Tweets Sent

15,000 GIFs Sent via Messenger

990,000 Swipes · tinder

120 New Accounts Created

50 Voice-First Devices Shipped

40,000 Hours Listened

156 Million Emails Sent

Linked in

amazon echo

Spotify

Created By:
@LoriLewis
@OfficiallyChadd

60 SECONDS

Digital exploration
- Storage capacity
- Linking data sets
- Accessing
- Perform querying
- Slice & Dice sources across time and datasets

Fit for the future
Which preparations are needed today to have the capacity and functionality needed in 10 years time?
- Managing and exploring datasets
- Linking current and past datasets
- Querying variety of formats

Source: Cumulus Media,
http://www.businessinsider.de/everything-that-happens-in-one-minute-on-the-internet-2017-9?r=US&IR=T

Supplementary Insights

New theories from combining different science fields

Near real-time snapshot

Extract information on the impact of policy actions

EVIDENCE

Early warning indicators

Detecting trends and turning points
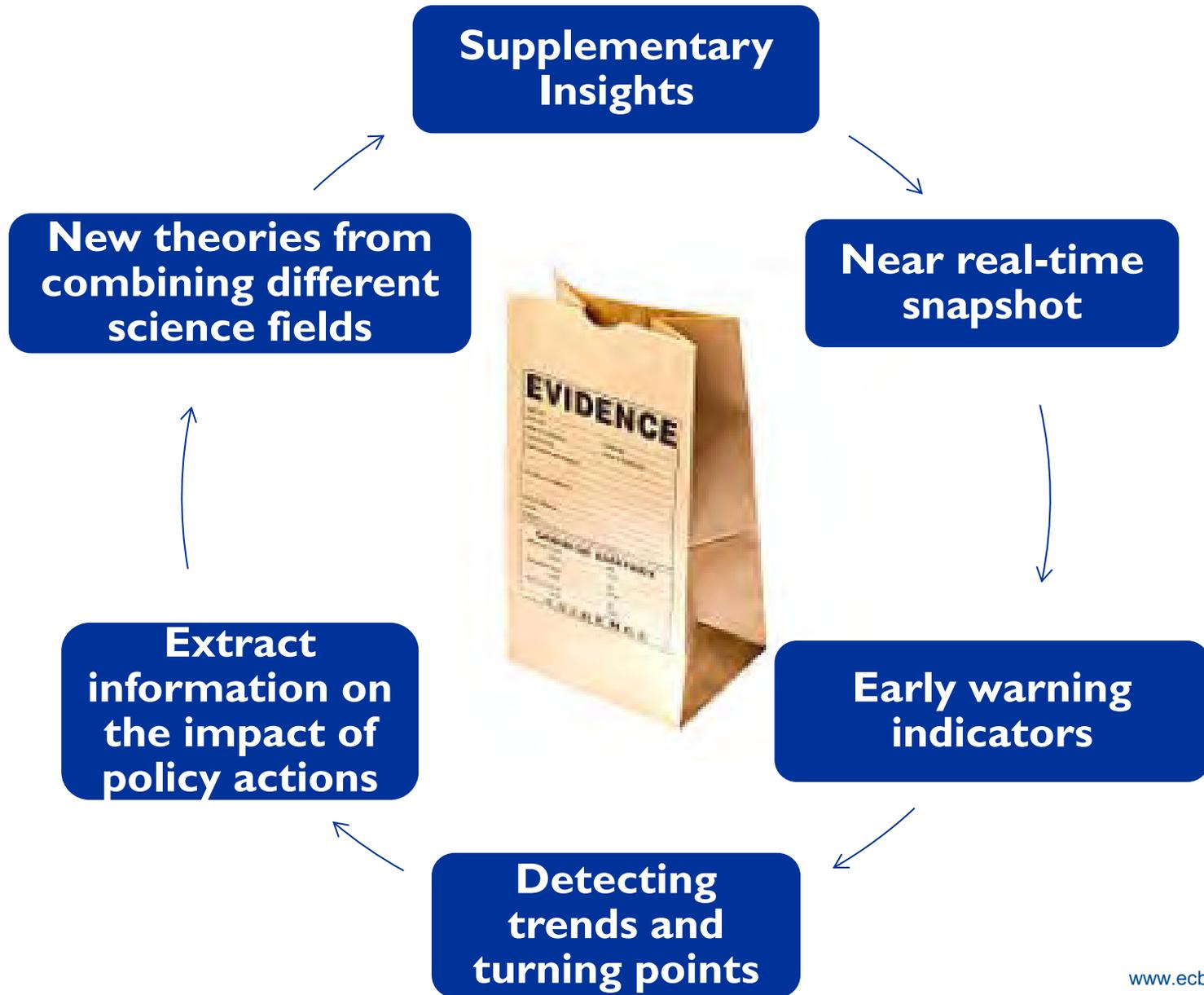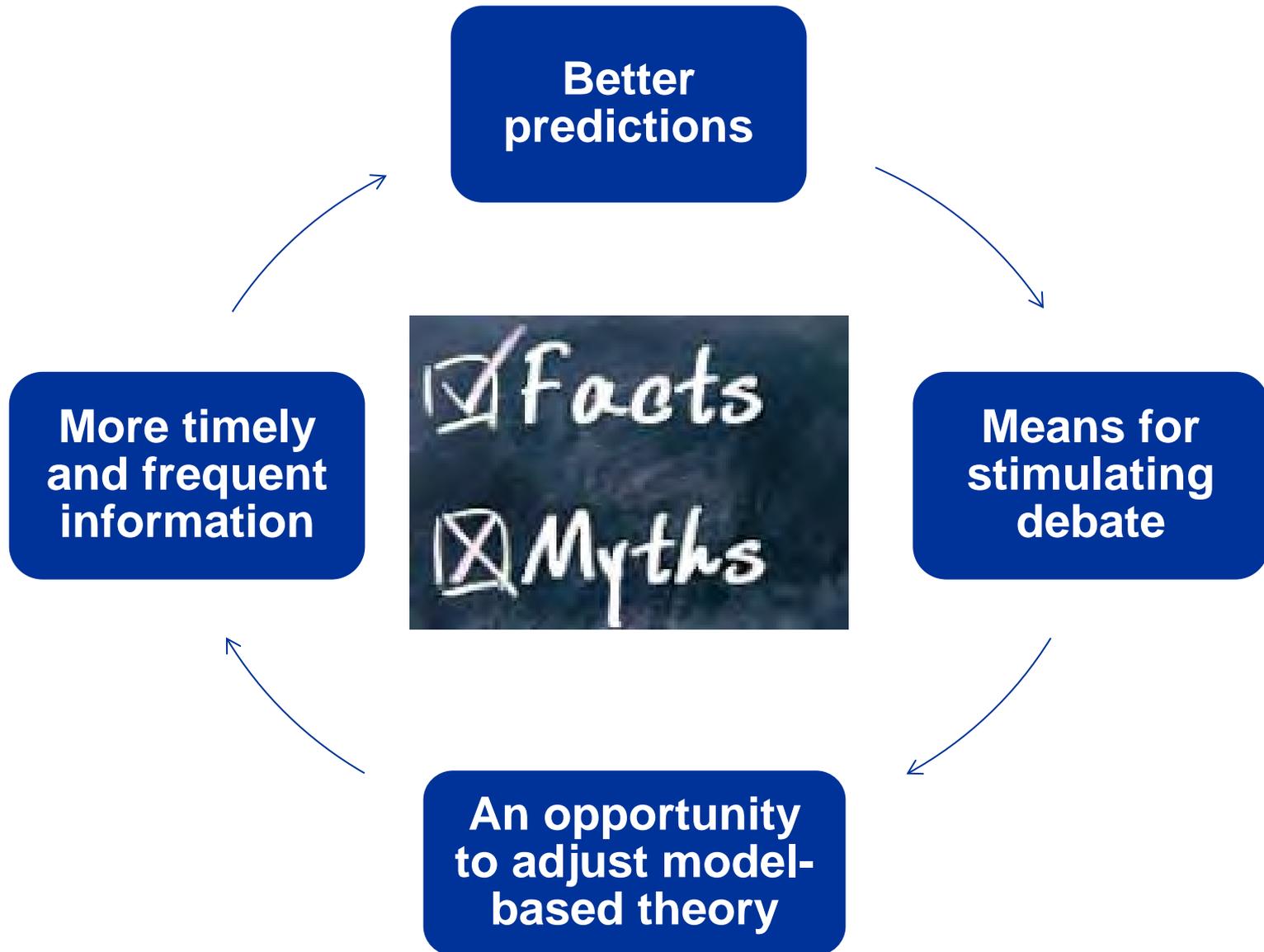
Paradigm shift - Moving to micro level/granular data

Linking & integrating

Micro-level data

Macro-level statistics
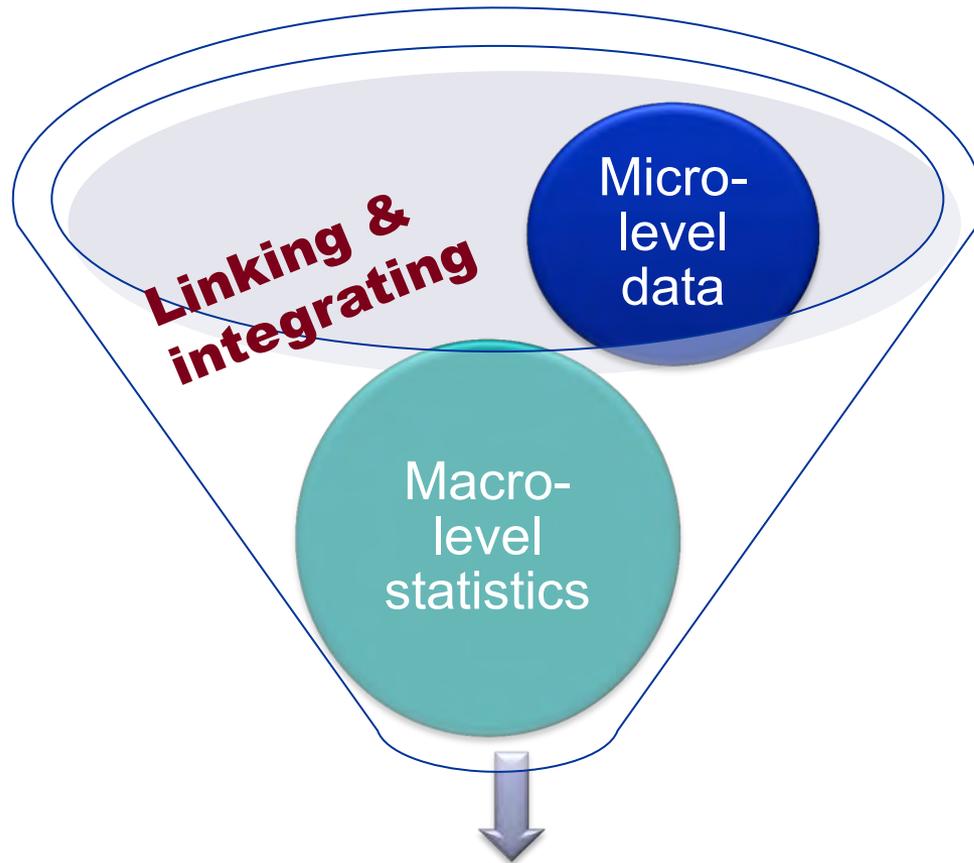
Statistics & Analytics

Micro-level statistics

- Security-by-security statistics
- Holdings of individual securities
- Money market transactions (MMSR)
- Loans by loans register (Ana Credit)
- Register of Financial Institutions
- Individual bank supervisory data

Macro-level statistics

- Balance sheet statistics
- Monetary aggregates (M1 – M3)
- Securities issues
- Banks interest rates
- Government finance
- Euro area financial accounts

New challenges - Micro-level data (5th "V"!)

Systematic approach for sustainable provision of statistics

Semantics and standardisation
- Definition and methodology
- Data Dictionary & data Model
- *Standardisation* of identifiers
- Mapping and linking datasets

Quality & streamlined IT
- Flexible reception and data views
- Linking internal & external data-sets
- **Data Quality** (automatic machine readable checks & probabilities)
- Managing data cubes

Statistics analysis
- Slice & dice micro-data
- Data Discovery and summary statistics
- **Data science**
- Statistics and analytical capacities

Communication outreach
- Visualisation & Presentations
- **Communication**
- Explainers
- Outreach to frequent users

Data sources for Monetary Policy & Financial Stability

Other systems ←→ **Financial system** ←→ **Real economy**

Other systems

Financial systems

| F I | M I | I |

Real economy

Financial systems

| F I | M I | I |
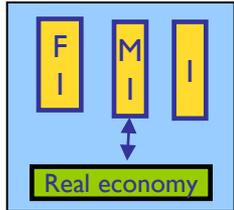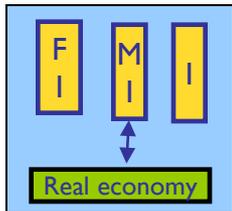
Real economy

Other sources

Policy events,
fiscal policies,
Global economy
External shocks
Sector failures

Financial system

Transmission of central banking policies, managing expectations, feed-back loops

Regulatory and oversight framework

Financial Intermediaries (FI)	**Markets and instruments (MI)**	**Financial infrastructures (I)**
Banks Insurance, pension hedge funds, Rating agents, others	Securities, Derivatives and other products	Pre-trading, Trading, post-trading Infrastructures Clearing, settlements

Raw sources:

Pre-trading, trading and post trading activities, actors, instruments, platforms, volumes, prices, frequencies, maturities, regulators and overseers alike

Derived indicators:

Yield curves, density, liquidity, price measures,

Functioning of markets, instruments and post trading activities

Risks measures and contagions indicators

Imbalances and concentrations measures

Effects on performance (Collective behaviour, Interconnections networks, transmission of instability measures

Real economy

CORPORATE SECTOR

HOUSEHOLD SECTOR

GOVERNMENT SECTOR

FOREIGN SECTOR

Data mania versus phobia – a paradigm of records

Digital transformation in finance and economics

E- trade

Settlement systems

Credit cards

Mobile trans

Lending & financing

- Fintech
- DLT
- D-coins
- S-contracts

BLOCK CHAIN

Price scans

S- media

Big data

Data Scientist

Data Analytics

iNSiGHT

Data lab

Systematic acquire, Process, summarize

Statistical algorithm and data explorations

Packaging data for Insights & business

.eu ©
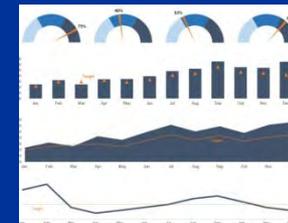
3 remarks on Big Data analytics

1. One <u>misperception</u> of big data is that we *do not need* to worry about **sample bias and representativeness**, as large volumes of information supersede standard sampling theory, since big data provide census-type information

Studies done on Corporate, consumer, household analysis & indexing, text mining, pulse of the economy, consumer emotions, stock market correlations.

- ❑ **Access to all tweets** *means access* **to the characteristics** of the "tweeting" population, which **may differ** from those people/corporates who do not tweet

- ❑ **Not all groups are represented. 21% of online adults use Twitter, varies according** to age, gender, income, education, ethnic origin and country;

- ❑ **Tweets vs unit measurement,** double counting (tweeting and re-tweeting), over-representativeness, statistical corrections are needed

- ❑ **An event driven source – volume changes** do not necessary refer to reporting units nor to changes in demand

3 remarks on Big Data analytics

2. Correlation is *not (necessary)* causation

No conclusion can be drawn simply on the basis of correlations between two variables. The similarity is a coincidence. We say that there is no causation

US crude oil imports from Norway correlates with Drivers killed in collision with railway train. Correlation *R= 0.95*
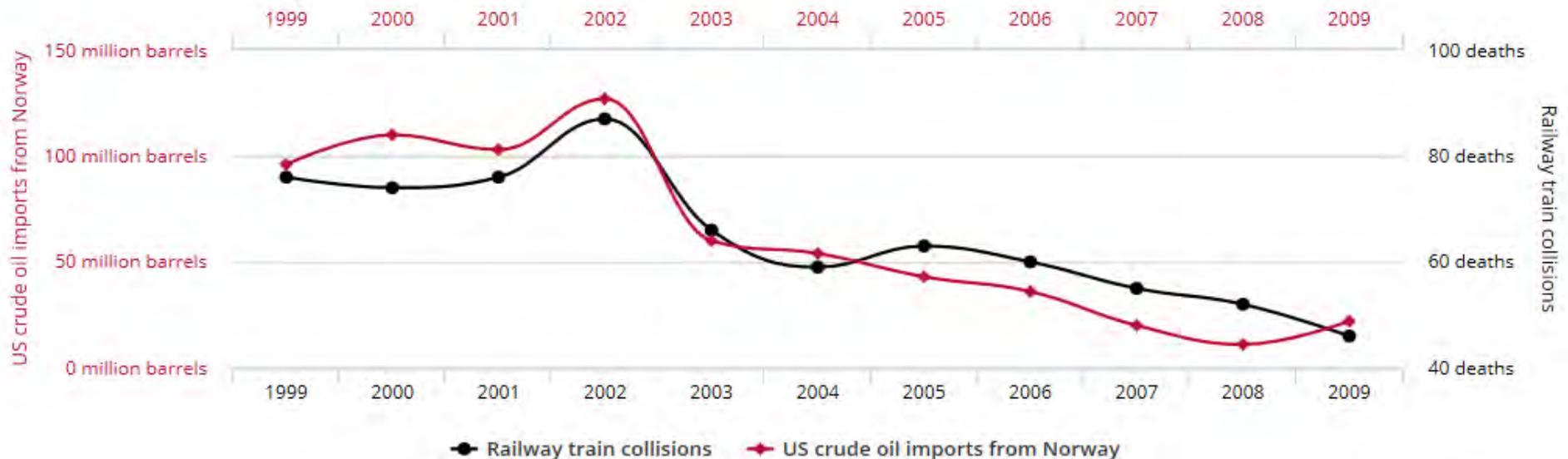
"The invalid assumption that correlation implies cause is probably among the two or three most serious and common errors of human reasoning" **Stephen Jay Gould, American evolutionary biologist and author, 1981**

3. Any source is subject to statistical quality standards

- **Big data is mainly a *by-product* and not the core business of the sources**
- **Standardisation is a pre-condition for managing & combining large datasets**
- **Pre-trading, trading and post trading activities - ISO20022 and SEPA**
- **Money Market Reporting & Banks' loans to corporates and households**

Institutions Trading partners (LEI)

Transactions (UTI)

Financial instruments (UPI)
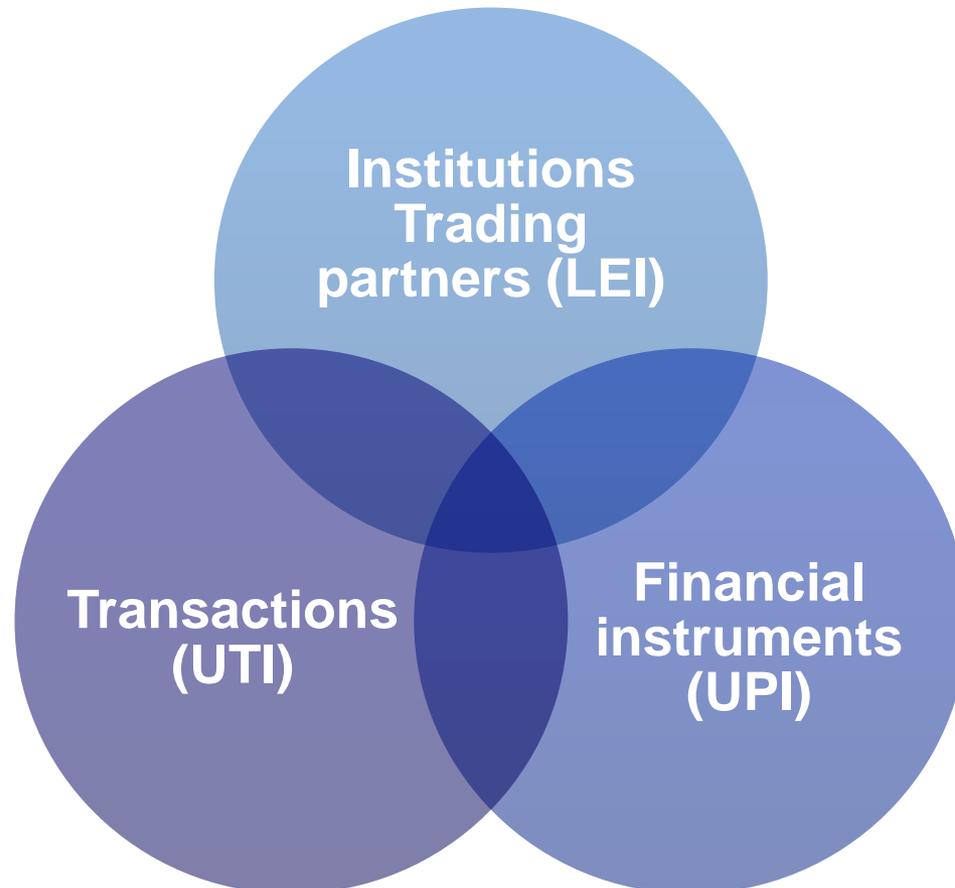
49 Central banks collaborating - The Irving Fisher Committee

Search machines, Web-prices and properties, Tweets, internet media,

Internet

Frequency trading, Prices, bid-offer spreads, Volumes and liquidity Loans and Holdings Transactions

Financial Market

IFC Pilots

Commer-cial

Credit cards operations Postal services

Admini-strative

Fiscal, trade and corporate balance sheet data

Collaboration and partnership
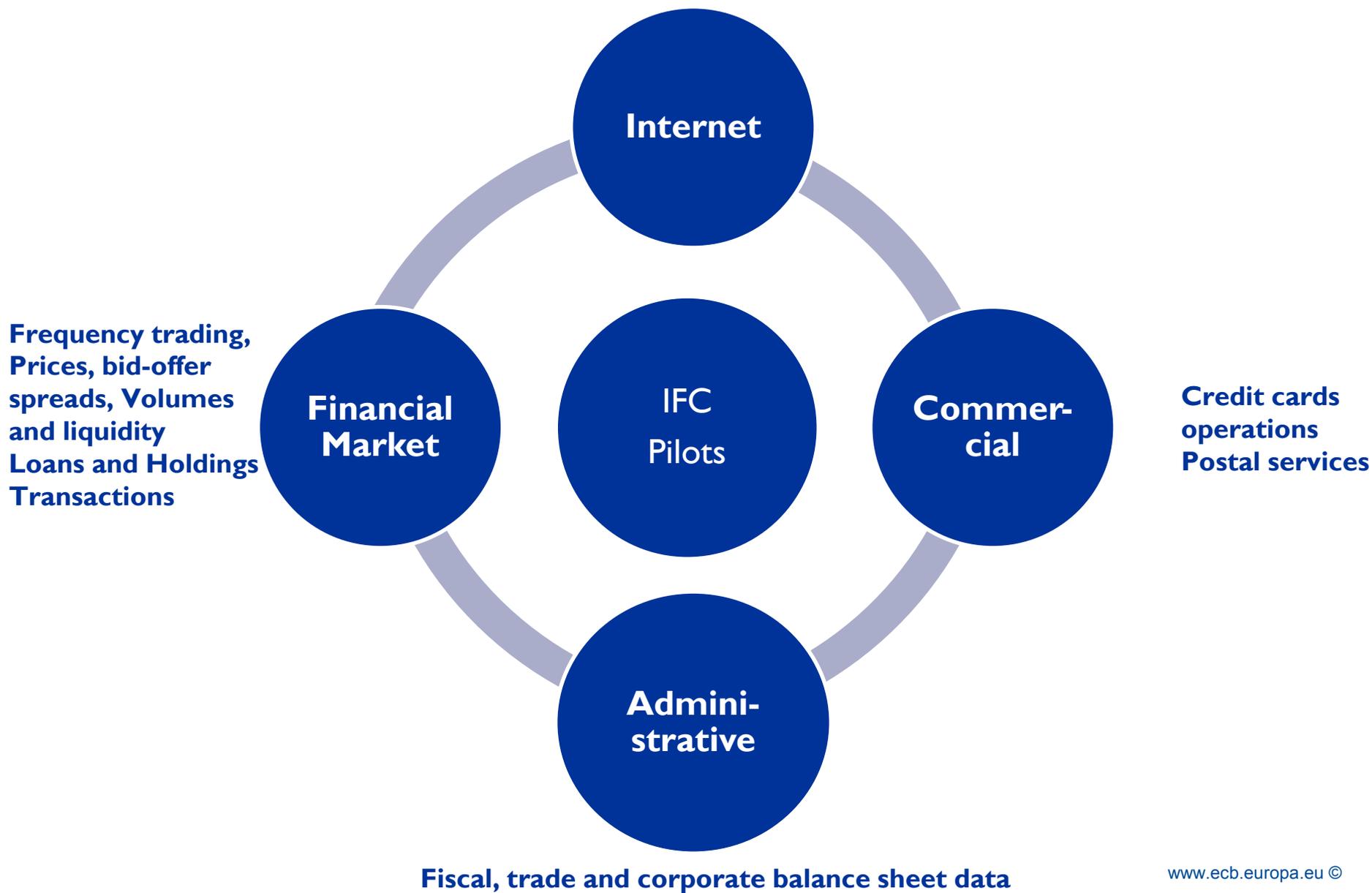
Five take!

1   There *is* a business case for exploring "big data" in economics & finance

2   Call for applying common standards in financial markets

3   Data scientists for ensuring quality and generating insights

4   Collaborate for piloting big data and use public/private partnerships

5   *Preserve the digital footprint – A rich (future) source for historians*

Thank you for your attention

Any questions?

Annex: ECB Paper Series as an outlet for big data research

➢ **An outlet for big data research:**

- **"Nowcasting GDP with electronic payments data" by Galbraith J & Tkacz G.**

    – Electronic payment transactions can be used in nowcasting current gross domestic product growth
    – finds that debit card transactions contribute most to forecast accuracy

- **"Social media sentiment and consumer confidence" by Daas P & Puts M**

    – Relationships between the changes in consumer confidence and Dutch public social media?
    – Could be used as an indicator for changes in consumer confidence and as an early indicator

- **"Quantifying the effects of online bullishness on international financial markets" by Mao H & Counts S, Bollen J.**

    – Develops a measure of investor sentiment based on Twitter and Google search queries
    – Twitter and Google bullishness are positively correlated to investor sentiment

Data and economic policy in the UK: opportunities and challenges

Mario Pisani

Deputy Director, Fiscal Group

10 November 2017

Contents of my talk today

Section 1: quick overview of HM Treasury

Section 2: understanding the economy

Section 3: policy-making process

Section 4: challenges

Her Majesty's Treasury is one of the oldest government departments in the United Kingdom

In the UK, the Treasury is both the finance ministry and the economics ministry
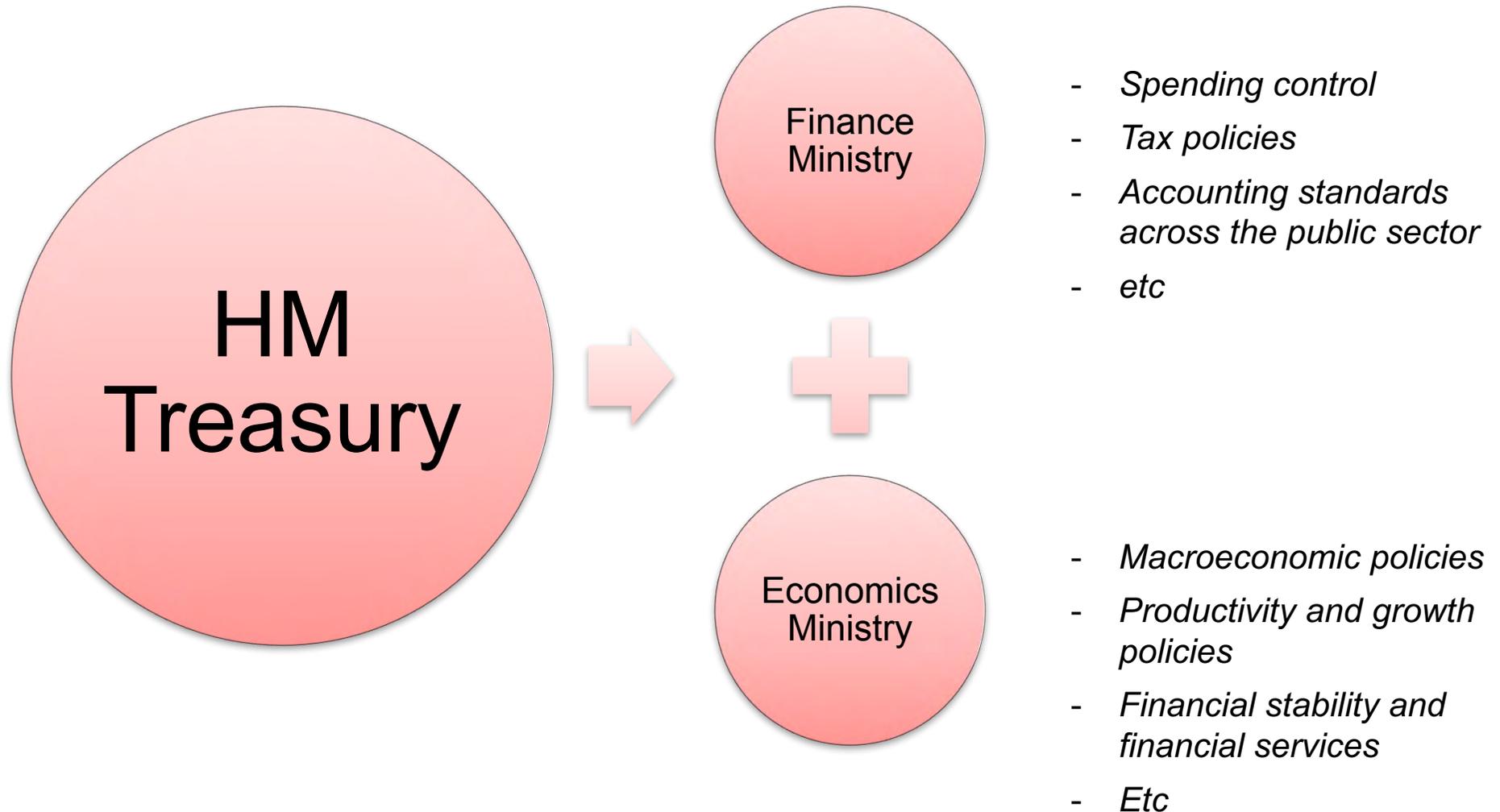
HM Treasury

→ +

Finance Ministry

- Spending control
- Tax policies
- Accounting standards across the public sector
- etc

Economics Ministry

- Macroeconomic policies
- Productivity and growth policies
- Financial stability and financial services
- Etc

Section 1: quick overview of HM Treasury

Section 2: understanding the economy

Section 3: policy-making process

Section 4: challenges

2016: HM Treasury commissions Professor Charlie Bean to do independent review of economic stats
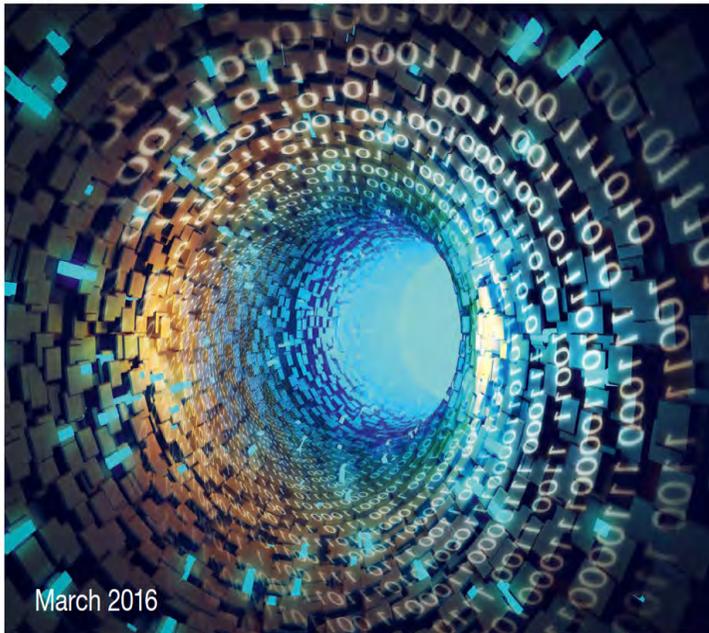
Digital revolution means the economy is changing fast – policy-makers need to understand this

Digital economy

81% The UK has the highest share of consumers **purchasing online** out of all EU countries

UK internet traffic

UK internet traffic is expected to **triple** in the next five years

2015

2020
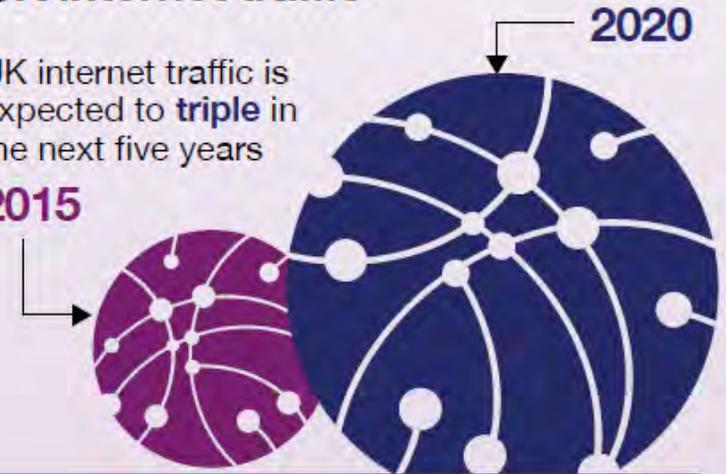
London has produced the third largest number of **sharing economy** start-ups in the world

SEVENTY TWO

San Francisco 131
New York 89
Paris 24
Boston 20

We've seen a very rapid increase in online activity – this and other digital processes create data
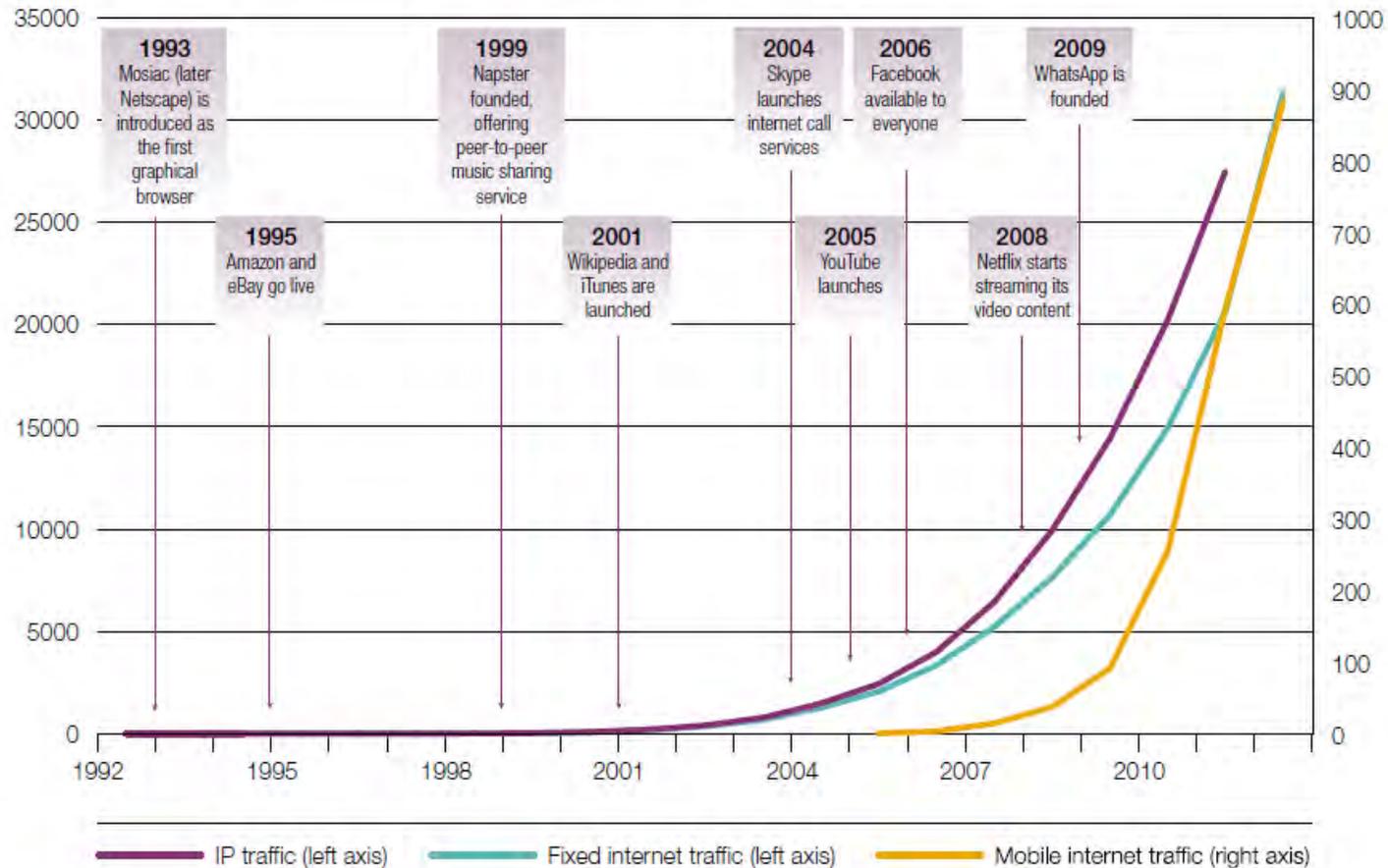
Notes: Petabytes per month. Aggregating from multiple sources and applying usage and bitrate assumptions, Cisco Systems, a major network systems company, has published the following historical Internet Protocol (IP) and internet traffic figures.

Source: Wikipedia.

1939: there has always been an interest in using data to understand patterns of economic activity...

London Transport workers manually examine over 4 million tickets to identify most and least popular routes, March 1939
Gerry Cranham/Fox Photos/Hulton Archive/Getty Images

Figure 14: Route options between King's Cross St. Pancras and Waterloo, and the proportion of devices on each one
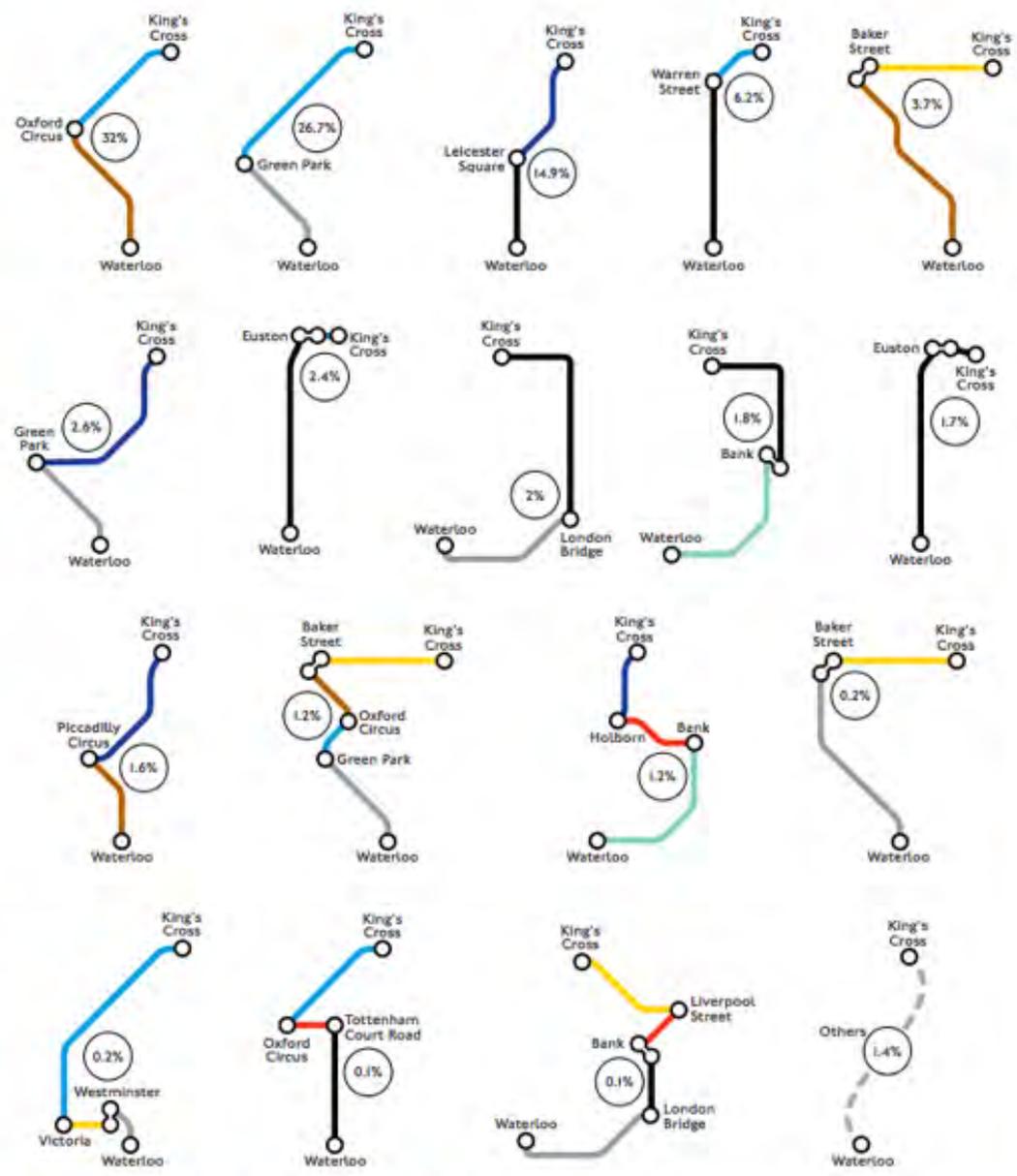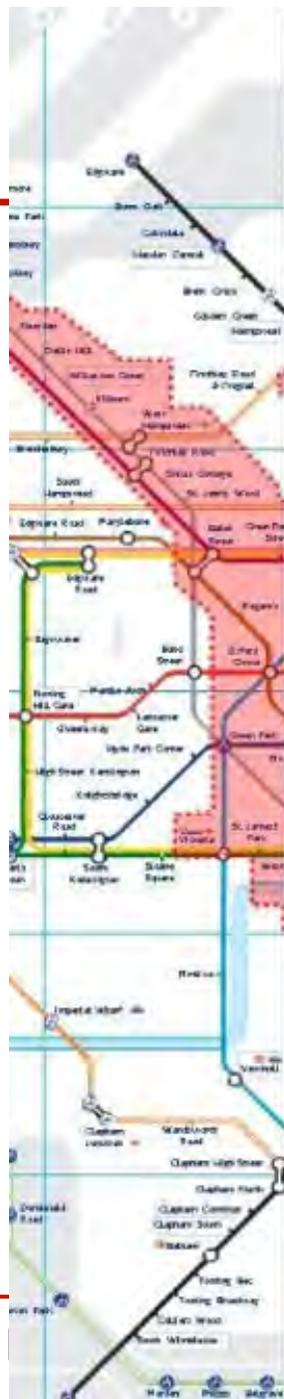
Government itself sits on lots of administrative data which can help us measure the economy

Businesses sampled by the Annual Business Survey

63,000

The HMRC VAT database has information for

1.8 million businesses

Employees sampled as part of wages and salaries survey:

9,000

Income tax records on HMRC pay-as-you-earn system:

1.5 million

The UK has a very large financial system – its regulation and supervision also generates data

Size of the financial system as a % of GDP
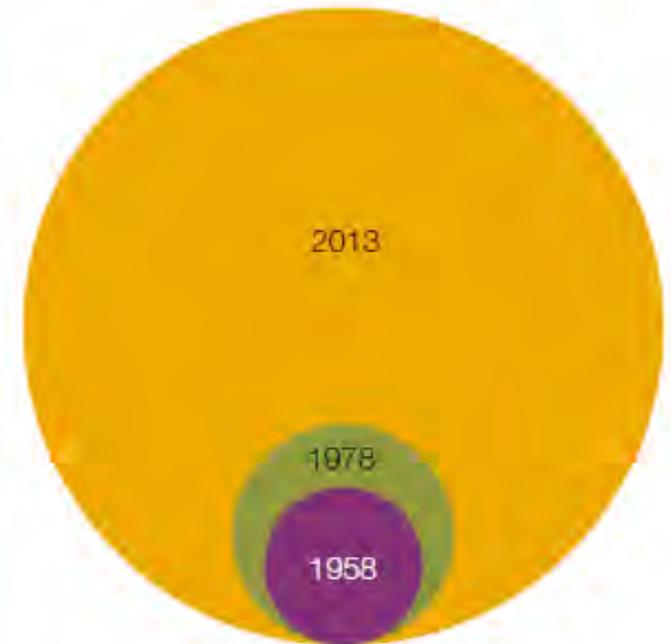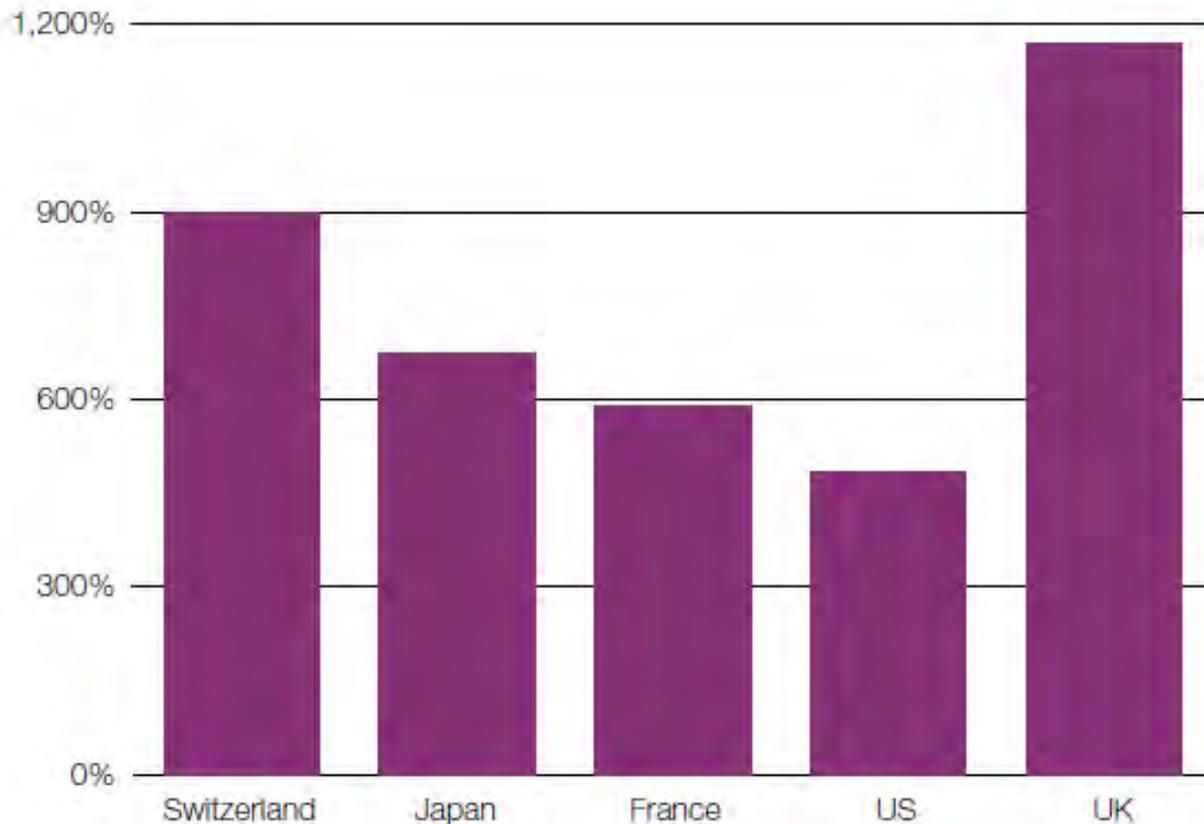
At the moment our understanding of financial flows is limited to sectors and subsectors only
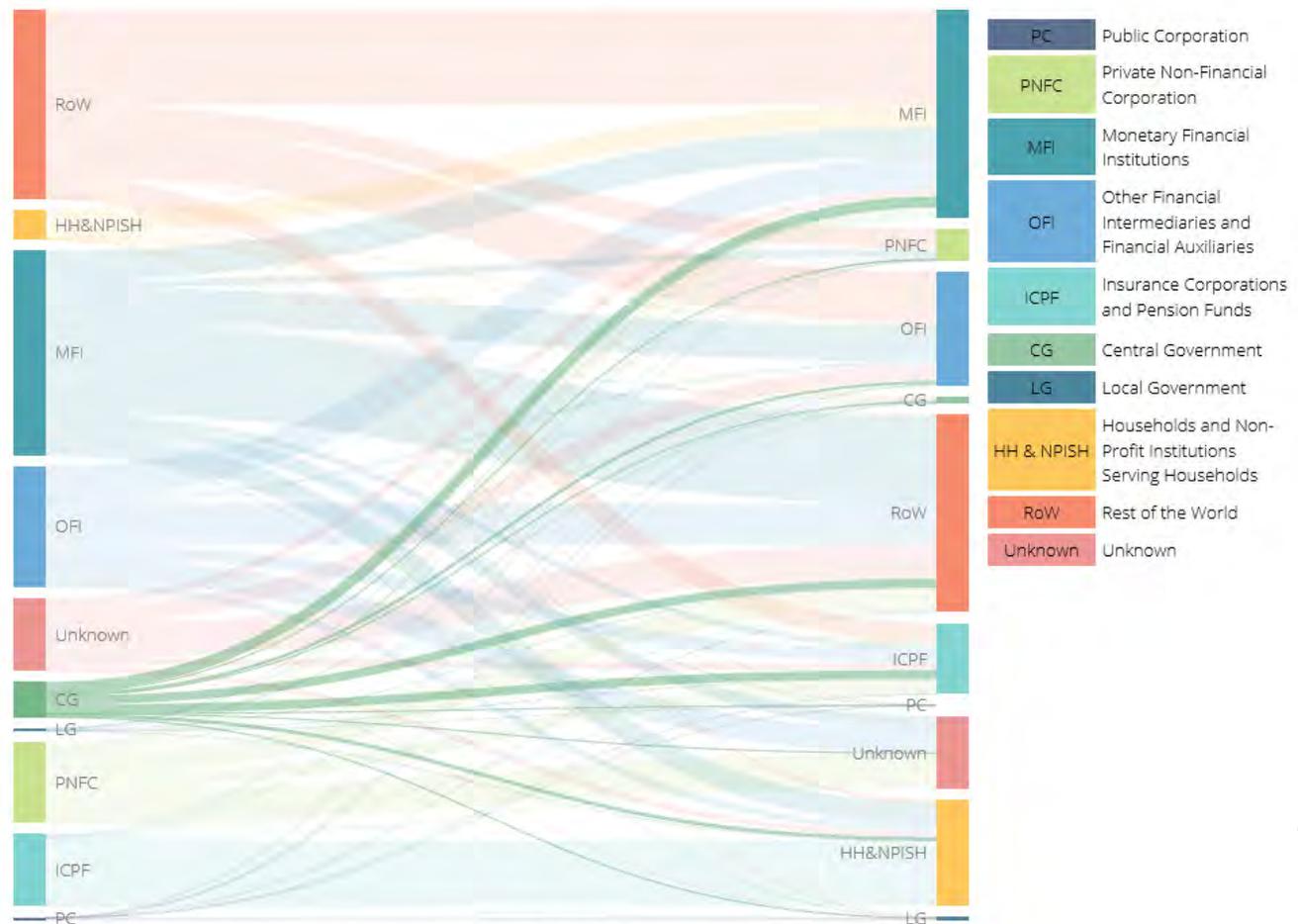
Link to Flow of Funds Sankey diagrams here and here

Lots of useful data outside the public sector – for example web scraping and scanner data for prices

Traditional price collection
Monthly manual collection of prices across 140 locations

Web scraping
Daily automatic collection of price quotes from 3 online supermarkets, 6,500 price quotes a day

Can shipping and ports data provide a better estimate of international trade flows?
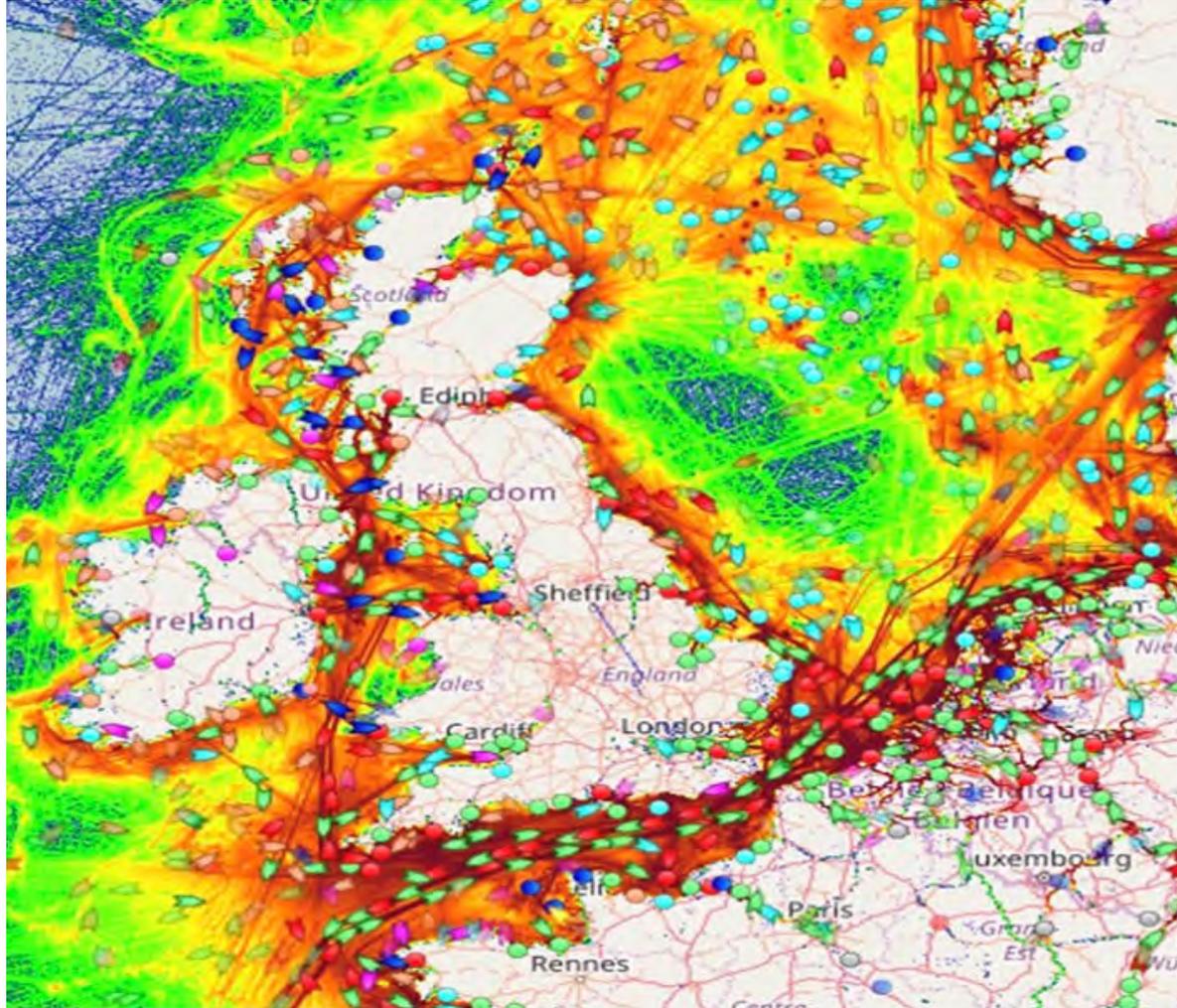
Section summary - more data is an opportunity for improving our understanding of the economy

We offer three kinds of service:

GOOD - CHEAP - FAST

You can pick any two

GOOD service CHEAP won't be FAST

GOOD service FAST won't be CHEAP

FAST service CHEAP won't be GOOD

Increased used of administrative and alternative data sources could:

- Improve timeliness and allow us to obtain information about the economy quicker = FASTER

- Greater sample sizes could improve granularity and accuracy of economic statistics = BETTER

- Reduce the need for expensive surveys and sampling = CHEAPER

Section 1: quick overview of HM Treasury

Section 2: understanding the economy

Section 3: policy-making process

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The traditional approach to policy development

HM Treasury
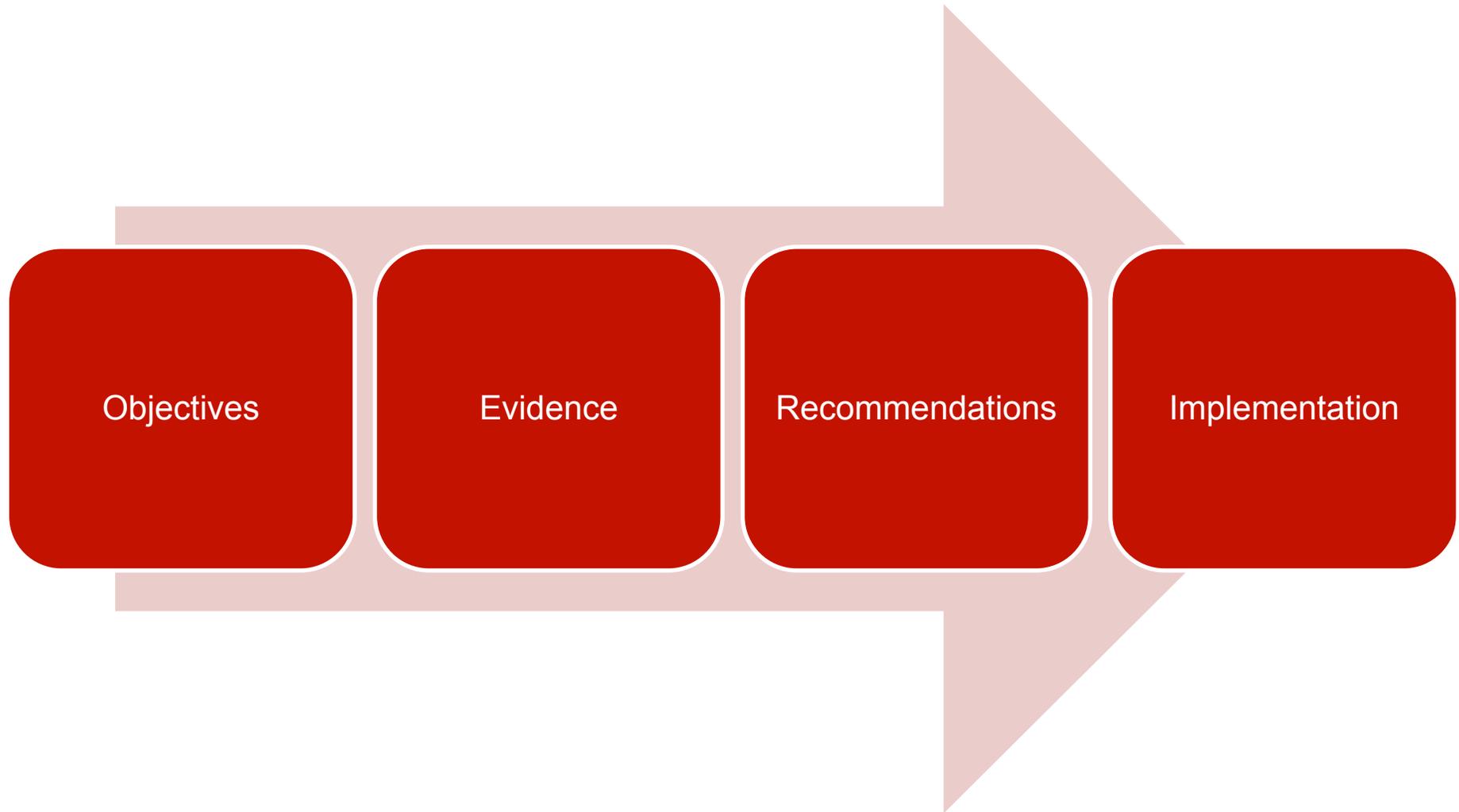
New data and data sources have made viable a range of different approaches to policy-making

Acting

Challenge setting

Challenge panels

Change cards

Crowdsourcing

Data and social media analysis

Data tool cards

Guerrilla Testing

Hope and fear cards

Interviews

Journey mapping

Evidence safari

Personas

Open Data

An introduction to prototyping

Prototyping in a workshop: Tabletop prototyping

Touchpint prototyping
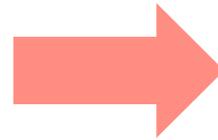
Some examples:

Social media engagement

Crowdsourcing

Open data

User consultation

Example 1: HM Treasury crowd-sourcing ideas for efficiencies in public spending

Policy paper
Public Sector Efficiency Challenge summary of responses and results

Published 25 November 2015

Contents

In August 2015 the Chancellor and Chief Secretary wrote to all public sector workers asking for their ideas on how the government could do more for less. The Spending Review and Autumn Statement 2015 announces the results of the exercise.

1. Who participated in the survey?

Just over 22,000 suggestions were submitted as part of the challenge, from a wide range of organisations in the public sector:

- 5,000 who work in healthcare and the NHS
- 3,200 who work in local government
- 2,500 who work in education and schools
- 1,400 who work in defence and the military
- 1,300 from those who work in policing

The remainder were submitted by civil servants, including those working in agencies and public bodies, such as Jobcentre Plus.

Example 2: engaging with businesses to understand how to change or improve regulation

Example 3: HM Treasury using social media to engage with citizens about the upcoming budget

Section summary: new technology means the policy-making process itself generates new data

Alternative approaches to policy-making have the potential to:

- Make it easier to obtain feedback direct from users and those affected by policy changes

- Harness the creativity and insight of a wider group of people, and exploit a range of experiences and approaches

These approaches can both generate new data and facilitate the analysis of data

Section 1: quick overview of HM Treasury

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Some examples of challenges with data (there are likely many others...)

- Volume: too much data – deciding what to ignore

- Access: different data cannot be matched due to limited access

- Costs: cost of managing and analysing data can be very high

- Continuity: some data sources may be discontinued
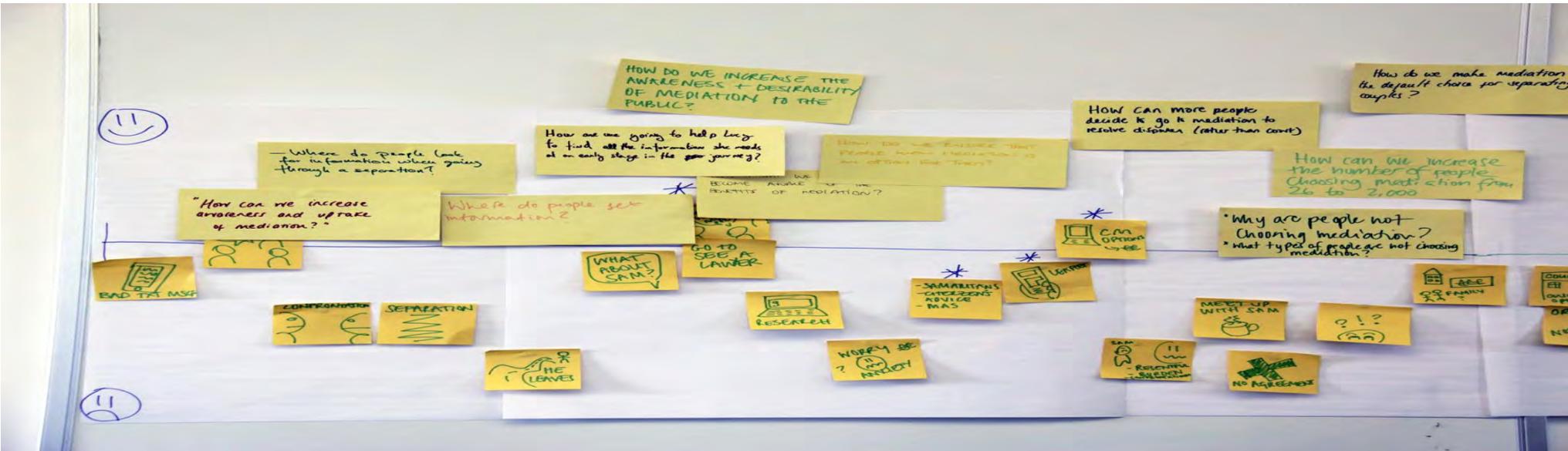
Links

Charlie Bean Review into big data and economic statistics

ONS article on flow of funds

Open policy-making

Public spending challenge

Mario.Pisani@hmtreasury.gsi.gov.uk

HM Treasury's information archives

A really great story that's really hard to tell

Jan Booth (DEFRA – former HM Treasury)

HM TREASURY

HM Treasury

Treasury information (my type of 'data')

TYPES	THEMES	WHERE'S THE STUFF?
• Ministers' files • Policy files • Budget records • Secondary sources (stats, reports, analyses…)	• Domestic economy • Institutions • Tax and spending • Shocks and crises	• Core series up to 1990 – National Archives • 1990-1998 paper files • 1998 on electronic records

Treasury readers

Treasury people

Organisational boundary

Professional analysts

Academics

Research students

Journalists

My existential crisis

The challenges

Getting behind the wire	I can fix
Poor metadata	I can help
The digital heap	I need help
Resources	I need help

Some questions...

Can researchers add archival value?

Can we share digital tools and know-how?

Can researchers act as Sherpas for Treasury users?

Do private collections play their part?

Is there a dimension beyond mere moral obligation?

The 'Big Data Revolution' in banking and financial history. Some French experiments.

Angelo Riva

European Business School-Paris

&

Paris School of Economics

Data dilemma: risk or asset?

- "The current reality of massive data stores is often no more than a massive cost and complexity": Yes

- "Academics are relishing the research potential of deep data archives and regulators are hoping for a fuller view of systemic risk and stability": should we give up?

  – Maybe...

No. Why not?

- If growth is to be strong and spread fairly, the EU needs a sound, academic evidence base with data about the long-run performance of European finance
  - History is a boundless laboratory for real-size natural experiments
  - The weak empirical foundations of the models used to analyze structural and cyclical changes have become obvious (crises… what ?)
- Crucial historical understanding of our society remains totally inadequate, because we lack the requisite empirical basis
- The EU Strategy Report on Research identifies Big Data in the social sciences and the humanities as the first science driver for these fields.

Innovation

- Investing time and money in developing new technologies to capture and connect FAIR data
  - Findable, Accessible, Interoperable and Re-usable => High quality data
  - Reading writings, not just getting numbers … to understand the numbers

- Some French Experiments at the Paris School of Economics

- Project designed to develop a comprehensive database on the French stock markets since 1796, to be extended to other kinds of data.

- Fortnightly spot, forward, options prices of all the assets listed from 1796 to 1976 on the Paris stock market
  - Assets: securities (stock and bonds, French and foreign, private and public), gold and silver materials (bullions, various coins), exchange rates, bills of exchange...
  - 1 asset => several prices per day
- Securities events:
  - coupons/dividends; new issues, split, reverse split, M&A..
- Data on issuers:
  - Juridical statutes from the foundation (dates)
  - Equity capital and subsequent issues of bonds/short terms notes
  - Localization of headquarters and factories
  - Balance sheets
  - Administrators
  - Governance (distribution of profit, specific rules)

- Collecting balansheets of all French banks from archival sources to study French banks failures in the Great Depression.
- Main source: Crédit Lyonnais (CL)'s collection of banks balance sheets (about 450 banks from 1910 to 1938): The "Album".
- The 'Album' was built by the Economic & Financial Research Dpt of the Crédit Lyonnais, whose archives have already been used extensively by historians
- Hitherto unseen material
- Full digitization. Connect the Album with other sources.
- Other sources from Crédit Lyonnais and Bank of France, on the number and causes of bankruptcies

Parisian Financers' Belle Epoque

Collecting data from deeds of parterships of Parisian bankers and partners (1783-1913)

- map of financial operators in Paris and of their partners around the world
- data on their social and professional characters
- GIS "Old Paris" at the Ecole des hautes Etudes en Sciences Sociales

Cooperation with archivists

- Archives… where all of it began
- Paris Stock Exchange sources at the Centre des Archives Economiques et Financières (CAEF)
  - Archives' organizational setting to host (many) RAs
  - Partnership to scan sources
- Deeds of bankers at the Archives de Paris
  - Facilities for RAs and sources digitalization
- Archives of the Crédit Agricole for SYSRI-30
  - Locating and scanning « The Album »

Pascal Penot, Crédit Agricole

Watch the video at https://www.youtube.com/watch?v=AMcqSvZlvOE

DFIH Sources

- Two main (serial) sources:
  - Lists of the exchanges
  - Yearbooks of the exchanges

- Additional sources
  - Additional printed sources (from exchanges, from other bodies)
  - Archives

Paris Stock Exchange Official Lists

1880

Restaurant et Caves du Café Anglais

Société anonyme formée par acte sous seings privés du 22 juillet 1879; définitivement constituée le 24 juillet; lesdits statuts déposés à M⁽ᵉ⁾ Delapalme, notaire à Paris, le 26 du même mois.

Objet. — 1° Exploitation du Café-Restaurant connu sous la dénomination de Café Anglais.

2° Commerce des vins en France et à l'étranger;

3° Acquisition, fondation et revente de tout établissement de café ou de restaurant, en France ou à l'étranger;

4° Acquisition et revente d'immeubles servant à l'exploitation desdits établissements.

Dénomination. — Société anonyme du Restaurant et des Caves du Café Anglais.

1907

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Société générale des Eaux de Calais

(SUSINI et C⁽ⁱᵉ⁾)

Société française en commandite par actions, définitivement constituée le 7 février 1855, modifiée par délibération de diverses Assemblées générales extraordinaires.

Objet : la jouissance et l'exploitation temporaire des eaux de Lawaille, sises à Lawaille, et du terrain sis au Pilotis, le tout commune de Guines, arrondissement de Boulogne (Pas-de-Calais), dans la propriété de M. de Guizelin; les eaux devront servir à l'alimentation et aux services journaliers des habitants de la ville, port et dépendances de Calais et de Saint-Pierre-lès-Calais et des villes circonvoisins; enfin, la distribution des eaux dans la ville, port et dépendances de Calais, Saint-Pierre-lès-Calais, Coulogne et Guines.

Siège social : à Calais; bureau à Paris, boulevard Magenta, 113.

Durée : 99 ans, à partir du 7 février 1855.

Capital social : à l'origine, 1.750.000 francs, réduit le 4 octobre 1871 à 900.000 francs, divisé en 9.000 actions de 100 francs libérées et au porteur.

Conseil de surveillance : cinq membres.

Année sociale : close le 31 décembre.

Assemblée générale : avant fin juin; une voix pour dix actions, maximum, six voix; dépôt trois jours à l'avance au bureau de Paris.

Répartition des bénéfices : 5 % d'intérêt aux actions non amorties; l'annuité nécessaire pour le remboursement des actions au pair, dans une période finissant en 1933; le surplus appartient pour 10 % au gérant et pour 9 % aux actions non amorties et aux actions de jouissance.

Directeur-gérant : M. A. Susini.

Service financier : à Paris, au Comptoir d'Escompte; à Calais, au siège social.

CONSEIL DE SURVEILLANCE.

MM. Thirion, Noizeux, Degoix, Poumailloux, Ch. Perrissin.

Les actions de capital de cette Société, sont inscrites à la Cote Desfossés, au comptant.

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Années	COURS Plus haut	Plus bas	Bénéfices nets	Dividendes
1901	315	230	177.000	14
1902	300	265	184.000	14
1903	310	270	190.000	14
1904	310	273 50	210.000	14
1905	315	280	228.000	15

BILAN AU 31 DÉCEMBRE 1905

Société nouvelle des Eaux de Martigny-les-Bains
(Vosges)

Société anonyme française, définitivement constituée le 17 juillet 1905.

Objet : l'exploitation des eaux minérales de Martigny-les-Bains (Vosges), de leurs établissements, hôtels et terrains, ainsi que toutes opérations mobilières et immobilières, commerciales et industrielles se rattachant, directement ou indirectement, à l'industrie hydrominérale.

Siège social : 31, rue Le Peletier.
Durée : 30 ans, du 17 juillet 1905.

1974

SOCIETE D'EXPLOSIFS ET DE PRODUITS CHIMIQUES

CONSEIL : MM. J. Chatel de Brancion, P.-D.G. ; B. Chatel de Brancion, R. Semelaigne, Mme J. Chatel de Brancion, M. E. Simon.

DIRECTION : MM. J. Chatel de Brancion, P.-D.G. ; J. Chéreau, S.G.

COMMISSAIRES AUX COMPTES : MM. G. Rey, Ch. Gaillard, titulaires ; Mme G. Rey, suppléante.

SIEGE SOCIAL : 61, rue Galilée, 75008 Paris. Tél. : 720-25-14.

CONSTITUTION : Société anonyme française constituée le 28 avril 1893, expirant le 28 avril 1983.

OBJET : Fabrication, achat et vente d'explosifs et de produits chimiques ; usines à Saint-Martin-de-Crau (Bouches-du-Rhône) et Billy-Berclau (Pas-de-Calais). A compter du 1ᵉʳ janvier 1973, la société a donné en location gérance ses départements explosifs et accessoires.

FILIALES ET PARTICIPATIONS : Filiales : Franco-Hellénique d'Explosifs et de Produits Chimiques ; Dépôts d'explosifs ; Explosives and Chemical Products ; Chérifienne d'approvisionnement minier ; Societa Esplosivi Industriali.
Participations : Irish Industrial Explosives ; Société Trabia.

CAPITAL SOCIAL : 16.840.000 F, divisé en 84.200 actions de 200 F, dont 42.100 amorties de 5 F. A l'origine, 1.400.000 fr. Par étapes successives le capital avait atteint 20 millions en 1924. Porté en 1946 à 21.052.400 fr. pour règlement de l'impôt de solidarité en 1948 à 42.104.800 fr., par création de 210.524 actions gratuites (1 pour 1). Réduit en 1950 à 42.100.000 fr. par rachat de 48 actions, puis porté à 210.500.000 fr. par élévation du nominal à 500 fr. Regroupement en actions de 2.500 fr. en 1952. Porté en 1954 à 421 millions par élévation du nominal à 5.000 fr. Converti le 1ᵉʳ janvier 1960 en 4.210.000 NF. Porté en 1963 à 16.840.000 F par élévation du nominal à 200 F.

PARTS DE FONDATEUR : 29.473 parts. Aucun droit de souscription dans les augmentations de capital. Il existe une société civile. Rachat de gré à gré prévu.

REPARTITION DES BENEFICES : 5 % à la réserve légale, somme à fixer pour tous fonds de réserve ou prévoyance, reports à nouveau ; éventuellement 10 % au Conseil d'administration ; dividende réparti : 75 % aux actions et 25 % aux parts.

LIQUIDATION : Extinction du passif, remboursement de capital. Sur le solde : 25 % aux parts, 75 % aux actions.

SERVICE FINANCIER : Siège social. Service des coupons : Crédit Lyonnais.

COTATION : Paris Actions et dixièmes de parts « Cote Desfossés », 23. — Notice SEF ; PC 229.

COUPONS NETS : Actions : N° 16 (2 octobre 1967), 7,82 F ; 17 (30 septembre 1968), 7,82 F + Av.F. 3,91 F; 18 (30 septembre 1969), 7,83 F + Av.F. 3,91 F ; 19 (30 septembre 1970), 7,82 F + Av.F. 3,91 F; 20 (30 septembre 1971), 7,82 F + Av.F. 3,91 F ; 21 (29 septembre 1972), 7,83 F + Av.F. 3,915 F; 22 (28 septembre 1973), 7,82 F + Av.F. 3,91 F.
Parts : N° 57 (2 octobre 1967), 7,45 F ; 58 (30 septembre 1968), 7,45 F + Av.F. 3,72 F ; 59 (30 septembre 1969), 7,45 F + Av.F. 3,72 F ; 60 (30 septembre 1970), 7,45 F + Av.F. 3,72 F ; 61 (30 septembre 1971), 7,45 F + Av.F. 3,725 F ; 62 (29 septembre 1972), 7,45 F + Av.F. 3,725 F ; 63 (28 septembre 1973), 7,45 F + Av.F. 3,725 F.

...RE D'AFFAIRES (H.T.) (en millions de F) : 1966 : 49,47 ; 1967 : 45,50 ; 1968 : 49,66 ; 1969 : 42,54 ; 1970 : 42,54 ; 1971 : 50,69.

COURS EXTREMES

	1968		1969		1970		1971		1972		1973 [31 oct.]	
	P. H.	P. B.	P. H.	P. B.	P. H.	P. B.	P. H.	P. B.	P. H.	P. B.	P. H.	P. B.
...s	209,00	138,50	202,00	150,00	215,00	144,00	215,00	163,00	205,00	180,00	216,00	53,10
	158,00	120,00	179,70	132,10	154,00	118,00	144,50	101,40	143,00	107,00	126,00	102,20

AMORT.	PROVIS.	BENEFICE NET	RESERVES	DIVID. ET TANT.	DIV. NET ACT.	DIV. NET PARTS
		(En Francs)				
3.096.071	294.699	2.104.995	1.129.066	975.429	7,83	7,45
2.676.093	57.435	961.448		928.429	7,82	7,45
2.168.263	863.750	2.658.857	1.730.620	928.236	7,82	7,45
1.963.311	257.416	1.498.888	570.551	928.336	7,83	7,45
1.748.486	1.592.591	2.319.898	809.574	928.337	7,82	7,45

BILANS AU 31 DECEMBRE	1968	1969	1970	1971	1972
Actif		(En Francs)			
...bilisations (nettes)	15.984.922	14.252.257	15.645.515	12.736.601	11.875.092
...valeurs immobilisées	9.302.095	4.571.545	9.397.137	11.641.976	13.495.135
...able :					
...urs d'exploitation	6.022.838	6.722.754	6.584.758	11.076.190	11.249.534
...iteurs	18.830.139	21.237.145	22.089.827	23.935.564	23.782.188
...s de placement	20.238	1.937.838	1.449.402	1.228.740	768.228
...ible	402.537	617.014	434.734	193.128	263.212
	50.562.769	49.338.553	53.601.373	60.812.199	61.433.389
Passif					
...l	16.840.000	16.840.000	16.840.000	16.840.000	16.840.000
...es	21.143.526	22.272.593	22.174.817	20.678.334	21.093.346
...value à long terme				3.357.797	3.513.337
...de renouvellement et provisions	3.471.519	3.472.105	3.587.891	4.134.588	3.455.141
...à moyen et long terme				19.356	19.742
...à court terme	7.002.729	5.792.407	8.339.808	14.283.236	14.191.925
...tes	2.104.995	961.448	2.658.857	1.498.888	2.319.898
	50.562.769	49.338.553	53.601.373	60.812.199	61.433.389

— 1610 —

Data Entry for the Official List (1)

IT organized manual data entry

- Reproduction of the structure of the Official list into the DB

- Sources' digitalization

- Creation of a data entry mask (java program)

- Training of data entry firm's operators (outsourcing for the most part of)

- Data delivery

- Data quality checks (IT validation, check of outliers; complete check on a representative sample)

31/12/1845 Stockexchange Paris (Official List) ▼ Manual

Paris (Official List)
├─ NOT QUOTED STOCKS or BONDS
├─ RENTES FRANCAISES
├─ FONDS ETRANGERS
└─ CHEMINS DE FER (actions)
    ├─ Bordeaux a la Teste (Chemin de Fer)
    ├─ Marseille a Avignon (Chemin de Fer)
    ├─ Montpellier a Gette (Chemin de Fer)
    ├─ Orleans (Chemin de Fer)
    ├─ Paris a Rouen (Chemin de Fer)
    ├─ Rouen au Havre (Chemin de Fer)
    ├─ Saint Etienne a Lyon (Chemin de Fer)
    ├─ Saint Germain (Chemin de Fer)
    ├─ Strassbourg a Bale (Chemin de Fer)
    ├─ Versailles (Rive Droite)(Chemin de Fer)
    └─ Versailles (Rive Gauche) (Chemin de Fe
├─ OBLIGATIONS (Chemins de Fer)
├─ FONDS DE LA VILLE
├─ COMPAGNIES DES CANAUX
├─ COMPAGNIES ANONYMES
├─ FONDS ETRANGERS
└─ VALEURS DIVERSES

Name: Montpellier a Gette (Chemin de Fer)
Sector: Railroads
Type: action de capital
Market: Spot (Au Comptant) ▼   Outside exchanges(Hors parquet)
Price 1:   Price 1:
Price 2:   Price 2:
Price 3:   Price 3:
Price 4:   Price 4:
Price 5:   Price 5:
Price 6:
Price 7:
Price 8:
Price 9:
Price 10:
Higher(Plus haut):
Lower(Plus bas):
Previous(Dernier cours coté):
At dd/mm/yyyy:
Price yesterday (Cours de la veille):
Demand(e):
Supply(Offre):
Volume:
Source: Official List ▼
Comments:
Nominal: No value found
Dividend: No dividend information available
Amount: No quantities found for this date.

Repo Market(Marché des réports)   Save   New   New Currency
Emission   Legend(e)   Amount   New code

No: 48 - St: 35 - Sh: 1 - QF: - Land: France - Zetel: France - Code: - Corp: Montpellier a Gette

start

Data Entry for the Offical List (2)

Specific OCR based software: some experiment (the same for Yearbooks)

- Sources digitalization
- Elaboration of a lexical dictionary and specifications rules to instruct the OCR software
- Design and creation of an interface human – software
- Design and creation of a workflow management system

Nombre de Titres	Période d'amortissement	Dates des Tirages	Époque de Jouissance	Intérêts et Dividendes (Brut)			Cours extrêmes depuis le 1er janv. 1929 (au comptant)		Milliers de la veille (compt.)	DÉSIGNATION DES VALEURS	Jouissance courante	— COMPTANT	COURS DU TERME					
				Exerc. précéd.	brut	net	Pl. haut	Plus bas					Reports Liq. h l'autre	Cours de consac.	Clôture de la veille	1er cours	Plus haut	Plus bas	Dernier cours

COMPTANT

| | | | mai | 42f.. | 43 .. | 29 356 | 1540 | 1070 | 1330 | Rente Foncière, act. 100 fr., t. p. (ex-c. 44) | 8 mai 29 | 1420 1425 1430 | | | | | | | |
| 200.000 | .... | .... | (Janv.-oct. | 8f.. | 8 .. | 0 60 | ●1250 | 461 | 623 | Société Générale Foncière, act. 100 fr., t. p. (ex-dr., ex-c. 18) | 8 avril 29 | 635 637 638 639 640 | | | | | | | |

CANAUX

446.795	1870-1968	16 déc.	janv.-juill.	644f57	210 ..	192 71	26300	18400	21060	**S**uez (Canal Maritime de), act. 250 fr., t. p. (ex-c. 142)	janvier 30	20995 21000 21050 21075 21095 21100							
64.273	....	....	janv.-juill.	682f07	203 75	142 83	23900	18400	20300	— Act. de jouiss. (n°s 1 à 56919 et 400001 à 436819) (ex-c. 104) (au comptant seulement)	janvier 30	20795							
100.000	....	....	janv.-juill.	712f19	239 57	157 56	24700	17500	19500	— Parts de fond. (ex-c. 104)	janvier 30	19252							
84.507	....	....	janv.-juill.	1130f04	407 50	255 15	30860	20800	22650	— Sté Civile pour le recouvrement des 15% attribués au Gouvernement égyptien (estamp. du c. 51)	6 janv. 30	29500 29625 25800 29850							
....	....	....	janv.-juill.	236f..	81 50	51 68	7840	5500	5800	— Cinquièmes (ex-c. 35) (au comptant seulement)	6 janv. 30	5950							

CHEMINS DE FER

385.000	1857-1954	25 juillet	mai-nov.	32f50	32 ..	13 382	1360	1078	1250	**E**st, act. 500 fr., t. p. (ex-c. 444)	nov. 29	1200							
387.914	....	....	mai	32f50	32 50	24 163	696	551	680	— Act. de jouiss. (ex-c. 77) (au comptant seulement)	mai 29	660 681 669							
800.000	1907-1958	25 juillet	mai-nov.	30f..	30 ..	12 90	1390	1367	1580	Lyon, act. 500 fr., t. p. (ex-c. 443)	nov. 29	1589 1580 1590							
196.757	....	....	mai-nov.	60f..	10 ..	5 97	1310	923	1330	— Act. de jouiss. (ex-c. 44) (au comptant seulement)	nov. 29	1250							
350.000	1871-1955	27 avril	janv.-juill.	22f50	22 ..	17 38	1350	1430	1288	Midi, act. 500 fr., t. p. (ex-c. 349)	janvier 30	1350 1295 1275							
87.424	....	....	juillet	37f50	37 50	27 15	800	671	800	— Act. de jouiss. (ex-c. 58) (au comptant seulement)	juillet 29	805							
525.000	1863-1955	1er mai	janv.-juill.	100f..	29 ..	10 78	2790	2200	2615	Nord, act. 500 fr., t. p. (ex-c. 147)	janvier 30	2615							
101.504	....	....	janv.-juill.	84f..	12 ..	5 925	2260	1730	2260	— Act. de jouiss. (ex-c. 147) (au comptant seulement)	janvier 30	2260							
800.000	1853-1954	5 août	avril-oct.	72f50	15 ..	9 71	1478	1226	1455	Orléans, act. 500 fr., t. p. (ex-c. 155)	octobre 29	1465 1460 1451 1450							
308.260	....	....	avril	57f50	57 50	44 90	1145	785	1155	— Act. de jouiss. (ex-c. 154) (au comptant seulement)	avril 29	1125							
500.000	....	....	juin-déc.	150f..	15N ..	89 20	3095	3790	3990	Santa-Fé, (Cie Française des Chemins de fer de la Province de), act. 500 fr., t. p. (ex-c. 31)	20 déc. 29	2980 2985 2990 2995 3000 3005 3025							
500.600	1898-1928	7 juin	mai	85f..	25 ..	25 31	1400	1085	1258	Métropolitain de Paris, act. 350 fr., t. p. (ex-c. 20)	juillet 29	1260 1265 1258 1259 1270 1272 1274 1275							
39.390	....	....	mai	37f50	57 50	20 53	1630	700	950	— Act. de jouiss. (ex-c. 21) (au comptant seulement)	juillet 29	951							

EAUX, ÉLECTRICITÉ

250.000	....	....	juin-déc.	65f..	32 50	24 696	4800	3075	3800	**E**aux et de l'Éclairage (Sté Lyonnaise des), act. 0 250 fr., t. p. (n°s 240001 à 490000) (ex-c. 8)	déc. 29	3815 3805 3815 3820 3825							
240.500	....	....	juin-déc.	92f50	26 25	19 88	4400	2990	3335	— Act. 0 de jouiss. (n°s 1 à 240000) (ex-c. 18) (au comptant seulement)	déc. 29	3335							
400.000	....	....	juillet	65f..	65 ..	45 63	3170	2110	3145	**D**istribution d'Électricité (Cie Parisienne de), act. 250 fr., t. p. (ex-c. 20)	juillet 29	3200 3205 3210 3215 3220							
350.000	....	21 juin	juin	15f..	15 ..	8 51	1200	880	1060	Électricité de la Seine, act. de prior. 250 fr., t. p. (ex-c. 1)	juin 29	1076							
1.650	....	....	juin	-- ..	-- ..	-- ..	748	670	...	— Act. de jouiss. (au comptant seulement)	(e. 1 alt.)	...							
400.000	....	....	décembre	35f..	35 ..	21 47	1415	1011	1249	Électricité et Gaz du Nord, act. 250 fr., t. p. (ex-c. 14)	6 déc. 29	1230 1232 1233 1234 1236 1239 1240							
247.000	....	....	juin-déc.	85f..	42 50	29 796	●4750	3040	3730	Électricité (Cie Générale d'), act. A 500 fr., t. p. (ex-c. 90)	10 déc. 29	3740 3745 3750 3765 3770 3775 3760 3770							
600.000	....	....	juillet	50f..	50 ..	37 05	4645	1235	1463	Énergie Électrique du Littoral Méditerranéen, act. A 500 fr., t. p. (ex-c. 27)	juillet 29	1470 1465 1470 1473 1474 1475 1476 1478 1475							
450.000	....	....	juillet	37f50	37 50	28 55	●1360	895	1255	Énergie Électrique du Nord de la France, act. A 250 fr., t. p. (ex-c. 34)	juillet 29	1235 1236 1239 1240 1244 1245 1246 1248 1249							
600.000	....	15 juillet	30f..	30 ..	23 572	1380	906	1240	Thomson-Houston (Cie Française des Procédés), act. 500 fr., t. p. (ex-c. 44)	13 juillet 29	1250 1255 1260 1261 1265								

FORGES, FONDERIES
HOUILLÈRES, MINES

400.000	....	....	décembre	35f..	35 ..	18 83	830	440	628	Aciéries et Forges de Firminy, act. ord. 250 fr., t. p. (ex-c. 122)	19 déc. 29	649 650 652 655 650 650 654 655 669							
355.080	....	....	novembre	185f..	185 ..	98 69	●3550	2500	2785	**E**lectro-Métallurgie de Dives, act. A 500 fr., t. p. (ex-dr., ex-c. 37 et c. 38)	20 nov. 29	2795							
568.000	....	....	décembre	40f..	33 ..	19 73	2120	1495	1784	Forges et Aciéries du Nord et de l'Est, act. A 250 fr., t. p. (ex-c. 64)	10 déc. 29	1820 1815 1820 1825 1830 1840 1845							

CANAUX

CHEMINS DE FER

EAUX, ÉLECTRICITÉ

FORGES, FONDERIES
HOUILLÈRES, MINES

Nombre de Titres	Période d'amortissement	Dates des Tirages	Époques de jouissance	Intérêts et Dividendes Exercice précéd. (brut)	brut	net	Cours extrêmes depuis le 1er janv. 1929 (au comptant) Pl. haut	Plus bas	Clôture de la veille (compt.)	DÉSIGNATION DES VALEURS	Jouissance courante	COMPTANT	Reports Liq. à l'autre	Cours de compens.	Clôture de la veille	1er cours	Plus haut	Plus bas	Dernier cours

Rente Foncière, act. 100 fr., t. p. (ex-c. 44)..... — 8 mai 29 — 1420 1425 1430 ....

Société Générale Foncière, act. 100 fr., t. p. (ex-dr., ex-c. 18)..... — 8 avril 29 — 635 637 638 639 640

CANAUX

Suez (Canal Maritime de), act. 250 fr., t. p. (n°s 1 à 222398 et 400001 à 623398)(ex-c.142)..... — janvier 30 — 20995 21000 21050 21075 21095 21100

TERME : Le 14 c¹ : 21190 plus haut cours
21150 21400 d500 au 31 janvier
21750 22000 d500 au 28 février

— Act. de jouiss. (n°s 1 à 56919 et 400001 à 436919)(ex-c. 104).. (au comptant seulement) — janvier 30 — 20295

— Parts de fond. (ex-c. 104).. — janvier 30 — 19250

— (Sté Civile pour le recouvrement des 15% attribués au Gouvernement égyptien) (estamp. du n° 51)..... — 6 janv. 30 — 29300 29600 29800 29840

— Cinquièmes (ex-c. 95). (au comptant seulement) — 6 janv. 30 — 5950

CHEMINS DE FER

Est, act. 500 fr., t. p. (ex-c. 144)..... — nov. 29 — 1200

— Act. de jouiss. (ex-c. 77).. (au comptant seulement) — mai 29 — 690 681 689

Lyon, act. 500 fr., t. p. (ex-c. 144)..... — nov. 29 — 1585 1589 1590

— Act. de jouiss. (ex-c. 44).. (au comptant seulement) — nov. 29 — 1250

Midi, act. 500 fr., t. p. (ex-c. 149)..... — janvier 30 — 1300 1295 1275

— Act. de jouiss. (ex-c. 58).. — juillet 29 — 805

Nord, act. 400 fr., t. p. (ex-c. 147).... — janvier 30 — 2615

TERME : Le 14 c¹ : prime d40 au 15 février nulle lire : 2740 d40 au 15 février

— Act. de jouiss. (ex-c. 147). (au comptant seulement) — janvier 30 — 2250

Orléans, act. 500 fr., t. p. (ex-c. 155)..... — octobre 29 — 1465 1460 1451 1450

— Act. de jouiss. (ex-c. 154).. — avril 29 — 1125

Santa-Fé (Cie Française des Chemins de fer de la Province de), act. 500 fr., t. p. (ex-c. 21).. — 20 déc. 29 — 2980 2985 2990 2995 3000 3005 3025

Métropolitain de Paris, act. 250 fr., t. p. (ex-c. 28).. — juillet 29 — 1260 1265 1268 1269 1270 1272 1274 1275 ...

— Act. de jouiss. (ex-c. 21).. (au comptant seulement) — juillet 29 — 951

EAUX, ÉLECTRICITÉ

Eaux et de l'Éclairage (Sté Lyonnaise des), act. O 250 fr., t. p. (n°s 250001 à 526000) (ex-c. 8)... — déc. 29 — 3815 3805 3815 3820 3825

— Act. O de jouiss. (n°s 1 à 250000) (ex-c. 18).. (au comptant seulement) — déc. 29 — 3335

Distribution d'Électricité (Cie Parisienne de), act. 250 fr., t. p. (ex-c. 23).. — juillet 29 — 3200 3205 3210 3215 3220

Électricité de la Seine, act. de prior. 250 fr., t. p. (ex-c. 1)..... — juin 29 — 1076

— Act. de jouiss. (au comptant seulement) — (c. 1 att.) —

Électricité et Gaz du Nord, act. 250 fr., t. p. (ex-c. 14)..... — 6 déc. 29 — 1230 1232 1233 1234 1235 1239 1240

Électricité (Cie Générale d'), act. A 500 fr., t. p. (ex-c. 50)..... — 10 déc. 29 — 3740 3745 3750 3765 3770 3775 3760 3770 ...

Énergie Électrique du Littoral Méditerranéen, act. A 500 fr., t. p. (ex-c. 29)..... — juillet 29 — 1470 1465 1470 1473 1474 1475 1476 1478 1479 1480

TERME : Le 14 c¹ : 1515 1525 d20 au 15 février 1535 1545 d20 au 28 février

Énergie Électrique du Nord de la France, act. A 250 fr., t. p. (ex-c. 24)..... — juillet 29 — 1235 1236 1239 1240 1244 1245 1248 1249

Thomson-Houston (Cie Française des Procédés), act. 500 fr., t. p. (ex-c. 41)..... — 15 juillet 29 — 1250 1255 1260 1261 1265 ...

FORGES, FONDERIES HOUILLÈRES, MINES

Aciéries et Forges de Firminy, act. ord. 250 fr., t. p. (ex-c. 123)..... — 15 déc. 29 — 649 650 652 655 659 660 664 665 669 ...

Électro-Métallurgie de Dives, act. A 500 fr., t. p. (ex-dr., ex-c. 37 et c. 38)..... — 20 nov. 29 — 2795

Forges et Aciéries du Nord et de l'Est, act. A t. p. (ex-c. 64)..... — 10 déc. 29 — 1820 1815 1820 1825 1830 1840 1845

Nombre de Titres	Période d'amortissement	Dates des Tirages	Époques de jouissance	Intérêts et Dividendes Rev. et dern. coupon payé 1929 (au comptant) (brut) brut net	Cours extrêmes depuis le 1er janv. 1929 (au comptant) Pl. haut Plus bas	Clôture de la veille (compt.)	DÉSIGNATION DES VALEURS	Jouissance courante	COMPTANT	Reports Liq. à l'autre	Cours de compens.	Clôture de la veille		1er cours	Plus haut	Plus bas	Dernier cours

COURS DU TERME

200.000	....	....	mai......	42f.. 42 .. 29 396	1340 1075	1350	**R**ente Foncière, act. 100 fr., t. p. (ex-c. 44),...	8 mai 29	1420 1425 1430	3 35	1360	1350	en liquid. au 31.. Pr. dem.. Pr. au 21. Pr. au 15. Pr. au 28.	1438 1445	1449	1420	1420
200.000	....	....	15 nvr.-oct.	8f.. 8 .. 0 60 ●1260 461	625		Société Générale Foncière, act. 100 fr., t. p. (ex-dr., ex-c. 18)................	8 avril 29	635 637 638 639 640	Pair	640	625	en liquid. au 31.. Pr. dem.. Pr. au 31. Pr. au 15. Pr. au 28. Pr. au 15.	639 642	642 645	635	639

CANAUX

446.796	1870-1968	16 déc...	janv.-juil.	644f57 210 .. 132 71	26500 18400	21650	**S**uez (Canal Maritime de), act. 250 fr., t. p. (n° 1 à 223398 et 400001 à 633398)(ex-c.142)	janvier 30	20995 21000 21050 21075 21095 21100	51 ..	21000	20900	en liquid. au 31.. Pr. dem.. Pr. au 31. Pr. au 15. Pr. au 28.	21095 21200	21250	21050	21100
							TERME : Le 14 c° : 21190 plus haut cours										
64.272	....	....	janv.-juil.	632f07 208 78 143 38	25800 18400	20300	— Act. de jouiss. (n° 1 à 56919 et 400001 à 436919) (ex-c. 104)... (au comptant seulement)	janvier 30	20295								
100.000	....	....	janv.-juil.	712f19 229 57 177 56	24700 17600	19300	— Parts de fond. (ex-c. 104)..........	janvier 30	19250	47 60	19600	19500	en liquid. au 31..	19275 19375			
84.507	....	....	janv.-juil.	1180f04 407 50 259 15	33980 26800	29650	— (Sté Civile pour le recouvrement des 15% attribués au Gouvernement égyptien) (estamp. du c. 51)........	6 janv. 30	29300 29600 29800 29840	72 40	29800	29875	en liquid. au 31..	29300 29350			
....	....	....	janv.-juil.	236f.. 81 50 51 68	7840 5500	3950	— Chanciènes (ex-c. 55). (au comptant seulement)	6 janv. 30	5950								

CHEMINS DE FER

584.000	1857-1954	25 juillet..	mai-nov.	52f50 20 .. 13 583	1260 1035	1200	**E**st, act. 500 fr., t. p. (ex-c. 144)......	nov. 29	1200	2 95	1210	1208	en liquid. au 31..	1210 1210			
297.914	....	....	mai......	32f50 32 50 24 163	690 551	690	— Act. de jouiss. (ex-c. 77)...... (au comptant seulement)	mai 29	690 688 689								
800.000	1907-1932	25 juillet..	mai-nov	80f.. 20 .. 12 90	1590 1367	1590	Lyon, act. 500 fr., t. p. (ex-c. 144)......	nov. 29	1585 1589 1590	3 85	1580	1576	en liquid. au 31..	1595 1599			
196.737	....	....	mai-nov..	60f.. 10 .. 5 97	1240 923	1230	— Act. de jouiss. (ex-c. 44)...... (au comptant seulement)	nov. 29	1250								
250.000	1871-1955	27 avril...	janv.-juil.	62f50 25 .. 17 38	1370 1130	1320	Midi, act. 500 fr., t. p. (ex-c. 149)......	janvier 30	1300 1296 1275	3 30	1340	1337	en liquid. au 31..	1295 1299			1300
67.424	....	....	juillet...	37f50 37 50 27 15	800 671	800	— Act. de jouiss. (ex-c. 58)...... (au comptant seulement)	juillet 29	805								
525.000	1865-1950	1er mai...	janv.-juil.	100f.. 20 .. 10 75	2730 2205	2615	Nord, act. 400 fr., t. p. (ex-c. 147)......	janvier 30	2615	6 35	2600	2630	en liquid. au 31..	2600 2605	2625	2605	2610
							TERME : Le 14 c° : prime d40 au 15 février nulle										
161.604	....	....	janv.-juil.	84f.. 12 .. 5 526	2260 1730	2260	— Act. de jouiss. (ex-c. 147)...... (au comptant seulement)	janvier 30	2250								
600.000	1853-1931	8 août...	avril-net..	72f50 15 .. 9 71	1478 1226	1455	Orléans, act. 500 fr., t. p. (ex-c. 155)......	octobre 29	1465 1460 1451 1450	3 55	1460	1455	en liquid. au 31..	1480 1480			1470
303.260	....	....	avril......	37f50 57 50 43 90	1145 785	1125	— Act. de jouiss. (ex-c. 154)...... (au comptant seulement)	avril 29	1125								
200.000	....	....	juin-déc..	150f.. 125 .. 89 20	2995 2780	2990	Santa-Fé, (Cie Française des Chemins de fer de la Province de), act. 500 fr., t. p. (ex-c. 21)......	20 déc. 29	2980 2985 2990 2995 3000 3005 3025	7 30	3000	2970	en liquid. au 31..	3000 3020		2995	3005
300.000	1898-1953	7 juin...	mai......	35f.. 33 .. 25 21	1400 1095	1248	Métropolitain de Paris, act. 250 fr., t. p. (ex-c. 28).	juillet 29	1260 1265 1268 1269 1270 1272 1274 1275 ...	3 10	1270	•1240	en liquid. au 31..	1275 1280	1288	1268	1280
99.260	....	....	mai......	27f50 27 50 20 52	1030 700	930	— Act. de jouiss. (ex-c. 21).. (au comptant seulement)	juillet 29	951								

EAUX, ÉLECTRICITÉ

|																	
286.000	....	....	juin-déc..	65f.. 32 50 24 690	4800 3075	3800	**E**aux et de l'Éclairage (Sté Lyonnaise des), act. 0 250 fr., t. p. (n° 240001 à 526000) (ex-c. 8)...	déc. 29	3815 3805 3815 3820 3825	9 20	3770	3755	en liquid. au 31..	3825 3820	3845 3895	3805	3820
240.000	....	....	juin-déc..	52f50 26 25 19 88	4400 2690	3325	— Act. G de jouiss. (n° 1 à 29000) (ex-c. 18). (au comptant seulement)	déc. 29	3335						4000		
400.000	....	....	juillet...	65f.. 65 .. 45 62	3170 2110	3165	**D**istribution d'Électricité (Cie Parisienne de), act. 250 fr., t. p. (ex-c. 25)......	juillet 29	3200 3205 3210 3215 3220	2 80	3200	3135	en liquid. au 31..	3200 3200	3225	3190	3215
350.000	....	21 juin	juin......	15f.. 13 .. 8 51	1200 880	1060	Électricité de la Seine, act. de prior. 250 fr., t. p. (ex-c. 1)......	juin 29	1076	2 65	1080	1059	en liquid. au 31..	1080 1087	1087	1079	1082
1.670	....	....	juin......	.. ..	745 675	...	— Act. de jouiss......... (au comptant seulement)	(e- 1 att.)	... .					1098	1100 1135		
400.000	....	....	décembre.	35f.. 33 .. 24 47	1419 1011	1239	Électricité et Gaz du Nord, act. 250 fr., t. p. (ex-c. 14)......	6 déc. 29	1230 1232 1233 1234 1235 1239 1240	3 05	1250	1224	en liquid. au 31..	1233 1240	1250	1235	1245
247.000	....	....	juin.-déc..	85f.. 42 50 29 796	●4750 3040	3730	Électricité (Cie Générale d'), act. A 500 fr., t. p. (ex-c. 50)......	10 déc. 29	3740 3745 3750 3765 3770 3775 3760 3770 ...	9 20	3780	3710	en liquid. au 31..	3775 3795			3760
600.000	....	....	juillet...	50f.. 50 .. 37 66	1645 1295	1463	Énergie Électrique du Littoral Méditerranéen, act. A 500 fr., t. p. (ex-c. 29)......	juillet 29	1470 1465 1470 1473 1474 1475 1476 1478 1479 1480	3 55	1460	1463	en liquid. au 31..	1465 1470	1485	1466	1485
							TERME : Le 14 c° : 1515 1525 d20 au 15 février										
450.000	....	....	juillet...	37f50 37 50 28 15	●1360 998	1235	Énergie Électrique du Nord de la France, act. A 250 fr., t. p. (ex-c. 34)......	juillet 29	1235 1236 1239 1240 1244 1245 1246 1248 1249	3 05	1250	1230	en liquid. au 31..	1250 1258		1250	1258
600.000	....	....	15 juillet.	50f.. 30 .. 23 522	1380 938	1240	Thomson-Houston (Cie Française des Procédés), act. 500 fr., t. p. (ex-c. 41)......	15 juillet 29	1250 1255 1260 1261 1265	3 10	1260	1235	en liquid. au 31..	1258 1275 1300	1272 1280 1305 1330	1265 1310	1262 1315

FORGES, FONDERIES HOUILLÈRES, MINES

400.000	....	....	décembre.	25f.. 25 .. 18 83	850 440	628	Aciéries et Forges de Firminy, act. ord. 250 fr., t. p. (ex-c. 123)......	15 déc. 29	649 650 652 655 659 660 664 665 567	1 60	650	633	en liquid. au 31..	652 658 680	620 690	651	668
185.000	....	....	novembre.	135f.. 135 .. 98 69	●3930 2300	2785	**E**lectro-Métallurgie de Dives, act. A 500 fr., t. p. (ex-dr., ex-c. 37 et c. 38)......	20 nov. 29	2795	6 70	2750	2750	en liquid. au 31..	2790 2795	2820	2775	2820
328.000	....	....	décembre.	40f.. 25 .. 18 73	2125 1495	1784	Forges et Aciéries du Nord et de l'Est, act. A 250 fr., t. p. (ex-c. 64)......	10 déc. 29	1820 1815 1820 1825 1830 1840 1845	4 40	1800	1760	en liquid. au 31..	1705 1805	1815	1800	1815

Emprunt des Emprunts admis en numéro de Titres	Période d'amortissement	Dates des Tirages	Époques de jouissance	Intérêts et Dividendes Exercice précéd. (brut) / dern. coupon payé brut / net	Cours extrême depuis le 1er janv. (en comptant) Pl. haut / Plus bas	Dollars de la veille (écart)	DÉSIGNATION DES VALEURS	Jouissance courante	COMPTANT	Reports Liq. à l'autre	Cours de compens.	Clôture de la veille	COURS DU TERME 1er cours	Plus haut	Plus bas	Dernier cours

FONDS D'ÉTATS ÉTRANGERS
(Groupe 4)

VALEURS ÉTRANGÈRES
(Groupe 1)

200.000	....	....	mai......	45f..	42 ..	29 296	1540	1075	1350	Rente Foncière, act. 100 fr., t. p. (ex-c. 44)......	8 mai 29	1420 1425 1430	3 35	1360 ..	1359 ..
200.000	....	....	15avr.-oct.	8f..	8 ..	0 60	●1560	461	625	Société Générale Foncière, act. 100 fr., t. p. (ex-dr., ex-c. 18)......	8 avril 29	635 637 638 639 640	Pair	640 ..	625 ..

CANAUX

446.796	1870-1968	16 déc....	janv.-juil.	644f57	210 ..	152 71	26300	18400	21050	Suez (Canal Maritime de), act. 250 fr., t. p. (nos 1 à 283298 et 400001 à 625998) (ex-c. 142).	janvier 30	20995 21000 21050 21075 21095 21100 ...... TERME : Le 14 ct : 21190 plus haut cours 21150 21400 d500 au 31 janvier 21750 22000 d500 au 25 février	51 ..	21000 ..	20900 ..
64.272	....	....	janv.-juil.	692f07	208 75	149 33	28900	18400	20300	— Act. de jouiss. (nos 1 à 56919 et 400001 à 456919) (ex-c. 104)...... (au comptant seulement)	janvier 30	20295			
64.272	....	....	janv.-juil.	692f07	208 75	149 33	28900	18400	20300	— Act. de jouiss. (nos 1 à 56919 et 400001 à 456919) (ex-c. 104)...... (au comptant seulement)	janvier 30	20295			
100.000	....	....	janv.-juil.	712f19	229 57	177 56	24700	17600	19500	— Parts de fond. (ex-c. 105)......	janvier 30	19250	47 60	19600 ..	19500 ..
84.507	....	....	janv.-juil.	1190f04	407 50	259 15	35990	26800	29650	— (Sté Civile pour le recouvrement des 15 % attribués au Gouvernement égyptien) (estamp. du c. 51)......	6 janv. 30	29300 29600 29800 29840	72 40	29800 ..	29875 ..
....	....	....	janv.-juil.	226f..	81 30	51 68	7840	5500	5950	— — Cinquièmes (ex-c. 93). (au comptant seulement)	6 janv. 30	5950			

CHEMINS DE FER

....	....	....	janv.-juil.	226f..	81 30	51 68	7840	5500	5950	— — Cinquièmes (ex-c. 93). (au comptant seulement)	6 janv. 30	5950			
564.000	1857-1954	23 juillet..	mai-nov..	38f50	30 ..	13 585	1360	1033	1200	Est, act. 500 fr., t. p. (ex-c. 144)......	nov. 29	1200	2 95	1210 ..	1208 ..
257.914	....	....	mai......	32f50	32 50	24 163	690	551	690	— Act. de jouiss. (ex-c. 77)...... (au comptant seulement)	mai 29	690 681 689			
257.914	....	....	mai......	32f50	32 50	24 163	690	551	690	— Act. de jouiss. (ex-c. 77)...... (au comptant seulement)	mai 29	690 681 689			
800.000	1907-1955	23 juillet..	mai-nov..	60f..	20 ..	12 90	1590	1367	1590	Lyon, act. 500 fr., t. p. (ex-c. 144)......	nov. 29	1585 1589 1590	3 85	1580 ..	1576 ..
196.757	....	....	mai-nov..	60f..	10 ..	5 97	1240	925	1230	— Act. de jouiss. (ex-c. 44)...... (au comptant seulement)	nov. 29	1250			
196.757	....	....	mai-nov..	60f..	10 ..	5 97	1240	925	1230	— Act. de jouiss. (ex-c. 44)...... (au comptant seulement)	nov. 29	1250			
230.000	1871-1955	27 avril...	janv.-juil.	62f50	25 ..	17 58	1370	1130	1325	Midi, act. 500 fr., t. p. (ex-c. 149)......	janvier 30	1300 1295 1275	3 30	1340 ..	1337 ..
67.424	....	....	juillet....	37f50	37 50	27 15	800	671	800	— Act. de jouiss. (ex-c. 58)...... (au comptant seulement)	juillet 29	805			
67.424	....	....	juillet....	37f50	37 50	27 15	800	671	800	— Act. de jouiss. (ex-c. 58)...... (au comptant seulement)	juillet 29	805			
525.000	1865-1950	1er mai...	janv.-juil.	100f..	20 ..	10 76	2720	2205	2615	Nord, act. 400 fr., t. p. (ex-c. 147)......	janvier 30	2615 TERME : Le 14 ct : prime d40 au 15 février nulle lire : 2740 d40 au 15 février	6 35	2600 ..	2630 ..
101.604	....	....	janv.-juil.	84f..	12 ..	5 526	2260	1730	2260	— Act. de jouiss. (ex-c. 147)...... (au comptant seulement)	janvier 30	2250			
101.604	....	....	janv.-juil.	84f..	12 ..	5 526	2260	1730	2260	— Act. de jouiss. (ex-c. 147)...... (au comptant seulement)	janvier 30	2250			
600.000	1853-1951	8 août....	avril-oct..	72f50	15 ..	9 71	1475	1236	1455	Orléans, act. 500 fr., t. p. (ex-c. 153)......	octobre 29	1465 1460 1451 1450	3 55	1480 ..	1455 ..
303.260	....	....	avril.....	57f50	57 50	43 90	1145	785	1125	— Act. de jouiss. (ex-c. 154)...... (au comptant seulement)	avril 29	1125			
303.260	....	....	avril.....	57f50	57 50	43 90	1145	785	1125	— Act. de jouiss. (ex-c. 154)...... (au comptant seulement)	avril 29	1125			
200.000	....	....	juin-déc..	150f..	125 ..	89 20	3995	2790	2990	Santa Fé (Cie Française des Chemins de fer de la Province de), act. 500 fr., t. p. (ex-c. 51)......	20 déc. 29	2980 2985 2990 2995 3000 3005 3025	7 30	3000 ..	2970 ..
300.000	1898-1955	7 juin....	mai......	35f..	35 ..	25 31	1400	1025	1248	Métropolitain de Paris, act. 250 fr., t. p. (ex-c. 55).	juillet 29	1260 1265 1268 1269 1270 1272 1274 1275 ...	3 10	1270 ..	1240 ..
99.260	....	....	mai......	27f50	27 50	20 53	1030	700	950	— Act. de jouiss. (ex-c. 51).. (au comptant seulement)	juillet 29	951			

EAUX, ÉLECTRICITÉ

99.260	....	....	mai......	27f50	27 50	20 53	1030	700	950	— Act. de jouiss. (ex-c. 51).. (au comptant seulement)	juillet 29	951			
286.000	....	....	juin-déc..	65f..	32 50	24 696	4800	3075	3800	Eaux et de l'Éclairage (Sté Lyonnaise des), act. O 250 fr., t. p. (nos 240001 à 500000) (ex-c. 8).	déc. 29	3815 3805 3815 3820 3825	9 20	3770 ..	3755 ..
240.000	....	....	juin-déc..	52f50	26 25	19 86	4400	2600	3325	— Act. O de jouiss. (nos 1 à 240000) (ex-c. 19). (au comptant seulement)	déc. 29	3335			
240.000	....	....	juin-déc..	52f50	26 25	19 86	4400	2600	3325	— Act. O de jouiss. (nos 1 à 240000) (ex-c. 19). (au comptant seulement)	déc. 29	3335			
400.000	....	....	juillet...	65f..	65 ..	45 63	3170	2110	3165	Distribution d'Électricité (Cie Parisienne de), act. 250 fr., t. p. (ex-c. 35)......	juillet 29	3200 3205 3210 3215 3220	7 80	3200 ..	3135 ..
350.000	....	21 juin	juin......	15f..	15 ..	8 31	1200	880	1060	Électricité de la Seine, act. de prior. 250 fr., t. p. (ex-c. 1)......	juin 29	1076	2 65	1080 ..	1059 ..
1.670	....	....	juin......	-- --	-- --	-- --	745	675	...	— — Act. de jouiss...... (au comptant seulement)	(c. 1 att.)	...			
1.670	....	....	juin......	-- --	-- --	-- --	745	675	...	— — Act. de jouiss...... (au comptant seulement)	(c. 1 att.)	...			
400.000	....	....	décembre.	25f..	25 ..	24 47	1419	1011	1229	Électricité et Gaz du Nord, act. 250 fr., t. p. (ex-c. 14)......	6 déc. 29	1230 1232 1233 1234 1235 1239 1240	3 05	1250 ..	1224 ..
247.000	....	....	juin-déc..	85f..	42 50	29 796	●4750	2840	3730	Électricité (Cie Générale d'), act. A 500 fr., t. p. (ex-c. 50)......	10 déc. 29	3740 3745 3750 3765 3770 3775 3760 3770 ...	8 20	3780 ..	3710 ..
600.000	....	....	juillet...	50f..	50 ..	37 66	1645	1250	1465	Énergie Électrique du Littoral Méditerranéen, act. A 500 fr., t. p. (ex-c. 29)......	juillet 29	1470 1465 1470 1473 1474 1475 1476 1478 1479 1480 TERME : Le 14 ct : 1515 1525 d20 au 15 février 1535 1545 d20 au 28 février	3 55	1460 ..	1463 ..
450.000	....	....	juillet...	37f50	37 50	28 15	●1360	990	1235	Énergie Électrique du Nord de la France, act. A 250 fr., t. p. (ex-c. 34)......	juillet 29	1235 1236 1239 1240 1244 1245 1246 1248 1249	3 05	1250 ..	1230 ..
600.000	....	....	15 juillet.	30f..	30 ..	23 332	1580	936	1240	Thomson-Houston (Cie Française des Procédés), act. 500 fr., t. p. (ex-c. 41)......	15 juillet 29	1250 1255 1260 1261 1265 ..	3 10	1260 ..	1235 ..

FORGES, FONDERIES HOUILLÈRES, MINES

400.000	....	....	décembre.	25f..	25 ..	18 85	850	440	688	Aciéries et Forges de Firminy, act. ord. 250 fr., t. p. (ex-c. 135)......	15 déc. 29	649 650 652 655 659 660 664 665 669	1 60	650 ..	633 ..
155.000	....	....	novembre.	135f..	135 ..	98 69	●3530	2200	2785	Électro-Métallurgie de Dives, act. A 500 fr., t. p. (ex-dr., ex-c. 37 et c. 38)......	20 nov. 29	2785	6 70	2780 ..	2750 ..
322.000	....	....	décembre.	40f..	35 ..	19 75	2125	1480	1784	Forges et Aciéries du Nord et de l'Est, act. A 250 fr., t. p. (ex-c. 61)......	10 déc. 29	1820 1815 1820 1825 1830 1840 1845	4 40	1800 ..	1760 ..

93.522	1580	535	1240	Thomson-Houston (Cie Française des Procédés), act. 500 fr., t. p. (ex-c. 41)............	15 juillet 29	1250 1255 1260 1261 1265	3 10	1260 ..	1235 ..	en liquid. au 31.....	1258 ..	.... ..	.... ..	.... ..

en liquid. 1258 ..
au 31..... 1265 ..   1272 ..   1255 .. 1262 ..
Pr. dem..   . . .. d20   .... d10
Pr. au 31. 1275 ..   1280 .. d40   1310 .. 1315 .. d30
Pr. au 15. 1300 ..   1305 .. d40   .... d30
Pr. au 28. .... ..   1320 .. d40   .... d30
Pr. au 15. .... d40   .... d30

23.522   1240   Thomson-Houston (Cie Française des Procédés), act. 500 fr., t. p. (ex-c. 41)
(Id=4434) Thomson-Houston (Cie Française des Procédés), act. 500 fr., t. p. (ex-c. 37)

1250 1255 1260 1261 1265   3.10   1260

En Liquid   1258.11
Au 31 1265   1272.11 1255.11 1262.11
(1) Pr. dem   d20   d10
(2) Pr au 31 1280 1275.11   d40 1315 1310.11   d20
(3) Pr au 15 1305 1300   d40   d20
(4) Pr au 28 1320   d40   d20
(5) Pr au 15   d40   d20

360.000	....	.	....	juillet ...	701..	70 ..	54 55	1069	685	800	Peugeot (Automobiles), act. B 500 l., t. p. (ex-c. 39).	23 mai 29	808 809 810 811 814 815 817	2 ..	820 .	814 ..	en liquid. au 31.....	810 ..	... ..	... ..	... ..

en liquid. 810 ..
au 31..... 815 ..   825 ..   814 .. 820 ..
Pr. dem..   :.. ..   .. d80   .... d10
Pr. au 31. .... ..   830 .. d40   .... .. 840 .. d80
Pr. au 15. .... d40   .... .. 850 .. d80
Pr. au 28. .... d40   870 .. 895 .. d80
Pr. au 15. .... d40   .... d80

60000   7   70   54,55   800   Peugeot (Automobiles) act. B 500 l. t.p. ex-c. 42)
(Id=5152, 64.82%) Peugeot (Automobiles), act. 500 fr., t. p. (ex-c. 35)
(Id=5291, 61.11%) Sant-Didier Automobiles, act. 100 fr., t.p. (ex-c. 9)
(Id=4609, 57.5%) Emterces Automobiles, act. Anc. 800 fr., t. p. (ex-c. 34)

808 809 810 811 814 815 817   2   820

En Liquid   810
Au 31 815   825.1 814.11 820.1
(1) Pr. dem   d20   d10
(2) Pr au 31 830   d40 840   d20
(3) Pr au 15   d40 850   d20
(4) Pr au 28   d40 895 870.11 d20
(5) Pr au 15   d40   d20

At the end of the day

- Many experiments
- Many failures
- Some success….

Top ten French Banks

raw ···· adjusted ── market cap ---
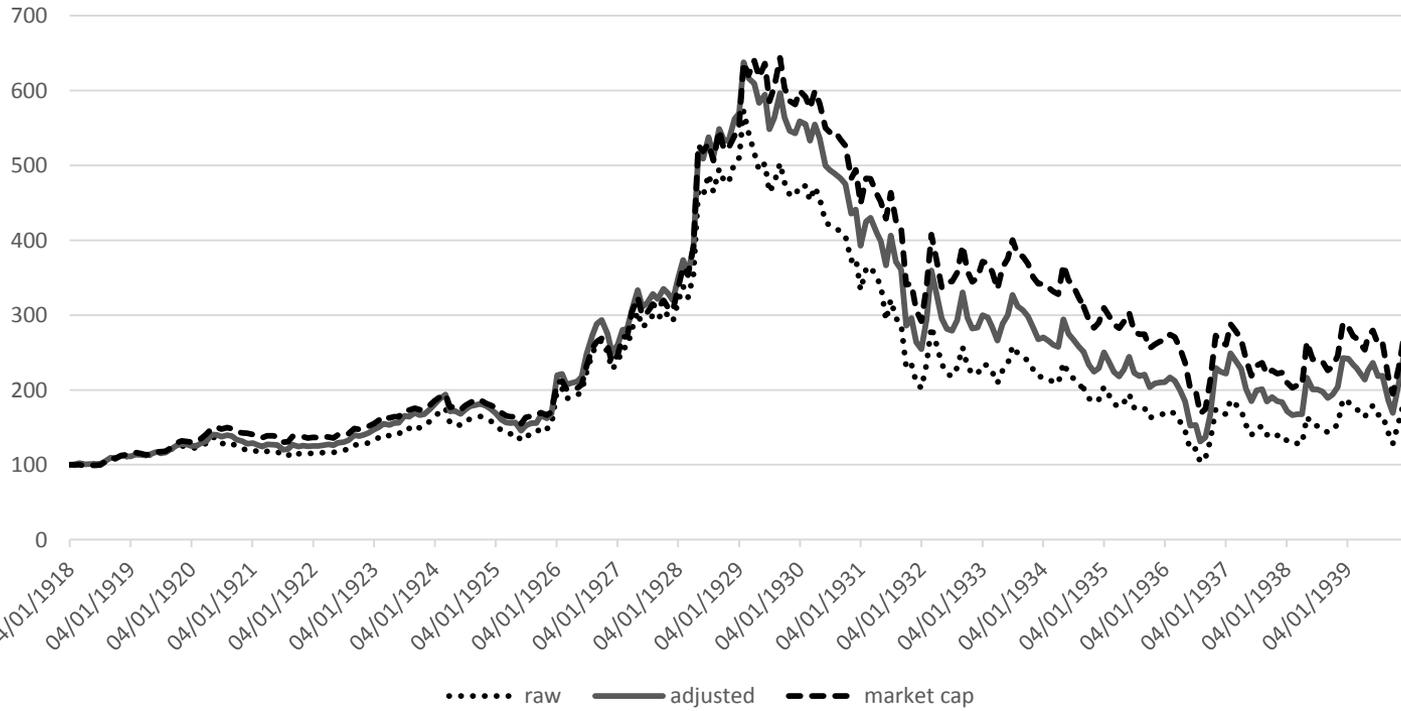
Album Comparison with previous series of deposits
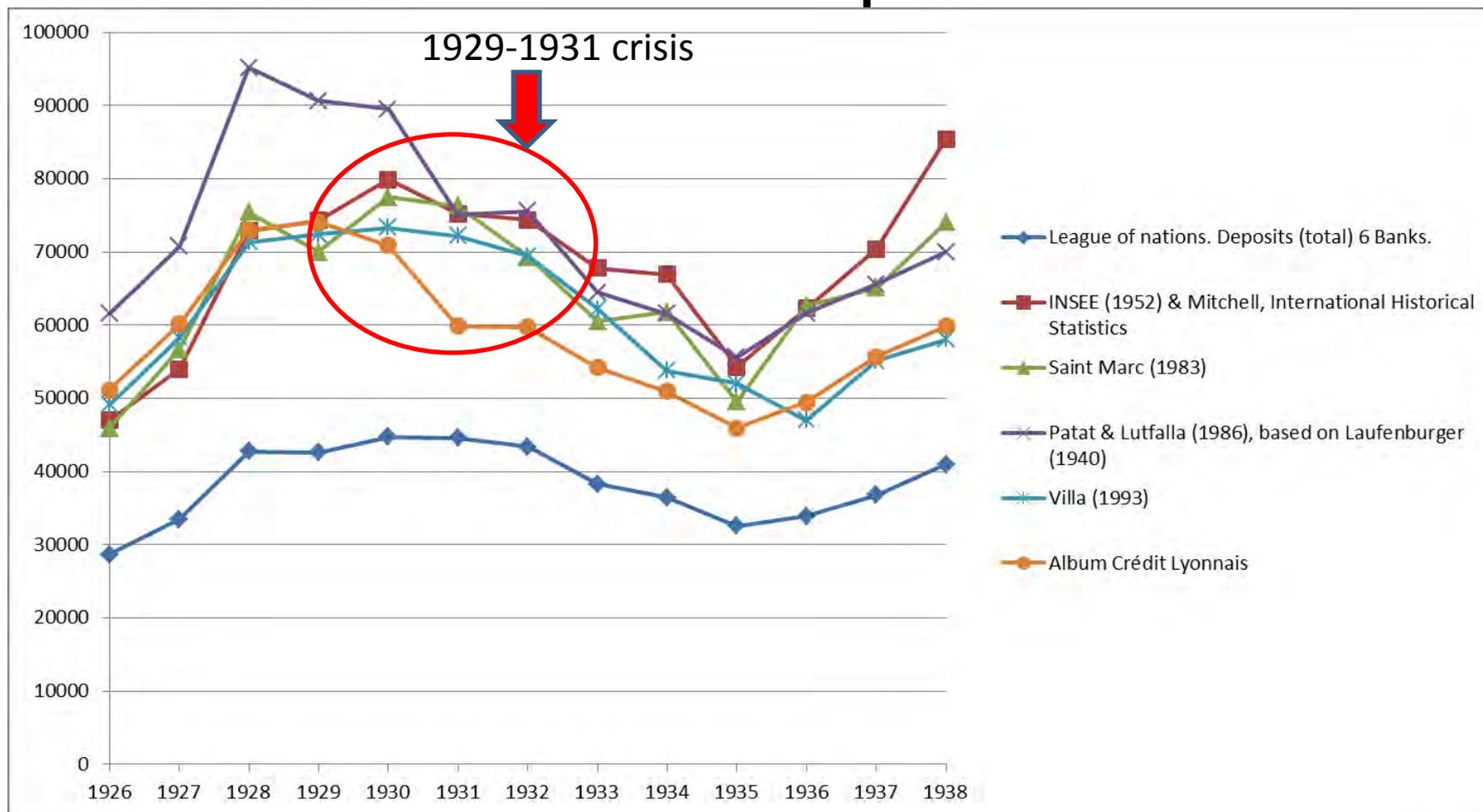
EURHISFIRM
European Long-Run Firm Data

H2020 – Infrastructure Development Project

EURHISFIRM

- **RESEARCH INFRASTRUCTURE** that collects, connects, and shares **LONG-TERM HIGH-QUALITY DATA** on **EU COMPANIES**

- Innovative technologies to spark the "**BIG DATA REVOLUTION in HISTORICAL SOCIAL SCIENCES**": Scaling up quantity, quality and variety of available "born-on-paper" data on EU companies

- "Flexible" OCR technologies + data warehouse + friendly browsers and data visualisation

Thank you!

Safeguarding irreplaceable financial information

Djordje Hinic, Business Development Manager

Understanding

Forecasting

Better decisions

"best practice" myth

lessons

piql

Ultra-secure data storage

Unalterable
It must be impossible to modify or delete.

Secure
It must be protected from cyber attacks, logical threats, EMP and physical threats.

Common

Flexible
It should be able to store any kind of files; digital and visual.

Searchable
It must be searchable.

Long-term digital preservation

Migration-free:
It must be migration-free to avoid the risk of data loss and the migration cost.

Future-proof
Data retrieval process must be independent of technological obsolescence.

Permanent
It must be scientifically tested for 500 + years longevity.

"Unplug"
Virgil Gligor

An integrated turnkey solution

piqlWriter

Writes data onto the piqlFilm. The piqlWriter is a high-speed industrial grade data writer utilizing Piql's proprietary, sophisticated software

piqlProcessor

Develops the piqlFilm and makes the data readable and permanent

piqlBox

A box/cartridge developed to protect the piqlFilm. The piqlBox constitutes newly developed polymers with 500 years + longevity
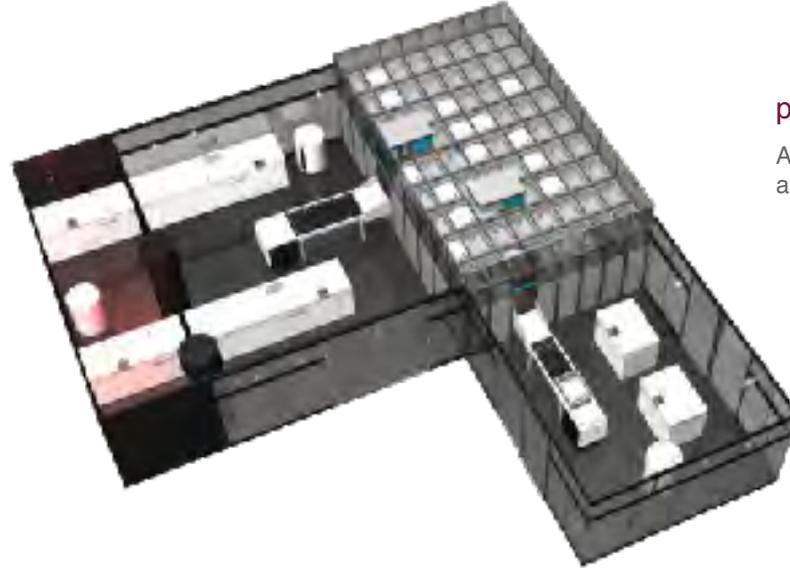
piqlVault

A robotic vault for safe, space efficient and automated storage of piqlBoxes

piqlReader

Reads data off the piqlFilm using open source software

piqlFilm

A newly developed nano-technology 35mm ultra-high resolution film optimized for digital storage, with documented 500 years lifespan

and many more…

Instability

Safest place?

Seed vault

Arctic World Archive
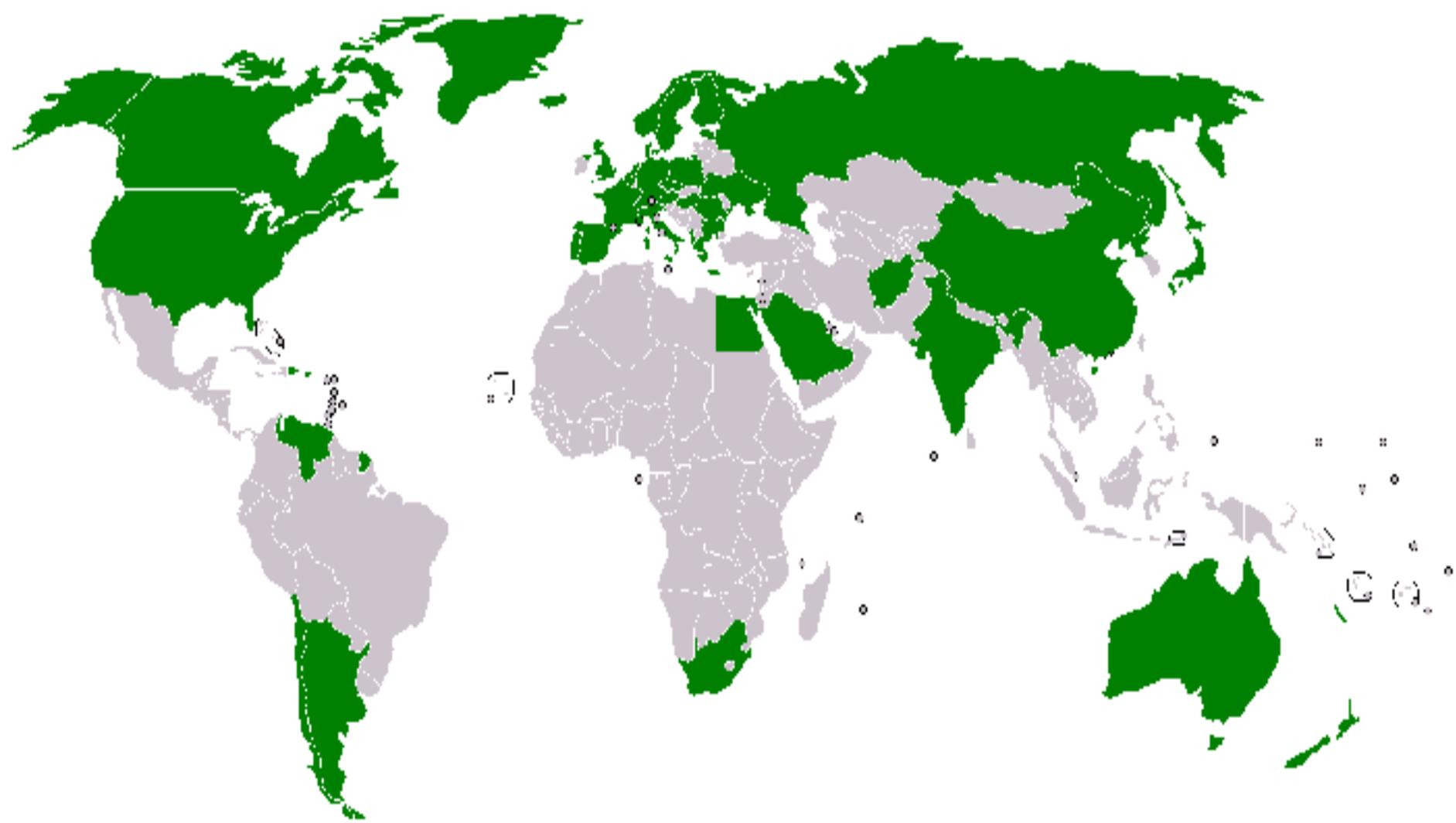
Protected by polar bears & permafrost

piql

ACTIVE LAYER

PERMA-FROST

TALIK

CNN
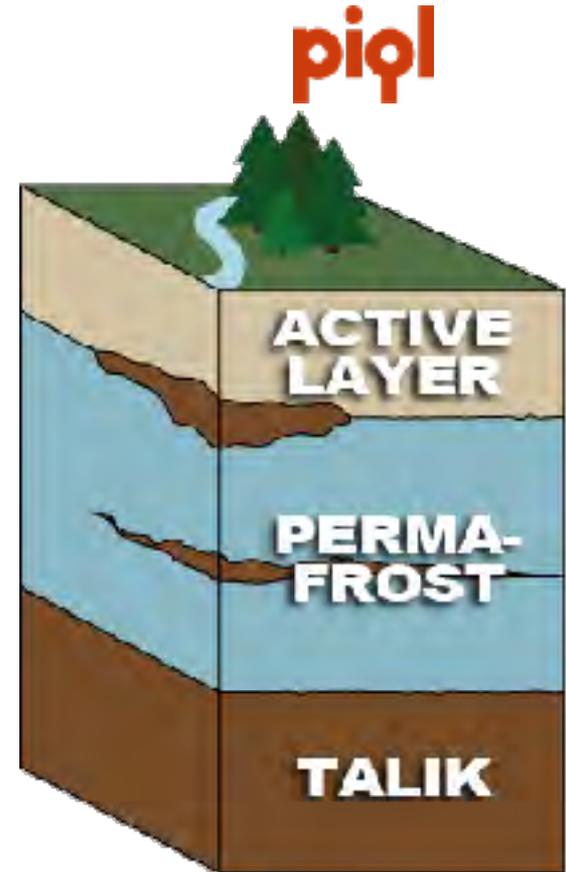
Arctic 'doomsday' vault seeks to protect world's most precious data

Viral

IFLSCIENCE!

Svalbard Will Soon Have Another "Doomsday Vault" For Storing Precious Literature

28.0K

Interested in learning more?

piql

www.piql.com

https://vimeo.com/106280961
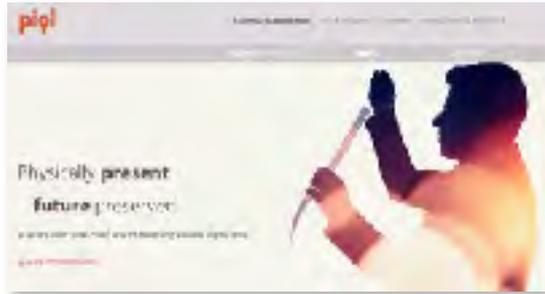
"What we do
- behind the scenes"
http://cld.bz/8JK9G0y

"When quality matters"
http://cld.bz/h38aCa

"Alternative storage
technologies" http://cld.bz/
2zaEa

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The data dilemma: a risk or an asset ?
Privacy, confidentiality, security and consumer protection

Kertész Ákos

Senior Supervisor

Zagreb, 10.11. 2017
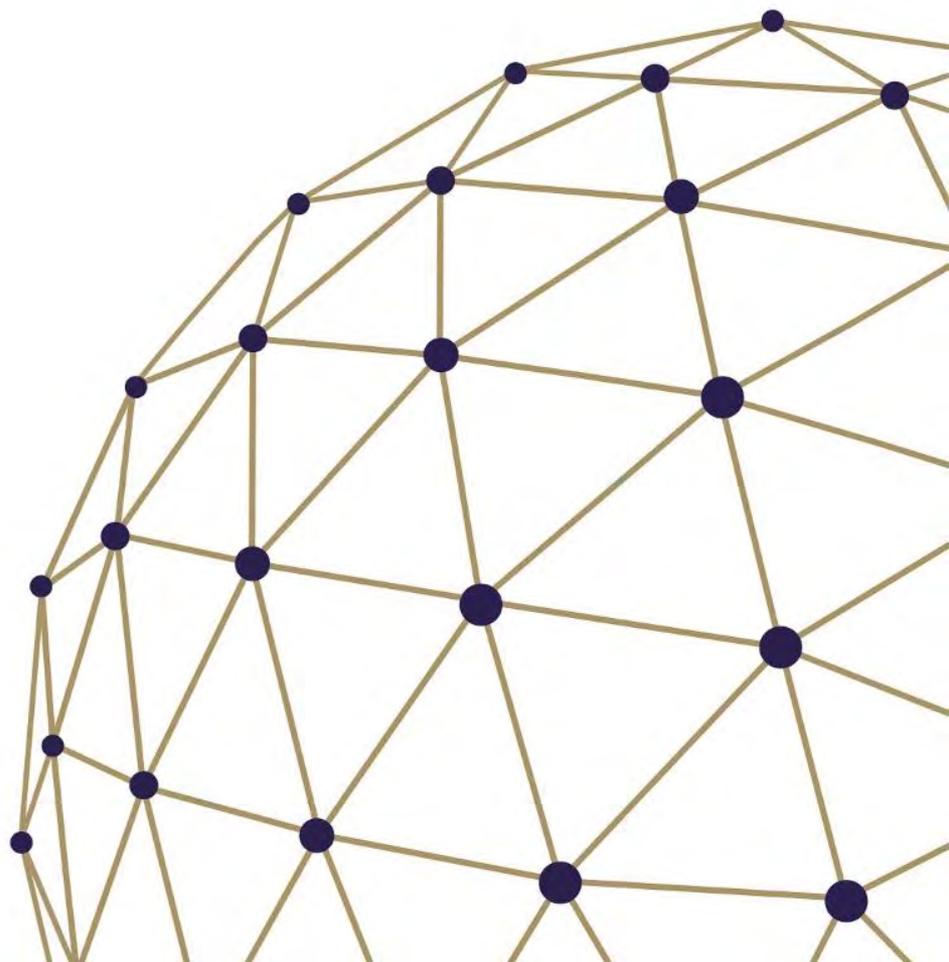
Introduction to basics

What is data ?

Definition

Data is a set of values of qualitative or quantitative variables. Pieces of data are individual pieces of information. Data becomes information by interpretation. **Data is a series of symbols**, while information occurs when the symbols are used to **refer to something**.

Usage

Data is measured, collected and reported, and analyzed, whereupon it can be visualized using graphs, images or other analysis tools. Data as a general concept refers to the fact that **some existing information or knowledge is represented or coded in some form suitable for better usage or processing**.

What kind of data?

Financial data

Financial data consists of pieces or sets of **information related to the financial health of a business, or a person**.
People and organizations outside a business will also use financial data reported by the business to judge its credit worthiness, decide whether to invest in the business, and determine whether the business is complying with government regulations.

Big Data

The term 'Big Data' is used to describe the collection and analysis of data on a scale or of a complexity that makes the use of such data challenging.

Big Data
Getting values from „shared" information

Why Big Data?

- This world is moving fast as data becomes **more accessible**, attributable and analytical.

- Sitting behind the **surge in digital services** is data and therefore data is of increasing importance to all organizations

- It can help businesses and entrepreneurs to identify areas of opportunity for innovation in **new products**, processes and services; improve customer engagement; identify inefficiencies**; improve productivity**, identify market trends.

Big Data
Financial usage

Example
Credit scoring Traditional credit scoring use information provided by customer (payment history, types of credit used, length of credit history,..). In case the customer has insufficient credit history, Banks **can not calculate the risk**. In the era of 'Big data', credit decisions may be based not only on credit information but also on a wide variety of **non-traditional data** that are not directly related to creditworthiness. Following an approach that "all data is credit data", Banks can identify patterns and habits of customers, which may drive to creditworthiness, so new customers can access to credit.

Risks
## Cost of data processing

Huge amount of data

- The data volumes are exploding, more data has been created in the **past two years** than in the **entire previous history** of the human race.

- Every second we create new data. For example, we perform 40,000 search queries every second, which makes it 3.5 billion searches per day and 1.2 trillion searches per year.

- Social Network users send on average 31.25 million messages and view 2.77 million videos **every minute**.

- Over 1.4 billion smart phones were shipped in 2015 - all packed with sensors capable of collecting all kinds of data, not to mention the data the users create themselves.

- Within five years there will be over 50 billion **smart connected devices** in the world, all developed to collect, analyze and share data.

- At the moment **less than 0.5%** of all data is ever **analyzed** and used.

Source: Forbes (2015)

Risks
Cost of data processing

Increased computational power
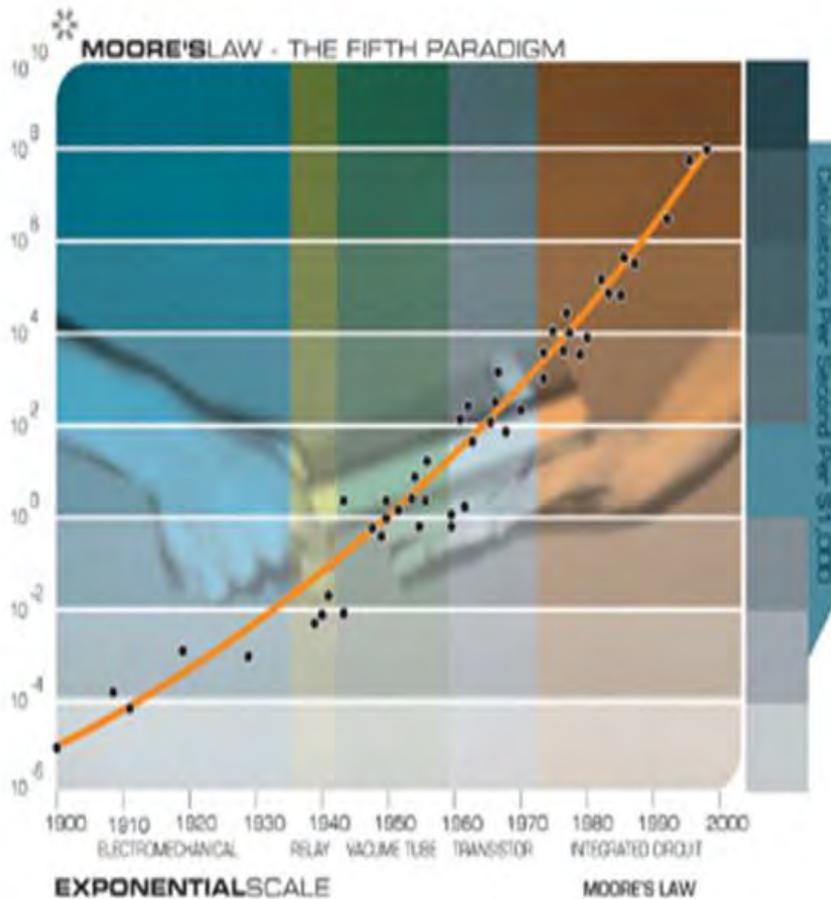
The Law of Accelerating Returns

Technological change is exponential, contrary to the common-sense "intuitive linear" view.

Computer speed (per unit cost) doubled every three years between 1910 and 1950, doubled every two years between 1950 and 1966, and is now doubling every year. Chip speed and cost-effectiveness, also increase exponentially.

Risks
Data Security

The financial sector is under fire

In general

- Financial data is a popular target for criminals and **cyber-attacks**, however the need of **sharing information**, and the potential benefits of analyzing data have growing tendency.
- Cyber criminals can **easily monetize** the wealth of data financial institutions collect – either by selling that data on the dark web or using the data to conduct fraud.

In details

- The financial services industry is the most breached industry, accounting for 35% of data breaches.
- 68% of financial services firms experienced multiple successful attacks in 2016.

Accessing systems to fraudulently transfer money or using personal information of customers for identity theft are two examples of financially motivated misuse.

	Incidents				Breaches			
	Total	Small	Large	Unk	Total	Small	Large	Unk
Total	**42,068**	**606**	**22,273**	**19,189**	**1,935**	**433**	**278**	**1,224**
Accommodation (72)	215	131	17	67	201	128	12	61
Administrative (56)	42	6	5	31	27	3	3	21
Agriculture (11)	11	1	1	9	1	0	1	0
Construction (23)	6	3	1	2	2	1	0	1
Education (61)	455	37	41	377	73	15	15	43
Entertainment (71)	5,534	7	3	5,524	11	5	3	3
Finance (52)	998	58	97	843	471	39	30	402
Healthcare (62)	458	92	108	258	296	57	68	171
Information (51)	717	57	44	616	113	42	21	50
Management (55)	8	2	3	3	3	2	1	0
Manufacturing (31-33)	620	6	24	590	124	3	11	110
Mining (21)	6	1	1	4	3	0	1	2
Other Services (81)	69	22	5	42	50	14	5	31
Professional (54)	3,016	51	21	2,944	109	37	8	64
Public (92)	21,239	46	20,751	442	239	30	59	150
Real Estate (53)	13	2	0	11	11	2	0	9
Retail (44-45)	326	70	36	220	93	46	14	33
Trade (42)	20	4	10	6	10	3	6	1
Transportation (48-49)	63	5	11	47	14	3	4	7
Utilities (22)	32	2	5	25	16	1	1	14
Unknown	8,220	3	1,089	7,128	68	2	15	51
Total	**42,068**	**606**	**22,273**	**19,189**	**1,935**	**433**	**278**	**1,224**

Table 1: Number of security incidents by victim industry and organization size, 2016 dataset.

Risks
Data Security

Cyber threats

Financial services firms fight an escalating and asymmetric war against cyber-attacks and internal threats. To effectively prioritize cyber defenses, financial institutions must understand the cyber threats they are up against.

The most frequent cyber security threats financial services firms must address:

1. Distributed Denial of Services (DDoS) attacks

2. Web application attacks

3. Data Theft or Breach
   - In 86% of cases where data was stolen, financial sector systems were compromised in minutes or less.
   - In 69% of cases, financial services victims didn't discover a security incident for weeks or months.

4. Insider Threats
   - 30% of phishing messages were opened
   - 12% of targets clicked to open the malicious attachment

Risks
Data Security

Correlation

Potential power shortage

Alternative power supply

Threat

Control

A grabber cuts the power supply

materialise by

Security Incident

exploits

patch

NO UPS

Vulnerability

Servers shut down, service unavailable

mitigate

Security Breach

increase

Risk

Residual risk

increase

High impact: loss of customer

Low impact: decreased service level
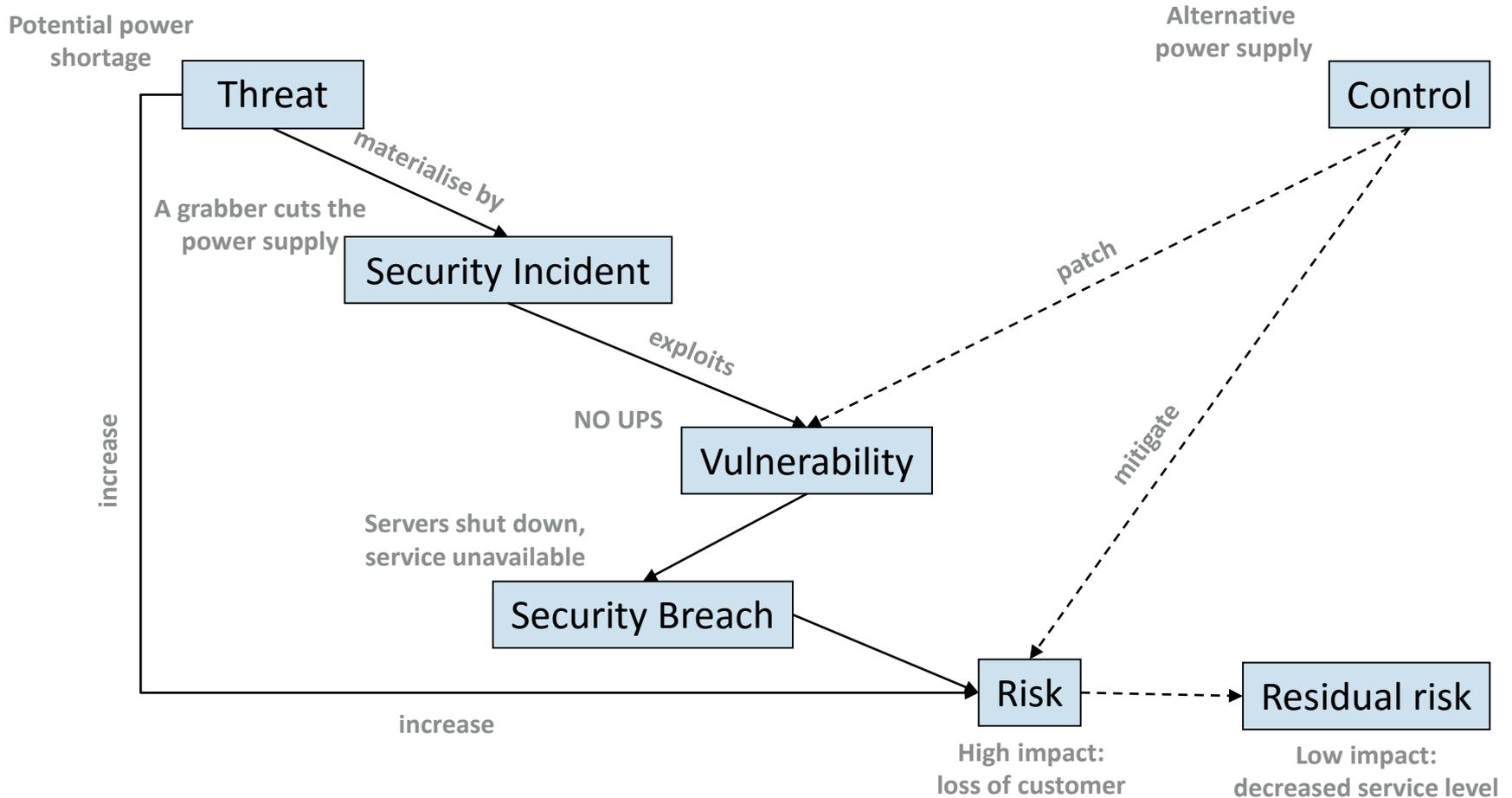
Risks
Data Security

Fundaments of security and control measures

Confidentiality

CIA

Avalability

Integrity

Completeness
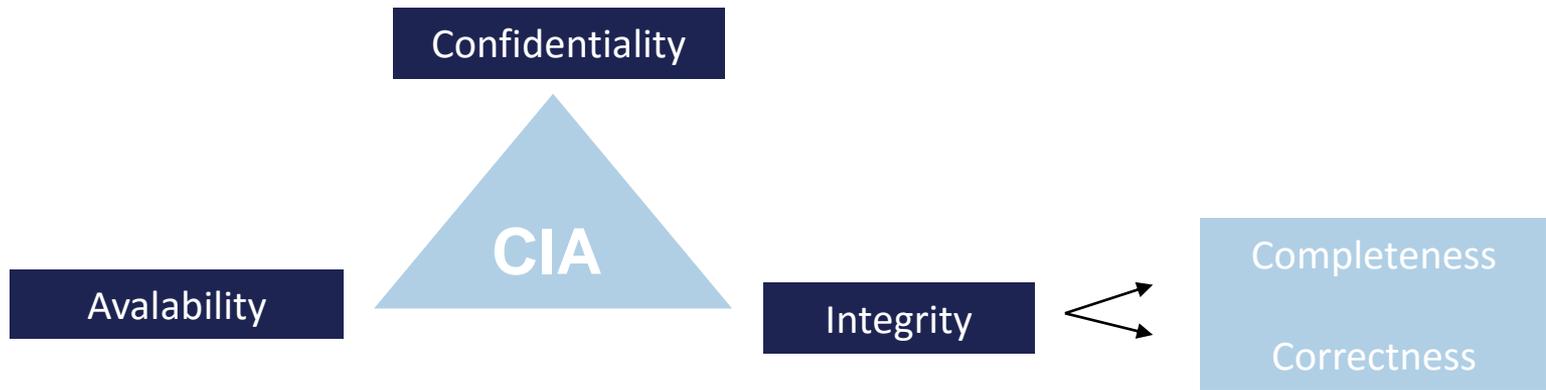
Correctness

Preventative	Detective	Corrective	Compensatory
Security Awareness Training	System Monitoring	OS Upgrade	Backup Generator
Firewall	IDS	Backup Data Restoral	Hot Site
User Right Management	Anti-Virus	CSIRT	Encryption
Security Guard	Motion Detector	Vulnerability Mitigation	. . .

National Bank of Hungary

Which are the risks related to data?
Gathering, storing, processing

Cost of processing

Bad Analytics

Data Security

Data Privacy

Bad Data

Risks
Bad data, bad analytics

Data Scientist

Data scientists combine statistics, mathematics, programming, problem-solving, capturing data in ingenious ways, the ability to look at things differently to find patterns, along with the activities of cleansing, preparing, and aligning the data.

- New channels and new data

- Complexity of interactions

- Data quality and consistency

- Extracting business value

- Lack of Big Data skills

Risks
Bad data, bad analytics

Data Analytics

Data management strategy

1. Learn how to collect the right data the right way
2. Inventory your data
3. Fill gaps in your data and analytics capabilities
4. Hire experts who can make data tell a story
5. Make data and statistics visual
6. Offer data-driven thought leadership

Risks
How to use it, and for what?

Data has a value chain

PRODUCER	PUBLISHER	CONSUMER	DECISION-MAKER
• Sensor • Open source feed (e.g.,Twitter) • 3rd Party Source (e.g., geo map) • External system	• Acquires • Stores • Makes available	• Develops decision support application	• Uses application to make decisions
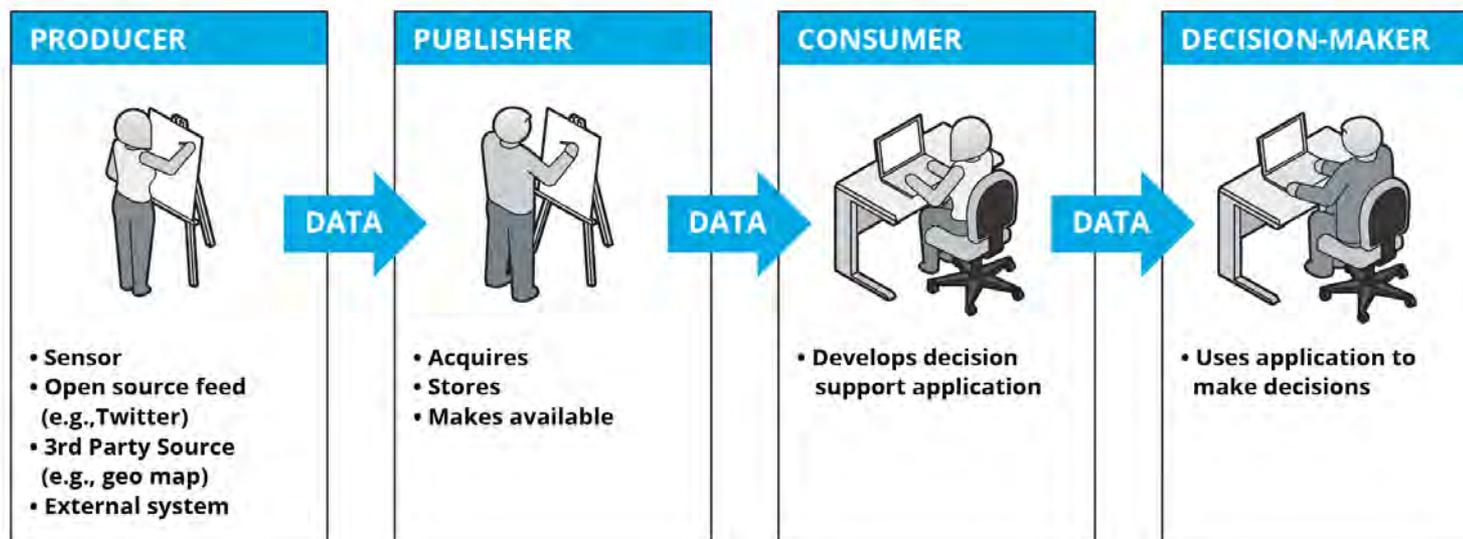
Customer – Fincial Institution – Fintech Company– Added Value

Which are the risks related to data?
Gathering, storing, processing

Cost of processing

Bad Analytics

Data Security

Data Privacy

Bad Data

Transport

Geographical

Cultural

Natural

Scientific

Metrological

Types of Data

Financial

Statistical
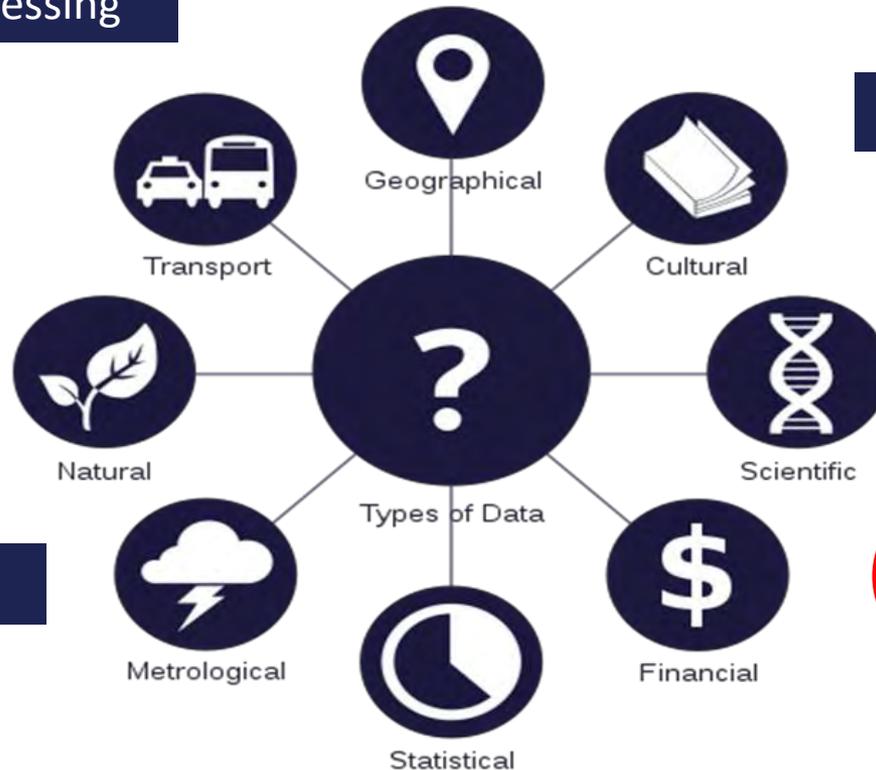
Risks
Data Privacy

Data Privacy

- Data vulnerability and fraud ?

- Transparency and trust ?

- Understanding of data usage ?

- Data security

- Outsourcing, partnership

- Need to know, need to do

- Consumer education

Supervisor's dilemma
Consumer, data and market protection

Laissez faire

Supervisory control

Unfair advantage
Fintech companies using big data have competitive advantage comparing to the strictly regulated banking market

Losing control
The risk of the spread of cross-border services (the Internet can not be stopped at borders)

Barriers for innovation
Maintaining the expensive banking model and cutting back on development

Consumer protection?
Increasing risk of fraud or any loss making event, which harm the investors/depositors

Solution:
Unified, international regulation

Regulations
Consumer, data and market protection

Regulations

Unfair Commercial Practices Directive

E-Commerce Directive

Banking secrecy rules impose restrictions to the use of consumer data by financial institutions

Directive on Electronic Communications and Privacy

Unfair Contract Terms

Directive on Distance Marketing of Financial Services

Payment Services Directive

recommendation on the use of community and public **cloud** services (HU)

Mortgage Credit Directive

GDPR the 'right to be forgotten' access to one's own data the right of data portability

Consumer Credit Directive

Payment Accounts Directive

Summary

Conclusion

To be successful on these topics is not only prepare more strict regulations and provide an even more secure infrastructure, but institutions should handle data in a different way.

Collecting, storing and using data is not enough, we should provide a structured **Data Governance** approach.

Data Governance
Methodology
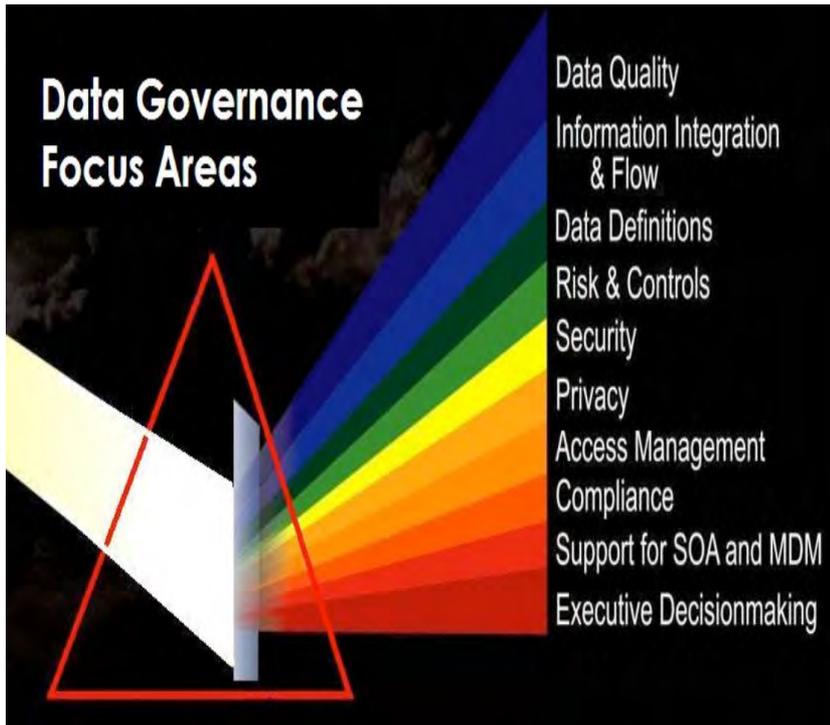
Source: The Data Governance Institute (2014)
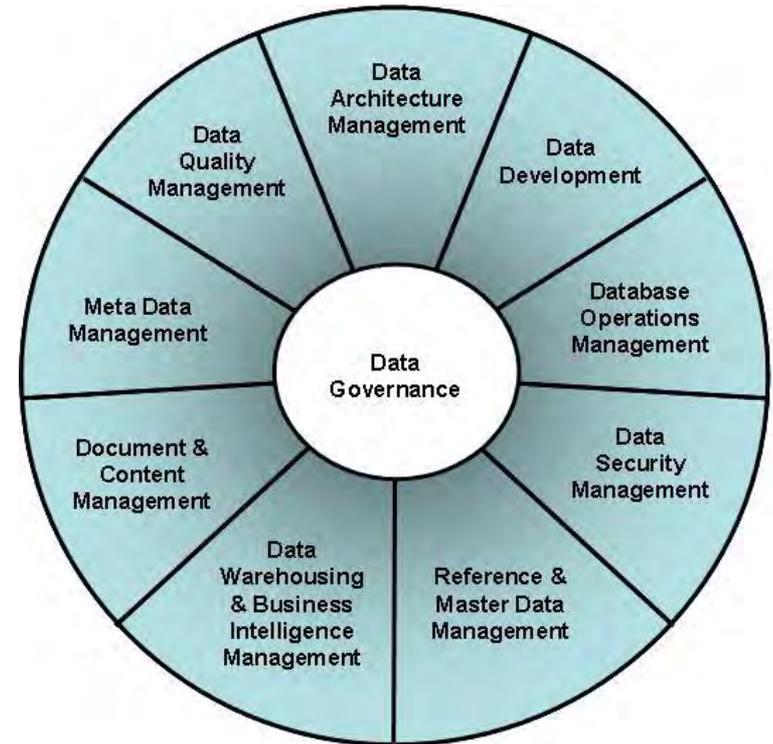
Source: DAMA International (2009)

Thank you for your attention!

Kertész Ákos CISA, CISM
kertesza@mnb.hu

Appendix

Wikipedia (2017): Data
https://en.wikipedia.org/wiki/Data

Forbes (2015): Big Data: 20 Mind-Boggling Facts Everyone Must Read
https://www.forbes.com/sites/bernardmarr/2015/09/30/big-data-20-mind-boggling-facts-everyone-must-read/#5acafb0f17b1

Ray Kurzweil (2001): The Law of Accelerating Returns
http://www.kurzweilai.net/the-law-of-accelerating-returns

Imperva (2016): Top 4 cyber threats facing the financial services industry
https://www.imperva.com/blog/2016/07/top-4-cyber-threats-facing-the-financial-services-industry/

Verizon (2017): Data Breach Investigations Report 10th Edition
http://www.verizonenterprise.com/verizon-insights-lab/data-breach-digest/2017/

SEI (2017): Six Things You Need to Know About Data Governance
https://insights.sei.cmu.edu/sei_blog/2017/06/six-things-you-need-to-know-about-data-governance.html

EBA (2016): Innovative uses of consumer data by financial institutions
http://www.eba.europa.eu/-/eba-publishes-report-on-consumer-data-and-identifies-a-number-of-applicable-requirements-under-eu-law

The Data Governance Institute (2014): The DGI Data Governance Framework
http://www.datagovernance.com/wp-content/uploads/2014/11/dgi_framework.pdf

DAMA International (2009): Guide to the Data management Body of Knowledge
https://www.dama.org/content/body-knowledge

What happened in the Daily Gold Fixings Auctions 1919 to 1968 - The Missing Data

Dr. Fergal O'Connor

Associate Professor of Finance

**The York Management School**
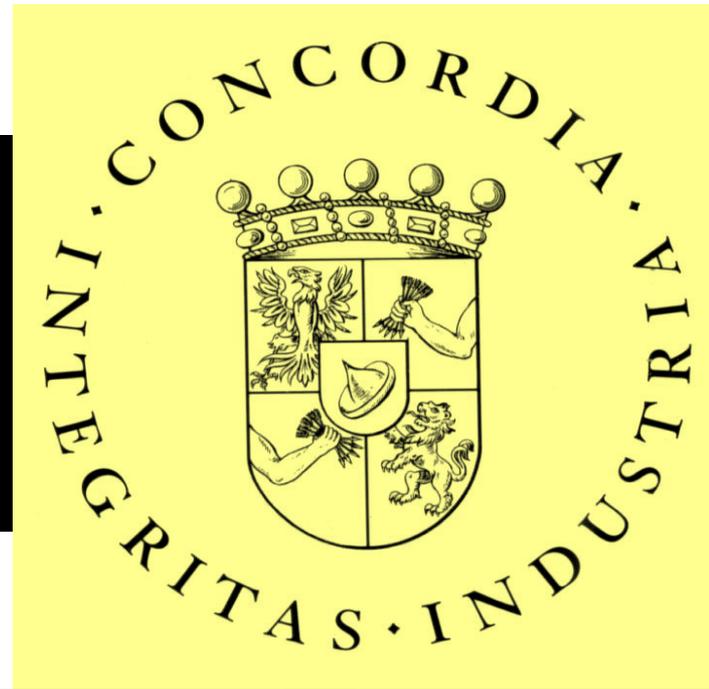
The London Gold Market

- Roots in trade between the East India Company and Moses Mocatta in late 17th Century

- Historically the Worlds Gold Market

- Still the Largest Market by Volume

- Significant recent changes

What was the Gold Fixing?

- Daily Meeting at NM Rothschild and Son

- 5 participants in the beginning

- Auction where the price and quantity was/is allowed to vary

Academic Gold Research

- Lots of research on the Macroeconomic aspects of the gold standard
  - Relies on monthly and annual gold price data
  - Assumes gold price fixed by CB's
- Lots of research on the Financial Economics of precious metals markets post 1968 (O'Connor et al. 2015)
  - Twice daily data available from the London Market

Where was the data?

- **Royal Mint Report** 1919-1925
- **Quins Metal Handbook and statistics** 1919-1965

Established 1913

THE METAL BULLETIN
THE LEADING METAL TRADES PAPER

PUBLISHED EVERY
TUESDAY & FRIDAY

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METAL INFORMATION BUREAU LTD
IBEX HOUSE · MINORIES · E·C·3

GOLD—DAILY PRICES, 1925 (Fine per oz.)

| 1925	Gold	1925	Gold	1925	Gold
Jan. 1	87/9	Mar. 5	86/9	May 9	84/11½
2	87/9	6	86/8	11	84/11½ nom.
5	87/4 nom.	9	86/8	12	84/11½
6	87/7	10	86/9	13	84/11½
7	87/5	11	86/8	14	84/11½
8	87/4	12	86/7	15	84/11½
9	87/2	13	86/4	16	84/11½
12	86/11	16	86/4	18	84/11½
13	87/1 nom.	17	86/7	19	84/11½
14	87/8 nom.	18	86/8	20	84/11½
15	87/1 nom.	19	86/8	21	84/11½
16	87/2 nom.	20	86/8	22	84/11½
19	87/1 nom.	23	86/7	23	84/11½
20	87/2	24	86/6	25	84/11½ nom.
21	87/3	25	86/4	26	84/11½
22	87/-	26	86/5	27	84/11½
23	86/10	27	86/5	28	84/11½
26	86/9	30	86/6	29	84/11½
27	86/11	31	86/7	30	84/11½
28	86/11	Apl. 1	86/6	June 2	84/11½
29	87/-	2	86/6	3	84/11½
30	87/1	3	86/6	4	84/11½ nom.
Feb. 2	86/11	6	86/5	5	84/11½
3	87/-	7	86/5	6	84/11½
4	87/1	8	86/5	8	84/11½
5	87/1 nom.	9	no price.	9	84/11½
6	87/2	14	86/5	10	84/11½
9	87/4	15	86/7	11	84/11½
10	87/2	16	86/7	12	84/11½
11	86/10	17	86/7	13	84/11½
12	86/8	20	86/6 nom.	15	84/11½
13	86/8	21	86/6	16	84/11½
16	86/10	22	86/4	17	84/11½
17	86/10	23	86/5	18	84/11½
18	86/11	24	86/3	19	84/11½
19	87/1	27	85/9	20	84/11½
20	86/11	28	86/-	22	84/11½
23	87/1	29	84/11½	23	84/11½
24	86/11	30	84/11½	24	84/11½
25	87/-	May 1	84/11½	25	84/11½
26	87/1	4	84/11½	26	84/11½
27	87/3	5	84/11½	27	84/11½
Mar. 2	86/10	6	84/11½	29	84/11½
3	86/10	7	84/11½	30	84/11
4	86/9	8	84/11½		

167

Gold price up to the Return to the Gold Standard, Shillings
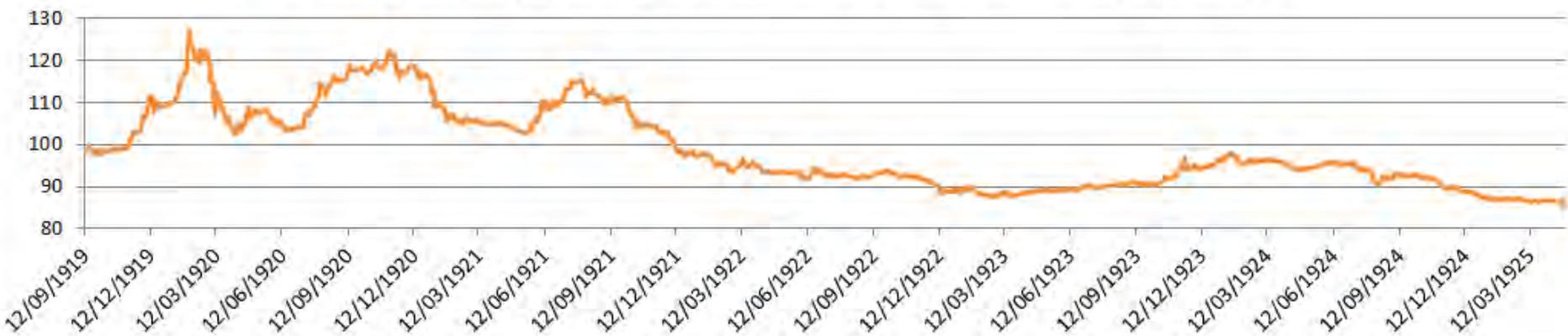
Gold Price during the Gold Standard, Shillings
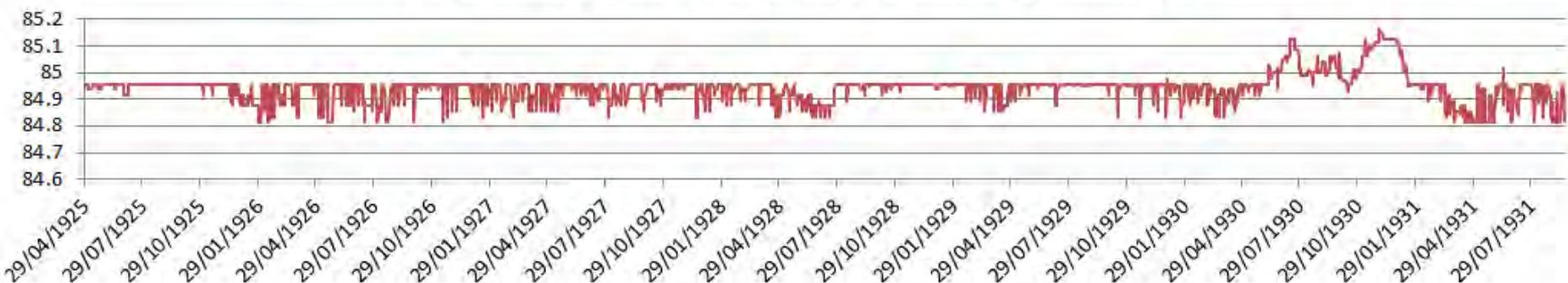

Gold Price after the Gold Standard, Shillings
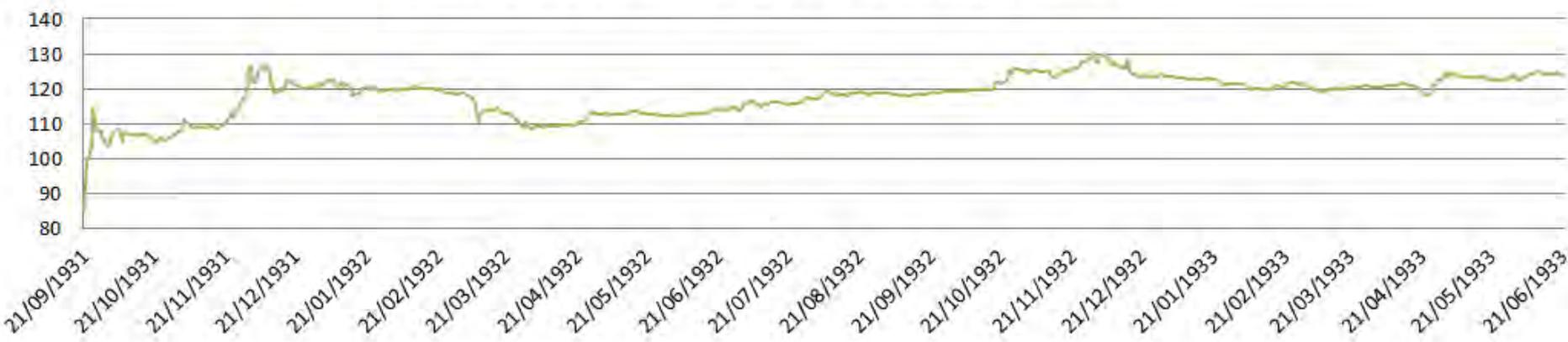
Other Sources of Gold Price Data

- **Annual** gold prices from 1257 freely available from MeasuringWorth.com

- **Monthly** gold prices are available from 1723 to 1968 and daily thereafter from the Global Financial Database

- **Daily** gold prices are freely available from the London Bullion Market Association website from 1968

**Errors in Current Data
Global Financial Database Vs. Quin's**
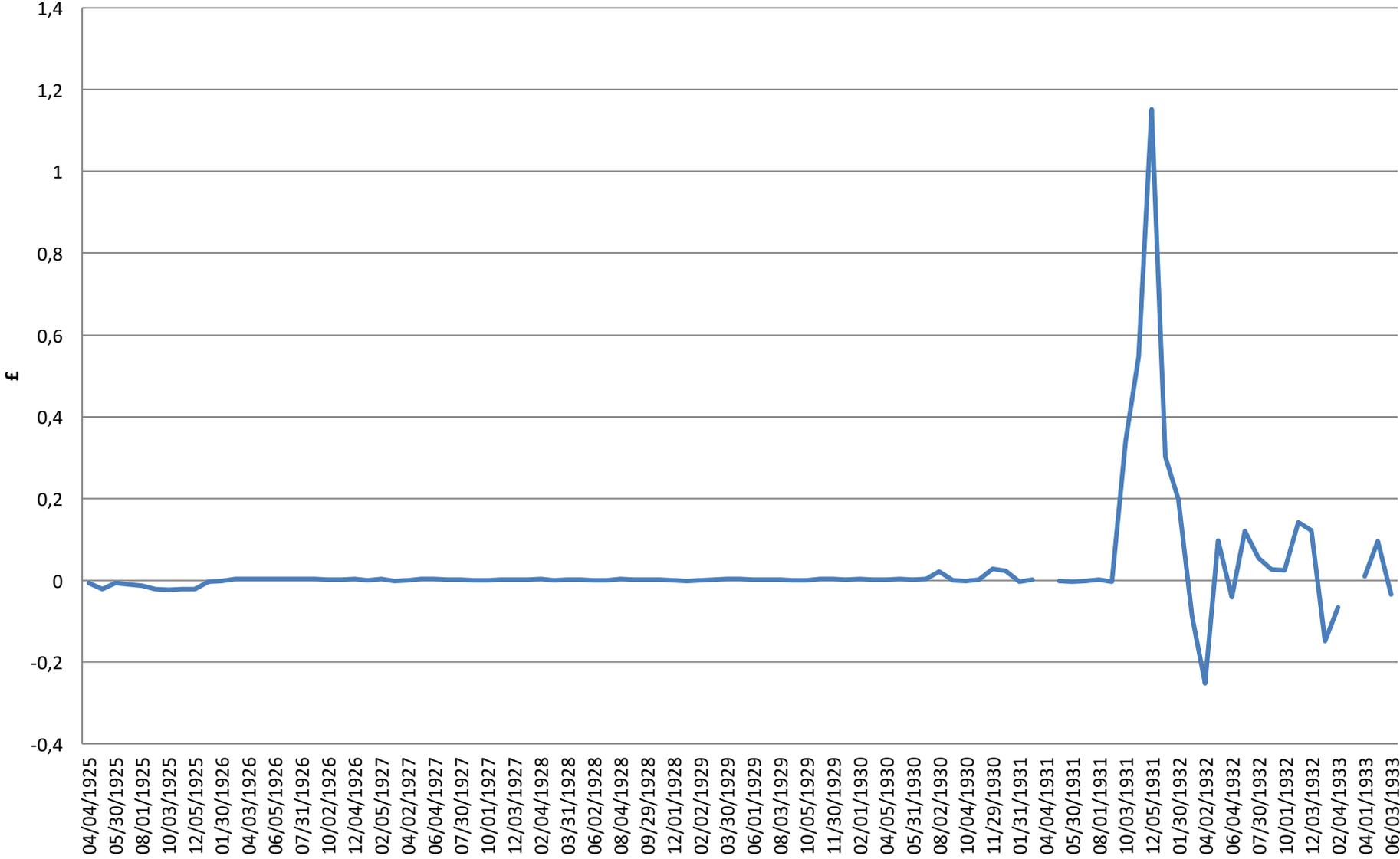
Other aspects to the project

- Qualitative History of the London Gold Market
  - Based on sources such as Samuel Montagu & Co.'s Annual Bullion Letter
- Daily Silver Fixings Data 1913-1970
- Daily LME data for Copper, Lead and Zinc 1913-1970

ANNUAL BULLION LETTER

1933

SAMUEL MONTAGU & CO.
BANKERS AND BULLION MERCHANTS
LONDON
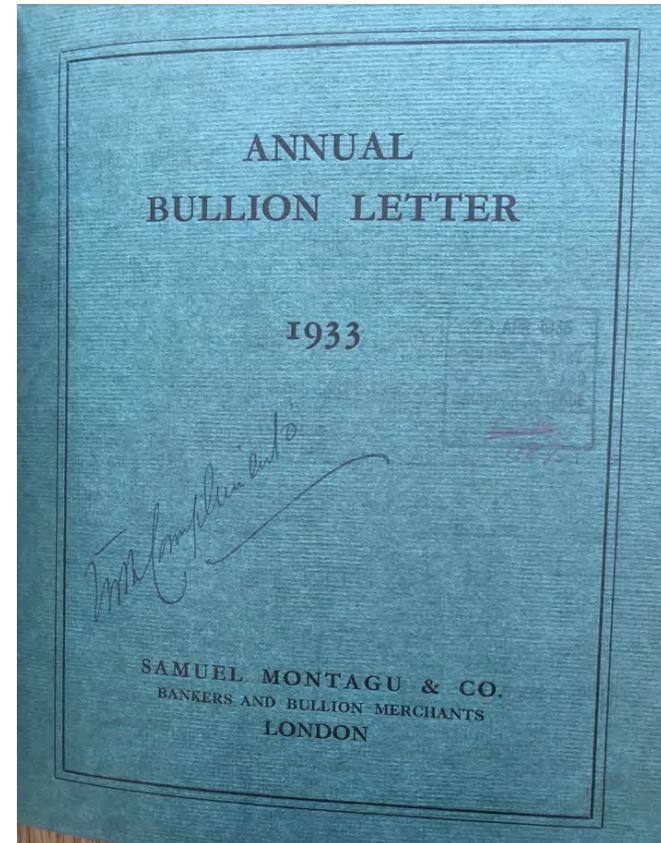
- **Thank you for Listening**

- **Questions and/or Suggestions Welcome**

A Tale of Rain and Bank Runs
From Small To Big Data and Back

ANTON COMANESCU
National Bank of Romania

Zagreb, Croatia
10 November 2017
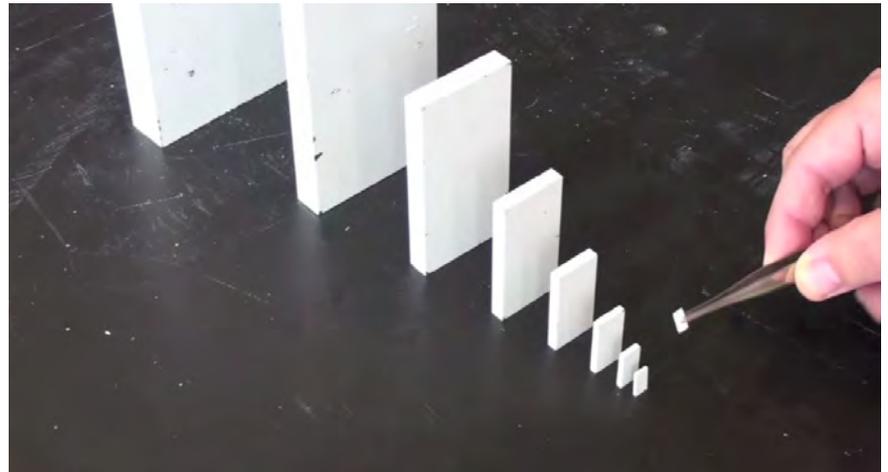
"Knowledge is nothing else than perception."

PLATO

"Perceptions can make or brake policies, even the best ones"

Jacques Santer, Report to the EU Parliament

Structure:

- Tales about the Devil in the details
- From demand and supply of information to Perceptions

The Iranian revolution of 1979 and the diplomats with dirty shoes

• In the aftermath of the Iranian revolution the UK Foreign Office commissioned a secret inquiry into the failure of British diplomats to predict the events

• The inquiry found out that one problem was that the embassy in Tehran had little contact with the world outside the Shah's entourage

• Subsequent generations of diplomats learned the importance of "**ground truth**"

• One ambassador to Iran used then to check if staff's shoes were dirty

CIA, Kremlinology and the failure to predict the fall of USSR

- Churchill once characterized Russia as a "riddle wrapped in a mystery inside an enigma"

- During the Cold War, the West became obsessed with gathering date about the Soviet Union

- CIA had a Department of Kremlinology; The Soviet Studies, based on data about USSR, tended to exaggerate its strength and underestimate its flaws

- A CIA report and a National Security Directive of September 1989 are two of many documents famously failing to predict the withdrawal of USSR from its engagement in Eastern Europe and ultimately the fall of communism

Document No. 1: CIA Intelligence Assessment, "Gorbachev's Domestic Gambles and Instability in the USSR"

September 1989

Gorbachev's rule at the top. For the time being, his power looks secure. If, somehow, a successful challenge were mounted against him over the next year or so, the most likely outcome would be a traditionalist restoration that would attempt to "draw the line" in various areas--

The character of the changes taking place in the Soviet Union leads to the possibility that a new era may be now upon us. We may be able to move beyond containment to a U.S. policy that actively promotes the integration of the Soviet Union into the existing international system. The

https://nsarchive.gwu.edu/

Make sense of big data but also dig for small data and "kick the tires" of the economy

- **Alan Greenspan** used his own private tennis club to check the mood of politicians and business leaders; he then used this first-hand information for his assessment of the economic outlook

- The members of the **ECB** Executive Board learned from the morning newspapers about the peak in the US residential mortgages delinquency rate in **August 2007**

- With unemployment at historical lows and reduced income inequality, 52 percent of UK voters have chosen, against all odds, to leave the EU

- **BBRD** Resolution algorithm to assess bank risks

- **Banking Union**: if we got it wrong, you all did

- **The Juncker Plan**: failing to pay attention to local culture

A model of demand and supply of information
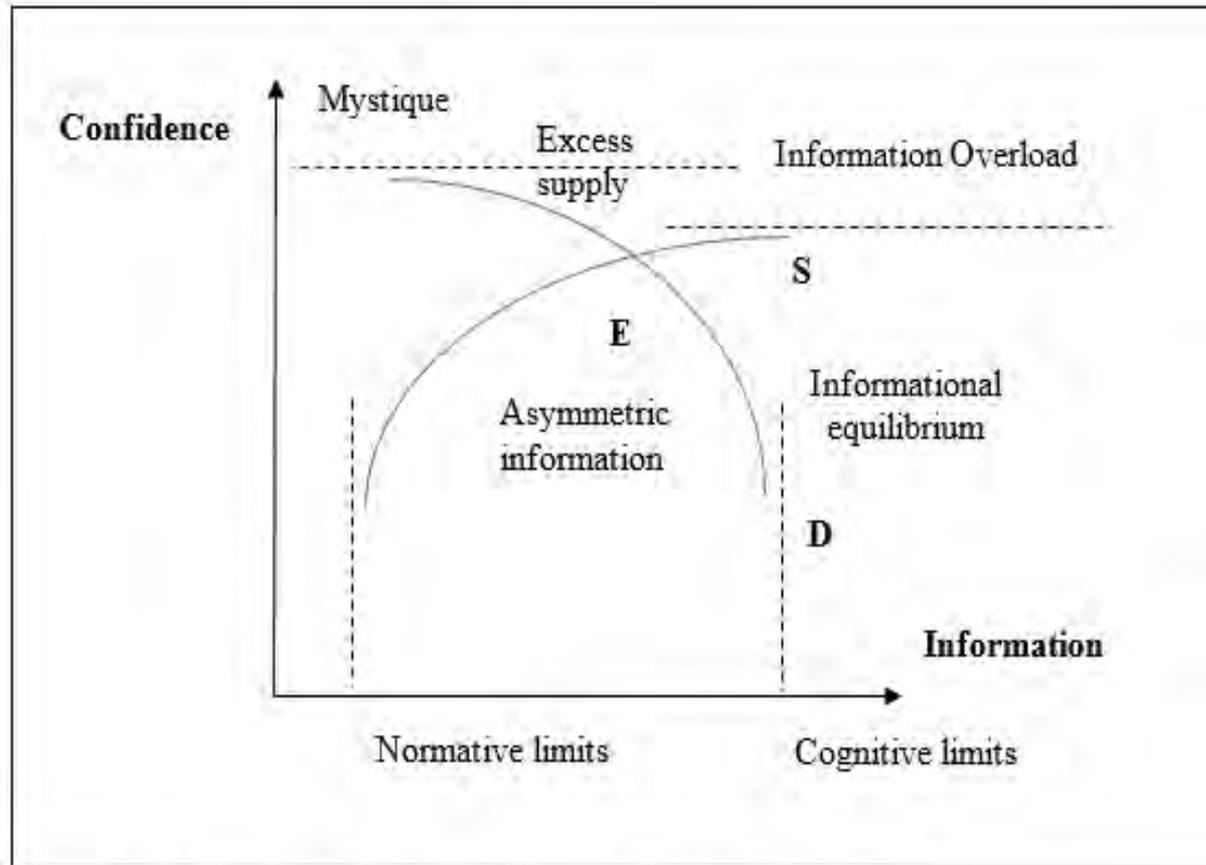
There is a limit of how much you can learn about the economy from data

"We have never successfully modeled the transition from euphoria to fear."
    ALAN GREENSPAN

From data to Greenspan's Weltanschauung

"Well, remember what an ideology is. It's a conceptual framework with the way people deal with reality. Everyone has one. You have to. To exist you need an ideology. The question is whether it is accurate or not. And what I'm saying to you is yes, I have found a flaw. I don't know how significant or permanent it is. But I have been very distressed by the fact."

The congressman questioning him asked: "In other words, you found that your view of the world, your ideology, was not right. It was not working?"

Greenspan replied: "Absolutely. Precisely. You know that's precisely the reason I was shocked. Because I have been going for forty years or more with very considerable evidence that it was working exceptionally well."

October 23, 2008, Alan Greenspan's testimony to the Congress about his failure to predict Lehman

Thank you! and here is how to topple a skyscraper!

Calling all archivists – the five grand challenges of the digital environment.

Michael Moss
(Northumbria University)

Big Data

velocity, volume, veracity and variety

Corpus of 1.7 million messages

The five grand challenges:
- appraisal, what to keep to meet demand and expectations on a new scale.
- how to identify content that cannot safely be released - termed sensitivity review,
- long term preservation of digital objects, very different from paper,
- how users are going to explore and analyse content whose bulk precludes conventional cataloguing,
- finally who is to pay for all the new services?

What to keep?

No agreement

- No discernible order.
- Penalties for destruction.
- Capstone?
- Digital forensics approach is to capture all email content for analysis with no filtering, essential for public enquiries.
- Extinguishing duplicates and trivia – there is a great deal left.
- Need to experiment before it is too late.

The need to keep PIPs for a long time.

Sensitivity review.
Data protection.
Appendices of
FOIAs.
Little case law.
Time consuming.
Proactive/reactive.
A great muddle.
Be cautious.

(a) Training

label → machine learning algorithm

input → feature extractor → features → machine learning algorithm

(b) Prediction

input → feature extractor → features → classifier model → label

Tim Gollins, 'Parsimonious preservation: preventing pointless processes! (The small simple steps that take digital preservation a long way forward)', London, TNA, 2009)

**We have three pillars, volume, variety and veracity.**
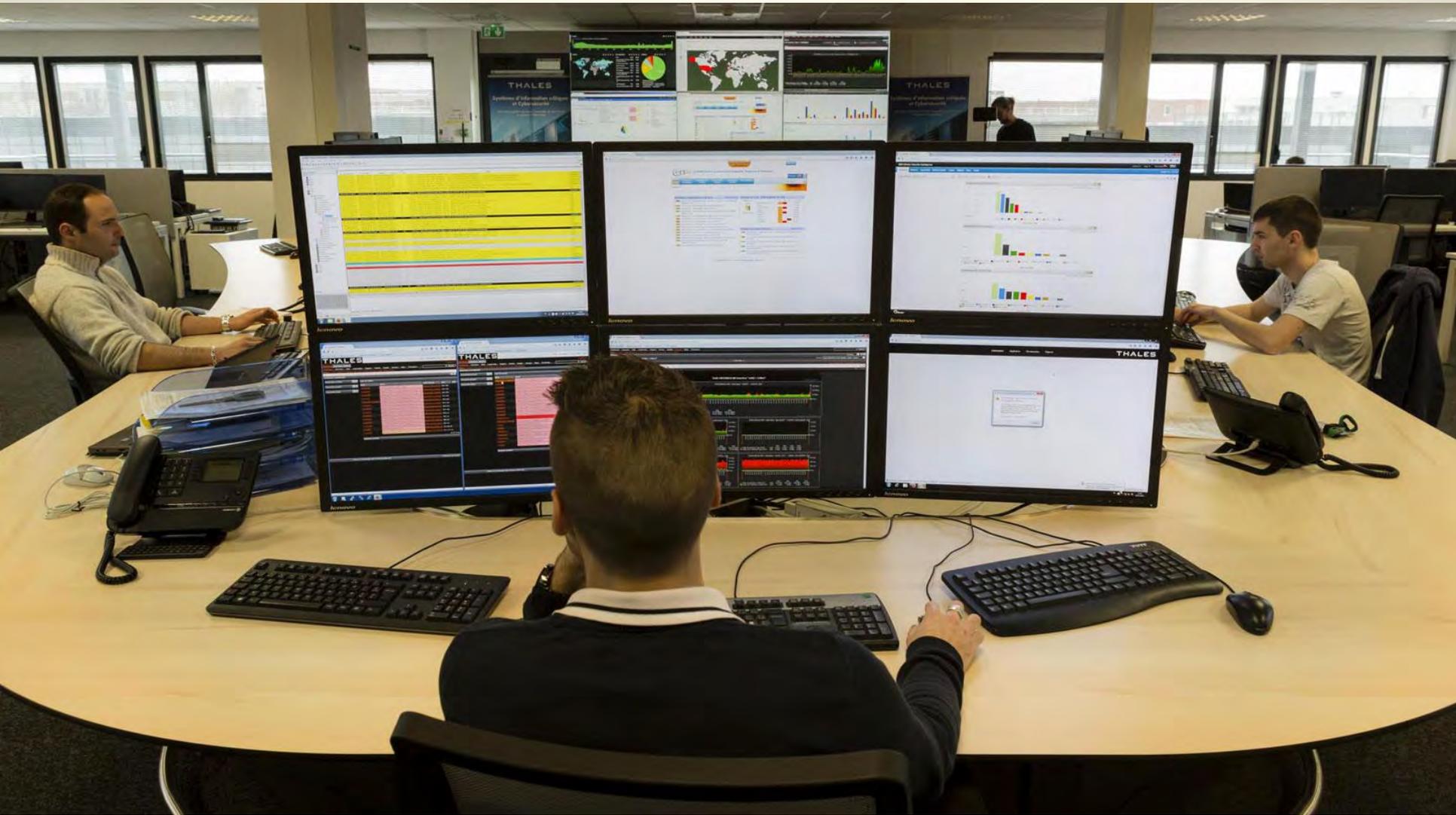
Throughout history the written word has taken on different forms. From clay and wax tablets to papyrus scrolls . . . Incised monumental lettering . . . Medieval manuscripts and eventually the printed book. The metamorphosis of of the printed book is taking place right now. And just like before, the written word is evolving into a new form.

Els van den Steen
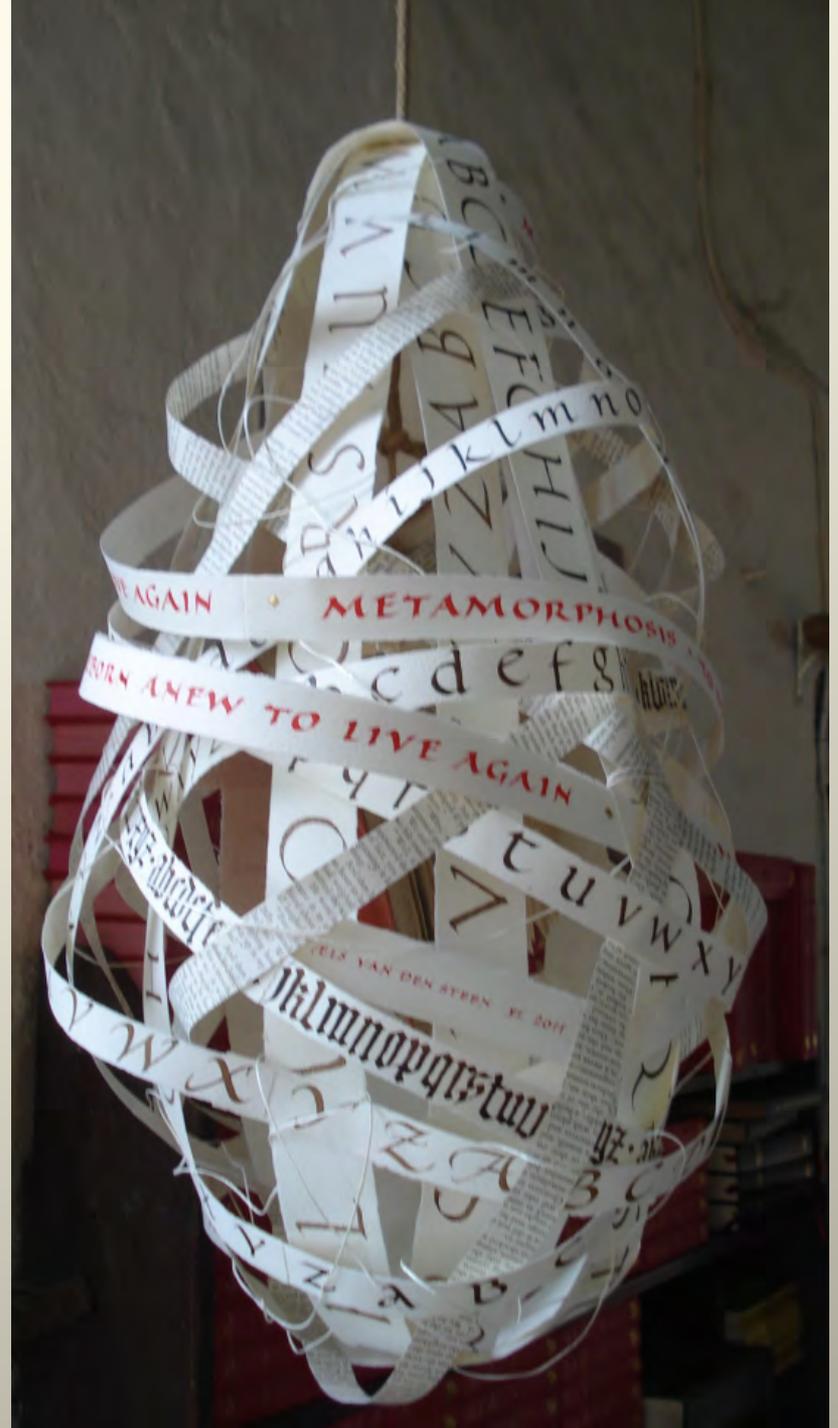
Exploring Big Historical Data: The Historian's Macroscope

We are not implying that this is the way historians will 'do' history when it comes to big data; rather, it is but one piece of the toolkit, one more way of dealing with 'big' amounts of data that historians are now having to grapple with. What is more, a 'macroscope', a tool for looking at the very big, deliberately suggests a scientist's workbench, where the investigator moves between different tools for exploring different scales, keeping notes in a lab notebook. Similarly, an approach to big data for the historian (we argue) needs to be a public approach, with the historian keeping an open notebook so that others may explore the same paths through the information, while possibly reaching very different conclusions. This is a generative approach: big data for the humanities is not only about justifying a story about the past, but generating new stories, new perspectives, given our new vantage points and tools

Countries Mentioned in Documents

What countries are most often discussed in these documents? To select them for search you can zoom into the map or select from the list below.
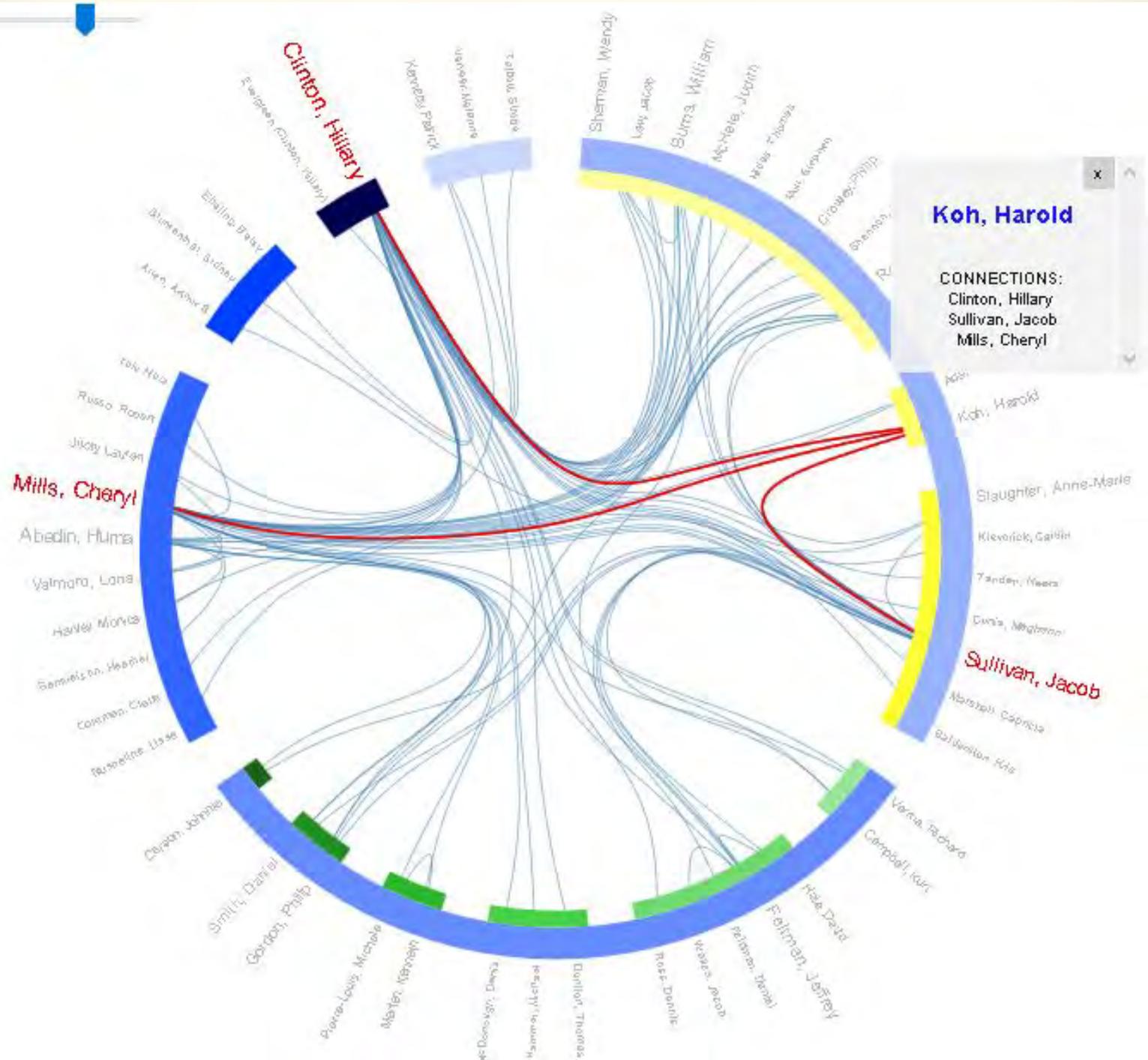
Percentage of documents with redactions by topic (1961-1968)
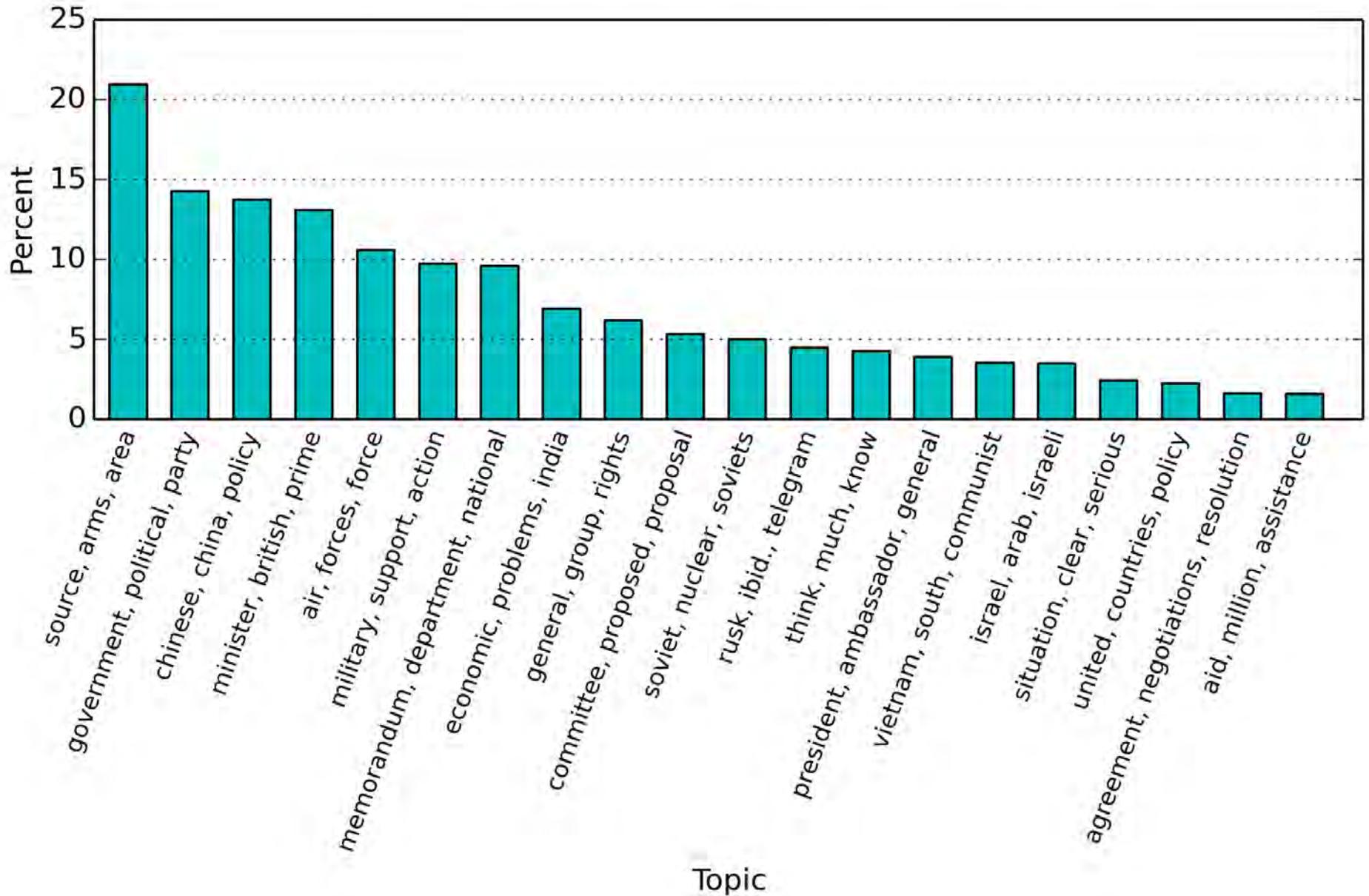
Who is to pay?

A Good Question

- Evidential value – the state or organisation.
- Cultural value – tricky.
- Tools – project based, but need to become services.
- Commercial providers.
- Will archives or customers provide tools?
- Raises questions of security and sensitivty.

Understanding the value
of arts & culture

The AHRC Cultural Value Project

Geoffrey Crossick & Patrycja Kaszynska

Arts & Humanities
Research Council

I hope you have been listening – this is not going away.