

# ECRI NEWS



Understanding Credit Markets for Europe

## ON THE MENU: RECOVERY, FINANCIAL INCLUSION AND DIGITALISATION

By Sylvain Bouyon

Research Fellow at CEPS-ECRI



In his foreword to the latest Economic Forecast of the European Commission, Mario Buti, [Director-General for Economic and Financial Affairs at the Commission](#), sketched a mixed picture of the European economy. In his own words, “growth is admittedly firm amid continued support from macroeconomic policies, but there is so far no sign of an acceleration.” To a certain extent, household retail finance mirrors these developments. On the back

of economic recovery and significant monetary easing, the real outstanding amounts per capita of both housing loans and consumer loans increased in 2015 for the first time in years in the euro area (and should continue to do so in 2016). However, this recovery is still fragile and a reversal of the ECB’s monetary policy stance combined with deteriorating household confidence could quickly result in new contractions of the market.

Against that background, ECRI continues its series of publications on the macroeconomic and microeconomic developments of household finance. For example, the analysis presented last May in the ECRI Commentary “Recent trends and developments in European Mortgage Markets” showed contrasting developments across the EU and significant downward trends in the share of adjustable-rate mortgages (ARMs) over the last decade, emphasising the ambiguous role of spreads in that dynamic. Additional macroeconomic/microeconomic publications in household finance will follow soon, including the report of the 2017

edition of the ECRI Statistical Package. As highlighted by Mrs Lei Pan from ING in this Newsletter, some focus will be placed on intra-household decision making.

One of the main missions of retail finance is to support the economic recovery in a balanced way. At the core of this policy agenda remains the key question of financial inclusion. In an increasingly digitalised world that produces more and more personal data, the notions of financial inclusion, scoring and pricing need to be redefined, creating new issues to be addressed by policymakers. In the 2017 CEPS-ECRI- ECMI Annual Conference organised in May on Fintech, the impact of big data and digitalisation on financial inclusion was the focus of debate among several key stakeholders. The present Newsletter explores the most salient elements of that debate, with contributions from Karl Gray (Zurich Insurance), Greg Van Elsen (BEUC) and Martin Schmalzried (COFACE). In order to continue shaping that debate, ECRI, in partnership with several consumer associations, will organise a large conference on big data and financial inclusion in October.

Finally, ECRI is continuously monitoring all developments related to Fintech. In September, it will launch a Task Force on Cybersecurity in Finance to discuss clouds, GDPR, an EU labelling scheme for ICT security products, PSD2, the NIS Directive, inter alia, in order to design an action plan for policymakers (for details click [here](#)). Two articles in this Newsletter from Monica Monaco (Trust EU Affairs) and Paul Thomalla (ACI Worldwide) offer a preview of the issues that will be debated by the members of the Task Force.

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## OPERATIONAL AND SECURITY RISKS IN THE PSD2 AND THE NIS DIRECTIVE: COMPARABLE SAFEGUARDS OF THE SECURITY OF THE INFRASTRUCTURE?

By **Monica Monaco**

*Founder and Managing Director, TrustEu Affairs*



The Directive on network information security (NIS)<sup>1</sup> aims to end the current fragmentation of 28 national cybersecurity systems in the EU, by identifying those sectors in which critical service companies will have to ensure that the existing systems are sufficiently robust to resist a cyber-attack. The Directive takes into account the fact that there are sector-specific acts in place under EU law that already provide adequate protection for the security of network and information systems in specific sectors. As regards financial services, the NIS Directive specifically states that credit institutions and financial services infrastructures are considered as operators of essential services to which the requirements of the NIS Directive apply.<sup>2</sup> Payment services providers are not listed as operators of essential services. But when a credit institution is engaged in the provision of payment services, the provisions of PSD2 as sector-specific Union legislation prevail in accordance with Article 1(7) of the NIS Directive.

The requirements under Articles 95 and 96 of the second Directive on payment services (PSD2) are considered to be equivalent to Articles 14, 15 and 16 of the NIS Directive in ensuring the security of the payment network and information systems and the notification of incidents for payment services providers. Furthermore, Article 95 (3) of PSD2 gives the mandate to the European Banking Authority (EBA) to develop, in close cooperation with the European Central Bank (ECB), guidelines on the security measures for operational and security risks of payment services. Such draft guidelines are currently subject to a public consultation, which runs until the 7 August 2017. The EBA will publish the final guidelines at the conclusion of this consultation period and they will be applicable, although not binding, as of the 13 January 2018.

As for incident notification, Article 16 of the NIS explains in paragraph 5 that, where an operator of essential services relies on a third-party digital service provider for the provision of a service that is essential for the maintenance of critical societal and economic activities, any significant impact on the continuity of the essential services resulting from an incident affecting the digital service provider shall be notified by that operator. There is no trace of such a “notification on behalf of a third party digital service provider used as an outsourcing entity” in a related or equivalent article in the PSD2; at the same time, Article 19 of the PSD2 explains that outsourcing of important operational functions, including IT systems, should not be undertaken in such a way as to materially impair the quality of the payment institution’s internal control or the ability of the competent

authorities to monitor and retrace the payment institution’s compliance with all of the obligations laid down in the PSD2. Still, there is no reference to a “notification on behalf of a third party digital service provider used as an outsourcing entity”, so it seems unclear how an incident would be notified in such a case, and who would perform the notification. Outsourcing is then referred to by the EBA draft Guidelines, which explain that PSPs (payment services providers) should ensure the effectiveness of the security measures to mitigate the operational and security risks in the provision of payment services that are outsourced.<sup>4</sup> Furthermore, the Guidelines<sup>5</sup> indicate that PSPs should ensure that appropriate and proportionate security objectives, measures and performance targets are built into contracts and service level agreements with their outsourcing providers for the provision of payment services. Finally, PSPs should monitor and ensure that outsourcing providers comply with the security objectives, measures and performance targets. But who would be responsible to notify an incident?

Regarding the Classification and reporting on major incidents, Article 86 (3) of the PSD2 explains that the EBA will issue guidelines in accordance with Article 16 of the NIS Directive. On 7 December 2016, a public consultation was published by the EBA on draft Guidelines on reporting major incidents under the PSD2. Draft Guideline 3 explains that payment services providers wishing to delegate their reporting obligations under the PSD2 to a third party should inform the competent authority in the home member state and ensure the fulfilment of the following two conditions:

- i) The designated third party is established in the Union.
- ii) The formal contract underpinning the delegated reporting between the payment service provider and the third party unambiguously defines the allocation of responsibilities of all parties. In particular, it clearly states that, irrespective of the possible delegation of reporting obligations, the affected payment service provider remains fully responsible and accountable for the fulfilment of the requirements set out in Article 96 of the PSD2 and for the content of the information provided to the competent authority in the home member state.

Furthermore, payment services providers should materially complete their reporting obligations without any recourse to external assistance whenever the designated third party fails to inform the competent authority in the home member state of a major operational or security incident, in accordance with Article 96 of PSD2 and these draft Guidelines. Furthermore, payment services providers should ensure that an incident is not reported twice, individually by said payment services provider and once again by the third party. Guideline 3 appears to be equivalent to Article 16 of the NIS,

1 Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union.

2 Annex 2, Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union.

3 Article 1(7) of the NIS Directive.

4 Point 1.7 draft EBA Guidelines on the security measures for operational and security risks of payment services.

5 Point 1.8 draft EBA Guidelines on the security measures for operational and security risks of payment services.

with the important exception that a Guideline is not legally binding. Will all entities that fall in the scope of the Guidelines agree to voluntarily comply with these principles?

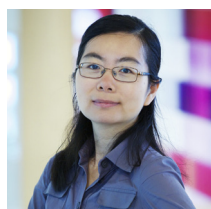
In addition, both the EBA Guidelines referred to above are addressed to payment services providers as defined in Article 4(11) of the PSD2, namely credit institutions, e-money institutions, payment institutions, post office giro institutions that are entitled under national law to provide payment services, the ECB and national central banks when not acting in their capacity as monetary authority or other public authorities – as well as entities covered by the exemptions of Articles 32 and 33 of the PSD2, which include account

information services providers (AISPs). But what about payment initiation services providers (PISPs)? They are not obliged to ensure the security of the payment network they are accessing – as this is ensured by the Account Servicing Payment Services Provider (ASPSP) – but what about the notification of any incident? Is this all left to the ASPSPs? Will all PISPs be robust enough to resist cyber-attacks?

Payments are the backbone of the economy. The questions raised above underscore the more fundamental question of whether PSD2 offers comparably stringent safeguards of the payments infrastructure security as provided by the NIS.

## INTRA-HOUSEHOLD DECISION-MAKING

By Lei Pan  
Senior Economist at ING



Human beings are connected much more today than they have ever been. People live in households and make decisions together with those closest to them. Yet, how people make financial decisions within a household is still an under-researched area. Strangely, many businesses including banks also treat their customers as isolated individuals. A new study from the Think Forward Initiative (TFI), set up by ING and other partners to enable researchers and field experts to share their insights on financial decision-making with practitioners, reveals insights on how Dutch couples make financial decisions.

Perhaps it should be no surprise to learn that couples make many decisions, from small to large, together: 87% of people jointly decide on their holidays with their partner and close to half of men consult their partner when choosing clothes for themselves. While many people regard decision-making as a joint activity, collecting information (e.g. about holiday destination) is much more an individual activity. Paying for a purchase is not the equivalent of making a decision, however. For consumer goods, from small to large, the number of men who claim that they pay for the expenses is always more than those who claim that they make the decision on the purchases. These results suggest that to fully understand how decisions are made, we need to better understand not only our customers but those closest to them, and how their roles and relationships are structured and evolve.

The study also finds that couples who make joint decisions on the use of a shared bank account and on savings encountered fewer financial problems, such as failing to pay an

invoice or a credit card bill on time, or not keeping a sufficient balance in one's bank account. While economists value the knowledge and efficiency brought about by specialisation, couples seem to do better when they take decisions together instead of assigning one person responsibility for making the decisions. The study looks further into what people do differently when making joint decisions that can potentially lead to better financial decisions. Couples who decide together as partners are more likely to have a good overview of their financial situation and are also more likely to have a financial plan. Joint decision-making naturally leads to more discussions and less disagreements between couples.

For business, our results are important for the design and delivery of products and services. In particular, banks have a long way to go towards making their products and services 'social' by incorporating the joint feature of people's decisions and finances into those products and services.

Launched about a year and a half ago, the TFI's mission is to help people make better decisions through research, practical solutions, awareness and potentially policy recommendations. To draw insights from the research, the first step is to create an awareness of the need to help people better understand how they make decisions. A unique feature of the TFI is its aim to arrive at solutions using insights from research. For example, for intra-household decision-making, one solution can be an app, a feature in an app, or a digital assistant that facilitates joint decision-making and contributes to the financial health of customers. ING and other partners of the TFI are actively working on realising solutions using insights from research in order to bring TFI to the next level with measureable impact on our customers.

### ECRI PUBLICATIONS

#### *Recent Trends and Developments in European Mortgage Markets*

Sylvain Bouyon, 01 June 2017

#### *The Future of Retail Financial Services: What policy mix for a balanced digital transformation?*

Sylvain Bouyon, 22 February 2017

#### *Two Dimensions of Combating Over-Indebtedness: Consumer protection and financial stability*

Sylvain Bouyon and Roberto Musmeci, 28 October 2016

For more information, visit our website [www.ecri.eu](http://www.ecri.eu)



Special articles: CEPS-ECRI-ECMI Conference, held on 30 May:

## Developing the FinTech Ecosystem: The challenges of regulation, innovation and digitalisation

### HOW THE INTERNET OF THINGS IS TRANSFORMING INSURANCE

By Karl Gray

*Global Head of Casualty, Motor & Personal Lines at Zurich Insurance*



The hype surrounding the Internet of Things (IoT) is well known. From the cars we drive, our thermostats, even the pills we swallow, it is widely recognised that the rise of connected devices is transforming our society. But what effects will these massive disruptions and changes bring to the insurance industry?

One area that will be heavily impacted is motor insurance. Most new cars will be equipped with some level of connectivity and will generate a large amount of data points. This enables insurance companies to offer ‘telematics-based’ motor insurance products, tailored to individual needs and actual risk levels. This could be particularly attractive to individuals with above-average risk profiles.

Such a development depends on access to the data produced by connected cars. To enable the use of data by multiple providers, consumers should be able to control third-party access to their raw data. This gives them the flexibility to move between service providers and avoids creating a monopoly.

Big data flowing from the IoT will be critical to the underwriting, pricing, distribution, marketing and claims functions. There will be a shift to a more predictive, and therefore preventative view of risk. In particular, we can expect to see insurers utilising home telematics in the property sector, digital health tools and a focus on the data-driven sharing economy sector. The net result of these changes will be an insurance industry more centred around the customer, at a time when technological advances are increasing consumer demands and expectations around services and interactions.

These opportunities are not without challenges. For example,

new pricing models carry with them a level of uncertainty. Traditional pricing models for motor insurance, property insurance, life insurance, etc. have been developed over decades. They evolved slowly in response to social, economic, technological and political changes. Sensor data analytics cannot yet offer this long-term view. The data simply have not been collected over a long enough period of time. In addition, changing technologies and analytical methods (such as machine learning) can reduce the validity of historical models very quickly. Also, ensuring adequate customer privacy is an additional crucial issue to consider.

More fundamentally, individualised risk assessment may lead to some consumers paying more for their insurance than others. This is a societal concern that must be addressed. Charging risk-based premiums allow insurers to send a clear economic signal to consumers. It encourages responsible behaviour that reduces or mitigates the risk. In principle, regulators should encourage the use of data and data analytics to allow these signals to be sent. Going forward, society will have to take decisions over whether it wishes to intentionally prevent individualised risk-based pricing in some areas. In these cases, policymakers should make their decisions transparent. They must also understand the impact of shifting or subsidising the cost of such high risks to other risk segments (e.g. low-risk consumers subsidising high-risk consumers) and of degrading risk-mitigating incentives. From an ethical standpoint, interventions on risk-based pricing may be desirable where an individual cannot influence their personal exposure (e.g. genetic predisposition for an illness). In contrast, for risks that can be influenced by individual choice and behaviour (e.g. driving), a lesser degree of regulatory intervention may be required.

Despite the challenges, the Internet of Things is set to become a permanent feature of our landscape. Zurich looks forward to engaging openly and pro-actively with EU stakeholders to realise the benefits this change will bring about.

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## ME, MYSELF AND I(NSURANCE)

By Greg Van Elsen

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"I have lost 10 kilos over the last year", an energetic insurance lobbyist told me last week. He told me that his smart watch had registered all the calories he had managed to avoid and asked: "Don't I deserve a cut in my health insurance premium now?". "Well, no" I told him. "You might be terribly underweight now, increasing your risk of health problems. Or your daily runs might have over-exposed you to gulps of polluted air or reckless taxi drivers." The insurance guy smiled reluctantly.

### Crunch the numbers

Of course, there are correlations between people's fitness data, eating patterns or sleeping habits and their health outcomes. As much as there might be links between social media posts and driving behaviour, between spending patterns and the willingness to accept an offer or claims settlement and even between time spend on Facebook and the risk of depression. But correlation does not mean causality in the real world.

Insurers are very keen to exploit these terabytes of data and spend billions on buying number-crunching artificial intelligence. Suitably equipped, they can all bless us with 'personalised products' and 'motivate us to drive more safely, eat more healthily, get more exercise and even brush our teeth better. "You can't be against this, right?", the insurance guy tried again.

"Well, yes I can" I told him, to his dismay.

### Capitalise on the numbers

Big data analytics will help the industry 'optimise' its business revenue by personalising quotes or claims settlements. Less-assertive consumers who e.g. don't surf the net to compare prices – intelligence happily sold by Google – will be offered a worse deal.

Multi-billion euro companies like AXA are not handing out free smart watches because they want to stimulate sporty behaviour. Instead, big data analytics will help them to target the most profitable customers, especially those with lower risk profiles. More vulnerable consumers or those unwilling to share their whereabouts, fitness data or other private info will pay the bill. You can read more in our recent [position paper](#).

Or, as an Insurtech guy explained recently in the FT,<sup>1</sup> "Imagine that mobile phone signals or other sensors detect that a person is about to walk down a road where several people have recently slipped and fallen because of ice", he says. "The insurer will react by either sending a message warning the person to walk more carefully or else automatically increase the premium and cover while the policyholder is walking down that road".

"Such financialisation of one's private life is the next step in 24/7 surveillance capitalism", I whispered.

### It is not about choice

By this stage I needed to calm down the insurance guy, telling him that he should be glad that he was not (yet) disclosing his blood pressure levels to his insurer. "But it is all about consumer choice, and people don't care about their privacy anymore, no?", he retorted.

"Umm, not really", I insisted.

Googling and Facebooking your way through life can prove very handy and pleasant, but most consumers don't know what happens with their data and what profound implications they could have on things that are less fun. Like dealing with insurance, which is often not a choice but something you have to do by law.

"Living in a poorer neighbourhood or having a body that is not up to running the next 20km in town is not really a consumer choice", I said. As premiums become more personalised, risk pools will become smaller. The happy (running) few will profit – if they are willing to share how healthy, safe and cautious they are living their lives 24/7. Solidarity with those unwilling or incapable of living up to their insurers' expectations will erode rapidly.

In the longer run, the model of risk pooling, which is at the heart of insurance, could be overhauled by big data analytics. Consumers with low-risk profiles will no longer need insurance, while vulnerable consumers will be unable to pay for it.

"Ultimately, I want to save your job", I concluded before going for a quick run. Not telling him where though.

### WHAT DO WE CALL FOR?

- A societal debate on the implications of big data and insurance!
- An investigation by the Commission and EIOPA into which types of data:
  - require greater disclosure and/or clearer approval (explicit consent) from the consumer
- and which types:
  - should not be collected or processed in any fashion e.g. for pricing or marketing purposes, from an ethical point of view.
- Specific guidance on how the principles embodied in the GDPR (general data protection Regulation) should be implemented in retail finance.
- Increased cooperation between data protection and financial supervisors

<sup>1</sup> <https://www.ft.com/content/bb9f1ce8-f84b-11e6-bd4e-68d53499ed71>

## THE COGNITIVE BANK OF THE FUTURE

By Paul Thomalla

*SVP Corporate Relations and Development, ACI Worldwide*



The financial industry is being and will continue to be disrupted by digitalisation, automation and disintermediation. At the same time, however, the impact of AI, machine learning and natural language processing will lead to the emergence of a new type of banking model that will mix the roles of smart humans with smart machines. This 'cognitive bank' will not fully displace humans but rather will augment their work so that talent can be redeployed to perform higher-value, non-repetitive tasks that do not lend themselves to full automation. It could be argued that we are already moving from a state of automation to augmentation.

Clients, users and customers are already becoming accustomed to high levels of interesting and intelligent products and services. Users expect products and services from their services providers that adapt, adjust and are improved to achieve their desired financial state with minimal effort, risk and cost. As such, client experience is fast becoming the differentiating and deciding factor in customer acquisition and retention. In addition, the software-driven nature of products and services will sharply reduce switching costs for users and clients between different financial services providers. This reduction in switching costs will drive the focus on client experience, satisfaction and value added.

The future cognitive bank will be completely driven by AI products, services, interfaces and experiences. Product and service design will get a boost from the ability of AI to generate and detect micro segments of users and design products and features to target these segments with highly customised offerings. AI-driven systems, coupled with across-the-board

digitalisation, will have the ability to process any and all data generated and find hidden patterns and signals that specify business risk or business value.

Digitalisation of financial products and services will lead to an increase in activity, interactions and transactions running through a complex ecosystem of multiple service providers. As such, risk detection and management will require super-intelligent systems that are able to operate at the macro level with the ability to transcend organisational boundaries. AI and machine learning will allow the development of risk management systems that employ anomaly detection, behaviour profiling and pattern matching to inspect data and information across financial stocks, generate alerts and recommendations to enable banks to adjust and adapt to and anticipate risk.

The promises of AI and robotic banking are also impressive. The ability to have core banking functions run entirely by machines that automate functions and learn to self-improve will transform banks' back offices and systems. If combined with the ability to interact with customers – including learning their typologies and meeting their banking needs – the potential is incredibly powerful.

Financial services, as a whole, may save millions of dollars or euro annually when AI and robotic banking are used to provide services to customers, while giving customers the flexibility to bank online 24/7, with access to problem-solving services wherever they happen to be in the world. Investment in the financial sector is said to already be worth over \$124 million in 2017 and is increasing as more case studies emerge and appetite grows for leveraging the powerful solutions now coming to market. Forecasts predict that investment will continue to grow over the short term with investment levels exceeding \$4.5 billion by 2025 (tractica.com).

For financial services to realise the promise of AI, however, the technology must be introduced in an inclusive manner that embraces responsible innovation. The biggest peril of AI is the hype that it will cause mass unemployment, which has led to the idea of using taxes to support people put out of work by automation. Bill Gates recently called for a direct levy on robots that would match what a human worker would pay in tax doing the same job. The money generated from the tax would be used to retrain people the robots have replaced.

AI has an additional flaw. Just as the person-controlled marketplace has problems with diversity, favouring certain groups of people over others, we run the risk of extending those biases to the programming of AI. The machines that will control parts of our society lack diversity. Their data sets and coding are rarely created by women or with consideration of integrating diversity or inclusiveness. This potential issue has also been highlighted in strategy documentation from the European Parliament's Committee on Economic and Monetary Affairs which published its draft [report](#) on "Fintech and the influence of technology on the financial sector" in January 2017.

### UPCOMING ECRI EVENTS

19 September, 2017 | CEPS-ECRI Task Force

#### **Cybersecurity in Finance: Getting the policy mix right!**

We are happy to confirm that CEPS-ECRI will launch a Task Force on: "**Cybersecurity in Finance: Getting the policy mix right!**" on 19 September at CEPS. The different consensuses achieved during the Task Force will result in a list of recommendations and an action plan that will be submitted to the European regulators (primarily DG FISMA, DG Connect, DG Justice, ESAs, ECB, and European Parliament).

17 October, 2017 | CEPS-ECRI Conference

#### **Big Data and Financial Inclusion: the missing link**

For more information, visit our website [www.ecri.eu](http://www.ecri.eu)

## WHEN COMPANIES PAY FOR YOUR INSURANCE AND CREDIT

By Martin Schmalzried

Senior Policy/Advocacy Officer at Families Europe - COFACE  
Member of the Financial Services Users Group and the EBA BSG



Big data analytics has generated a lot of hype in the financial services industry over the last few years. Many financial services providers claim that it will enable financial inclusion by being able to properly assess the credit risk of individuals with no credit history, or that by analysing customers' profiles in a more granular way, financial products will be better tailored to suit their needs. But there is one aspect that no one has talked about or even envisaged so far: the possibility that big data analytics could make private companies subsidise your insurance or your credit.

Let us start by examining how big data analytics allegedly enables financial services providers to better price risk and tailor financial products to consumers' needs. By combining various data sets, such as delinquencies on a loan, with social networking data, the correlations made can enable financial services providers to predict default rates of users having a similar social networking behaviour, even if they have no credit history. The same is being done for health insurance, by gathering and combining various sources of data, via e.g. connected devices (pedometer, smart watch,...) and social networking behaviour (a study has shown that a user who publishes "positive" posts is more likely to be in better health). From a public interest point of view, however, such developments give us much grounds for concern. Big data could enable systematic discrimination of the poorest and most vulnerable parts of society, breaking the socialisation of risk and moving to individualised risk-based pricing.

But there may be a silver lining after all. In recent years, there have been many breakthroughs in certain fields of study, such as psychology, behavioural economics, sociology and neurology, and even the birth of entirely new disciplines like psychometrics. To name a few examples, [neuroscience of free will](#) is a discipline that looks into human decision-making. Many studies have shown that decisions are made in the brain before they reach our consciousness, questioning the very concept and existence of free will. [Psychometrics](#) enables researchers to make a link between detailed psychological characteristics of people by matching their responses from a very detailed psychology questionnaire with their social networking behaviour. This research was put to direct use by the managers of both the Brexit "leave" campaign and Donald Trump's presidential campaign last year.

You might ask what does this have to do with private companies subsidising insurance or credit.... Well, just about everything! As big data analytics becomes more and more prevalent and the amount of data collected on individuals' behaviour grows in availability and scale, combining it all may finally shed light on one of life's greatest mysteries: why do people act the way they do? To date, researchers who set out to explain almost any form of human behaviour, such as why people drop out of school or are more or less likely to commit a crime, had to go through a very long and tedious process of collecting massive quantities of longitu-

dinal data, mostly via questionnaires, and publicly available data (income, age, gender, profession,...). And then, they had to try to find some meaningful correlations that could explain the observed behavioural differences. But the outcomes were always shaky, as it was next to impossible to account for all or at least a sufficient number of variables.

That may very well change in the very near future. Let's take a very concrete example: How can we measure the impact of advertising of unhealthy food and beverages on eating habits? Although there is mounting evidence that eating habits are influenced by advertising, culminating in last year's [WHO report](#), the major food and beverage companies have successfully argued that there are too many 'factors' determining eating habits, and therefore, that it is unfair to point fingers at advertising. But that controversy may soon be over. Children are going online at an ever-younger age, and in the near future, everything they see or do online or even offline (through the Internet of Things, connected toys, smartphones and other devices that monitor their offline behaviour) will be documented. Such collections of data will allow us to construct a highly accurate 'profile', most notably to feed targeted advertising, but ultimately. But such data could be put to a million other uses. For instance, data could be collected about which advertisements a child has seen, how many times he/she has clicked on them and how such advertisements translated into eating habits later in life by comparing eating habits of millions of other grown-up children exposed to similar advertisements. It may finally be possible to untangle the complex web of variables that determine behaviour: how much of a person's eating habits is linked to family models, advertising, media consumption, the shelf placement of products and so forth.

Now imagine what this means. Making people pay higher health insurance premiums can only be justified if and only if you take the view that there is such a thing as 100% free will. But thanks to big data, in combination with advances in neuroscience and other fields of study mentioned above, it will be possible to assess the various factors influencing your behaviour. In short, big data analytics may evaluate that advertising is a factor that can explain up to, say, 27% of your eating habits. And should such eating habits, in turn, be linked to higher health risk and thereby higher health insurance premiums, it is certainly fair to turn to the companies that are responsible for such eating habits and ask them to pay 27% of the health insurance premium. The same logic could be applied to a myriad of other fields. For instance, falling into debt due to excessive/compulsive consumption and its relationship to advertising, or making employers who pay women lower wages cover the excess credit risk such women present because of their higher risk of defaulting on a loan.

So far, it has mostly been used to maximise the impact of advertising, but big data might open a huge Pandora's box, as researchers start grasping just how much we could discover about human behaviour. Making links between advertising and people's behaviour is only a tiny aspect of a much larger philosophical challenge posed by the untangling of free will.

Alternatively, big data analytics and artificial intelligence (AI) may spell the end of certain financial products altogether. As individual risk becomes increasingly susceptible to accurate measurement, nearly to the point where we may know with certainty which risks an individual will face in the future, insurance products will make little sense as individuals could simply directly calculate how much money they need to put aside to cover the financial cost of facing these risks. Insurance companies might be replaced by automated savings algorithms that set money aside based on risk calculations derived from the mass of big data available about millions and millions of individuals in real time, putting thousands of insurance professionals out work. This alternative scenario, however, does not examine the underlying reasons behind an individual's risks and makes individuals cover their own risk, which may lead to exclusion of certain parts of the population.

Ultimately, we might find that such insights are dangerous for society, violating essential freedoms and individual rights. Consequently, we may appreciate the value of preserving the role that free will plays in human psychology and mental health and conclude that big data should only be used to monitor global trends and shape the overall environment to be more conducive to positive outcomes for society.

But since many private companies, especially financial services providers, seem keen to go down the road of peeping into individuals' personal behaviour, there is no reason they should not face the full-scale implications of their actions.

## ECRI STATISTICAL PACKAGE 2016

*For the first time, detailed data on several "emerging economies"*

### WHAT IS THE ECRI STATISTICAL PACKAGE?

Since 2003, the European Credit Research Institute (ECRI) has published a highly authoritative, widely cited and complete set of statistics on consumer credit in Europe. This valuable research tool allows users to make meaningful comparisons between all 28 EU member states as well as with a number of selected non-EU countries, including the US and Canada.

### WHAT IS COVERED?

Two Statistical Packages are on offer. The more comprehensive product "Lending to Households (1995-2015)" contains valuable data on consumer credit, housing loans, other loans, total household loans, loans to non-financial corporations as well as total credit to the non-financial business and household sector. The 'standard' "Consumer Credit in Europe (1995-2015)" exclusively covers consumer credit data.

The 2 Packages in Fact & Figures:

- 40 Countries: EU 28, Turkey, Rep. of Macedonia, Iceland, Norway, Switzerland, Liechtenstein, Australia, Canada, Japan, the United States, India and Russia, Mexico and Saudi Arabia.
- 21 years data series: 1995-2015
- National accounts: GDP, final consumption expenditure and gross disposable income of households, inflation and exchange rates.
- 150 (67) tables: present time series data in nominal and real terms, and per capita, as well as breakdowns by lender, type, currency and maturity are also available for selected countries.
- 27 (13) figures: highlight credit trends in a way that allows user to make meaningful comparisons of the retail credit markets across countries.

### FACTSHEETS

The European Credit Research Institute (ECRI) provides in-depth analysis and insight into the structure, evolution and regulation of retail financial services markets in Europe. Through its research activities, publications and conferences, ECRI keeps its members and the wider public up-to-date on a variety of topics, such as retail financial services, credit reporting and consumer protection at the European level.

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