



Financial Services digital insights in the Digital Age Leveraging Technology and Regulation to Achieve a Stronger Capital Markets Union



'New technology is changing the face of financial services. It will be an important driver of the integration of capital markets. Examples like electronic trading, crowdfunding and FinTech show this.'¹

Jonathan Hill, European commissioner for financial stability, financial services and capital markets union

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DIGITAL INSIGHTS: SPECIAL EDITION

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On 18 February 2015, the European Commission released *Building a Capital Markets Union*, a 27-page "green paper" that launched a public consultation on how Europe could leverage its single market to improve financial services, consumer choice and, most importantly, access to capital for investment-starved European businesses.² If the public consultation goes well, the European Commission intends to follow up with legislative proposals by 2019. ➤

This Digital Insight Special Edition was prepared for and submitted as part of the European Commission's consultation on Building a Capital Markets Union. For more information, visit http://ec.europa.eu/finance/consultations/2015/capital-markets-union/index_en.htm.

1 Commissioner Hill's answer to a question posed by the author during the Live Chat on 20 April 2015: "Dear Commissioner Hill, how do you see the role of digital technology in the achievement of the Capital Markets Union?" http://ec.europa.eu/finance/chat/index_en.htm

2 According to Wikipedia, a green paper is "a tentative government report and consultation document of policy proposals for debate and discussion, without any commitment to action – the first step in changing the law." http://en.wikipedia.org/wiki/Green_paper

- The initiative is timely, and speaks directly to a key objective of the new European Commission, led by President Jean-Claude Juncker – the need to raise, deliver and mobilise more capital for European businesses.³ But while the green paper does pay lip service to the key force that will ultimately deliver change to the European financial sector – namely, the spread of digital technology and the steady rise of innovation in financial services that this technology has unleashed – it remains woefully vague on how this major economic transformation will ultimately affect the sector.⁴ Even more importantly, it says little about how the rapid advance of digital technology – and the potential it contains to deliver radically improved funding opportunities and financial services – will need to be tapped to provide the better, stronger capital market Europe will need.⁵

In this special issue of Digital Insights – prepared by the European Digital Forum as part of the Capital Markets Union consultation – we look at the way digital technology can be harnessed to give consumers and businesses greater access to capital and to make Europe a bigger, more

efficient and better regulated capital market. We will examine the rise of new and innovative financial services such as crowdfunding, blockchain technology and data analytics. We will also scrutinize the veritable revolution new technology has wrought in the traditional banking sector – with many leading market participants embracing technology to provide better services and respond dynamically to 21st century expectations. Put simply, technology has brought a

‘The Capital Markets Union initiative speaks directly to a key objective of the new European Commission – the need to raise, deliver and mobilise more capital for European businesses.’

wealth of improved consumer services and greater access to funding opportunities in its wake. If the European Commission wants to make the Capital Markets Union a success, it must tap into this leading force. It needs to do more to encourage the adoption of technology in slow-moving parts of the sector. And it should make the creation, support and adoption of technology a horizontal policy objective, taking care that the Capital Markets Union is not simply siloed out of Europe’s digital policy, but that the contemporaneous Digital Single Market initiative has a substantial capital markets union pillar as well.⁶

- 3 Specifically, the Capital Markets Union green paper identified three key areas in which challenges need to be overcome: 1) improving access to financing for all businesses; 2) increasing and diversifying the sources of funding from investors; and 3) making markets work more effectively, linking investors to those who need funding more efficiently and less costly. See European Commission, *Building a Capital Markets Union*, 18 February 2015, COM(2015) 63 final. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0063>
- 4 Digital technology is mentioned only twice in the paper, where it is described as “an important driver of the integration of capital markets.” The paper acknowledges that “European and national company law has not kept pace with technological development, for example by insufficiently integrating the benefits of digitalisation.”
- 5 President Juncker has promised to mobilise €315 billion of additional funding for investment in “viable projects with real added value for the European economy” over the next three years (2015-2017) through the Investment Plan for Europe. The best way to use this investment programme to deliver growth and jobs will be the topic of a forthcoming European Digital Forum Digital Insight later this Spring. See also Jean-Claude Juncker, *A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change* (Brussels: European Commission, 2014).
- 6 The European Commission unveiled its comprehensive Digital Single Market strategy on 06 May 2015. Visit <http://ec.europa.eu/priorities/digital-single-market>

'Swift and seamless cross-border electronic payments in Europe through various channels would be immensely beneficial for a wide range of businesses.'

Today, more than 25 million businesses operate in Europe, ranging from the largest (Royal Dutch Shell with 92,000 employees and €387.8 billion of sales in 2014) to the smallest (the more than 8.9 million freelancers, the fastest rising segment of the workforce, many incorporated as one-person companies).⁷ Despite the near constant media focus on the ups and downs of the biggest industrial enterprises, small- and medium-sized businesses still make up the lion's share of the economy in Europe – providing 67% of the employment and 57.5% of all economic value added.⁸ All these companies – big and small – need capital to start, grow, expand and ultimately to prosper. And almost all of them – in Europe at least – still rely almost exclusively on traditional bank financing to do it.⁹

Digital technologies, meanwhile, have served a dual function for the financial sector. First and foremost, they have enabled existing businesses to service clients much more personally, efficiently and effectively, leading to a vast and important shift in the way money is exchanged and banking services provided. Today, electronic (high-frequency) trading is rapidly replacing human trading in global securities markets, while a gamut of "near field communication" and other technology-based payment systems are taking virtual cash out of real people's wallets, with many payments moving online and onto smartphones.¹⁰

But the technology has also led to the rise of a new class of financial-service providers and the emergence of fascinating new funding vehicles and payment systems, which have brought access to finance to many new customers who might otherwise have been shut out. Along the way, it has posed new and unanticipated challenges to a regulatory framework conceived before these technologies were a gleam in anyone's eye. Crowdfunding, virtually unknown a decade ago, is expected to reach the €7 billion-a-year mark in Europe alone in 2015. And "blockchain" technology – the open source algorithm underlying digital currencies like bitcoin – is threatening to overturn traditional concepts of how monetary value is counted and held.

Swift and seamless cross-border electronic payments in Europe through various channels would be immensely beneficial for a wide range of businesses. The blockchain protocol itself could effectively and efficiently help connect fragmented national capital markets in Europe, if it were properly understood, regulated and accepted. On top of that, extending the already wide-scale use of digital technologies in the financial sector could improve transparency and monitoring, which in turn would lead to less systemic risk in the financial system – a key objective of any capital markets reform.

Put simply, if properly managed and regulated, the adoption, spread and uptake of digital technologies would contribute immensely to the deepening of the European single market and

7 Eurostat, *Structural Business Statistics. Business Demography Statistics*. <http://ec.europa.eu/eurostat/web/structural-business-statistics/data/main-tables>. See also, Patricia Leighton, *Future Working: The Rise of Europe's Independent Professionals* (London: EFIP and PCG, 2013). <http://www.efip.org/future-working-the-rise-of-europeans-independent-professionals>

8 Eurostat, *Business Economy: Size Class Analysis* (April 2013 data). http://ec.europa.eu/eurostat/statistics-explained/index.php/Business_economy_-_size_class_analysis

9 According to the Association for Financial Markets in Europe, banks provide 70% of the debt financing of non-financial businesses in the EU, in contrast with just 30% in America. The dependence in the euro area on banks is even higher: 85% according to Standard & Poor's, a credit-rating agency. Source: Paul Wallace, "Bank Rupture," *The World in 2015* (London: The Economist, 2014).

10 Apple Pay, Apple's payments system, was launched in the US on 20 October 2014. Apple Pay offers the option of making contactless payments using near field communication (NFC) technology on Apple gadgets. In Europe, NFC payment services have been launched by BBVA, Barclays and other banks.

the achievement of the Capital Markets Union. It would create a wealth of new opportunities for private customers and businesses, including traditional businesses and startups. However, the current regulatory framework has not yet properly or fully addressed the developments made possible by digitalisation. An enabling legal framework and single rulebook could stimulate more investment, including through traditional as well as alternative finance platforms. Small businesses that often face problems in accessing finance would be the biggest winners. Clear rules of game in so-called “FinTech” – the jargon used to describe advanced, cutting-edge financial services based on new technologies – could create new business opportunities for technology firms, innovative businesses, and especially startups (so long as those rules are enabling and not protectionist), as well as open new horizons for traditional financial-services institutions.

Policy initiatives within the framework of the Digital Single Market and the Capital Markets Union should contribute to the spread of digital technologies within the financial sector and the formation of a vibrant and dynamic FinTech sector – in which European companies can gain scale and access the entire European market and further contribute to digitalisation of the financial-services sector (see the table on page 5 for a list of policy recommendations). Businesses want and need more

capital. Consumers want and are entitled to more choice. And regulators want to be certain that consumers are protected from fraud and counterparty risk. Digital technology holds out the prospect of helping to deliver all three objectives. But policymakers must work to create an enabling regulatory environment, a place where economic actors compete in a relatively stable setting to provide the best service possible to consumers.

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Financial services in the digital age: Opportunities for more players in the market

Given the “high-end” nature of the services it provides, perhaps it should come as no surprise that financial services is already the most digitised sector in Europe, according to Strategy&, a global management-consulting firm.¹¹ These days, most financial institutions in Europe routinely offer online banking to clients who consider it a necessity not a luxury.¹² The Global Commercial Banking Survey 2014, produced by EY, the professional services firm, shows that globally, eight in 10 commercial customers are using online banking each week, and almost seven in 10 are using mobile banking weekly.¹³ Most banks are investing heavily in apps for smartphones and tablets, making it easier for customers to conduct a wide array of banking activities on the go.

11 The classification includes “financial services and insurance” in one category. See Roman Friedrich, Matthew Le Merle, Florian Gröne and Alex Koster, *Measuring Industry Digitisation: Leaders and Laggards in the Digital Economy* (New York: Strategy&, 2011). <http://www.strategyand.pwc.com/media/file/Strategyand-Measuring-Industry-Digitization-Leaders-Laggards-Digital-Economy.pdf>

12 For instance, Banco Bilbao Vizcaya Argentaria (BBVA), a multinational banking group with headquarters in Spain, spent roughly €850 million a year between 2011 and 2013 to become the “world’s first digital global bank” and reinvent itself as “a knowledge-based information company,” as its CEO Francisco González describes it. Duncan Kerr, “Digital Banking: BBVA’s González – The Digital Banker,” *Euromoney*, September 2014. <http://www.euromoney.com/Article/3379655/Digital-banking-BBVAs-GonzalezThe-digital-banker.html>

13 EY, *Global Commercial Banking Survey 2014: Advancing Service in a Digital Age* (London: EY, 2014). <http://www.ey.com/GL/en/Industries/Financial-Services/Banking---Capital-Markets/EY-global-commercial-banking-survey-2014>

Key recommendations: Enabling policy in the digital age

Electronic and mobile payments Cryptocurrencies Electronic trading

- Advance the “SEPA 2.0” or “e-SEPA” – a pan-European system for online real-time electronic payments
- Articulate clearly the liability issues between third-party providers and the existing payment providers in the revised payments services directive (PSD2)
- Promote legal clarity of cryptocurrencies in Europe and ensure coherence among regulatory regimes in European Union member states
- Initiate an open and forward-looking discussion on the prospects of blockchain technology in financial services and its contribution to the Capital Markets Union
- Transpose the directive on markets in financial instruments (MiFID 2) into national law
- Promote electronic trading platforms tailored to the needs of small- and medium-sized enterprises

Data analytics and FinTech

- Create a single European data protection regime for the ease of cross-border operations in the European Union
- Promote a more opening and enabling regulatory approach towards cloud storage and cloud analytics (particularly, in the network and information security directive)
- Invite the European Central Bank to bring regulatory clarity in the use of financial data analytics and ensure coherence in the approaches of national financial regulators toward data analytics
- Create a pan-European central credit scoring database for small businesses to ease smaller companies’ access to capital
- Promote data analytics for assessment of creditworthiness of firms
- Promote a positive societal attitude towards (financial) data analytics, and show its benefits for the society at large

Technology-driven alternative finance (crowdfunding)

- Encourage alternative finance with a strong and proportional pan-European regulation – adding clarity and transparency to the sector
- Promote collaboration between incumbents and the newcomers to the financial-services industry in the area of alternative finance

Trust and cyber security

- Address “grey areas” in the proposed network and information security directive
- Design a framework for a “cyber security audit” in financial institutions
- Nurture a cyber security culture – raising society’s overall awareness of and resilience to cyber risks

These days, customers may not visit a bank branch for months, while interacting every day digitally. Over 10 years, the number of bank retail branches in the United Kingdom fell to 9,700, down from 11,690 in 2003.¹⁴ And correspondingly, new online banks, with very limited or no physical presence, have been mushrooming – *inter alia*, First Direct in the United Kingdom, KNAB in the Netherlands, mBank and ZUNO Bank in Central and Eastern Europe.¹⁵ Holvi, an online-only banking service with its base in Finland, is expanding rapidly across Europe. On the institutional side, electronic trading platforms bring together institutional buyers and sellers and facilitate cross-border trading in securities. Electronic communications networks and electronic stock exchanges, such as NASDAQ or NYSE Arca are automated systems for trading stocks 24 hours a day, seven days a week, 365 days a year.

The swift digitalisation of financial services is led by a multitude of players in the financial sector – ranging from incumbents such as large banks and insurance companies to the newcomers – i.e., technology companies, which are rapidly expanding into “payment services” that make them strikingly like credit or settlement companies (See the box on Ethereum on page 13 for a good example). These businesses – both giants and startups – are assertively entering the financial sector, leveraging technology and delivering continuous innovation to frequently upgrade their arsenal and to compete – or collaborate – with banks and other financial institutions in unregulated segments of the financial markets or activities that do not require a banking licence. Accenture, the global management consulting firm, estimates that global investment in financial

services technology ventures has tripled to nearly \$3 billion [€2.7 billion] since 2008.¹⁶ This trend is set to continue, with global investment on track to grow up to \$8 billion [€7.1 billion] by 2018.¹⁷

‘Convergence towards the wrong type of legislation would be detrimental.’

Far from blocking these exciting developments, many financial institutions are devising and implementing collaborative strategies for working with the newcomers. Through partnerships like these, banks, capital market firms and insurers can strengthen their competitive position and cut the time needed to develop new

products and bring them to the market. In 2012, French bank Crédit Agricole launched an open application programming interface (API), enabling developers to build apps on top of its services. Now the bank has a range of apps providing expense management, social payment and finance analysis tools to its customers.¹⁸

A growing number of financial institutions are establishing their own innovation labs and accelerators. Global players, such as Banco Bilbao Vizcaya Argentaria (BBVA) and HSBC, have developed in-house venture capital funds that invest directly in promising FinTech companies. The size of these funds can range from \$50 million [or €40 million] to \$250 million [or €200.3 million].¹⁹ In February 2015, Axa, the insurance and investment management firm, launched a €200 million

14 Patrick Jenkins and Tom Braithwaite, “New Platforms Vie to Take Finance to Masses,” *Financial Times*, 29 January 2015.

15 As a rule though, these online banks are not stand alone and belong to large banking groups, operating under respective national regulations.

16 Accenture, *The Rise of FinTech. New York’s Opportunity for Tech Leadership* (Dublin: Accenture, 2014). <http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Rise-of-Fintech-New-York.pdf>. The euro/dollar exchange rate is from March 2015 according to the European Commission’s InforEuro website. The March 2015 euro/dollar exchange rate will be used throughout this paper unless otherwise stated.

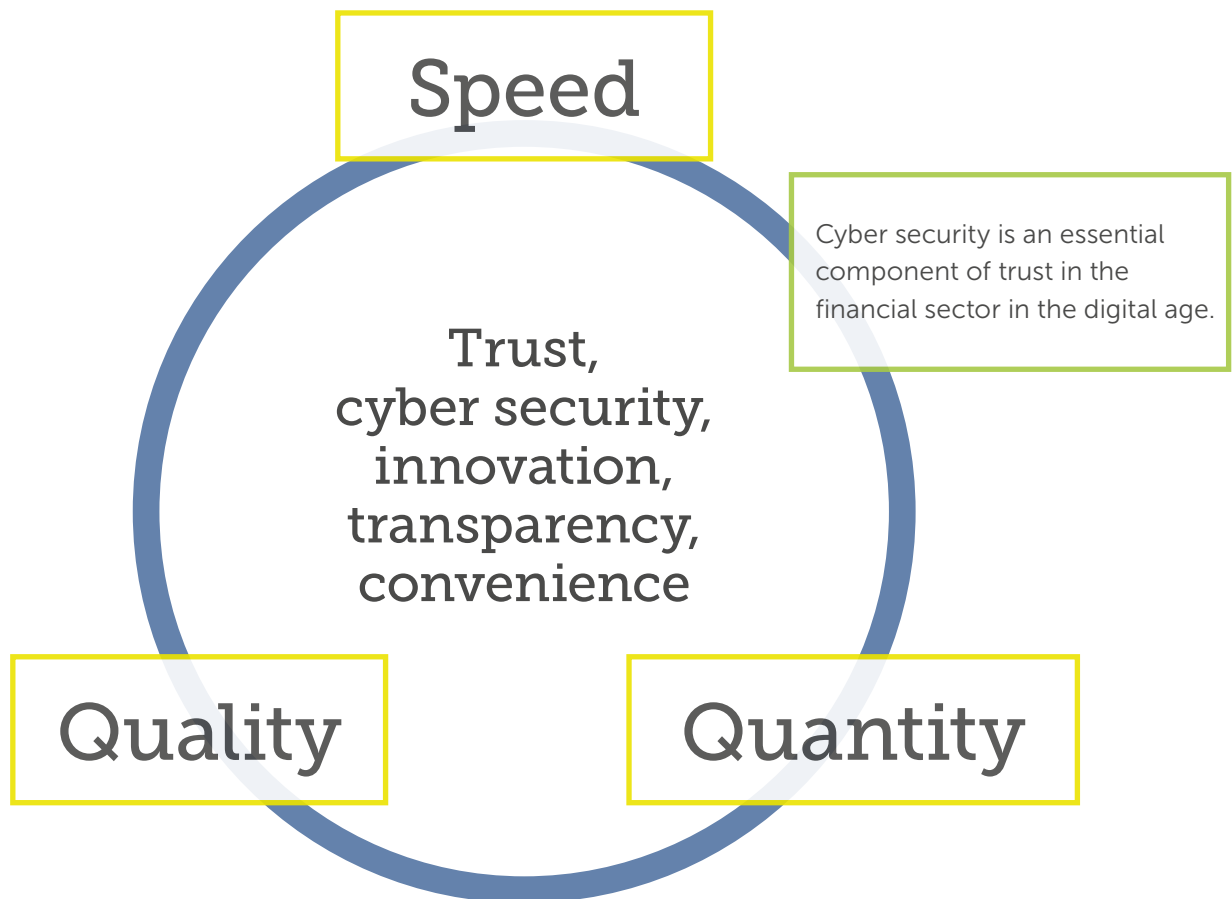
17 Ibid.

18 Crédit Agricole Store. <https://www.creditagricolestore.fr>

19 Laura Lorenzetti, “Big Banks Are Shunning Tradition and Turning to Tech Startups,” *Fortune*, 26 June 2014. <http://fortune.com/2014/06/26/big-banks-are-shunning-tradition-and-turning-to-tech-startups>

Technology-driven transformation of financial services

Digital technologies make possible **electronic and mobile payments**, combining speed and convenience. Consumers are increasingly using smartphones or tablets to transfer money in a more convenient, efficient and seamless way. **Electronic trading** brings together buyers and sellers from across the globe on virtual marketplaces; and is rapidly replacing human trading in global securities markets. The advent of **cryptocurrencies** and the underlying **blockchain technology** is set to revolutionise payments, drastically increasing speed, in combination with cost savings and transparency.



The application of **data analytics** to huge amounts of raw financial data enables financial institutions and third parties to create high-quality innovative products and provide tailor-made solutions to a wide range of customers.

The sector of technology-driven **alternative finance (crowdfunding)** is rising steadily. Digital technologies connect investors and entrepreneurs, make more capital available for investment.

venture capital fund to act as an accelerating force for startups with the potential to bring innovative approaches to the basic insurance industry.²⁰ By investing early in promising initiatives and businesses, financial institutions are gaining early access to innovative solutions that can help reduce information technology costs and make their businesses more flexible to consumer need.

The table on page 9 presents a brief summary of how digital innovation in the financial-services sector impacts various categories of customers – from individuals to large corporations – in three critical areas: 1) electronic and mobile payments, cryptocurrencies, electronic trading, 2) data analytics, and 3) technology-driven alternative finance.²¹

Electronic and mobile payments

Europe has achieved remarkable success in the digitalisation of payments. In contrast to the US and Canada, paper-based cheques have almost disappeared from retail payments in Europe. Electronic payments now account for a growing share of the value of transactions. The total number of European non-cash transactions (including bank transfers) was €87.6 billion in 2012, an increase

of 4% on the previous year.²² The average value of each card payment transaction in the EU in 2013 was €49.40; the total value of card payments reached €2.2 trillion in 2013.

'Many leading financial service providers are embracing technology to provide better services and respond dynamically to 21st century expectations.'

Europe's impressive lead in this area is the result of a hard-fought European policy initiative: the Single Euro Payments Area (SEPA), which the European Commission first proposed in 2001 and forced through over loud opposition from some financial-service companies (among other changes, the

original legislation forced banks to charge the same for inter-EU financial transfers as for domestic transfers. The sector complained that this would drive up cost and cut into existing margins, but the system has had the opposite effect: The costs for businesses and banks are considerably lower, cross-border money transfers are growing rapidly, and the system itself is considered as having helped Europe gain an important advantage over the still less developed US market in this area.).

Powered by the rapid adoption of smartphones and tablets, the mobile Internet is having a big and growing economic impact globally and in Europe.²³ In the second quarter of 2014, for example, 23% of European electronic payments were made using smartphones or tablets making smartphone-based payments the fastest growing segment. The value of mobile payments worldwide is expected to pass the \$234 billion [€206.8 billion] mark this year.²⁴ Driven by in-app purchases and subscriptions, mobile-based payments are the fastest growing payments sector.

20 AXA, "AXA Launches a €200 million Venture Capital Fund to Foster Innovation and Improve Customer Experience," Press Release, 25 February 2015. http://www.axa.com/lib/en/uploads/pr/group/2015/AXA_PR_SV_20150225.pdf

21 Disruption in financial services is also palpable in a wide range of domains, such as personal finances, investment and wealth management and personal advice.

22 European Voice, *Payments: at the Heart of the Digital Technology* (Brussels: European Voice, 2014). <http://www.politico.eu/wp-content/uploads/2015/01/MastercardRevisedPDF.pdf>

23 Wolfgang Bock, Dominic Field, Paul Zwillenberg and Kristi Rogers, *The Connected World. The Mobile Internet Economy in Europe* (Boston: The Boston Consulting Group, 2014). http://www.bcgperspectives.com/content/articles/telecommunications_digital_economy_devices_mobile_internet_economy

24 European Voice, op. cit.

Impact of digital technologies on financial services in different categories

	Individuals	Small businesses, startups	Large corporations
Electronic trading Electronic and mobile payments Cryptocurrencies	<p>Investment opportunities through electronic trading platforms</p> <p>Faster and convenient payment through mobile channels – payment on the go using apps, 24/7 account statements</p>	<p>Access to capital markets through electronic trading platforms</p> <p>Faster and convenient payment, cost savings, opportunities for e-commerce, new business opportunities</p>	<p>Access to capital markets through electronic trading platforms</p> <p>Real-time movement of funds in a simple, convenient and cost-efficient way. Enhanced accounting and internal transparency and audit</p>
Data analytics	<p>Profiling (with explicit consent) will offer additional value – tailored financial products and services, better customer experience, quick and easy credit risk assessment</p>	<p>Better insight into financial performance, data analytics for credit analysis, new business opportunities in the data analytics sector</p>	<p>Better insight into financial performance, optimisation of internal processes, data analytics for risk management</p>
Technology-driven alternative finance	<p>Access to a wider capital base/ alternative sources of capital, as well as investment opportunities</p>	<p>Access to a wider capital base, access to finance that wouldn't have been possible otherwise</p>	<p>Investment opportunities, collaborative strategies with crowdfunding platforms</p>
Trust and cyber security	<p>Underlying issue of trust in a digital environment</p> <p>Cyber security and cyber-risk culture</p>		

Today, electronic payments represent a very lucrative segment of the market not only for banks or credit card companies, like MasterCard, Visa or American Express. Increasingly, established financial institutions compete against alternative systems of online payment such as PayPal, Google Wallet, Facebook Payments, T-Mobile Mobile Money, Samsung LoopPay and others whose mobile payments technology threatens to displace banks in consumers' daily transactions.²⁵

'The ultimate objective of any forthcoming regulation should be to provide better access to capital on better terms for more people.'

As payments progressively become electronic and even mobile, the old regulatory framework designed for the traditional payments in the analogue age becomes ill-suited for the new realities. This was the reason why the European Commission proposed the e-money directive, which was adopted in 2009. It modernised EU rules on electronic money, especially bringing the prudential regime for electronic money institutions in line with the requirements for payment institutions in the payment services directive that laid the ground for SEPA.

SEPA has successfully harmonised the payment standards and introduced the same language – for example, all bank accounts in SEPA countries are written in the same format. However, the underlying logic behind banking transfers has remained the same as in the 1970s. Bank clients may use an e-banking interface and execute payments 24/7, but the actual clearing, i.e. settlement of payments, is done by humans within traditional business hours. A payment done on Friday evening is unlikely to reach its destination before Tuesday. Banks in certain EU member states have developed and introduced a national e-commerce payment system. One of the most successful is iDEAL in the Netherlands, offering merchants a real-time payment method to accept Internet payments. Payments don't stop after 5pm, and the system does not shut down on weekends. The introduction of such a payment system required concerted efforts from all players on the financial markets, including a major upgrade in the payment infrastructure.

Europe faces the ambitious and urgent task of developing a "SEPA 2.0" or "e-SEPA" initiative, which would make it possible to transfer money in real time across the continent and bring European practice up to speed with the next round of digital innovation in the payments sector. The European Central Bank has made the first step – in December 2013 it launched the Euro Retail Payments Board that will help foster the development of an integrated, innovative and competitive market for retail (internet and mobile) payments in euro in the EU. The European Central Bank should act as a catalyst for change, fostering the creation and development of common pan-European e-payment standards. This will require strong leadership in forcing through this initiative, in same way as the European Commission fought for SEPA in the 2000s. It may be met with strong resistance, which should not be discouraging. At the end, the benefits for millions of European individual and businesses will be enormous.

On 24 July 2013, the European Commission adopted a legislative package in the field of the EU payments framework. This package proposed a revised payments services directive (PSD2) and a regulation on multilateral interchange fees (MIFs). Among the key innovations proposed in the

²⁵ Google is gaining ground in electronic payments, too. In February 2015, it struck a deal with a five-year-old venture Softcard (to acquire mobile wallet technologies and patents) and several US telecoms companies – AT&T, T-Mobile USA and Verizon Wireless – (to expand its Google Wallet app). See Sarah Mishkin, "Google in Deal to Boost Mobile Payments," *Financial Times*, 23 February 2015. <http://www.ft.com/intl/cms/s/0/4548ee08-bb98-11e4-b95c-00144feab7de.html>

PSD2 is opening up the access to payment account to third-party providers. Put simply, the new entrants in the financial sectors will be able to access the existing payment infrastructure of the financial institutions. These third parties, for example, are businesses that enable customers to access different online banking accounts including credit cards, current and savings accounts using a single online portal. They may also be granted rights to initiate payments and access information about the clients.

While this proposal is intended to properly regulate current digital developments, it leaves open important issues of consumer and data protection, and liability allocation between third-party providers and the existing payment-services providers (in cases of fraud, data breaches, etc). It raises many questions

that policymakers will have to address. How will the relations between banks that will be obliged to open up their payment systems and the newcomers be constructed and formalised? Will the third-party providers need a licence to operate and access to the payment infrastructures? Another issue is a technical standardisation and interoperability between different payment infrastructures. Last but not least, what will be fair and proportionate remuneration for the use of the existing payment infrastructure?

The PSD2 is a good step forward to regulate new activities made possible by digital technology and open up payment infrastructure in a safe and secure way. If it is implemented properly, consumers operating in a trustworthy environment will be the big winners.

'We must take care that the Capital Markets Union is not simply siloed out of Europe's digital policy, and that the contemporaneous Digital Single Market initiative has a substantial capital markets union pillar as well.'

Cryptocurrencies and blockchain technology

More radical than electronic payments is the advent of digital currencies, or cryptocurrencies. These digital currencies are designed in such a way that payments are recorded in a distributed ledger (the "blockchain") using its own unit of account. Similar to the World Wide Web, the blockchain protocol is a distributed database that doesn't have any trusted central authority and payments work peer-to-peer without a central repository.

The most famous digital currency by far is bitcoin, an online payment system introduced as open-source software in 2009. Bitcoin is gaining its popularity as payment platforms begin to accept this cryptocurrency widely.²⁶ At the beginning of February 2015, Adyen, the payments platform, integrated with the world's leading bitcoin payment processor BitPay, opening up the possibility for Facebook, Spotify, Ryanair and thousands of other merchants using Adyen to accept bitcoin in the future.²⁷

²⁶ Marc Andreessen, a venture capitalist who has invested just under \$50 million [€46 million at the April 2015 exchange rate] in bitcoin-related startups, explains the practical uses of bitcoin in Marc Andreessen, "Why Bitcoin Matters," *The New York Times*, 21 January 2014. <http://dealbook.nytimes.com/2014/01/21/why-bitcoin-matters/>

²⁷ Based in the Netherlands, Adyen, valued at \$1.5 billion [€1.2 billion, at the December 2014 exchange rate], processed \$25 billion [€20 billion] in transactions in 2014. More than 3,500 merchants around the world now use the platform to process transactions, including four of the five largest US Internet companies. Source: Anthony Cuthbertson, "Facebook, Spotify and Ryanair Could Accept Bitcoin from Today Following BitPay Deal," *International Business Times*, 03 February 2015. <http://www.ibtimes.co.uk/facebook-spotify-ryanair-could-accept-bitcoin-today-following-bitpay-adyen-deal-1486361>

Based in the Netherlands, Adyen is an example of a successful European digital startup that seized the opportunities offered by cryptocurrencies. Angellist, the world's leading platform for startups, lists almost 700 cryptocurrency startups worldwide, ranging from facilitators of bitcoin mining to apps supporting payment in bitcoin. These startups, with an average valuation of \$3.9 million [€3.4 million], originate not only from the US, but from Europe too. If bitcoin was an exclusive domain for tech geeks only three years ago, today the cryptocurrency startups have massively created user-friendly interfaces popularising digital currencies for large groups of people.

The cryptocurrencies sector's steady growth raises regulatory challenges. Common concerns relate to the use of cryptocurrencies for criminal operations, as they are not subject to the same money laundering regulation as banks, and users are able to make payments without being tracked by law enforcement authorities. However, it should be cautioned that transactions in digital currencies are not absolutely anonymous and are considerably more transparent than cash transactions.

'Despite the near constant media focus on the ups and downs of the biggest industrial enterprises, small- and medium-sized businesses still make up the lion's share of the economy in Europe.'

The European Banking Authority identified more than 70 risks across several categories, including risks for users, market participants, risks related to financial integrity, such as money laundering and other financial crimes, and risks for existing payments in conventional currencies. The European Banking Authority advises that financial

institutions should not buy, hold or sell digital currencies while no regulatory regime is in place.²⁸ Along the same lines, the European Central Bank described digital currencies as "inherently unstable" in a February 2015 report.²⁹ But the study concludes this inherent instability is caused by the fact that large players – established financial institutions – are staying outside of this nascent, unregulated sector, making balance (or adjustment) on the cryptocurrencies market hard to achieve.

Nevertheless, the ECB recognises some positive aspects of digital currencies in terms of financial innovation and the provision of additional payment alternatives for consumers, and specifically for payments within virtual communities and for cross-border payments. The ECB acknowledges that the usage of digital currencies "remains limited for now, which implies that there is not yet a material risk for any central bank tasks.... Therefore, the Eurosystem will continue monitoring developments."³⁰ In the meantime, national regulatory authorities in certain EU member states have issued specific regulations applicable to bitcoin use in their respective jurisdictions.³¹

28 European Banking Authority, *EBA Opinion on 'Virtual Currencies'* (London: European Banking Authority, 2014). <https://www.eba.europa.eu/documents/10180/657547/EBA-Op-2014-08+Opinion+on+Virtual+Currencies.pdf>

29 European Central Bank, *Virtual Currency Schemes – A Further Analysis* (Frankfurt am Main: European Central Bank, 2015). <http://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf>

30 Idem.

31 The Law Library of Congress, *Regulation of Bitcoin in Selected Jurisdictions* (Washington, DC: The Law Library of Congress, 2014). <http://www.loc.gov/law/help/bitcoin-survey/regulation-of-bitcoin.pdf>

Ethereum: Blockchain technology for digital contracts

Ethereum is an example of blockchain technologies. It is a decentralised Web 3.0 publishing platform featuring user-created digital contracts and a Turing-complete contract programming language. Ethereum uses its underlying network unit, Ether, as payment to execute Ethereum contracts. In this respect, Ethereum is not solely a network for transacting monetary value; rather, it is a network for powering Ethereum-based contracts. These open-ended contracts can be used to securely execute a wide variety of services including voting systems, domain name registries, financial exchanges, crowdfunding platforms, company governance, self-enforcing contracts and agreements, intellectual property, smart property and distributed autonomous organisations. To find out more, visit www.ethereum.org.

Much of the attention surrounding cryptocurrencies and bitcoin in particular has focused on their role as a medium of exchange. Yet, it is the technology behind the currency – the blockchain protocol – that has profound, even revolutionary implications for financial services. Blockchain is a groundbreaking new way to record transactions without a single database; this is a low-cost technology based on open-source software.

If regulated correctly, the application of the blockchain protocol to a wider spectrum of financial operations and online payments will dramatically increase the speed of payment, enable 24/7 operations for everyone, add more confidence and lead to substantial cost savings. In the long run, it may even challenge the Society for Worldwide Interbank Financial Telecommunication (SWIFT)'s near-monopoly as a platform for financial institutions worldwide to send and receive information about financial transactions in a secure, standardised and reliable environment. Besides, blockchain technologies are also beginning to be exploited for other purposes, such as domain names registries, distributed records of ownership and smart contract enforcement.

Leading financial institutions began exploring the blockchain's potential. At the end of 2014, three Dutch banks – ABN AMRO, ING and Rabobank – jointly responsible for the lion's share of retail banking in the Netherlands, launched a collaborative research project examining the use of blockchain technology in their daily operations.³²

Although the ECB's official position is to "continue monitoring developments," we support decisive policy actions to promote legal clarity of bitcoin and other cryptocurrencies across Europe. The risk is that cryptocurrencies falling outside of financial regulation may indeed be used for money laundering and other illegal activities. Europe urgently needs a regulatory framework that would provide confidence in and legitimisation of digital currencies without stifling innovation. Cryptocurrency innovations have several potential applications, but the legal vacuum is causing grave uncertainty for cryptocurrency entrepreneurs.

**'All companies
– big and small –
need capital to start,
grow, expand and
ultimately
to prosper.'**

³² RTL Nieuws, "Banken Omarmen Bitcoin Techniek," *RTL Nieuws*, 01 December 2014. <http://www.rtlnieuws.nl/nieuws/binnenland/banken-omarmen-bitcoin-techniek>

Further, we call for an immediate wide-ranging discussion and open reflection on the prospects and promises of blockchain technology and its potential contribution to the Capital Markets Union. The distributed ledger technology has significant future promise as an innovation in payments technology. This decentralised solution may ultimately successfully complement financial mechanisms built on the principle of centralisation.

While many European regulators have shown conservative attitude towards cryptocurrencies, the United Kingdom government has been much more receptive to digital currencies. In March 2015, it concluded a public consultation and outlined concrete next steps to extend anti-money laundering regulation to digital currency exchanges, to develop voluntary standards for consumer protection and to launch a new research initiative on digital-currency technology.³³ This is an extremely positive pioneering example that can be used as valuable input in the design of the Capital Markets Union framework. EU lawmakers and regulators need to show leadership and embrace digital innovation in this important area of the financial-services sector.

Electronic trading

Electronic trading is an area where speed is everything. In the early days of stock exchanges, brokers handled transactions manually. Starting in the 1970s, transactions started to migrate to electronic trading platforms that allowed brokers to place orders remotely. Traditional floor trading using open outcry and telephone progressively gave way to electronic trading and electronic trading platforms, used to place orders for financial products – stocks, bonds, currencies, commodities and derivatives – from any location. Electronic trading platforms connect fragmented pools of liquidity worldwide, and combine predictive analytics and transaction cost analysis tools.

'Distributed ledger technology has significant future promise as an innovation in payments technology.'

Gigantic advances in digitalisation are responsible for a radically new phenomenon in electronic trading – trading *by machines*, not by humans using machines. High-frequency trading is a form of algorithmic trading, the use of sophisticated technology and computer algorithms to simultaneously process large volumes of information and execute orders in milliseconds. High-frequency trading algorithms rely not only on objective structured data (such as stock quotes or exchange rates), but also on artificial intelligence using unstructured data.

Computers observe a flow of quotes and extract, or predict information that has not yet appeared on the screen. By the same token, algorithms capture news items and announcements, analyse them and generate a buy or sell order. Without human interpretation of information, however, it is a risky strategy. Given the velocity of calculations, any minor error may lead to an uncontrollable chain reaction, devastating for individual companies, such as US broker Knight Capital, and potentially sending stock markets into a meltdown.³⁴ Computer-driven orders provoked the “flash crash” of 06 May 2010 in the US, sending the Dow Jones Industrial Average down by 1,000 points (about 9%) in a matter of minutes – a fall unprecedented in its depth and speed.

³³ UK Government, *Digital Currencies: Call for Information. Consultation Outcome*, 18 March 2015. <https://www.gov.uk/government/consultations/digital-currencies-call-for-information>

³⁴ In 2012, Knight Capital took a pre-tax loss of \$440 million [€359.3 million at the August 2012 exchange rate] after a fault in an algorithm (caused by a human error) triggered orders in 154 US stocks. The meltdown required an emergency financial bailout from private investors to keep Knight Capital in business. The company was acquired by Getco LLC in December 2012.

Despite its young age, high-frequency trading is a mainstream activity – it was estimated at 56% of all equity trades in the US and 38% by value in Europe in 2010.³⁵ Advocates argue that high-frequency trading increases volumes of trades, improves markets, provides liquidity and reduces transaction costs; opponents point to increased volatility and potential market shocks (such as “flash crashes”). Once again, regulators are faced with the challenge of finding a delicate balance between promoting financial innovation and ensuring capital market stability. In Europe, lawmakers responded to high-frequency trading with some of the toughest regulation in the world.

“Blockchain” technology – the open source algorithm underlying digital currencies like bitcoin – is threatening to overturn traditional concepts of how monetary value is counted and held.’

The directive on markets in financial instruments (MiFID 2), a cornerstone of the EU’s regulation of financial markets, was adopted by Council of the European Union in May 2014 and entered into force on 02 July 2014.³⁶ The high-frequency trading limits include standards meant to keep the price increment for securities from being too small, mandatory tests of trading algorithms and liquidity requirements. With regards to the better access to capital markets for small- and medium-sized enterprises, MiFID 2 aims to create a new, tailor-made market for small businesses. It provides for a specific new type of trading venue, designed to cater specifically for small- and medium-sized issuers, and to providers of market data and other reporting services. MiFID 2 will fully apply in practice in January 2017 – which is set as a deadline for all EU member states to transpose it in their national legislation.

While it is too early to talk about the actual impact of this legislation, we support this policy initiative in principle and welcome pan-European electronic trading platforms tailored to the needs of small businesses and guaranteeing investor protection.

Data analytics

Financial markets (banks, payment service providers, e-money companies) generate immense quantities of financial transaction data. Data analytics enables users to transform enormous repositories of siloed data into knowledge and insights, and have a better understanding of customers’ needs in order to deliver a compelling customer experience in a digital environment. For instance, American Express, a US-based multinational financial services corporation, plans to capture and analyse large amounts of data from both customers and merchants to improve segmentation, aid merchants in their marketing efforts, and ultimately generate more precisely targeted offers to cardholders and participating merchants.³⁷

35 Jeremy Grant, “High-Frequency Trading: Up Against a Bandsaw,” *Financial Times*, 02 September 2010. <http://www.ft.com/intl/cms/s/0/b2373a36-b6c2-11df-b3dd-00144feabdc0.html>

36 Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU (recast) <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0065>

37 Roman Friedrich, Matthew Le Merle, Florian Gröne and Alex Koster, *Measuring Industry Digitisation: Leaders and Laggards in the Digital Economy* (New York: Strategy&, 2011). <http://www.strategyand.pwc.com/media/file/Strategyand-Measuring-Industry-Digitization-Leaders-Laggards-Digital-Economy.pdf>

Specifically, the data that financial institutions accumulate enables easy and straightforward approval of loan requests based on a simulated risk profile, or may set flexible loan rates based on live market data. Profitability analysis can be easily executed too. Moreover, banks have the potential to offer customers not only the product or loan they need today, but also the one they might need next year. Further, this data – once anonymised and aggregated – is a valuable input for new services and products.

There is immense potential for mobile apps, developed by either financial institutions themselves or third parties, that can access personal data (with the client's informed consent), provide analytics and deliver new innovative services. A successful example of such collaboration is the Open Bank Project in Germany.³⁸ It is an open source application programming interface (API) and an app store for banks that empower financial institutions to securely and rapidly enhance their digital offerings using an ecosystem of third-party mobile apps and services.

One of the underlying problems of access to finance for small- and medium-sized enterprises is a lack of a common minimum set of comparable information for credit reporting and assessment. In Europe around 25% of all companies and around 75% of owner-managed companies do not have a credit score.³⁹ The tremendous potential of data analytics can be leveraged to this end, providing

investors and lenders with information on creditworthiness of small businesses. Based on that, financial institutions can make available pre-approved credit offers.

'Most financial institutions in advanced countries offer online banking to clients who consider it a necessity not a luxury.'

Notably, data-analytics products and services can be used not only for commercial purposes, but also for the greater good of society. Barclays, the multinational banking and financial services company, runs a programme called "Barclays Local Insights."⁴⁰ It uses anonymised financial data to provide UK members of parliament from England and Wales with economic facts and figures about people and

small businesses in their constituencies. These free-of-charge reports offer valuable up-to-date insights in spending habits, mortgages and business activities that lead to evidence-informed policymaking, and ultimately contribute to the society's wellbeing.

If regulated properly, the application of data analytics into financial services holds the enormous potential to redefine the industry, and its impact on the proposed Capital Markets Union could be significant. In this respect, policymakers should address two fundamental issues: 1) access to data, and 2) cloud computing for banking.

Access to data – the essential input in any data analytics process – is a very contentious topic given European concerns that these processes may infringe on consumers' right to privacy. The European Commission plans to unify data protection with a single law, the general data protection regulation, to replace the EU data protection directive adopted in 1995. Its draft was first unveiled in January 2012, but has been amended substantially by the European Parliament and not yet approved by the Council of the European Union, whose consent will be necessary for the statute

38 Visit <http://www.openbankproject.com> for more on the Open Bank Project.

39 European Commission, *Building a Capital Markets Union*, op. cit.

40 Visit <https://www.insights.barclays.co.uk/> for more on Barclays Local Insights.

Data analytics: The risk of miscommunication

On 10 March 2014, ING, one of the largest banks in the Netherlands and worldwide, launched a pilot project to understand whether customers would be interested in receiving relevant and tailored advertisements and discounts from third parties, aligned with their spending pattern. This pilot was supposed to be on an “opt-in” basis, meaning that customers would have been requested to explicitly give their permission (informed consent) before their payment details could be analysed. If the customer in question no longer wished to participate in the pilot, they could terminate their participation at any time. Far from gaining rapid acceptance, the pilot created a wave of unrest and generated much mistrust among potential participants – before it even got off of the ground. It led to massive queries and comments from customers and other stakeholders, many expressing doubts about the uses the banks was making of their personal data. Klaas Knot, president of the Dutch central bank (De Nederlandsche Bank), made critical statements about this project and expressed his reservations about such practices in general. On 17 March 2014, ING Netherlands CEO Nick Jue addressed the issue in a letter to customers – he withdrew the programme and apologised for the lack of clarity and the unrest caused. More info: www.ing.com/about-us/ing-and-the-use-of-customer-data.htm

to become law.⁴¹ The notion of harmonising data protection laws within the EU deserves support; it would greatly facilitate the development of data-driven businesses to face a single regulatory regime rather than 28 different ones. But, as many successful data-driven businesses have noted, the overall tone of the proposed legislation is one of overt hostility to companies seeking to work in this area. For instance, the proposed regulation (in its most extreme version) would require prior consent for the use of any data collected for one purpose to be used for another (including analytical purposes that might not have been defined when the data was originally collected). It would also radically extend the number of companies subject to data protection rules, a step which would impose grave burdens on many startups – where one finds a plethora of emerging data-driven businesses these days, given the cutting-edge nature of the technology.⁴²

One way or another, the new regulatory regime should create a single data protection regime that provides adequate consumer protection but does not stifle innovation. And it should avoid placing new administrative burdens on emerging businesses, whose success will be crucial if Europe expects to reach and remain at the forefront of the global, data-driven economy.

‘Most banks are investing heavily in apps for smartphones and tablets, making it easier for customers to conduct a wide array of banking activities on the go.’

⁴¹ European Commission, *Proposal for a Regulation of the European Parliament and of the Council on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of Such Data (General Data Protection Regulation)*, Brussels, 25 January 2012, COM(2012) 11 final http://ec.europa.eu/justice/data-protection/document/review2012/com_2012_11_en.pdf

⁴² See Sergey Filippov, *Data-Driven Business Models: Powering Startups in the Digital Age* (Brussels: European Digital Forum, 2014) http://www.lisboncouncil.net/index.php?option=com_downloads&id=1076

Recent proposals to regulate the “cloud” is another area of concern for financial institutions. Seeking to combine high efficiency and speed with low costs, financial institutions increasingly leverage cloud-based technologies to deliver data analytics and other services. They often employ a hybrid model that combines private clouds (internally-stored servers) and public clouds from third parties – cloud service providers such as Amazon Web Services, Deutsche Telekom and IBM. Having vast, high-performance computing capacity available on demand from third parties is extremely important in the capital markets industry.⁴³

The proposed general data protection regulation does not deal specifically with cloud computing, as it sets out to be technology-neutral. However, it is applicable to non-EU controllers who process personal data of subjects residing in the EU or where such processing activities relate to offering

‘Accenture estimates that global investment in financial services technology ventures has tripled to nearly €2.7 billion since 2008.’

EU data subjects goods or services.⁴⁴ One of the versions of the legislation requires businesses not to store data in cloud data centres in countries outside the European Economic Area that do not have equivalently strong data protection standards. The list of countries that satisfy these requirements is very short, at only 11 countries. And the US, where 67% of all cloud services are located, is not on the list.⁴⁵ European businesses that need to comply with this regulation risk being forced to operate in a “European cloud,” putting them at a disadvantage *vis-à-vis* their non-EU competitors.

On top of the general data protection legislation, financial institutions are also subject to industry-specific supervision by national regulators who impose stricter rules regarding personal data (in relation to bank secrecy obligations). As a result, financial institutions often find it difficult to run data analytics on vast amounts of siloed raw data. This is in contrast to businesses not falling under the supervision of financial regulators, but also possessing their clients’ financial data. Social networks, for example, not supervised by national central banks, may run data analytics on the transactions and purchases users conduct on the social network.

In the absence of common European guidelines to financial data analytics, formulated by the European Central Bank, here again we are witnessing huge heterogeneity across the European continent, with some national regulators being more liberal towards data analytics and others more restrictive in terms of the use of the clients’ data for activities that may differ from strictly defined financial services. Next to this fragmented regulatory framework, the 130 largest banks in the eurozone – with holdings of 85% of the banking assets – are supervised directly by the European Central Bank as of 04 November 2014. The European Central Bank has not so far formulated its position on the use of data analytics. These 130 biggest banks act in compliance with general provisions of the personal data protection regimes in respective countries, but the analytics of specifically financial data (in relation to bank secrecy) remains unregulated by the European Central Bank and represents a “grey zone.”

43 Tom Groenfeldt, “Some Banks Are Heading To The Cloud – More Are Planning To,” *Forbes*, 26 June 2014. <http://www.forbes.com/sites/tomgroenfeldt/2014/06/26/some-banks-are-heading-to-the-cloud-more-are-planning-to>

44 See DLA Piper, *Data Protection Laws of the World* (London: DLA Piper, 2015). <http://dlapiperdataprotection.com/#handbook/eu-section>

45 Cameron Coles, “Only One in 100 Cloud Providers Meet Proposed EU Data Protection Requirements,” *Sky High*, 11 August 2014. <http://www.skyhighnetworks.com/cloud-security-blog/only-1-in-100-cloud-providers-meet-proposed-eu-data-protection-requirements/>

Data analytics: Bridging the transatlantic divide

Data anonymisation is a cornerstone principle of data analytics in Europe. In this respect, European companies face much more rigid regulation than their US counterparts, where data anonymisation is not required. As a result, economic agents in the US and EU face an unlevel playing field in terms of the complexity and costs of using new technologies with regards to data analytics. European firms are faced with the prospect of constantly evolving requirements on the geo-localisation of data within the EU, and the complexity of having to pseudonymise data for public cloud computing – a procedure by which the most identifying fields within a data record are replaced by one or more artificial identifiers, or pseudonyms. Moreover, transatlantic data flows as such are generally perceived in Europe as a threat.

Paul Hofheinz and Michael Mandel have argued that the on-going negotiations on a free trade agreement between the EU and the US – the Transatlantic Trade and Investment Partnership (TTIP) – represent a unique opportunity for the partners to work together to define future global rules and standards, such as data analytics (for financial and capital markets), to more effectively harmonise transatlantic data-privacy rules. In the end, agreement will probably require higher standards and better safeguards from the US side; and on the EU side, legislation that is more open and enabling for data-driven businesses.

Further reading: Paul Hofheinz and Michael Mandel. *Bridging the Data Gap: How Digital Innovation Can Drive Growth and Create Jobs* (Brussels/Washington, DC: The Lisbon Council/ Progressive Policy Institute, 2014)

Neither data analytics nor cloud computing is directly or openly addressed in the on-going debate on the Capital Markets Union and the consultation paper. We believe that data protection cannot be considered in isolation, and the transformative power of data analytics – offering efficient and high-quality financial products and services – ought to be examined in the context of the Capital Markets Union. Agility in the implementation of regulation is crucial, and lawmakers should focus on principles when designing a future-proof policy framework, rather than on specific and rapidly outdated technological requirements.

Specifically for financial institutions, the European Central Bank should clarify the rules of data analytics for the 130 directly supervised banks and for the financial institutions supervised by national regulators. These rules should provide enough flexibility to allow financial institutions and the society at large to benefit from the tremendous potential of data analytics.

'Many financial institutions are devising and implementing collaborative strategies for working with the newcomers.'

The promise and potential of technology-driven alternative finance

Alternative finance is a sector that didn't exist a decade ago in the form we know it now, and became possible and started to flourish thanks to technology. Consumers and small businesses begin to turn to non-banks to access capital. The Global Commercial Banking Survey 2014 shows that 53% of customers are already using non-banks, and 38% are considering doing so. In addition to the more established alternatives to banks, such as credit card and insurance companies, new entrants – crowdfunding platforms – are contributing to altering patterns in bank loyalty and switching service providers.⁴⁶

The principal idea behind these alternative finance models is to access small contributions from a large number of contributors (investors) to make a bigger funding need (see the table on page 27 for a guide to the terminology used in alternative finance). In general, these models are called crowdfunding, however in some jurisdictions such as the UK, the crowdfunding-lending model is referred to as peer-to-peer lending. Alternative finance platforms offer the ability to increase

transparency in the system, thereby reducing search costs for both those seeking investment opportunities and those seeking finance.

'Global players such as BBVA and HSBC have developed in-house venture capital funds that invest directly in promising FinTech companies.'

Acting as lean intermediaries, many alternative finance platforms effectively manage to escape much of financial regulation and supervision as they operate in a niche segment, not requiring a banking licence. Normally, they do not hold deposits or provide financing themselves.

They often rely on external electronic payment

providers, such as PayPal, or even traditional banks to execute their payments. Credit scoring might be executed by third-party scoring agencies too, complemented with in-house data analytics. When they operate in regulated segments of the financial-services industry, alternative finance platforms take advantage of exemptions in legislation. In the case of equity-based crowdfunding, alternative finance platforms may offer solutions for startups ranging from up to €100,000 in Germany to €5 million in the UK, without burdensome compliance requirements, depending on how the EU member states transposed the relevant EU directive into national law.⁴⁷

A report produced by University of Cambridge Judge Business School and EY, the professional services firm, estimates the amount raised through alternative finance methods to top €7 billion across the EU in 2015 (excluding the UK, this amount is to reach €1.3 billion).⁴⁸ Nonetheless, even with impressive growth dynamics of 144% in 2014, the alternative finance sector remains

46 EY, *Global Commercial Banking Survey 2014: Advancing Service in a Digital Age* (London: EY, 2014). <http://www.ey.com/GL/en/Industries/Financial-Services/Banking---Capital-Markets/EY-global-commercial-banking-survey-2014>

47 Stet Directive 2010/73/EU of the European Parliament and of the Council of 24 November 2010 amending Directives 2003/71/EC and 2004/109/EC <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0073>. In parallel with a public consultation on the Capital Markets Union, the European Commission launched a public consultation on the review of the prospectus directive. One of the stated objectives is to make the regime more appropriate for small- and medium-sized enterprises and companies with reduced market capitalisation. http://ec.europa.eu/finance/consultations/2015/prospectus-directive/index_en.htm

48 The UK, the undisputed leader in Europe's crowdfunding sector, accounted for a sizeable €2.34 billion of the market in 2014, with France at the second place (€154 million), followed by Germany (€140 million), Sweden (€107 million), the Netherlands (€78 million) and Spain (€62 million). However, if ranked on volume per capita, Estonia takes second place in Europe after the UK (€36 per capita), with €22 million in total and €16 per capita. With regards to the sheer number, with over 100 alternative platforms, the Netherlands has the highest number of platforms per capita. See Robert Wardrop, Bryan Zhang, Raghavendra Rau and Mia Gray, *Moving Mainstream: The European Alternative Finance Benchmarking Report* (Cambridge: University of Cambridge, 2015). <http://www.jbs.cam.ac.uk/index.php?id=6481>

relatively small in comparison to the overall banking and insurance sector. There are around €12 trillion locked in the pension and insurance sectors and €17 trillion held in the European asset management industry.⁴⁹

But alternative finance is set to grow, offering varied financial products that prove to be extremely needed for a wide range of economic agents – most notably,

'By investing early in promising initiatives and businesses, financial institutions are gaining early access to innovative solutions that can help reduce information technology costs and make their businesses more flexible to consumer need.'

promising new and young businesses. More often than not, these firms cannot access traditional sources of finance, and would not have been able to sustain and expand their business operations in the lack of alternative sources of finance. Collectively, the European alternative finance market, excluding the UK, is estimated to have provided €385 million worth of early-stage, growth and working capital financing to almost 10,000 European startups and small- and medium-sized enterprises in 2012-2014, of which €201.43 million was funded in 2014 alone.⁵⁰

Significantly, the technology-driven alternative finance sector also offers ample business opportunities to innovative startups and technology firms; and the rapid transformation of the marketplace offers opportunities for a mutually beneficial collaboration between established financial institutions and the newcomers. In June 2014, Santander UK announced a partnership with Funding Circle, the first website to use the process of peer-to-peer lending for business funding in the UK in 2010. Through this partnership, the bank can refer businesses that would be normally denied for a classic loan to the crowdfunding platform in exchange for the platform flagging up some of its products. Royal Bank of Scotland launched the same scheme in January 2015.⁵¹ Another example of such collaboration is that numerous business-angel investors and venture-capital funds invest alongside crowdfunding investors in equity crowdfunding.⁵²

Notwithstanding these examples of successful collaboration, the explosive growth of alternative finance poses a direct competitive threat to traditional players in the financial sector. Nonetheless, the European Banking Federation discuss the alternative finance development in a constructive tone:

"Banks support the examination of alternative market-based funding mechanisms and of measures aimed at building a European capital market that can be a strong complementary tool to bank funding. It must be a central aim to unify this idea into a single capital market in Europe, with deep liquidity and diversity rather than have each member state build its own capital market in isolation."⁵³

49 European Commission, "Building a Capital Markets Union," op. cit.

50 Wardrop et. al., op. cit.

51 Patrick Jenkins and Tom Braithwaite, "Democratising Finance: Technology Improves Access for the Masses," *Financial Times*, 29 January 2015. <http://www.ft.com/intl/cms/s/0/b09ce354-968f-11e4-a83c-00144feabdc0.html>

52 Peter Baeck, Liam Collins and Bryan Zhang, *Understanding Alternative Finance. The UK Alternative Finance Industry Report 2014* (London: Nesta and the University of Cambridge, 2014). <https://www.nesta.org.uk/sites/default/files/understanding-alternative-finance-2014.pdf>

53 European Banking Federation, *EBF Handbook for MEPs 2014-2019: Taking Stock of the EU Banking Regulation and Upcoming Challenges* (Brussels: EBF, 2014). <http://www.zyzyne.com/zh5/142158>

A common and proportionate European regulatory framework for alternative finance would hugely add to the Capital Markets Union, but in the absence thereof, certain EU member states launched policy initiatives to regulate the field at the national level.⁵⁴ The Financial Conduct Authority, the UK national regulator, monitored the developments in the sector before setting out its own regulatory framework. It authorises alternative finance providers to facilitate investment in securities, and regulates the peer-to-peer lending industry from 01 April 2014. The regulator requires peer-to-peer lenders to have minimum operating capital requirements, meet client money requirements and adhere to a disclosure-based regime.⁵⁵ In France, crowdfunding became subject to law on 16 September 2014, effectively putting an end to the banks' monopoly to lend money.⁵⁶ In Germany, equity-based crowdfunding is recognised and legal. Large crowdfunding platforms there have used a financial instrument known as "subordinated profit participating debt." A wider national regulation on crowdfunding is in final stages.⁵⁷

Consumer behaviour in alternative finance reflects this fragmentation of regulatory regimes along national lines. The report by University of Cambridge and EY finds that individuals and firms tend to use their national crowdfunding platforms, and cross-border transactions are limited. On top of heterogeneity in national legal regimes, factors preventing full-scale, pan-European operations of crowdfunding platforms are inherent to Europe, such as cultural and linguistic differences.

Regulation covering technology-driven alternative finance today is a complicated lattice of the existing European and national regulation covering certain aspects of alternative finance (with rules and exemptions) and an emerging regulatory regime for crowdfunding. The European Commission acknowledges that diverse national approaches may encourage crowdfunding activity locally, but may not be necessarily compatible with each other in a cross-border context.⁵⁸

A common European approach – within the Capital Markets Union – that would facilitate cross-border flows and connect separate markets of alternative finance in Europe is needed.

It should be caveated, however, that pan-European harmonisation and convergence towards the wrong type of

regulation would be detrimental. Harmonisation should only occur when regulators are confident that they have enough information to construct appropriate regulation.

'Europe has achieved remarkable success in the digitalisation of payments. In contrast to the US and Canada, paper-based cheques have almost disappeared from retail payments in Europe.'

54 For the latest overview of existing crowdfunding regulation, see Oliver Gajda, *Review of Crowdfunding Regulation: Interpretation of Existing Regulation Concerning Crowdfunding in Europe, North America and Israel* (Brussels: European Crowdfunding Network, 2014). <http://www.eurocrowd.org/files/2014/12/ECN-Review-of-Crowdfunding-Regulation-2014.pdf>

55 Read FCA's policy statement for more details: Financial Conduct Authority, *The FCA's Regulatory Approach to Crowdfunding over the Internet, and the Promotion of Non-Readily Realisable Securities by Other Media*, 06 March 2014. <http://www.fca.org.uk/news/ps14-04-crowdfunding>

56 République Française, *Décret n° 2014-1053 du 16 septembre 2014 relatif au financement participatif*. <http://www.legifrance.gouv.fr/eli/decree/2014/9/16/FCPT1415064D/jo/texte>

57 Friedrich Geiger and Christian Grimm, "Germany to Regulate Crowdfunding," *The Wall Street Journal*, 17 April 2015. <http://blogs.wsj.com/digits/2015/04/17/germany-to-regulate-crowdfunding/>

58 European Commission, *Building a Capital Markets Union*, op. cit.

Alternative finance is a wide umbrella for a variety of technology-driven financial exchange and operations. A proportional framework should regulate it, effectively balancing consumer protection, risk and innovation. Donation- and reward-based crowdfunding – arrangements that do not foresee any financial reward – generally fall outside the scope of regulation of the financial sector, and thus may not need any specific regulation at all. Certain flexibilities could be allowed for peer-to-peer consumer lending, while equity-based crowdfunding and debt-based securities would continue to fall under the current wider regulation of financial services, complemented with a regulation specific to alternative finance.

The recent surge in alternative finance has brought some much-needed oxygen into the room, but the playing field remains confused and skewed. We believe the playing field needs to be made more level based on common principles of openness and competition. Some degree of regulation of alternative finance – so long as that regulation seeks only to make the pie a little safer and more certain – would be helpful to promote confidence and competence within the sector. But it is equally important that regulation in this area remains proportionate and enabling.

'23% of European electronic payments were made using smartphones or tables in Q2 2014, making smartphone-based payments the fastest growing payment segment.'

Enhancing trust and cyber security

Financial-services companies are traditionally depositaries of trust, on which their relationships with customers are built. The digitalisation of financial services accentuates the importance of trust as more players enter the financial-services sector and the interaction between traditional banks and their clients moves from a trusted face-to-face contact in bank retail branches to a "virtual space," which is potentially prone to a variety of cyber incidents, including data breaches, business interruption and network damage.

Cyber security – security applied to computing devices as well as private and public computer networks – is becoming a dominant concern as the rapid adoption of digital technologies creates new, sophisticated threats. The Global Commercial Banking Survey 2014, produced by EY, the professional services firm, shows that 59% of customers are concerned about cyber security. Digital leaders must be able not only to deliver new features and functionality but, just as importantly, to demonstrate a sustained commitment to ensuring customers' security.⁵⁹

Organised crime is radically moving into the cyber sphere. The most recent large-scale cyber attack in February 2015 targeted as many as 100 banks and other financial institutions around the world. An international criminal gang is responsible for estimated losses of some \$1 billion [or €0.9 billion].⁶⁰

⁵⁹ EY, *Global Commercial Banking Survey 2014: Advancing Service in a Digital Age* (London: EY, 2014). <http://www.ey.com/GL/en/Industries/Financial-Services/Banking---Capital-Markets/EY-global-commercial-banking-survey-2014>

⁶⁰ Richard Waters, "Russian Report Says 100 Groups Hit by \$1bn Cyber Attack," *Financial Times*, 15 February 2015. <http://www.ft.com/cms/s/0/3bca441c-b535-11e4-8362-00144feab7de.html>

The New York Department of Financial Services concludes that while financial institutions have taken significant steps to bolster cyber security efforts, they will continue to be challenged by the speed of technological change and the increasingly sophisticated nature of threats. Whereas institutions are aware that the threat landscape is constantly evolving, they find it difficult to keep up with the latest developments amid competitive pressure to integrate new technologies into their

product offerings.⁶¹ At the same time, the World Economic Forum warns that if government cyber resilience regulation becomes more directive, disturbing adoption of innovative technologies, as much as \$3 trillion [or €2.7 trillion] in potential value creation will remain unrealised by 2020.⁶²

'The value of mobile payments worldwide is expected to pass the €206.8 billion market this year.'

In order to combat cyber crime, the EU has implemented legislation and supported operational cooperation, as part of the EU Cyber Security Strategy.⁶³ Several EU legislative actions contribute to the fight against cyber crime, including a directive on attacks against information systems (2013), the ePrivacy directive (2002) and the framework decision on combating fraud and counterfeiting of

non-cash means of payment (2001). As cyber crime does not stop at national borders, a common European approach should be adopted. The European Financial Services Round Table, a roundtable organisation of chairmen and chief executives of Europe's leading banks and insurance companies, recommends:

*"to further enhance consumer protection against cyber risks, regulators should harmonise cyber security standards for the digital single market, based on principles that allow the cross-border sharing of cyber security incidents, as well as best practices and prevention measures between companies and clearly identified competent authorities."*⁶⁴

Considering the global nature of the Internet and digital technologies, this harmonisation of cyber security standards should not be done in isolation and stop at the European borders but ought to proceed in harmony with and involve key European partners, above all, the US.

In terms of specific cyber security recommendations, we highlight the importance of a unique framework that defines when, how and to whom the cyber security incidents must be reported in order to reduce cyber risks. The network and information security directive proposed in February 2013 is a right step forward.⁶⁵ Specifically, several parts represent "grey areas" and deserve particular attention and clarification: 1) personal data and privacy, 2) timing for notification, 3) who should be notified – central agency, 4) the one-stop-shop mechanism for notification, 5) ways in which financial institutions can legally report a large number of individual incidents when they become collective in a short-term manner, and 6) solutions to avoid unnecessary cost and complexity in

61 Gregory S. McNeal, "Banks Challenged By Cybersecurity Threats, State Regulators Acting," *Forbes*, 26 May 2014. <http://www.forbes.com/sites/gregorymcneal/2014/05/26/banks-challenged-by-cybersecurity-threats-state-regulators-acting/>

62 World Economic Forum, *Risk and Responsibility in a Hyperconnected World* (Geneva: World Economic Forum, 2014). http://www3.weforum.org/docs/WEF_RiskResponsibility_HyperconnectedWorld_Report_2014.pdf

63 Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "Cybersecurity Strategy of the European Union: An Open, Safe and Secure Cyberspace" /*JOIN/2013/01 final */ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013JC0001>

64 European Financial Services Round Table, *The European Financial Services Landscape in 2015* (Brussels: EFR – European Financial Services Round Table, 2015). <http://www.efr.be/newsstory.aspx?pvs=OACE76J%2frn7cFvK2rdSCMQ%3d%3d>

65 European Commission, *Proposal for a Directive of the European Parliament and of the Council Concerning Measures to Ensure a High Common Level of Network and Information Security Across the Union*, Brussels, 07 February 2013, COM(2013) 48 final, 2013/0027 (COD). http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=1666

reporting and audit mechanisms. On an operational level, a “cyber security audit” should become ingrained into the operations of financial institutions.

Regulation, no matter how advanced it can be, is only one side of the coin. Another side of the coin is a cyber security culture – the society’s overall awareness of and resilience to cyber risks – which should be promoted to companies and individuals.

Making the Capital Markets Union a success

Europe needs space for innovation in digital financial services – not just to help this key sector of the modern economy grow stronger in the period ahead, but also in the interest of helping promising companies gain access to capital and create the jobs Europe so desperately needs.

The ultimate objective of any forthcoming regulation should be to provide better access to capital on better terms for more people.

That principle should be kept high in mind as policymakers seek to revise the regulatory framework to achieve their key strategic objectives and take advantage of the huge opportunity that digital technology provides.

To be sure, consumers need to be protected, and we have in place already much legislation to do just that. It is important that consumers remain confident that they can act and interact safely within European capital markets.

But it is equally important that any future legislation remains “proportionate,” in the industry jargon, meaning it must contribute to and create an enabling environment where innovation can take place.

‘Europe faces an ambitious and urgent task of transition towards “SEPA 2.0” or “e-SEPA,” making it possible to transfer money in real time across the continent.’

Considering the swift and drastic nature of change made possible by digital technology, it is critical that lawmakers and financial regulators address FinTech and digital innovation in financial services as a priority issue in the Capital Markets Union and other strategic dossiers. The existing regulation seems to be clearly outdated in many instances; much of it stems from the analogue age and is not fit for the challenges and realities of the new digital environment. And, as this special edition of Digital Insights has argued, regulation is evolving slowly and in an uneven manner. The EU should seek to ensure pan-European regulatory consistency by moving more decisively in the capital-markets arena. It should put in place a truly European framework which will draw on and promote the best that Europe has to offer. And it should minimise the addition of national provisions in the transposition of EU directives, perhaps by relying more directly and frequently on regulations.

The digitalisation of financial services should be tackled from two angles. First and foremost, it should be addressed on the financial side with a stronger technology mandate embedded in the forthcoming Capital Markets Union proposals. But, given the strategic importance of the sector, capital markets should also appear more prominently in the emerging Digital Single Market strategy. The European Commission’s directorate-general for financial stability, financial services and capital markets union (DG FISMA) and directorate-general for communications networks, content and technology (DG CONNECT) should work together energetically to drive a policy agenda forward.

We propose that all future policy in this area – and the upcoming Capital Markets Union-based legislation in particular – should be based on five principles:

- 1** Europe needs financial sector policies that are enabling and opening. We need a larger market that is better regulated.
- 2** New technological developments in financial services – such as blockchain technology – should be promoted. We need an open and inclusive discussion on their prospects and promises.
- 3** FinTech should be encouraged for everyone – startups, technology companies and financial services incumbents. We particularly need legislation that is more open and enabling for data-driven businesses.
- 4** Alternative finance should be encouraged. As it grows, strong and proportionate regulation needs to be developed. Traditional finance should not be closed out of this important new market by over-regulation.
- 5** Regulation can and should remain “proportionate,” meaning it should be adequate to ensure consumer protection but also avoid existing solely with hidden protectionist aims in mind. To date, European policy has managed this balance quite well. But new sectors often require new ways of regulating. The emphasis should be on getting the balance right.

A list of concrete policy recommendations – and a roadmap for their successful implementation – appears in the table on page 5.

Alternative finance: A taxonomy

Peer-to-Peer Consumer Lending

Debt-based transactions between individuals; most are unsecured personal loans.

Reward-based Crowdfunding

Backers have an expectation that recipients will provide a tangible (but non-financial) reward or product in exchange for their contribution.

Peer-to-Peer Business Lending

Debt-based transactions between individual/institutional investors and existing businesses who are mostly small- and medium-sized enterprises.

Equity-based Crowdfunding

Sale of registered security by mostly early-stage firms to investors.

Community Shares/ Microfinance

Microfinance refers to the lending of small sums to entrepreneurs who are often economically disadvantaged and financially marginalised. There is a debt obligation incurred, but the amounts lent are very small. Community shares refer to the sale of withdrawable share capital in cooperative and community benefit societies.

Invoice Trading

Firms sell their invoices or receivables to a pool of individual or institutional investors.

Debt-based Securities

Lenders receive a non-collateralised debt obligation, typically paid back over an extended period of time. Similar in structure to purchasing a bond, but with different rights and obligations.

Pension-led Funding

Mainly allows small- and medium-sized enterprises' owners/directors to use their accumulated pension funds in order to invest in their own businesses. Intellectual properties are often used as collateral.

Source: Wardrop, Zhang, Rau and Gray

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About the European Digital Forum

The **European Digital Forum** is a think tank dedicated to empowering web entrepreneurs and growing Europe's digital economy. The initiative is led by the Lisbon Council, a European think tank based in Brussels, and Nesta, the United Kingdom's innovation foundation, in collaboration with the European Commission's Startup Europe initiative. The European Digital Forum was launched at the World Economic Forum in January 2014 as a vehicle to intellectually accompany the 22-point action plan put forth in the **Startup Manifesto** (www.startupmanifesto.eu) written by the **Leaders Club**, an independent group of founders of world-leading technology companies based in Europe, including Atomico, HackFwd, Rovio, Seedcamp, Spotify, Tech City Investment Organisation (TCIO), Tuenti and The Next Web. In the manifesto, which was drafted to spur discussion on improving Europe's startup ecosystem and digital-era performance, the European tech leaders proposed establishing a permanent independent think tank to explore and elaborate a more decisive approach to startups, an invitation which was seized and carried forward by the Lisbon Council and Nesta in 2014. Among the founding partners of the initiative are the European Investment Fund (EIF), Banco Bilbao Vizcaya Argentaria (BBVA) and Telefónica. Accenture is a partner. Follow the European Digital Forum on twitter at www.twitter.com/edf_eu.

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