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WINNER TAKES ALL

Once a tech company becomes dominant, it is very hard to displace, says Patrick Barwise

LESSONS FROM SPECTRUM AUCTIONS

With nations under pressure to allocate spectrum, auction experience is examined

AGENDA FOR GENDER

Women still face barriers to technology jobs and accessing ICTs, and also hostility on the internet

MIXED MESSAGES FROM MEXICO

Will reforms meet future challenges?

PARLIAMENT, PEOPLE AND PLATFORMS

A call for independent inquiries

by Damian Tambini



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Inter MEDIA

PLATFORM PICTURES



Digital platforms continue to dominate the policy and regulatory discourse, and we continue to present the latest thinking and perspectives. In this issue of Intermedia, we present three articles that offer several perspectives on the big picture. In our cover feature, Damian Tambini has updated a submission he made to the UK House of Lords inquiry on internet regulation, in which he argues that independent commissions are the crucial first step to what he sees as the need to rein in platform power – inquiries should not be run by governments because they could be seen to be shaping media environments in their favour. Tambini details what he sees as the various options – including breaking up the tech giants. He notes that there is no credible global regulatory initiative, so much impetus needs to come from countries with strong democratic traditions. Patrick Barwise, meanwhile, takes us through his perspective on just how dominant the Silicon Valley giants are and why competition is unlikely to materialise. And Antonio Nicita writes on the impact of big data and platforms on our understanding of capitalism, quoting me saying that “It’s all about data”. Indeed it is, and it will be interesting to see how policymakers and industry reach accommodation on how to both protect data and ensure the success of the digital economy – and see Daniel Sepulveda’s article in this issue too, which gets to the heart of this debate.

Chris Chapman, president, IIC

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The International Institute of Communications is the world’s leading independent, non-profit, membership forum engaged with digital media policy and regulatory affairs. IIC activities cover issues in telecommunications, broadcasting and the internet.

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NEWS

FROM AROUND THE GLOBE



We won: Alex Voss, the German MEP who steered the copyright proposals through the European Parliament, celebrates the vote that takes the rules forward to the member states. "Huge American platforms make money while our creatives die out," he said.

COPYRIGHT

EU PARLIAMENT SETS THE AGENDA

The European Parliament has adopted a revised negotiating position on controversial copyright rules, adding safeguards to protect small firms and freedom of expression. It sets in train talks with member states to hammer out a final deal, and was approved by 438 votes to 226, with 39 abstentions. The proposed copyright directive has divided the internet world perhaps even more than the net neutrality debate, with hyperbolic claims that it heralds the end of the internet, while supporters see it as protecting copyright owners and curbing the power of the platforms.

Most of the concern is about Articles 11 and 13, which give content owners a right to recompense when items are run on platforms (which could affect services such as Google News – the company did pull its service in Spain), and determines that platforms are liable for material that infringes copyright so they must filter content, which is the "internet killer". In attempting to level the playing field, critics say the EU could stifle traffic to news sites and leave individuals open to legal action for sharing material, among other unintended consequences.

Tim Berners-Lee, inventor of the world wide web, and Jimmy Wales, founder of Wikipedia, have warned: "It takes an unprecedented step towards the transformation of the internet from an open platform for sharing and innovation, into a tool for the automated surveillance and control of its users."

MEP Alex Voss (see picture above) defends the proposed legislation. "We want to protect and to strengthen the rights of the creatives: authors, performers, singers, songwriters, journalists... all copyright holders. They are all in a miserable situation: their work is used by huge platforms who make a lot of profit with it." He adds that memes and derivative fan works will not be affected: "They will still be covered by the copyright exception that already exists in national legislation." Article 11, he also explains, gives press publishers the right to claim remuneration if platforms use their content, but hyperlinks and private copy can still be used. Small, independent publishers can also claim remuneration from the platforms that use their content.

● Another current dispute with the tech giants concerns the right to be forgotten. France's privacy regulator, CNIL, is attempting to globalise the right beyond Europe. At a hearing at the EU Court of Justice, Google said extending the right is "completely unenvisagable [sic]".

BROADBAND

ANNUAL STATUS REPORT

The latest broadband status report by the Broadband Commission for Sustainable Development shows only a small increase in the number of governments now having a national broadband plan or strategy – just three more, taking the total to 159 countries (81%). The commission has upgraded its services affordability threshold target for 2025 from less than 5% to less than 2% of monthly gross national income per capita, which inevitably has meant fewer countries meet this target today. The report also notes that it will be hard to meet connectivity targets given population growth rates of 5% a year. Currently, least developed countries have just 17.5% broadband penetration and the target is to double this to 35% by 2025. Other metrics covered include digital skills and literacy, financial services, and achieving gender equality, where the gender divide grew from 11% in 2013 to 11.6% in 2016. Women are 26% less likely to use mobile internet than men (see also page 28). See bit.ly/2pbJoID

SOCIAL MEDIA

CALL FOR A REGULATOR

Executives from UK media organisations – the BBC, ITV, Channel 4, Sky, BT and TalkTalk – have called for a new regulator to take on fake news, child exploitation, harassment and other online issues. "We do not think it is realistic or appropriate to expect internet and social media companies to make all the judgment calls about what content is and is not acceptable, without any independent oversight," they say. In June, Sharon White, head of UK regulator, Ofcom, signalled that social media regulation could be on the cards, and Ofcom has now published a discussion paper on addressing harmful online content, drawing on lessons from the regulation of content standards for broadcast and on-demand video services. Also published is research on people's perception of online harm. The documents are at bit.ly/2NnA174

NEW ZEALAND

MOBILE ISSUES IN FOCUS

New Zealand's Commerce Commission has published an issues paper on mobile telecoms in the country, which presents its initial observations and analysis of the performance of mobile markets and emerging developments, and considers their potential impact on competition and market outcomes. It is looking into competition issues (such as why virtual operators supply less than 1% of services in New Zealand); consumer engagement and satisfaction; and 5G, infrastructure sharing, network slicing and e-SIMs. The paper is available at bit.ly/2pdmVea

PLATFORMS

JUDGING LIABILITY FOR CONTENT

The Centre on Regulation in Europe (CERRE) has released a report, "Liability of online hosting platforms: should exceptionalism end?", in which the authors explore whether platforms such as Facebook, Twitter and YouTube benefit from a "free pass" on liability, and if their liability should increase with their growing economic and societal importance. They consider if and how this growing importance ought to affect their liability exemption when hosting illegal material (e.g. terrorist, racist and xenophobic content, child pornography, diffusion of copyrighted material without licence or sale of counterfeit goods), in the context of the EU's e-commerce directive, and other pieces of European legislation.

The report notes that the response so far has not been to review the e-commerce directive but to adapt sectoral laws, issue guidance and develop co- and self-regulation schemes. A number of

recommendations are made on the regulatory framework and on the liability exemption:

- As tackling illegal material online is in many hands and rules, these rules need to be consistent
- Liability rules should efficiently share the burden of policing the internet among all the private and public actors
- Liability rules need to be principles-based to ensure easy adaption to rapidly and unpredictably evolving technologies and markets
- For platforms to benefit from the liability exemption they should provide a practical and proportionate infrastructure allowing users to comply with their responsibilities, and ensuring effective detection and removal of illegal material
- Illegal material that justifies a more extensive duty of care needs effective co- and self-regulatory schemes that sit with the e-commerce directive.

The CERRE report is at bit.ly/2x9MKil

NET NEUTRALITY

RESEARCHERS SPOT THROTTLING

Researchers have found that many mobile operators are throttling video traffic. Using data from an app called Wehe, developed to track net neutrality violations, a team at Northeastern University in the US conducted more than half a million data traffic tests across 161 countries, finding that operators are giving a fixed amount of bandwidth – typically something in the range of 1.5 to 4 Mbps – to video traffic, but they don't impose these limits on other network traffic. And because of differences in mobile data plans, they might throttle one user's internet traffic but not another's. There is also no evidence that any of these policies are only happening during network overload. The researchers have contacted the Federal Trade Commission to report the findings, and will publish them in due course. See bit.ly/2O33qQd

SPECTRUM

UK SELECTS 5G PILOT REGION

The West Midlands has been selected as the UK's first multi-city 5G testbed. The Urban Connected Communities Project, the next step in the UK government's 5G Testbed and Trials Programme, will develop a large-scale 5G pilot across the region, with hubs in Birmingham, Coventry and Wolverhampton. The project has an initial focus on the health, construction and automotive sectors.

Among the plans:

- Hospital outpatient appointments and emergency consultations will be carried out remotely by video link not subject to droppage or latency barriers
- Connected ambulances: crews at an incident could access specialist advice at the scene
- Live streaming of CCTV footage from public transport buses.

IIC EVENTS

8-11 October, Mexico City
IIC Communications Policy and Regulation Week, comprising the International Regulators Forum and Annual Conference

4-5 December, Washington, DC
IIC Telecommunications and Media Forum

18-20 February 2019, Kuala Lumpur
IIC Regional Regulators Forum and Telecommunications and Media Forum

IN BRIEF

DIGITAL PANEL

UN secretary-general, António Guterres has established a high-level panel on digital cooperation to inform on the benefits of digital technology and investigate how to protect against unwanted impacts and negative externalities. The panel is to be co-chaired by Melinda Gates and Jack Ma (Alibaba) and has 20 members representing industry, civil society and academia.

OFCOM'S TECH MAN

The UK telecoms and media regulator, Ofcom, has appointed former BT/EE director Mansoor Hanif as its new chief technology officer.

ARCEP'S WEBSITE

France's regulator, Arcep, has redesigned its website to adopt a service-based approach and to engage new groups of stakeholders that are less familiar with regulation, to sustain its data-driven regulatory approach. See arcep.fr

DATA TRUST MARK

Singapore's The Infocomm Media Development Authority (IMDA) and Personal Data Protection Commission (PDPC) have launched a call for organisations to participate in a pilot for Singapore's Data Protection Trustmark (DPTM) certification, a scheme for firms that consumers can trust.

APPLE MERGER OK

The European Commission has approved under the EU merger regulation the proposed acquisition of Shazam by Apple. It concluded that the merger would not adversely affect competition in the European Economic Area or any substantial part of it.

SYDNEY SESSIONS

The IIC's TMF in Sydney was packed with high-level speakers from a region at the forefront of regulatory issues, as **CRISTINA MURRONI** reports

Robert Picard (Reuters Institute for the Study of Journalism) gave the keynote to open the debates at the IIC's Telecommunications and Media Forum (TMF) in Sydney. Noting that several rationales may underpin policymaking in communications, he compared the regulatory settings in Australia, the UK and the US. In all three countries, policies are driven by opportunities to develop industries and services, and by the desire to maintain dominant social arrangements. The main regulatory agencies are independent and funded through regulatory fees and spectrum auctions, with a high degree of involvement with the industry players. However, they differ in size (the FCC being the largest with 1,600 employees, followed by Ofcom in the UK with 800 and the Australian Communications and Media Authority, ACMA, in Australia with 400) and the geographies they preside over. Regulation is preferred to other policies, like incentives, or the promotion of good behaviour, which should receive much more attention. Greater connections across overlapping agencies (antitrust, industry development) is also increasingly important. Policymaking ought to be principles-based, and while technology is

important, harnessing and directing technologies for the use of collective benefit has to be the primary objective.

CAN REGULATORY PRINCIPLES KEEP UP WITH PRACTICE?

Addressing the first panel in her keynote, Nerida O'Loughlin (ACMA chair) highlighted that the

government reinforced ACMA's remit to ensure that all layers of the communications market are covered and that the sectoral regulator is fit-for-purpose. It also provided the broad principles that should guide ACMA's work: its actions should be timely, transparent, accountable, proportionate, consistent and targeted and the regulator should have regard to the importance of promoting competition, innovation and efficient investment. Rules need to have a sound legal and empirical base. But she stressed the need to be pragmatic, and use regulatory and other tools in innovative ways to address issues in the sector as quickly as possible when they emerge. Fast moving times require fast regulatory responses even if the tools can only be 80% effective; that is 80% better than nothing.

Ben Heap (H2 Ventures) explained that confidence in the policy environment is critically important for venture capitalists, because their investments, by definition, fund opportunities which have a very high likelihood of failure, and they cannot afford that those investments that do well may fail because the regulatory landscape has changed.

Belinda Moffat (New Zealand Broadcasting Standards Authority) gave an overview of the New Zealand regulatory system, which has several regulatory bodies addressing various content providers. A regulatory review is planned but key policy principles have been set. The purpose of content regulation, she said, is to promote the right to freedom of expression, subject to the obligation not to cause harm. Regulation needs to be technology and platform agnostic to enable growth and innovation, and to ensure a fair playing field for competition. It also needs to be simple, transparent and accessible to the public.

Mike Mrdak (Department of Communications and the Arts, Australian government), spoke about his country's Next Generation Network (NBN), saying that the next challenge after building it will be to make it profitable and ensure future investments can be financed. He noted that even though the NBN will go some way towards achieving the goal of bridging the digital divide, this issue is likely to re-emerge with 5G and other technologies.

The conversation expanded on possible ways of regulating firms' behaviour, emphasising the need to focus on customers and greater reliance on consumer research by regulators.

PLATFORMS ARE ALL THE RAGE

Rod Sims (chair, Australian Competition and Consumer Commission, ACCC) reported on the ACCC's enquiry into digital platforms, and the effect that digital search engines and social media platforms have on media and advertising markets, with a particular focus on the impact on the quality of news and journalistic content in Australia. Advertising today is about data and user engagement, he maintained, where the platforms are dominant and expected to continue to grow. But there are other questions, such as the platforms' market power, their transparency and fairness using consumer data, and their regulatory treatment compared with other players. While the internet has created plurality in a concentrated media market, the issue of personalised newsfeeds creating a filter bubble is non-trivial, and so is the explosion of non-rigorous journalism. The answers to these



The NBN will go some way towards bridging the digital divide, but it is likely to re-emerge with 5G and other technologies.



questions will be complex and challenging, and they will define our new media age.

Robert Picard argued that while social media platforms bring potentially huge audiences to content providers, they also compromise revenues and limit companies' direct contact with their consumers, reducing the quality of the data they have about consumer interactions to the advantage of the platforms. It is not clear, however, whether regulation should intervene. These are issues affecting business relationships, but competition law tends to focus on the effects on competing firms offering similar products and services, and on the consumers of those products. The application of competition law to business relationships and effects on downstream users is often very challenging.

Commenting on the lack of a level playing field across media players, Bridget Fair (Free TV Australia) called for independently verifiable standards, rather than just relying on social media's own viewing figures, to allow advertisers to compare the platforms' metrics. Simon Milner (Facebook) addressed myths about the popular social media platform, such as the suggestion that Facebook extracts value from publishers and does not generate any. By providing another channel for journalism in the concentrated Australian market, Facebook has enabled new players to enter the journalistic and news market for the first time, he said. As for the idea that advertising is finite and Facebook is crowding out the other players, in reality Facebook has tapped into the long tail of advertising, the millions with extremely small budgets who could not buy TV ads. Is Facebook a media company and should be regulated as such? Milner said it is a platform that connects people and organisations. It is up to people who are using its services to determine what they see in their news feeds. Finally, there is the competition myth: Facebook is in a fiercely competitive market for people's attention, since it is just one of the many apps that people have on their phone.

Tom Burton (The Mandarin) said that the bigger issue is that we still do not really understand the value of data: accountants and economists can't agree about it; in balance sheets there is no line to say what the data is worth.

John Broome (Australian Association of National Advertisers) explained that self-regulation is channel neutral; its codes apply equally to TV, radio and also to social media and digital platforms. The participation of all media owners, new and old, is necessary for supporting responsible advertising and the industry is working to measure things consistently, and to make sure that ad fraud and brand safety measures are in place.

CONTENT AND DEMAND

Content on social media is poorly understood by commentators and policymakers, argued Stuart Cunningham (Queensland University of Technology). One common misconception is that user-generated content is not viable as a business: this is ignoring the business models that have



A question from the floor, speakers and a panel at the Sydney TMF

consolidated and changed over the past 10 years. They have evolved over time to include a growing range of revenue sources, including merchandising, live appearances, licensing, crowdfunding, brand integration and the rise of the influencer. Every kind of revenue model in this entrepreneurial practice depends on activated community support. Mainstream arts, culture and screen industries, with all their talk of audience building, have much to learn from this practice.

Another misconception has to do with the quality of the content. It is not only about the quality of content, it is about the quality and diversity of engagement: debates about quality need a strong dose of demand-side thinking. Cunningham said we need to work these points about the demand side and business models into our established policy instruments at the agency support levels.

Also on the content panel was Bárbara Navarro (Google), who provided an overview of the success stories and opportunities available to Australian creators on the internet, and warned against over-regulating the internet, which stifles innovation. Deanne Weir (Hoodlum Entertainment) provided the perspective of the content producer, arguing that the internet has enabled companies like Hoodlum to access international markets and raise the average budget of productions. Unfortunately, higher budgets are not matched by higher licence fees from broadcasters, so new ways of filling that gap need to be found. She argued that a quota of independently produced content could improve the situation.

Dean Ormston (APRA AMCOS, a music rights organisation) echoed the view that Australian creators are getting more successful on the international stage, with foreign revenues from the music community having doubled in the past 5 years and enormous growth in streaming and video on demand. For this community, a good copyright regime is essential for monetising its work, and rights and innovation should be considered together and not separately.

David Anderson (Australian Broadcasting Corporation, ABC) highlighted that 91% of Australians trust ABC and 12.3 million people watch it every week, the result of producing as much quality Australian content as possible and believing that quantity doesn't equal quality: it's about maintaining a high quality of distinctive Australian content, and not getting distracted by a quantity requirement that could otherwise result in a different decision.

Richard Hooper (Broadband Stakeholder Group, UK) expanded

◀ on the existential threats to public service television: prominence in the world of internet broadcasting, is one, political threats another, as is the competition of big players with huge budgets for content creation, such as Netflix and Amazon. There is a strong debate on whether platforms are also publishers and should be regulated as such; perhaps the winning approach may be to argue that whatever the definition, these companies have a duty of care towards their customers.

This was expanded on during the Q&A session: the idea is that just like physical amusement parks or sports stadiums, electronic platforms have a duty of care towards those who go there, i.e. both content creators and users. When big players invest millions in technology to protect intellectual property rights, for example, they are showing duty of care. A corollary of this approach would be that anonymity could no longer be used to protect misusers.

CYBERSECURITY IN THE IoT ERA

Alastair MacGibbon (Australian Cyber Security Centre) opened the session on security with the news that cyber threats to national security are on the increase for all actors: government, businesses and citizens. He added that, with the internet of things (IoT), we will need to worry not just about the confidentiality of information, but also about its integrity and availability when facing potential attacks. The approach adopted by Taiwan was presented by Hong-Wei (Howard) Jyan (Department of Cyber Security, Executive Yuan), who explained that Taiwan's strategy consists of two main planks: defining security standards and legal frameworks, and establishing how to cooperate with critical infrastructure service providers. Darren Kane (NBN) argued that security needs to be factored in at the start of any digital project, otherwise it will be an ongoing risk that is very difficult to fix.

Frank Zeichner (IoT Alliance of Australia) expanded on the ingredients in the formula for security that apply to the new world of IoT. Since there will be many more sources of data, and we will need to know what's the right data, rather than fake or "not-data"; metadata will be especially useful, and organisations will need to learn when and how to use data that they are not generating themselves. The key implication is this will change the way in which we react and measure data, which will be different for every industry.

Instead of only talking about regulations and frameworks, the panel felt that we should think about educating the public, which could go a long way to solving some of the most frequent cybersecurity issues. We have pushed far too much responsibility onto end users, and not driven responsibility back to industry, which is another reason why awareness and education are key issues.

TELCO TRANSFORMATION

After years of industry disruption powered by innovation and by non-traditional entrants that have set new benchmarks of customer experience, telcos are now transforming, illustrated Brendon Riley (Telstra). They will evolve into platforms,

delivering next-generation service experiences, such as connected vehicles, smart metering and locate and sense technology that enables self-driven wheelchairs for airlines and pallets at supermarkets. These developments imply huge investments, and greater incentives to invest should be provided.

Guillaume Mascot (Nokia) added that while 5G means more opportunities for diversification – new services and new verticals – it also means even greater demands for spectrum, and significant labour displacement. As a result, education will grow in importance and the employee/employer relationship will need to evolve. Chris Althaus (Australia Mobile Telecommunications Association), said we should think about the 4G/5G mix instead of just focusing on 5G. The real question, he highlighted, is whether the community is ready for the infrastructure deployment needed to see the benefits of IoT.

Teresa Corbin (Australian Communications Consumer Action Network) also stressed how services should be trusted, reliable, available and affordable, especially if they are essential services. A key issue is the fact that consumers have too little awareness of the exchange implied when they get



Telcos are now transforming into platforms delivering next-generation service experiences.



something free of charge and provide their data. John Stanton (Communications Alliance, Australia) highlighted several benefits of technology developments,

such as 5G enabling enhanced broadband and intelligent machines that will help us double food production by 2050, while reducing food waste.

PUBLIC INVESTMENTS, PRIVATE INVESTORS

Many elements of public infrastructure, like hospitals, have a communications component, said Deena Shiff (BAI Communications), and the two will be increasingly enmeshed in the future. There are many examples of public-private partnerships providing communications in public contexts, such as the subways in New York, Toronto and Hong Kong where the infrastructure provider pays for coverage in subways, and then rents it to telcos. Dan Lloyd (Vodafone) added that there also several different infrastructure-funding models, and they should not be viewed as mutually exclusive. Co-funding and seed funding can provide catalysts for investment.

For Henry Ergas (The Australian), private ownership and market forces should be the default, where the risk is borne by those who choose to bear it, not taxpayers who have no choice. Indeed, there should be no benefits given to the private sector without transferring the risk. Only in some circumstances is the government the best risk-bearer. David Havyatt (Havyatt Associates) remarked that in the 1990s there was excitement about infrastructure-based competition but even though equipment prices have fallen consistently over time, this cannot provide all the answers in all regions.

TRUST IN AI, TRANSPORT AND RISK MANAGEMENT

The importance of trust for new technology products and markets to develop was highlighted by Megan Brownlow (PwC). She illustrated a tool developed by PwC to help businesses and organisations identify the drivers of trust. Clayton Noble (Microsoft) added that trust is built on behaviour that is considered responsible and acceptable, and the consensus grows out of norms that we exhibit every day, sometimes backed up by laws and regulation. There are principles that need to underpin any technology development if we want them to be trusted: reliability, safety, privacy, security, fairness. Artificial intelligence (AI) should not replicate the bias that human data will naturally contain, and it should aim to eliminate existing digital divides. It should also strive to be as transparent as possible and AI developers need to be accountable for the systems they create.

Michelle Zeibots (University of Technology Sydney) reported on a project developed for Sydney Trains, which provides a “dynamic passenger information system” where information comes from sensors monitoring what people are doing in the busiest stations, for example. This will reduce congestion by advising passengers of the actual arrival of trains with “nudge” messages, so that they can wait in places other than the platform.

Sebastian Robertson (BIRDI) described his firm’s drone management platform, developed to help businesses integrate drone technology into their operations to capture data in a safe, reliable and compliant way. Toby Walsh (University of New South Wales) reminded the audience that AI changes the scale and the speed of what we can do, creating both fresh opportunities and challenges. That we give machines the right to make decisions of their own is one AI development that does require a serious think about ethics. Machines should be held to higher standards than humans, he said, and independent, transparent bodies are needed to provide ethical approval processes.

DATA USE AND PRIVACY – THE AUSTRALIAN WAY

Peter Harris (Productivity Commission, Australia) opened the final panel with the Australian approach to data management, which might provide a long-term foundation for a new regime that looks at the opportunities that will come from control of one’s data, rather than starting from the threat of privacy infringements. The commission has proposed a comprehensive consumer right for continued access to data as a form of guaranteed control, rather than ownership. Governments will only be better trusted with data if consumers feel that they too are sharing in this right. First, Australians will get standards on the safe exchange of data, he said. Presently, there is no public standard for data trading, but there will be a consumer data right applicable to both public and private data collectors. Australia is likely to go beyond the informed consent provision of the EU’s GDPR, and propose regular “push updates” from the collector, and the publishing of who is receiving individuals’ data, for maximum transparency.



More speakers in action in Sydney, while participants pay attention

Aileen Chia (Infocomm Media Development Authority, Singapore) reported on data portability in Singapore. In the health sector, for example, the government has announced that it will mandate that medical institutions have to provide data for the national electronic health record, and this central system will allow access by licence to medical practitioners, so that they can have a comprehensive understanding of the history of the patient.

Sophie Dawson (Bird & Bird) expanded on the differences between the GDPR, which is focused on individuals, and the proposed Australian regime. Peter Leonard (Data Synergies/IoT Alliance Australia) said that there are three main approaches to privacy. One is to look at it from the viewpoint of user control, or as an economic right, which in essence is at the heart of the Australian recommendations. Then there is the concept of privacy as a human right, which has been the basis of EU regulation of privacy, and with which the right to be forgotten is particularly attached – along the lines of the right to have a sentence “spent” after several years of good behaviour. Finally, there are countries that see privacy as part of their digital trade agenda, to market the country as a safe place to store data, compared with other jurisdictions that may not have effective data privacy regimes.

Trust is difficult to gain and very easy to lose, stated Harry Iles-Mann (patient/consumer advocate), who said that in healthcare, data ownership would be more appropriate than just data control, considering how patients traditionally have been disempowered in the patient-clinician relationship. Nadia Levin (Research Australia) added that the lack of consumer data literacy – even understanding what data is – is an even bigger issue than data ownership vs control. Transparency is imperative, and we need to understand how much transparency we are prepared to sacrifice for the opportunity of betterment, particularly in the health sector.

Transparency, the panel argued, is about informing customers in a way that is meaningful to them rather than providing legal T&Cs that nobody reads. The discussion showed that consumer expectations for transparency and the deal that the consumer has on the distribution of benefits with platforms have changed since the GDPR and the Cambridge Analytica/Facebook story.

CRISTINA MURRONI is a telecoms and media analyst.

ROAD TO THE DIGITAL ECONOMY

How should telecoms regulators pave the way for the digital economy? **JUAN MANUEL WILCHES** at Colombia's regulator says a change of mindset is needed

If any telecoms regulator wants to understand what they need to do in the current digital environment, they need to go beyond the limits of the telecoms industry and understand the challenges facing all public and private stakeholders that need communications networks as the base layer to support digital growth in their economic sectors. At present, Colombia has four studies that were developed by the Communications Regulation Commission (CRC) to understand the impact of digital transformation in the country. They describe how any regulator should approach the challenges that arise from the rapid evolution of the digital economy, proposing actions and recommendations for multiple governmental stakeholders.

The first study, published in 2017, identified challenges for the development of e-commerce in the country.¹ We thought the lack of payment options and appropriation of financial products were the most difficult barriers. However, the main conclusion was that consumers need to build trust in the digital environment to perform more transactions online. A second barrier for the development of e-commerce is the lack of certainty in the physical delivery of packages, due to issues affecting the logistics portion of the value chain. Taking this into account, the CRC set out to analyse the provision of postal services and developed, in a second study,² a set of recommendations and legal/regulatory actions to improve its efficiency and prepare the industry to support increasing online demand.

At the same time, we were working on defining a way to measure the digital economy. There is no way that we, as government or regulators, know if we are doing a good job if we do not set a baseline and establish a way to measure the evolution of digital transformation. So the CRC developed a detailed methodology³ to measure the impact and evolution of the digital economy in our country. Based on a proposal presented by the OECD in 2015, we set out our efforts to understand the needs of stakeholders in multiple economic sectors in terms of analysing the effect of digital transformation on the activities they perform. The result was the definition of 128 indicators, including one nationwide compound indicator (the digital economy index), as well as regional indicators that will help evaluate improvements to digital transformation in the years ahead.



On the straight and narrow: a road in the capital, Bogotá

Finally, to organise all the different initiatives, recommendations and actions that came out of these studies, and to provide a “whole of government” approach to the analysis of the digital economy, the CRC designed a roadmap for the digital economy for the country.⁴ We were aware that decisions related to digital transformation would need to be structured in such a way that all public and private stakeholders were aligned with the same objectives. Based on this, a group of 20 recommendations or actions were defined for the roadmap. Six of them relate to telecoms regulation decisions that need to be adopted. Three legal decisions are required to provide a better framework for the development of digital services. And 11 proposed actions aim to unchain the digital economy, starting by the need to define a unified digital policy for the country coordinated by the highest level of government and to which all stakeholders would need to be committed (see panel for details of the roadmap).

What you might think is that it is not common for a regulator to get involved in such studies, or to recommend or propose to other institutions in government actions or decisions that need to be made, because this would go way beyond the limits of what a traditional telecoms regulator usually does or has the ability to do. However, if we as telecoms regulators don't understand what is happening outside of our telecoms frame of mind, we might underestimate the impact of our decisions and adopt rules that would probably limit the possibilities of telecoms market players to become the digital services providers that the rest of the economy needs.

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HOW DID THE CRC GET HERE?

About 3 years ago, during a strategic planning session, the team at the CRC was trying to determine what the institution should look like in 2025. And the conclusion was that, if we continued to do the same kind of things in the same way, we would disappear altogether. As in any other sector, there's a competitive environment in which online platforms are starting to gain market share, the services they offer are complementing traditional telecoms services, and consumers are becoming more "digital" every day. Traditional regulation is not needed anymore, and rules need to be simplified so that all market players have the same possibilities to compete and expand their reach to provide integrated solutions adjusted to the digital environment.

As Chris Chapman, president of the IIC, has said, telecoms regulators need to become promoters of the digital economies of their countries. If we don't act as promoters, our decisions could undermine the appearance of new digital offers in the market or restrict telecoms operators that want to provide these offers.

The first thing a telecoms regulator needs to do is to change its mindset. We need to build the capacity and acquire the knowledge and competencies to be able to understand the new digital environment, the new business models and the way the new competitors behave. If we do that we will be able to rethink the traditional way of doing things and estimate the impact of our decisions on all digital market players appropriately.

For this purpose, the CRC decided to modify its own internal structure as well as to imprint the idea of changing the way we think in the organisational culture, and we are still in the process of implementing these changes. We are dedicating more resources to analysing the information that is already being gathered from multiple sources, trying to get better in data analytics. We also need to get the new knowledge about the digital environment studies we are developing to all employees and to external stakeholders, so we are implementing knowledge management practices across the organisation.

The next tool for a promoter of the digital environment is an ideal legal framework establishing new responsibilities for regulators to allow them to have a broader view of the digital environment, not just one limited to the telecoms industry. Changes can take time and a lot of effort, but an ideal framework is one of the best tools that governments can provide to ICT regulators to better promote digital services. The framework can be seen to enable a mandate for the regulator to "find ways to regulate less and promote more".

But as these modifications are not that easy or will take time, we, as regulators, can always show that we are committed to that mandate. We must look for ways to simplify regulation, make it leaner, less costly to all market players, and easier for consumers to understand. All of us have been working with a history of rules that were needed in the past, and probably some of these rules will still

COLOMBIA'S ROADMAP

Actions by MINTIC

- Strengthening the competence of MINTIC
- Criteria for defining information services
- Creation of a multisector monitoring system

CRC projects

- Regulatory framework for promoting broadband deployment
- Competition analysis of telecoms and information services
- Market analysis of online audiovisual services and TV
- Net neutrality for new business models
- Tools for analysing multisided platforms
- Updating the regulatory framework for the postal sector

Actions by other institutions

- Creation of a public policy for the digital economy (Presidency, DNP)
- Creation of an inter-sector committee (MINTIC)
- Analysis of online audiovisual services and subscription TV (ANTV)
- Mechanisms for resolving conflicts in the digital economy (MINTIC)
- Digital user protection in transnational services (SIC)
- Regulatory regime for data transfer in digital markets (SIC)
- Creation of a digital hub for intellectual property rights (DNDA)
- Tax regime for the digital economy (DIAN)
- Labour regime for the digital economy (Ministry of Labour)
- Competitive analysis/promotion of the big data market (SIC, CRC, DNP)
- Promotion of sandboxes in the finance sector (Ministry of Finance)

MINTIC = Ministry of IT and Communications ANTV = TV authority SIC = competition authority
DNP = national planning department DNDA = copyright agency DIAN = tax agency

These actions are mostly due to complete by 2020.

The roadmap report details a number of digital economy topics:

- Competitive dynamics of the digital economy – such as knowledge convergence and globalisation – and its definition
- Benchmarks – five countries were compared (US, UK, Australia, Singapore, Chile) in areas such as the existence of a legal framework for the digital economy, regulation of online user protection, net neutrality, intellectual property etc.
- Sector analysis in Colombia – transport, tourism, media, finance, logistics/post, manufacturing
- Challenges detailed and actions needed – the report details the actions as in the list above, such as establishing criteria that define the digital economy in the context of Colombia's free trade agreement with the US.

be needed, but if we just start to reevaluate the relevance of all the regulation that is in place, we will certainly find ways to improve it.

The CRC has already started to work on simplifying regulation and has tried out new ways to promote reactions from market players. One example is the publication of quality of service measurements made directly by the CRC. Once some telecoms operators started to see they had the lowest rankings, it prompted them to invest to improve network performance and their quality indicators went up again. Furthermore, the CRC has implemented autoregulation mechanisms, letting market players propose ideas to maximise compliance and consumer benefits, but also reducing the regulatory burden.

At the end of the day, all of these results and the modifications that the CRC has made in its regulation may not be perfect, and a lot of work is still needed, but I believe the most important decision we, as regulators, can make is to focus ourselves on changing our traditional mindset and find ways to collaborate with multiple stakeholders to rebuild the regulatory framework into one adjusted to the needs of the digital ecosystem in each of our countries.

JUAN MANUEL WILCHES has been director of the CRC since 2015, joining as a commissioner in 2013.

PARLIAMENT, PEOPLE AND PLATFORMS

DAMIAN TAMBINI says the first step in reining in platform power is to set up independent, cross-party, civil society commissions supported by governments

After a series of scandals about Facebook in particular, but also YouTube (Google) and other platforms, governments are now involved in multiple negotiations with powerful internet intermediaries. The danger is that these complex processes will get bogged down and parliaments and the public will be played by the platforms. To ensure the best deal for the public, governments need a clearer overall strategy and coordination, and genuine support of the public.

The platforms have finally been dragged to the table. Facebook's Mark Zuckerberg was called to testify to the US Senate and the European Parliament. With several ad-hoc inquiries in the UK and the EU on issues such as internet regulation, fake news and hate speech, what happens next in Brussels, Washington, London and other capitals will shape not only the internet but the traditional media for generations. The emerging crisis has occurred because these platforms now play a crucial infrastructure role in most of our lives. They are too important and powerful to ignore.

They are associated with a range of harms from hate speech to child exploitation to dominance in advertising markets. They enjoy power without responsibility as news publishers, widespread data tracking in "surveillance capitalism" supported by addictive behaviours, and are re-engineering our environment from the High Street to our transport infrastructure. But they also deliver huge benefits, which is one reason why it is so difficult to leave, and why they benefit from powerful lock in and network effects.¹

Such a broad canvas requires a clear-sighted approach – policymakers must consider more holistic approaches to the problem of platform power. This means joining up the various policy fields where states and platforms are negotiating about the responsibilities of powerful internet intermediaries. If policymakers fail to do this, they will undermine their negotiating position.

In the UK, a House of Lords inquiry has posed the question of how the internet should be regulated.

As Harvard law professor, Cass Sunstein, has pointed out,² regulation is the norm on the internet, in the form of property rights, and protection from harm is necessary online as it is elsewhere. The regulatory question is how and by whom. The internet – as a regulatory object – is difficult to grapple with, because it is nothing but a cluster of communications protocols and standards. What do exist, and increasingly control and even supplant the internet for many consumers and services, are platforms and intermediaries such as Google, Amazon, Facebook and Apple. This is what the House of Lords inquiry is really about. If we, via our representatives, do not regulate the platforms, they will regulate us.

WHAT IS THE SOCIAL VALUE OF PLATFORMS?

In the UK, the government has a standard procedure when considering if anything needs to be regulated, and that is the treasury's Green Book.³ According to this government bible, policymakers must first ask whether markets will fail to deliver optimal welfare. Like the methodologies used in competition law, it is based on a model of individual consumer welfare. As pointed out by myself and colleagues on spectrum allocation,⁴ there are limits to this approach when it is applied to complex, incommensurable policy issues.

Fundamentally, it is not possible to capture the value to society of broadcasting and the internet in simple models based on cash values. In policy terms, what is the value of a service to society is the question that must be asked before any regulatory question is posed; whether that is the question of whether something needs regulating at all (the Green Book question); or how it needs regulating – through fiscal measures, competition instruments or some form of licensing?

In the context of public service broadcasting, there is a generally accepted – if sometimes contested – notion that the BBC, for example, delivers positive social externalities – or "public value" – that would not be delivered by the market. Our problem with



regulation of the internet is that we have not even asked the prior question of whether the internet – or rather the platforms – deliver social value or whether that value might be negative.

The truth is of course that what the platforms do, and whether they deliver value for society, is being worked out in a discussion across society and parliament. In essence, parliament is negotiating with the platforms – as it did over the previous two centuries with the press – about how and to what extent they will serve society, and what regulatory deal they will get to facilitate this. The problem is that until now, this has been done in a fragmented way, with one conversation about copyright, another about child protection; one about hate speech and another about fakery; one about election advertising and another about data privacy.

The solution to the current impasse is not going to be a tweak here or there, but a policy response that is coordinated across multiple policy areas. Competition policy – shaping and structuring the market as a whole – must be considered alongside other forms of regulation, for whether the platforms develop an ethic of public value across each of these considerations will depend on their own voluntary behaviour. If they fail to do so quickly, society will rein them in.

If arms-length ethical standard setting fails, governments have many options. These include, at the extreme, break-up or nationalisation of platforms or punitive regulation. China and Russia have demonstrated that the structure of the internet does not prevent the licensing of social networks and control of their content. In liberal democracies that recognise fundamental rights, the regulatory solution will involve autonomous institutions, regulated in the public interest, but the detail of how regulation will work institutionally (what combination of self, co- and statutory regulation) is yet to be determined. Governments

The UK's Houses of Parliament, where the House of Lords internet inquiry is taking place

must rediscover the social objectives that lie behind regulation and develop a clearer vision for where they want to get to. This means negotiating a new “social compact” for platforms, which respects their autonomy, but gets the balance right between transparency, independence and accountability.

TAXATION

Fiscal policy can be used to achieve social policy goals. There is a consensus in favour of high taxation on tobacco and alcohol, gambling and more recently sugar, because of the overwhelming evidence of detriment and negative social externalities associated with consumption of those products. On the other hand tax breaks are offered to goods considered beneficial, for example, controversially, all newspapers in the UK benefit from a VAT exemption.

Because they provide virtual services, there has been a history of ineffective enforcement and taxation of the platforms, and a degree of avoidance. As a result there has been a lot of discussion about using fiscal policy to achieve regulatory outcomes, but not a great deal of decisive action. This is due not only to difficulties of enforcement but because there is no consensus on the social benefits or costs associated with, for example, social media, search or the wider data and artificial intelligence (AI) services they enable. In this, the next few years are crucial, and a social policy driven tax regime that attempts to reinforce socially beneficial and undermine socially costly outcomes is likely to be designed.

In recent weeks and months this consensus has shifted: in part because of the growing realisation that data driven “surveillance capitalism”⁵ may act to the detriment of individual wellbeing and fundamental rights including privacy; and in part because new evidence has emerged about worrying negative political and social consequences of platforms, including in the most sensitive areas ➔

◀ of elections and national security. These negative externalities are particularly difficult to assess: there is currently a very wide range of opinion on the cultural, political and economic benefits – and disbenefits – delivered by platforms.

In such an environment, calls for levies on platforms to fund various social goods including news, gain more traction. Policymakers in France and Germany have developed several iterations of digital taxes already, and US expert Victor Pickard recently called for a “public media tax” on Facebook’s and Google’s earnings to fund public interest journalism.⁶ He calculated that a 1% tax on their 2017 net income in the US alone could yield \$285m for independent journalism. A similar proposal has been advanced in the UK by campaigns such as the Campaign for Media Reform. The hazards of such an approach are obvious – the compromise of genuine independence – but the history of the BBC and other policy instruments demonstrate that it is entirely possible to provide public funding and protect media independence.⁷

WHAT WOULD IT MEAN TO ‘BREAK UP’ FACEBOOK OR GOOGLE?

In the book, *Digital Dominance*,¹ edited by myself and Martin Moore, we conclude with a call to open up or break up the dominant social media platforms. We are by no means the first to advocate this obvious move. Emily Bell, one of our chapter authors has made the same point. With companies that have the economic features of network effects that lead to natural monopolies the choice, as summarised by Jonathan Taplin, is whether to regulate them as monopolies or break them up.⁸

HOW DOES COMPETITION LAW NEED TO CHANGE?

A related issue is the fact that existing competition law and antitrust have been developed and applied in a way which creates difficulties in dealing with concentrations of market power in platforms. There are various problems: one is that consumer interests are often constructed in narrow terms and in particular in relation to price. Lina Khan points out in her excellent essay¹⁰ that Amazon’s long-term strategy of achieving market dominance through low prices, while sacrificing short and medium term profits has had the additional benefit to Amazon of providing some immunity from competition law as it appears to regulators that Amazon’s low prices indicate the degree of consumer benefit.

Martin Moore’s work makes clear that the history of antitrust in the US is a history in which competition law and regulation has much wider social objectives than price alone. While there is a need for a good deal of caution in offering regulators or politicians wide discretion in examining the public interest benefits of private actors such as internet platforms, it is entirely possible to design regulatory systems that ensure regulated companies protect a wide range of public benefits. Drawing on the history of media regulation in particular, and the combination of sector specific public interest benefits with general competition benefits, it should be possible to arrive at new forms of regulation.



We are therefore currently at a decision point. Break up or regulate as monopolies?



work: data driven dominance enables social media to become entrenched and see off competitive entrants (see article on page 22 of this issue). We are therefore currently at a decision point. Break up or regulate as monopolies? Break-up is, in addition to punitive taxation, the big stick held in the background as a discussion goes on about what kind of regulation might work.

WHAT KINDS OF STRUCTURAL SEPARATION WOULD ADDRESS THE PUBLIC POLICY CONCERNS?

If it does come to breaking up platforms how would that work? This is not science fiction. Various forms of structural separation remedies are available in communications regulation; incumbent former telecoms monopolies in Australia, Japan and the EU have over the past decade been required by national regulators to progressively separate internal divisions – such as wholesale from retail divisions.⁹ Classically, the history of US antitrust has shown that both in the energy sector and in communications with the breakup of AT&T, regulators and Congress have been prepared to break up unacceptable concentrations of economic and political power when this becomes necessary.

The signs from Brussels and Washington are that momentum is building for such a break-up. This could take the form of a separation between the different operations of the platform company, for example between the advertising, personal data, content production and user generated content departments. And if a structural solution cannot be found, regulators can shape behaviour. One could imagine a public interest intervention requiring some form of divestment or structural separation combining competition and public interest concerns, but this would in all likelihood require new legislation.

REAL TRANSPARENCY AND ACCESS TO DATA

Academics have called for access to data and more transparency with increasing militancy; participants at a conference in Amsterdam¹¹ and more recently in Perugia¹² have demanded better access. Regulators, too, need to know more about the process of opinion formation. This inevitably raises questions about the autonomy and independence of internet publishers and would require legal and constitutional restraints under the European Convention on Human Rights. Facebook recently announced that it was setting up or facilitating the setting up of an independent body – a council of academics and civil society representatives that would be granted access to data. Although this is a useful delaying tactic for Facebook it is difficult to see how it will work in practice: given commercial and personal confidentiality such a body could not be granted unfettered access to

Facebook's systems and they would ultimately be in the position of making requests for data to Facebook. In these circumstances, data could be formatted. This is no substitute for the kind of statutory body with licensed access to private data within clearly defined terms, as advocated by US experts such as Frank Pasquale.¹³

REDEFINE PLATFORMS AS MEDIA?

Journalists are fond of calling for a level playing field between internet intermediaries and news media and in particular calling for the redefinition of platforms as publishers. What this would mean in practice is to change the liability structure for internet intermediaries, something previously regulated from Brussels. The UK's culture secretary, Matt Hancock, recently announced that the government would be consulting on this, as the UK could develop its own policy after Brexit.

This is not a new issue. Back in 2011 the Council of Europe called for a "new notion of media"¹⁴ in which internet publishers would assume many of the responsibilities and obligations of media and also benefit from privileges and exemptions enjoyed by media. While this kind of policy shift is attractive in principle, in practice it may be an immensely complex affair particularly in UK where there is no overarching definition of what a publisher in fact is. In France and Germany there is more clarity regarding the obligations, for example of transparency that pertain to publishers in general. There is a consensus building on both sides of the Atlantic that the very wide exemptions and immunities granted to internet intermediaries are not sustainable and provide an unfair subsidy to the platforms. The question is, what to replace them with. How tough to be on the platforms?

TOUGH DATA PROTECTION FOR SOCIAL NETWORKS?

The platform business model is essentially based on exploitation of personal data. Platforms can offer smarter advertising and a range of ancillary services because they know more about you than their competitors do. But personal data regulation is being tightened, and how this is carried out, particularly in Europe, has the potential to shift the dial on whether their business model works. The GDPR, in force across Europe now, is a major paradigm shift in the regulation of social networks, and regulators will face a number of decisions about how to exercise the considerable discretion they have in implementing it. How they do so will depend in part on what range of complaints they receive, and the wider policy discussion around platforms is bound to have an impact.

Campaigners fought hard for a right to data portability with social networks in mind. But in practice an effective right to data portability will depend on a range of interpretations: will it in fact be possible for you to download your entire Facebook history, photos and friends, delete them from Facebook and transplant them into a competitor social network? That is the policy solution that would fuel real competition, but it is one that Facebook and others will fight to prevent.

COPYRIGHT

One of the key bones of contention between platforms and news publishers is the extent to which platforms are able to exploit news created by others for advertising revenue. States can pass laws which alter the balance of power between publishers and platforms. The EU's current proposal for a press publisher right is one such proposal. What this would do is introduce another layer of protection, in addition to existing copyrights and database rights, by creating a broad right of ownership in news. Such proposals could, however, create significant negative outcomes: for example by undermining

the free flow of quality news and ideas, and arguably creating space in the market for fake news.

In redesigning the copyright regime, states are effectively switching the dial that determines flows of revenues either to publishers or to platforms. But they are doing so without a debate about which of the two deliver real social value. The fake news issue is a smear with which traditional media can daub the platforms, but let's not forget that the press is not perfect, and in the UK, a broad swath of the country's newspapers is acting in a contemptuous manner towards parliament and its royal charter.

PROTECTING DEMOCRATIC LEGITIMACY

Election laws also need to be radically reformed. Part of this is about having spending limits that are easier to enforce and would prevent the kind of money laundering, shell companies and benefits in kind that are alleged to have occurred in relation to the EU Brexit referendum and part of it is about new offences relating to deliberate attempts to mislead voters through targeted advertising. Some have called for outright bans on political advertising in social media: this may be going too far as there are likely to be significant benefits to various forms of targeted communication.

In the longer term we need to have a debate about propaganda. It was the rise of totalitarianism in the mid-20th century that gave rise to the paradigms of media freedom and media pluralism protection within the Council of Europe system. The rise of AI and data driven algorithmic propaganda poses new challenges not merely at the level of new centres of powerful corporate authority, but at the level of each individual citizen whose autonomy is challenged by the ability of propagandists to know and understand their identities, interests, intimate ideas and behavioural proclivities. The platforms have an important role to play in this and what they do matters to all of us. It is not acceptable for monopoly players, or even big players in oligopolistic markets, to enjoy the role of censors and editors without transparent ethics and accountability.

WHAT DOES ALL THIS MEAN FOR INTERNET FREEDOM?

We have come a long way since the late and recently lamented John Perry Barlow made his celebrated Declaration of the Independence of Cyberspace in 1996. It was Hillary Clinton in 2011 who made the key intervention in defining the new US doctrine of internet freedom. The platforms have, as one might expect, embraced this notion for their own self-interested objectives, for example claiming that intermediary liability shields, and protection from various forms of transparency obligation are crucial to freedom of expression. It is certainly the case that opposition and dissent in authoritarian countries can benefit from free internet services including global access, but it is also the case that internet freedom, like press freedom needs to be understood as instrumental – i.e. as conditional on serving particular democratic ends – and institutional, implying social responsibility with regard to the institutions of democracy. ➔

◀ Internet freedom, like the other freedoms of communication, is by no means absolute. Individual human rights of freedom of expression will continue to be claimed and defended online as well as offline. Internet platforms, particularly those that enjoy monopoly or dominant positions are likely to operate as censors or pseudo-censors through their ability to block, filter, or make more prominent certain forms of content. So it is time that the communicative gatekeeping role of internet players was regulated and regularised alongside that of other publishers. The maintenance of a separate regime for internet-only players is unsustainable.

HOW TO MANAGE REFORM

Macho phrases like “open up” or “break up” rightly raise the hackles when one considers the history of media freedom. We do not want governments kicking Facebook’s doors down, any more than we want them smashing printing presses or journalists’ laptops. This is why process matters. If any political party or government attempts to design the constitutional settlement for platforms, history tells us they will not be able to do so without attempting to create a media system tilted in their own favour.

Almost a century ago when radio was in its infancy, the Sykes and Crawford Committees in the UK set out the framework that would establish the BBC. These were independent commissions involving parliamentarians along with other experts. Such processes were elitist of course, but as a basic model it remains the way forward as it is not limited to parliament. There must be an independent committee of inquiry to investigate platforms, and this should cover not only regulation, privacy and child protection, copyright, fake news and hate speech but the entire range of issues where the role of platforms, not of the internet per se, is raised. Institutions such as the UK House of Lords are a good place to start, but the process needs to be more open, more civil society led, and more plugged into the huge range of international initiatives in this space.

The “open up” part of the deal must mean being subject to data transparency requirements and to regulatory institutions that are independent of the state. Facebook’s announcement that it will create data access for academics is not enough. There is an opportunity for Facebook and Google to set some global standards. While the reality of the state in China or Iran would not permit genuine independence, working through institutions such as the Global Network Initiative, platforms could develop a framework for revealing data to genuinely independent third-sector bodies with oversight of civil society and academia. This would not compromise rights to freedom of expression and privacy in the context of state oversight.

As this process of negotiation unfolds, it is crucial to have a clear and shared notion of the wider citizen interests that are at stake. Politicians need to decide whether, for the purposes of tax and competition law, Facebook is more like tobacco, or more like public broadcasting. In some ways the UK is coming to the party late – other countries have



Multiple overlapping inquiries resulting in uncoordinated tweaks to regulation here or there cannot continue.



been involved in trying to operate at a constitutional level. Brazil, for example, passed a constitution for the internet in 2014. But the Brazilian authorities have had difficulties enforcing these abstract laws without a firm grounding in constitutional traditions and the support of civil society. They also lack the global authority that the UK has enjoyed as a long-established democracy.

So it is worth asking at this stage how such a negotiation between states and the powerful global platforms can work. The platforms, and particularly Facebook, now accept that they are not only dominant in some markets but that they are powerful monopoly players playing an important social role in society and should be subject to various forms of social regulation. They do not want to be subject either to rules that do not meet global norms of human rights or subject to a complex patchwork of rules in different markets.

There has been no credible threat of global regulation. The existing global institutions, such as the Internet Governance Forum (IGF) and other bodies under the UN umbrella simply don’t have the enforcement power and operate as talking shops and coordination mechanisms. The first step must be taken by national parliaments, and the UK is well placed to do that. But the current approach of multiple overlapping inquiries resulting in uncoordinated tweaks to regulation here or there cannot continue. An independent commission should address the platforms with one voice, and a clear message. The debate about the overall social value of the platforms is prior to the multiple overlapping questions about how they should be regulated.

The debate will need to take into account the relationship to declining legacy media. In the UK, one option might be to re-open what the Royal Charter on Self-Regulation of the Press might be for. The government is at an impasse, but it has created a valuable legislative and regulatory machine in the Press Recognition Panel¹⁵ and the incentives of the Crime and Courts Act.¹⁶ Perhaps one role for such a commission is to redefine what this regulatory framework is for, and make sure that it deals with a wider range of social ills – and social benefits – delivered by this new breed of platform publisher.

Whatever the content of the eventual deal between the platforms and democratic societies, it is clear that the first proposal must be for a vehicle that is up to the task of carrying out a multi-year negotiation with a credible threat of the full range of policy tools, competition, fiscal and regulatory, that governments can ultimately call on.

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MIXED MESSAGES FROM MEXICO

There has been rapid progress in more affordable telecoms access and wider coverage in Mexico, but the view of **ADRIAAN TEN KATE** is that reforms – aimed mainly at establishing equal access at competitive prices – may fail to address current and future convergence and technology challenges

The Mexican telecoms reforms of 2013 and 2014 were inspired by a dubious perception that Mexican telecoms were lagging far behind modern developments, by an excessive confidence in what competition can bring about in markets with strong economies of scale and by unrealistic expectations about what economic regulation can achieve in such a setting. As I set out in this article, the results thus far are a crusade against the incumbents under the banner of competition, a spiral of regulatory intervention with increasing costs and diminishing returns, and a creeping erosion of the incentives that private operators are left with to invest in the expansion and upgrading of their networks. The reforms may well turn out to be counterproductive, and fail to address the real challenges facing the industry.

THE HISTORY

When the Mexican telecoms industry was opened up to competition in 1996, expectations were high. Experience in other countries had shown that competition would lower prices, increase coverage, enhance the quality of service and encourage investment in infrastructure. So it did in Mexico, but in the view of the industry regulator at the time (Cofetel), not enough. The regulator had expected a more pronounced decline in the market share of the incumbent (Telmex) than what occurred, and has remained disappointed by the performance of the new entrants ever since.

A decade later, Telmex still enjoyed a market share in fixed telephony of 80% and its running

mate in the mobile market, Telcel, had acquired a comfortable share of 70%. As of 2010, the new entrants in fixed telephony Alestra (AT&T) and Avantel (Sprint), had bitten the dust, and competition was coming from TV cable operators entering the triple-play market. In mobile, Telcel, taking advantage of its relations with Telmex, had quickly overtaken the initial operator, Iusacell, while its main competitor Movistar (Telefónica) had never been able to get much more than 20% of the market (although Telcel is not the incumbent in the mobile market in the strict sense of the word, I refer to it as such for simplicity).

Cofetel blamed this on the anticompetitive practices of the incumbents and on the deficiencies of the regulatory framework; the incumbents were obstructing access to their networks and so favouring their own operations with end users. This conduct had given rise to a host of complaints, either with the Federal Competition Commission (Cofeco) or with Cofetel, most of them doomed to endless delays in the judiciary.

Something had to be done and, in the view of Cofetel, the only effective remedy would be to have its powers extended and to curtail possibilities to appeal its rulings. A complete overhaul of the regulatory framework would be necessary. To gain support for such an undertaking, Cofetel asked the OECD for an independent assessment of telecoms in Mexico and for recommendations. That was in late 2010, when the regulator still belonged to the Ministry of Communications and Transport (SCT). In January 2012 the OECD released its Review of

◀ Telecommunication Policy and Regulation in Mexico.¹ The findings were devastating, to say the least. According to the review, the industry was dysfunctional. Compared with other OECD countries, Mexican prices were excessively high and penetration ratios extremely low. As a result, the Mexican economy as a whole would have suffered a welfare loss of 1.8% of its GDP. This was due to a lack of competition caused by the anticompetitive practices of the incumbents. That is why the review recommended a series of measures, most of them aimed at strengthening the powers of the regulator.

Perhaps the most surprising part of the review was that there was hardly anything new. We had heard the story of high prices and low penetration for a long time from Cofetel and that of the lack of competition from Cofeco. And the recommendations were a rehash of what Cofetel had always recommended in its pursuit of extended powers.

The real state of affairs in the Mexican telecoms industry was less dramatic than believed. Since the privatisation of Telmex in 1990 and the opening up to competition in 1996, the industry had made enormous advances in almost everything: in prices, coverage, quality of service, expansion and modernisation of infrastructure, and introduction of new services. There was definitely a lag with the more advanced countries of the OECD, but a reasonable estimate of such a lag would not surpass 5 years for most cases, which compares favourably with Mexico's lag in economic development in general.²

In fact, in 2011 when the OECD did the review, Mexican prices were only higher than OECD averages in purchasing parity power (PPP) dollars. When compared at nominal exchange rates, they were even lower, and the most important price of all – that of mobile services – substantially lower. Likewise, the relatively low penetration rates could be explained by the fact that Mexico was among the least developed member countries of the OECD. Last but not least, the alarming welfare loss reported by the review was estimated with a flawed econometric exercise featuring untenable assumptions and embarrassing mistakes.³

Altogether, the findings of the OECD were vastly exaggerated and, without doubt, a more objective assessment would have arrived at a completely different picture of the state of development of the Mexican telecoms industry. However, because the purpose of the review was to gain support for an overhaul of the regulatory system, a more objective assessment would not fit the purpose.

It worked. The media were enchanted with the sensational welfare loss, which made the headlines of the main newspapers day after day. And the legislators also bought the story. Who would object to the conclusions and recommendations of an evidence-based study performed by such a prestigious organisation as the OECD? As a consequence, the review by the OECD played a key role in the approval by the Mexican Congress of constitutional reform in June 2013, and of a new

bill on telecoms one year later: the Federal Telecommunications and Broadcasting Law (LFTR).

THE CONVENTIONAL DOCTRINE UNDER SCRUTINY

The professed goals of the telecoms reforms in Mexico are lower prices, more coverage, better services, and expansion and modernisation of infrastructure. And the way to get there is by more competition. With more competition these benefits will sprout all by themselves, was the belief. Yet, for more competition a smooth interconnection of networks is needed, which requires indiscriminate access by operators to each other's networks at competitive prices. Indiscriminate, to level the playing field in downstream markets; and at competitive prices because expensive access is like no access. That is why most of the measures enabled by the reforms are aimed at procuring equal access.

However, this is the conventional doctrine and the real world is often more complex. A first question is whether there is room for more competition in Mexican telecoms, and also whether, if so, it will really deliver the envisaged benefits. This is more than just a rhetorical question and to answer it some qualifications are in order.

In upstream markets of network services there is little room for competition. Everybody agrees on that. Economies of scale are too strong. Infrastructure should be shared, not duplicated. But whether there is room for competition in the downstream markets of services to end users is not that clear. Downstream markets are not at all free from economies of scale; many costs are fixed and become more affordable when spread over more subscribers. Such economies of scale limit room for competition, downstream.

Moreover, in markets with economies of scale, competition loses much of its magic spell. In such markets, it is no longer impartial market forces that pick the most efficient firms as winners. It is rather first-mover advantages that do not necessarily favour the most efficient market players. And even when market forces happen to pick the most efficient ones, there is still the trade-off between more competition and productive efficiency. The presence of several operators implies multiplication of fixed costs, which drives prices up. So, the hope for lower prices from more competition may be delusive.

A second question is what exactly is meant by indiscriminate access. It sounds fair, but again there is some friction between theory and practice. The problem is that in a differentiated world equal treatment may be highly discriminatory. Take telephone services, which are quite differentiated. Providing a specific service at one location with one technology is not the same as providing the same service at another location with another technology. And production costs depend on that. Even so, flat pricing of such services is common practice, although it discriminates against low-cost users and generates inefficiencies, such as "cream skimming" and freeriding. Yet, there is no doubt that regulating differential access prices according to such cost differences would be entirely

unadministrable. That is, even when all playing fields are level, some are a bit more level than others.

A third question is what is meant by competitive prices. Again the term has a connotation of fairness and efficiency, but in practice nobody knows what competitive prices are. In the regulatory jargon they are usually interpreted as cost-based prices and the favourite model to estimate them is that of long run average incremental cost (LRAIC), a term suggesting scientific rigour, but in reality the model produces outcomes hypersensitive to the assumptions made and the choice of parameter values. Doing it one way or another does not affect the outcomes by 10% or 20%; it doubles or halves them, or even worse.

Altogether, the kind of competition in downstream markets resulting from regulated equal access at competitive prices is not “free competition”. It is manipulated competition. It is the way the regulator interprets equal access at competitive prices that steers the process. Whatever the choices made by the regulator, they will always favour some market players over others, intentionally or unintentionally. And whatever the efforts to keep up an appearance of impartiality, the regulator will always be the one to blame. It is like refereeing a soccer game, but with the difference that in telecoms regulation the rules of the game are much less clear.

That said, let us now have a look at the main elements of the Mexican telecoms reforms of 2013 and 2014, and at the way they have been implemented so far.

THE REFORMS

As the recommendations of the OECD review roughly coincided with what Cofotel had recommended before, most were incorporated in the reforms. However, the OECD recommendations were relatively open-ended and had to be embedded in the Mexican legal system. In doing so, those who designed the reforms went far beyond the original phrasings, and even beyond common regulatory practice in other jurisdictions. With the legislators under sufficient media pressure, the authorities did not settle for less than the whole pie. In one stroke they removed the most important obstacles they had found in their way to combat the market power of the incumbents.

Institutional aspects Perhaps the most important change was the creation of the Federal Telecommunications Institute (IFT) in charge of regulating the telecoms and broadcasting industries. The new institute, replacing Cofotel, was given autonomy to shield it from political interests. Apart from that, it was given the power to enforce the competition regime in the industries. To make this possible a new competition statute was enacted and Cofeco was renamed the Federal Economic Competition Commission (Cofece).

To derail the attempts by the incumbents to delay regulatory injunctions for long periods, the Mexican amparo system (an instrument to challenge the acts of authorities) was reformed to not grant suspension of the injunctions during the



The reforms were incorporated at high levels in the Mexican legal system.



appeal process. Although the purpose is clear, in my view it is an assault on the rule of law, leaving subjects unprotected against acts of authorities that may cause irreparable harm.

To render legal appeal even more cumbersome, the reforms were incorporated at high levels in the

Mexican legal system. What one would expect in a secondary law was put in the constitution and what would be properly expected in a decree was put in the law. As a consequence, such esoteric things as the unbundling of the local loop is now a constitutional mandate and termination fees equal to zero for the so-called “preponderant” firms are decreed in the LFTR.

The result is an extremely rigid regulatory framework in an industry championing innovation and disruptive change, which would rather require a high degree of regulatory flexibility. Moreover, the regulator is not very accountable, endowed with an unmatched mixture of investigative, adjudicative, punitive and regulatory powers, further strengthened by the non-suspension of its injunctions during the appeal process.

Regulatory aspects What went beyond the OECD recommendations was the concept of preponderance. It was invented by the proponents of the reforms and sidesteps the advances that competition analysis has made on the subject over the past few decades. The idea was to capture what in competition analysis is known as market power, but contrary to the traditional concept, preponderance does not require the definition of a relevant market. That makes it easier to apply, but less precise in its coverage. Thanks to the concept of preponderance, it took the IFT just half a year to declare the Carso group (with both Telmex and Telcel) preponderant in telecoms, and the Televisa group in broadcasting. What had taken many years before the reform, was now done in half a year. To my knowledge, there is nothing similar to the concept of preponderance in any other jurisdiction.

Preponderant firms are subject to asymmetric regulation, interpreted as measures imposed on preponderant firms, but not on their competitors. All the measures enacted or enabled by the LFTR have to do, either directly or indirectly, with access to the networks of the preponderant firms. Many of the measures are vague, multi-interpretable and difficult to monitor. How about the obligation to refrain from practices that impede or limit an efficient use of infrastructure for interconnection? Or the obligation to attend to requests for interconnection as quickly as attending to one’s own requests? How to enforce such measures in practice is unclear, but what is clear is that competitors will always have enough to complain about, and that there will always be arguments to maintain that preponderant agents did not comply.

One of the measures enabled by the LFTR is the vertical separation of the preponderant company. The original OECD recommendation was to

← authorise the regulator to “impose functional, and, if necessary, structural, separation of an operator that continues to abuse its dominant power...”, but the LFTR goes a step further by enabling the IFT to impose an accounting, functional or structural separation on a preponderant agent, without the need to show an abuse of dominance. And indeed, in March 2017, after a first revision of the state of preponderance in telecoms and broadcasting, the IFT ordered Telmex to separate functionally.⁴ The reason for this was not an abuse of its preponderance, but a lack of effectiveness of the measures imposed so far.

The shared network (SN) Apparently lacking confidence that interconnection among private operators with equal access and competitive prices was ever going to work properly, the authorities brought matters back into the hands of the state with the project of the so-called shared network (Red Compartida), one of several wholesale open access networks (WOANs) mooted globally. The idea is to cover the whole country with a mobile broadband network under a public-private partnership. It was a public initiative, but private participation was necessary to finance the project. To avoid leveraging of upstream market power to downstream markets, the operator of the shared network was not allowed to provide services to end users (an exception is made for remote areas where downstream operators are not willing to provide services). And to avoid conflicts of interest, the existing vertically-integrated operators were banned from participation.

It is a strange project, at odds with common regulatory practice in other countries. It introduces competition in upstream markets where there is admittedly little or no room for competition. As such it definitely discourages investment by private operators in the expansion and modernisation of their own networks. Moreover, it brings the state back in an area where it is none too welcome. There is a handful of similar initiatives in other countries, but all of them are in an experimental stage and far less ambitious than Mexico’s project. (See next page for more details on the SN.)

PERFORMANCE

The advances of the Mexican telecoms industry since the reforms of 2013 and 2014 have been remarkable. Prices have come down further and penetration increased. In mobile broadband subscriptions growth has even been spectacular. From 2012 to 2016 approximately 50 million people were added to the subscriber base. Moreover, the market shares of the incumbents in both fixed and mobile telephony and broadband declined. They declined probably less than expected, but they declined.

In a more recent review about telecoms in Mexico, the OECD attributes these positive developments to the reforms.⁵ The lower prices are a result of more competition induced by the reforms, the spectacular growth in mobile broadband subscriptions is a result of the lower prices thanks to the competition induced by the reforms, and the

decline in the market shares of the incumbents shows that there is indeed more competition. In short, the OECD reports a success story.

Whether the reforms really induced more competition, whether the lower prices are really a result of enhanced competition and whether the enhanced penetration is really a result of the lower prices is questionable.⁶ Since long before the reforms, prices have declined substantially, even at times that the Mexican industry was still dysfunctional due to a lack of competition (according to the previous OECD review) and the explosive growth of mobile broadband access was well underway long before the reforms could have had any effects. Probably, the spectacular growth in mobile broadband access was rather due to the introduction of the smartphone and its applications, and would have occurred with or without reforms.

The IFT was less enthusiastic about the achievements of the reforms than the OECD. In its first evaluation of the state of preponderance in the telecoms sector of March 2017, it found that the measures of asymmetric regulation implemented so far had not had the envisaged effect of reducing the market shares of the incumbents sufficiently and that additional measures were necessary to spur competition.

THE FATE OF ACCESS REGULATION

Access is a complex matter. There are lots of details to be agreed on by the interconnecting parties. There are technical issues, locational issues, how to share costs, and how much time it may take to establish interconnection. And once connected, there may be disagreement among the parties on fees, traffic volumes and, thus, on how much one party has to pay to the other. All such disagreements may be real or sham. Technical problems may be exaggerated to slow down the process of interconnection, traffic volumes may be deflated or inflated to provide an excuse for not paying or for disconnecting the other party, etc. Altogether, interconnection is a paradise for opportunistic behaviour.

It is usually the regulators that are invoked to resolve such conflicts, but traditionally access regulation has a built-in bias against the incumbents. By default, the incumbents are the foes, and the competitors are the victims. Mexico is no exception. The result so far has been a war of attrition between the incumbents, on one side, and the competitors, knowing they are backed by the regulator, on the other. Perhaps a more important ingredient for smooth interconnection would be a cooperative spirit between the interconnecting parties, but after a long history of stigmatisation of the incumbents little is left of such cooperative spirit.

In the declaration of preponderance of March 2014, the IFT imposed a host of asymmetric measures on the preponderant agent, but in the first review of the state of preponderance of March 2017 it was found that the measures had failed to produce the envisaged effect of reducing the market power of the preponderant agent sufficiently.

Whether that was due to the anticompetitive practices of the incumbents, to the inadequacy of the measures themselves or to the way they were implemented, was not at issue. The failure itself was sufficient reason to impose a functional separation on the incumbent company in fixed telephony, Telmex.

VERTICAL SEPARATION

Vertical integration in telecoms is standard. Networks are built for own use, not for selling network services to other operators. Integrated operators do sell network services, but as a by-product, mostly due to compulsory interconnection, not to make money. It is not attractive from a business point of view, and less so when access fees are regulated at low levels. I do not know of any private initiative to develop networks for wholesale only. Existing upstream-only operators are either spin-offs of vertically integrated operators as a result of regulatory intervention, or public initiatives.

There are strong reasons for vertical integration in the industry. The main choices to be made during network development – where and what technology – crucially depend on the characteristics of demand by end users. In particular, the density of users and their degree of sophistication are essential. Integrated firms have a far superior knowledge of such demand characteristics, and the way they change over time, than firms only active upstream. It is mainly coordination between up- and downstream that motivates vertical integration and such coordination is mostly needed at network development, less so when the network is already there. Once it is there, it is just a matter of operating the network in the most efficient way and mistakes made during development are there to live with.

Whether vertical separation is attractive from a policy point of view is a different issue. It depends on the benefits derived from enhanced competition downstream and the costs from the loss of coordination. Both benefits and costs are difficult to estimate, but benefits are in the short term while costs are of a long-term nature, so ordering vertical separation runs the risk of compromising the future. When, on top of that, upstream prices are regulated at low levels, so as to spur competition downstream, network expansion and modernisation may be severely discouraged. That is the trade-off.

In the first biannual review of the state of preponderance of March 2017, the IFT imposed a functional separation on Telmex between its infrastructure and its services to end users. After affirming that the asymmetric measures implemented so far had not had the desired effects, it added new measures to those already in force and ordered functional separation hoping that would do the job. The IFT said it had considered international experience without mentioning details, but I understand that it considered that experience successful.

Whether the international experience with vertical separation of fixed telephony operators is indeed successful is controversial. For a few

THE SHARED NETWORK

The purpose of the project is to build a last-generation (4G) mobile broadband network to spread the benefits of modern telecoms, particularly access to internet, all over the country. The operator of the network will not serve end users; it will provide network services to operators downstream. That is to say, in the case of the Shared Network (SN), the vertical separation is not imposed on a previously integrated operator; it is there from the outset.

The SN is a public initiative, but it is carried out under a public-private partnership in which the private parties are supposed to come up with the \$7bn necessary to build the network, and in which the state contributes 90 MHz in the 700 MHz band plus a couple of fibre backbones from the Federal Electricity Commission (CFE) to connect the base stations. To ensure genuine vertical separation of the network, vertically integrated operators are not allowed to participate in the partnership.

There is no clear division of labour between the SN and the networks of the integrated operators. There is an implicit division because the SN uses the 700 MHz band, which has advantages for long range, but the mandate of the SN is to cover the whole country, not only remote areas. Moreover, the SN is not impeded from acquiring spectrum at higher frequencies and the private operators are not excluded from the 700 MHz band. So, the SN is going to compete upstream with integrated operators.

Such competition is going to take place on an unlevel playing field – tilted to one side because the SN has an endowment of spectrum that private operators would have to pay for; tilted to the other side because the operator of the SN has strong universal service obligations and, on top of that, the constraint of vertical separation. The exact balance is difficult to determine but, in my view, the SN is facing a complicated future. The great unknown is whether it will find sufficient demand for its services at the prices it will have to charge to make a reasonable return on investments.

Altogether, it is unlikely that the vertically integrated operators would be very concerned about competition from the SN in the upstream markets. Their business is in retail services, not in wholesale. They would rather be concerned about competition downstream where the SN is not allowed to operate. They will just see where they can save the effort of building and upgrading their own networks by using the SN. This will have a negative impact on their incentives to invest.

Private participation in the project was achieved by intensive lobbying followed by a sham bidding process set up by the SCT. The result was a tender with a single participant that won. The other candidate was disqualified for not presenting a guarantee in time. The winner was a consortium (Altán) set up for the purpose of the tender and composed of equipment providers – including Nokia and Huawei – and financing firms that are development banks backed by public funds, and not firms risking their own capital.

The network was given the go-ahead in March 2018 with a coverage of 32% of the population, just above the target of 30%. The bid winning the tender had been 92%, but this target is to be met in 2024. Evidently, these figures refer to potential, not actual coverage, which depends on demand by downstream operators, and when actual coverage falls short of potential coverage, this cannot be blamed on the operator of the SN. To my knowledge, the SN has no clients yet. The major operators have declared no interest yet. But it is too early to draw conclusions.

With SN, the future of the Mexican telecoms industry is falling between two stools. On the one hand, we have a set of interconnected networks of private vertically integrated operators trying to make money and, on the other, a public vertically separated network with a private twist, also trying to make some money, but committed to a goal of universal coverage. There is no clear division between one and the other, so they have to compete, but subject to entirely different rules. It is Lionel Messi playing tennis against Muhammad Ali. The best one can hope for is a funny, though confusing contest.

European countries, and for Australia and New Zealand, research has been done on the effects on prices and penetration, some with positive results, but the only study I know of that has investigated the long run effects on investment in infrastructure is on the functional separation of the UK's Openreach wholesale arm from British Telecom in 2005. That study finds that the separation has had negative effects on investment.⁷

By now, it is not clear what exactly the functional separation of Telmex will entail, but there is no doubt that it will be a costly and painful undertaking. Unscrambling eggs is never easy. Problems abound: those of corporate governance of the separated entities, trade unions defending the rights of their members, for example. One question is how the upstream entity is going to break even, given the interconnection fees regulated by the IFT. A simple accounting exercise has already shown that, given actual traffic volumes and access fees, it would have made losses over the last few years.⁸ So, it may be necessary to raise fees to have the upstream entity break even, a hardly expected consequence.

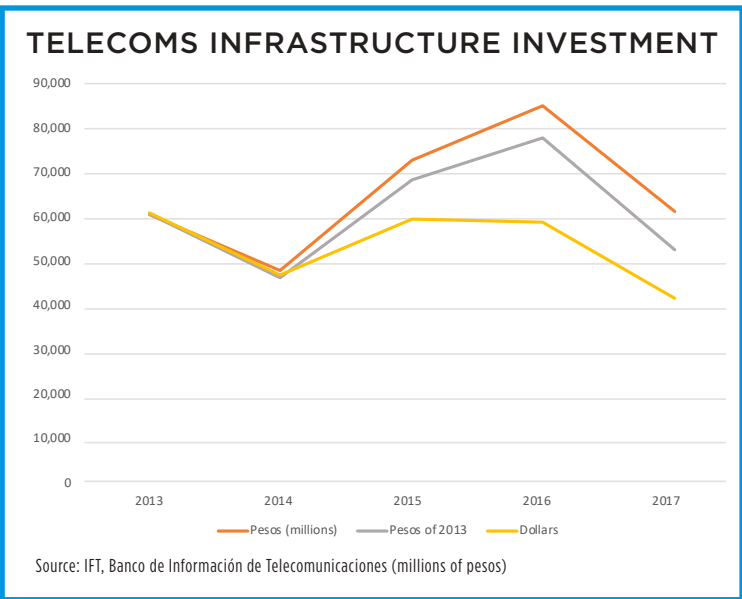
What will come out of the vertical separation of Telmex is up in the air. Whether it will bring more competition in downstream markets is also up in the air. There will always be sufficient ways to defend that it will have done. But that it will be costly is not up in the air. There is no doubt about that. And an adequate evaluation of the costs and the benefits will not be possible for a long time to come, if at all.

INVESTMENT IN INFRASTRUCTURE

Compulsory interconnection has always discouraged investment in infrastructure. As the benefits from such investment are to be shared with competitors downstream, everybody prefers to wait for the others to stick out their neck. When, on top of that, access regulation is tough and interconnection fees are kept low, the incentives to invest are eroded further. That is to say, there is a trade-off between access regulation to spur competition downstream, and investment in infrastructure upstream. The tougher the access regulation, the lower the incentives to invest.

In the early 2000s, awareness of the existence of such a trade-off was low. Tough access regulation was fashionable, particularly in Europe; interconnection fees were regulated at bargain levels, local loops were unbundled and in some countries incumbents were vertically separated, functionally or structurally. After 2010, authorities became increasingly aware of the trade-off. Comments that integrated operators should be allowed at least a reasonable return on their investments, and that access regulation should be tempered accordingly, became more frequent.

The Mexican reforms were late in this respect. They were designed in the spirit of what in other jurisdictions was common practice 10 years earlier, and with little awareness of the existence of the trade-off between access regulation and incentives to invest. This lack of awareness does not spell a great future for network development in Mexico, but what



is actually happening with investments and what will happen in the future is what matters.

The graph presents the evolution of aggregate investment in telecoms infrastructure from 2013 to 2017 in current pesos, in pesos of 2013 and in US dollars (my calculations). The figures should be interpreted with care. As a general rule, investments cannot be expected to show regular behaviour and responses to changes in incentives are not immediate. Investment projects are often planned long in advance; it may take time to start them up and, once underway, they are not interrupted by the first sign of adversity.

At the beginning of the administration of President Peña Nieto, investment in infrastructure was depressed. This was attributed to the uncertainty derived from the pending reforms announced in the "Pacto por México" of 2012. Once the reforms had taken shape, investments would rebound, was the general belief. The graph shows a different picture. Even if the rebound of 2015 and 2016 were due to increased certainty, it was shortlived. In 2017, investment in current pesos was back to the level of 2013, in constant pesos it was 13% lower and in dollars even lower (31%). Measured in dollars, investment in infrastructure has never been back to the supposedly suppressed level of 2013.

What will happen in the coming years is difficult to predict, but the collapse in investment in telecoms infrastructure in Mexico by 2017 which is apparent from the graph is an ominous development. Such figures tell more about what is happening in the industry than, for example, price movements, increases in coverage and declines in market shares of the incumbents. The best we can hope for is a quick recovery in 2018.

CONVERGENCE

Convergence in telecoms and broadcasting has been embraced worldwide as a development benefiting consumers. Mexico is no exception. At the end of 2006 Mexico celebrated its Convergence Agreement,⁹ recognising the importance of convergence and

setting out some rules to promote it. However, the way those rules were implemented rather suggests that everything was done to impede convergence. Already before the agreement, what I call the “big ban” was an issue with a heavy political load. The “big ban” is the provision that the incumbent in fixed telephony, Telmex, is not allowed to provide television services. The restriction stems from times when convergence was hardly an issue. It was an arrangement in the modification of Telmex’s concession title when the company was privatised. In my view, it is an obsolete provision that ignores what has happened in the industry over the past few decades. To my knowledge, there is nothing similar to such a restriction imposed on telecoms operators in other jurisdictions.

Since convergence became an issue, Telmex has applied for a modification of its concession title so as to be allowed to offer TV, but it has never been given a chance. Opposition from the free-to-air duopoly (Televisa and TV Azteca) and cable and satellite operators has always been strong. The cable operators, especially, see their business threatened by Telmex with its vast fibre-optic network that is well-suited to TV services.

At the time of the Convergence Agreement, the idea was to open the door to Telmex, but to give the cable operators that were just entering triple-play a head start of a couple of years. The condition was that Telmex would comply with its obligations of its concession title, particularly the obligations of universal service. It never did, at least not in the perception of the regulator.

That is how lifting the “big ban” became a bait to tame Telmex in matters that had little to do with convergence. First it was compliance with the universal service obligations. With the reforms it became compliance with the asymmetric regulation resulting from its preponderance. However, as both universal service obligations and asymmetric regulatory measures are so detailed and open-ended that their compliance will always be disputable, the ban is still in force and can best be understood as a punishment for Telmex’s alleged disobedience.

Moreover, the bait is not convincing any more. After many years of raising expectations, the regulator is unlikely to grant the necessary modification of the concession title. Telmex could bow and scrape for many more years to learn afterwards that it was not enough. Thus far, the regulator has not demonstrated that it is prepared to stand up against the vested interests opposing the removal of the “big ban”.

What is behind all this is the fear that Telmex, once given the chance to enter TV, would quickly displace the existing cable and satellite operators, and acquire a dominant position in the new market, where it would likely repeat all the anticompetitive practices it is so familiar with in the telecoms markets. That should be avoided at any cost, in the view of the regulator.

Whether Telmex would quickly displace the existing operators is not certain, but not unlikely either. But that this should be avoided at any cost is a step further, given that the costs – or rather the

lost benefits – are high. It is a typical example of what is known in competition policy as the fallacy of the efficiency offence: if Telmex were to really displace the existing operators in a short time, it would be for some reason; for example because customers prefer its services over those of other operators. So, impeding Telmex from providing those services is equivalent to withholding from customers what they like more.

The result is that in 2016 Mexico had a penetration ratio of barely 15% for triple-play, at a time when streaming is already replacing free-to-air and pay TV services. As a consequence, more than a decade has passed without taking advantage of a fibre network that could have brought better and cheaper pay TV to more households. All this, to safeguard competition in a market in which the dominant player, Televisa, has been allowed to consolidate freely.

A SCENARIO FOR THE 2020s

It is difficult to predict what Mexican telecoms will look like in the medium run, but if things go on as now, a not unlikely scenario for the 2020s is the following:

- The IFT will industriously be procuring indiscriminate access at competitive prices to the networks of the preponderant incumbents
- The IFT will do so by piling up one asymmetric measure on another, giving rise to a host of complaints and endless litigation
- The IFT will be estimating LRAICs for all the separate components of the unbundled local loop with quite sophisticated cost models whose outcomes can be manipulated at will
- Sooner or later, the IFT will break up Telmex structurally after realising that the additional measures did not have the effect of reducing the market shares of the incumbent sufficiently
- Convergence in the industry will remain on hold because the IFT, under pressure from vested interests, will not allow Telmex to offer TV
- In spite of disguised subsidies from the state, Altán will be struggling to break even because of not finding sufficient demand for its network services at the competitive prices controlled by the IFT
- Investment in infrastructure by private operators, at least in backbone infrastructure, will remain suppressed and will only pick up to the extent the SN is not in a position to fill the gap.

Meanwhile the real challenges facing the industry will be different:

- Mobile generations will go beyond 4G to 5G, 6G or more
- Convergence will not be triple-play, but sextuple-play
- A good deal of traditional free-to-air and pay TV services will be replaced by streaming
- Vertical integration will not be between up- and downstream telecoms services, but between media companies, content providers and telecoms operators
- Most operators will be multisided platforms obtaining an increasing part of their income not from subscriptions, but from targeted publicity and advertisements.

Whether regulation has a role to play is not at issue, but in my view the kind of regulation enabled by the current Mexican telecoms reforms is not prepared for such challenges.

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WINNER TAKES ALL

There are multiple reasons why technology markets are ‘winner takes all’ and why, once a tech company becomes dominant, it is almost impossible to displace, says **PATRICK BARWISE**

Apple, Amazon, Alphabet (Google), Microsoft, and Facebook, in that order, are the five most valuable public companies in the world by market capitalisation (as of July 2018).

Microsoft has been on the list since the 1990s but the others are relative newcomers. These companies are a large part of everyday life in developed economies and increasingly everywhere else except China – a protected market with its own tech giants (discussed later). They wield enormous power, raising difficult questions about their governance, regulation and accountability. That power derives from their dominance of large, profitable markets.

In this article, I address two questions. First, why are technology markets “winner takes all”, characterised by extreme market concentration? Second, how likely is it that market forces will end these companies’ market dominance in the foreseeable future, given that their competitors are “only a click away”?

The five companies vary in many ways. For instance, Apple is primarily a hardware company and Amazon has a huge physical distribution

network, while Google, Microsoft and Facebook are mainly “weightless” online businesses, although that is changing. Also, Facebook’s market capitalisation has now been somewhat left behind by those of the other four (“Maga”: Microsoft, Apple, Google and Amazon). Nevertheless, they all share several features:

- A US west coast base
- Dominant founders: Steve Jobs (Apple), Jeff Bezos (Amazon), Larry Page and Sergey Brin (Google), Bill Gates (Microsoft), Mark Zuckerberg (Facebook)
- Significant control of the digital markets on which consumers and other companies depend
- A business model to monetise this market power by charging users and/or others, such as advertisers, leading to sustained supernormal profits and/or growth
- A capable, hard-driving, innovative corporate culture epitomised by Facebook’s former motto, “move fast and break things”, but with a sustained commitment to R&D and capital investment.

They have a combined annual revenue of \$745bn, net income of \$124bn and market capitalisation of

THE BIG FIVE US TECHNOLOGY COMPANIES

COMPANY	FOUNDED	BASED	MAIN PRODUCT	REVENUES 2017-2018	MARKET CAPITALISATION 31/7/18	TAX INCOME (AFTER-TAX PROFIT) (2017/18)	P/E RATIO
APPLE	1976	Cupertino, CA	Hardware	\$255bn	\$939bn	\$56.1bn	17
AMAZON	1994	Seattle, WA	Commerce	\$208bn	\$885bn	\$6.3bn	141
ALPHABET (GOOGLE)	1998	Mountain View, CA	Search	\$124bn	\$872bn	\$26.2bn	33
MICROSOFT	1975	Redmond, WA	PC software	\$110bn	\$827bn	\$16.6bn	50
FACEBOOK	2004	Menlo Park, CA	Social network	\$48bn	\$506bn	\$19.1bn	26
TOTAL				\$745bn	\$4,029bn	\$124.3bn	32

Source: Company reports and corporateinformation.com

Revenue and net income: 12 months ending 30/6/18. P/E (price/earnings) ratio = share price/latest earnings per share



over \$4 trillion – even after over \$120bn was recently wiped off the value of Facebook in a single day after it warned of slowing growth, lower future margins and higher costs to improve safety and security (see table).

This is the latest stage of a 60 year pattern. In the 1960s, IBM dominated the mainframe computer market. It still does. In the 1980s, Microsoft and Intel dominated the PC software and processor markets. They still do. From the 1990s, with the world wide web, the winners were Amazon in e-commerce, Google in search and Facebook in social networking. They still dominate those markets. Since 2007, Apple and Google (Android) have also dominated the market for mobile internet operating systems.

The pattern is clear. New tech markets are volatile and highly competitive, but once a company achieves clear market leadership – usually as a fast follower with better and bolder execution than the pioneer – it soon attains complete dominance and is then almost impossible to displace. Instead, the threat is that, at some point, a newer, bigger, adjacent market emerges, dominated by another player, as mainframes and PCs have been overshadowed by online, mobile and cloud-based technologies. In the words of industry analyst Ben Thompson, dominant tech companies can be “eclipsed but not displaced”.

To head off this threat and exploit the new opportunities, dominant tech companies invest heavily in high-potential, emerging product markets and technologies, both organically and through acquisitions. Current examples include:

- The augmented and virtual reality (AR/VR) platforms being developed by Apple, Google and Facebook

Apple's futuristic new HQ in Cupertino is testimony to the company's ambition

- The race among Google, Apple, Uber, Tesla and others to develop self-driving car technology
- The creation of ecosystems based on connected, voice-activated home hubs such as Apple's HomePod, Amazon Echo and Google Home
- The internet of things (IoT), with a growing proportion of data processing migrating to smart devices at the edge of telecoms networks.

What are the factors driving this repeated pattern of extreme market concentration with the winner remaining dominant over an extended period?

WHY ARE TECH MARKETS WINNER TAKES ALL?

There are multiple reasons why technology markets are so concentrated. In broad terms, they can be split into “hard” factors based on economics and technology and “soft” factors based more on human behaviour. The hard economic and technological factors include traditional economies of scale, scope and learning; direct (within-market) and indirect (between-market) network effects; and big data and machine learning.

In total I identify nine factors that make the tech giants' markets “winner takes all”. The first four are “hard” factors based on economics and technology. The other five are “soft” factors based more on human behaviour:

- Economies of scale, scope and learning
- Direct (within-market) network effects
- Indirect (cross-market) network effects
- Big data and machine learning
- Strong user brands and habitual usage
- Switching costs and lock-in
- Attractiveness to talent (“employee brand equity”)
- Powerful founders and hard-driving corporate culture
- Economic geography (“cluster economics”). ➔

← **Traditional economies of scale, scope and learning** Traditional economics goes some way towards explaining these companies' market dominance. In particular, most tech markets exhibit extreme economies of scale. Software and digital content have high fixed development costs but low to zero marginal (copying and online distribution) costs. Unit costs are therefore almost inversely proportional to sales volume, giving a big competitive advantage to the market leader. These economies of scale are reinforced by significant economies of scope and learning. For instance artificial intelligence (AI), cloud-based resources and Amazon's leading distribution systems support a wide range of diverse activities, and become ever more effective and efficient the more they are used.

Digital products are also "non-rivalrous" – unlike, say, pizzas, cars or haircuts, they can be used simultaneously by a limitless number of people.^{1,2} This often leads to business models based on advertising (free services, maximising reach) and/or continuing customer relationships rather than one-off sales.

Direct network effects In 1974, Jeffrey Rohlfs, an economist at Bell Laboratories, published a seminal paper, "A theory of interdependent demand for a communications service".³ AT&T, then parent of Bell Labs, was contemplating the possible launch of a video telephony service and Rohlfs was researching how this should be priced if it went ahead. His mathematical model was based on the key qualitative insight that "the utility that a subscriber derives from a communications service increases as others join the system", enabling each person to communicate with more others (although some adopters are more influential than others in driving network externalities).⁴

Economists call this effect a direct network externality, because it involves external third parties in addition to the individual firm and customer; the less technical term, "network effect", is also used. Most direct network effects are positive (revenue economies of scale) but they can be negative, as with congestion in transport and communications networks. There can also be both positive and negative behavioural direct network effects if other consumers' adoption of a product makes it either more, or less, acceptable, fashionable or attractive.

Indirect network effects ("multisided markets") Most tech companies are, at least to a degree, "platform" businesses, creating value by matching customers with complementary needs, such as software developers and users (Microsoft's Windows and Apple's App Store); publishers and book buyers (Amazon); drivers and potential passengers (Uber); and, in many cases including Google and Facebook, advertisers and consumers.

These network effects are called "indirect" because – unlike with the direct, single-market, externalities discussed above – the value to participants in each market (e.g. diners) depends on the number of participants in the other market (e.g. restaurants), and vice versa. Once a platform



Competition is for losers. If you want to create and capture lasting value, look to build a monopoly.

Peter Thiel, cofounder of PayPal and Palantir



or untrustworthy, e.g. posting malicious reviews on TripAdvisor or fake news on Facebook, or overstating the size and quality of their homes (or, conversely, throwing a noisy, late-night party as a guest) on Airbnb. Platforms often incorporate governance processes to limit these behaviours.⁵

The need to appeal to both buyers and sellers simultaneously has been known since the first organised markets. But there was no formal modelling of two-sided markets until the late 1990s, when Jean-Charles Rochet and Jean Tirole noted structural similarities between the business models of payment card businesses, telecoms networks and computer operating systems.⁶ All exhibited network effects under which the value of the service for one group (e.g. payment card users) depended on how many members of the other group (e.g. merchants) were in the system, and vice versa.

More recent work uses the term "multisided" – rather than two-sided – markets because some platforms facilitate interaction between more than two types of participant. For instance, Facebook connects six distinct groups: friends as message senders, friends as message receivers, advertisers, app developers, and businesses as both message senders and receivers.

Digital devices with compatible software, such as Microsoft's Xbox video games player, exhibit indirect network effects because each device's installed user base constitutes an addressable market for software developers, and the range and quality of software available for the device are key to its user appeal. Similarly, automated online marketplaces such as Amazon, Airbnb and Uber operate in multisided markets with indirect network effects.

All businesses that depend on indirect network effects face the chicken-and-egg challenge of achieving critical mass in both or all the key markets simultaneously. Until the business reaches this point, it will need to convince investors that early losses will be justified by its eventual dominance of a large and profitable multisided market. Most start-up tech businesses, such as Twitter, Uber, Snapchat and Pinterest are heavily loss-making for years and the casualty rate is high.

Achieving critical mass is easier if the product or service offers immediate benefits independent of network effects. For instance, at its 2007 launch, the iPhone already offered 2G mobile (voice, texts, email and web browsing) and music, with a market-leading touch-screen interface, driving rapid adoption. The App Store then created a virtuous circle of further adoption and app development.

dominates the relevant markets, these network effects become self-sustaining as users on each side help generate users on the other.

Most indirect network effects are, again, positive, although they too can be negative for behavioural reasons if some participants are antisocial

Hosting a large digital platform requires massive infrastructure – servers, data storage, machine learning, payment systems, etc. Most of these have marked economies of scale and scope, enabling the business to take on other markets and to rent out capacity to other firms, further increasing its efficiency and profitability. The pre-eminent example is Amazon – both in its logistics arm and its market-leading cloud computing business, Amazon Web Services (AWS). Google, too, sells cloud storage, machine learning, data analytics and other digital services that have grown out of, or complement, its core search business, while Microsoft is rapidly building up its cloud services business, Azure.

Big data and machine learning The internet enables tech companies to collect extensive, granular, real-time usage data at low cost. The resulting datasets are challenging for traditional software to process because of their size, complexity and lack of structure. But new data analytics techniques, increasingly automated (by machine learning), can use big data to drive relentless improvement in products, services, pricing, demand forecasting and advertising targeting. For instance, Netflix constantly analyses viewing and preference data to inform its content purchases and to automate its personalised recommendations.

The more detailed the data, the wider the range of transactions, the bigger the user sample and the greater the company’s cumulative analytics experience, the better: quantity drives quality. Data and machine learning therefore offer both cost and revenue economies of scale, scope and learning, encouraging digital businesses to offer free or subsidised additional services, at least initially, to capture more data.

The business benefits of big data are both tactical (continuous improvement) and strategic. These are interlinked: over time, continuous improvement can give the dominant provider an almost unassailable strategic advantage in service quality, customisation, message targeting and cost reduction. Subject to privacy regulations (recently loosened in the US), the data can also be sold to other, complementary companies, enabling them to obtain similar benefits. Finally, data can be analysed at a more aggregate level to provide strategic insight into market trends. An important example is access to aggregate data on the many start-up clients of AWS and other cloud companies, giving early intelligence on which are doing well and might be a competitive threat and/or investment opportunity.

Big data and machine learning can powerfully reinforce network effects, increasing the dominant companies’ returns to scale and helping to entrench incumbents and deter market entry. However, economic theory has not yet caught up with this. For instance, David Evans and Richard Schmalensee do not mention big data, analytics, algorithms or machine learning in their 2016 book on multisided markets.⁷ Another book from 2016 does list leveraging data as one of the ways in which platforms compete, but the discussion is barely two pages long and gives no references, reflecting the

lack of relevant economic research to date.⁵

There has been some broadly related work in a special issue of MIS Quarterly on the use of big data analytics in business intelligence,⁸ while its potential is explored in management⁹ and economics¹⁰ research, respectively. But overall, although data and machine learning are key drivers of the tech giants’ market and civic power, existing economic theory provides an insufficient framework for making this power accountable and regulating it to sustain effective competition.^{11,12} (See article on page 31 for more on this issue – Ed.)

These economic and technological drivers of market concentration (economies of scale, scope and learning; direct and indirect network effects; and big data and machine learning) are reinforced by a number of both demand-side and supply-side behavioural factors. On the demand side, there are two closely interrelated drivers of sustained market concentration: strong user brands and habitual usage; and switching costs and lock-in.

Strong user brands and habitual usage

In November 2017, advertising firm WPP ranked Google, Apple, Amazon, Microsoft and Facebook – in that order – as the five most valuable brands in the world, worth a total of just over a trillion dollars, nearly 30% of their \$3.6 trillion combined market capitalisation at that time. Digital products are “experience goods”: users need to try them and



Big data and machine learning can powerfully reinforce network effects.



learn about them – from their own or trusted others’ usage experience – to judge their quality. Well-known, trusted brands are essential in online markets to encourage trial and discourage switching to a competitor. Usage becomes habitual or even addictive, reinforcing the incumbents’ dominance: “Google” is now widely used as a verb.

Switching costs and lock-in All five companies – and most other tech companies – use multiple additional ways to lock users in by increasing the cost or effort of switching to a rival product or service. It takes time and effort to learn how to use unfamiliar systems and software. The greater the amount of such learning (“brand-specific consumer human capital”), the greater is the switching cost.¹³ Often, there are also technical incompatibility issues locking users into a particular company’s ecosystem or “walled garden”: for instance, apps bought on iOS cannot be carried over to an Android device. Similarly, users’ personal data archives may not be portable to another platform.

Some services’ utility also increases with use by allowing for customisation by the user (e.g. creating playlists on iTunes or Spotify) and/or the company (based on the individual’s usage data) or enabling the user to accrue, over time, a reputation or status (e.g. Amazon marketplace ratings) or to accumulate content they do not want to lose (e.g. Facebook message histories), all of which reinforces lock-in. ➔

◀ Turning to the supply side, there are three more behavioural factors further reinforcing the market leaders' sustained dominance of these markets: attractiveness to talent; powerful founders and a hard-driving corporate culture; and – often overlooked – economic geography.

Attractiveness to talent The brand valuations mentioned above relate to consumer brand equity – the brand associations in consumers' long-term memory that make them more likely to buy or use the brand in future. Tech giants also have significant employee brand equity, the equivalent in the talent market. This enables them to attract the best technical, managerial and commercial staff.

Powerful founders and hard-driving corporate culture All the tech giants have, or had, strong, hard-driving, hands-on founders such as Jeff Bezos, Steve Jobs and Mark Zuckerberg. Their corporate culture is epitomised by Intel cofounder Andy Grove's "Only the paranoid survive" and Facebook's former motto, "Move fast and break things". At Amazon, Bezos insists that every day is still treated as "Day one for the internet". This relentlessly active, innovative corporate culture is a significant strength, reinforcing the tech giants' continuing market dominance. Arguably, it also drives their hyper-aggressive tax and acquisition policies, further adding to their competitive advantage.

Geography – or "cluster economics" Finally, despite earlier expectations¹⁴ and the beliefs of many Brexit enthusiasts such as UK trade minister Liam Fox (who claimed that we are now entering a "post-geography trading world"), geography still matters. Innovation clusters like Silicon Valley, Hollywood and the City of London derive their strength from a potent combination of talent, social capital (informal networks and a shared culture), a range of support services, and infrastructure.¹⁵

Apple, Google (Alphabet) and Facebook are all located in Silicon Valley. Amazon and Microsoft are in Seattle, a 2 hour plane ride to the north. Seven of the other 14 tech firms in the global 100 most valuable public companies – Intel, Cisco, Oracle, Netflix, Nvidia, Adobe and PayPal – are also based in Silicon Valley, while Salesforce is in nearby San Francisco (the only other US firm on the list is New York-based IBM). Beyond the US, there are just four Asian companies (Tencent, Alibaba, Samsung and Taiwan Semiconductor) and one European (SAP) on the list. So, including the top five, 13 of the world's top 19 public tech companies are based in or near Silicon Valley. China has two, in different cities. No other country has more than one.

Silicon Valley is also the leading global cluster for tech start-ups. An analysis in late 2017 found that, of the top 50 global tech "unicorns" – companies founded after 2000 with a valuation over \$1bn – 21 were US-based and 16 of these were in Silicon Valley, including Uber, Airbnb and Palantir (big data analytics), ranked 1, 4 and 5. The other five were scattered around the US: even America has only one Silicon Valley.¹⁶

WILL THE MARKET END THE DIGITAL DOMINANCE?

Tech companies' exploit these factors as well as other classic sources of competitive advantage such as product quality and innovation, design (notably at Apple), brand extensions, and bundling.

Increasingly, they also operate in multiple product markets, often with products and services offered free or below cost as part of a wider strategy to protect and extend their core market dominance and capture more data. Examples include Amazon's Kindle and Google's Maps and Gmail. All this makes for a very powerful winner-takes-all cocktail.

David Evans and Richard Schmalensee partly dispute this view. They argue that "winner takes all thinking does not apply to the platform economy", at least for Google and Facebook, on the grounds that – although they dominate consumer search and social networking – in the advertising market they have to compete with each other and with other media.¹⁷

Google and Facebook do, of course, have to compete for advertising. But advertising media are not homogeneous: advertisers use different media

for different purposes.

Google completely dominates search advertising and Facebook has a dominant, and still growing, share of online, especially mobile, display advertising. Because marketing budgets are

finite, they do compete indirectly against each other and against other advertising media – and other ways of spending marketing money (promotions, loyalty schemes, etc.) – just as all consumer products and services indirectly compete for consumers' expenditure. But advertisers have no credible substitutes of comparable scale and reach as Google in search and Facebook in online display advertising. That they continue to use them despite the numerous problems (fraud, audience measurement, etc.) reflects this lack of choice.

It is hard to see another company any time soon overtaking Google in search, Microsoft in PC software or Amazon in e-commerce. Facebook's lead in social networking looks almost as strong, despite the potential for users to "multi-home" (i.e. use multiple social media) and its recent problems with audience measurement, Cambridge Analytica, etc. This bullish view is reflected in these companies' high P/E ratios, showing that the financial markets expect their earnings not only to withstand competitive pressures but to continue growing faster than the market average for the foreseeable future. Some of this expected future growth presumably relates to the perceived long-term potential of their non-core activities, perhaps especially in the case of Alphabet, but it is hard to see how these P/E ratios could be justified if their core businesses were seen as being under significant competitive threat.

Amazon's P/E of 140 also reflects its strategy of reinvesting most of its profit to achieve additional long-term growth. This leads to a double whammy:



Advertisers have no credible substitutes of comparable scale and reach for Google and Facebook.



artificially low short-term profits and high long-term growth expectations. Apple's lower P/E of 17 reflects its lower expected future growth rate as Samsung and other Android manufacturers gradually catch up with the quality and ease of use of its devices and ecosystem, boosted by the growing superiority of Google services such as Assistant, reflecting the high penetration of Android and Google's lead in AI. As Apple is increasingly forced to include Google's services in its ecosystem, its price premium over Android devices – the big driver of its high margins – is likely to be eroded.

Of course, whether – and if so, how soon – this happens will depend on Apple's continuing ability to come up with new, better products, content and services to reinforce its dominance of the market for premium-priced mobile devices. In the wider mass market for mobile devices, Android is already the global standard, accounting for 77.3% of smartphones shipped in the year to 30 June 2018, versus 19.4% for iOS, according to StatCounter. However, Apple has an outstanding track record in product quality, ease of use, design and branding. As the number of different types of device continues to proliferate – PCs (where Apple's share is growing), mobile, wearable and smart home devices, VR/AR, automotive, etc. – Apple may be able to keep exploiting its ability to integrate devices and services into a superior, seamless user experience at a premium price.

In contrast, Google, Microsoft and Amazon, like IBM before them, all fit the long-term pattern that dominant tech players are rarely displaced as market leaders in their core markets, because the winner-takes-all dynamics are so powerful. Facebook's position is almost as secure, reflected in a P/E of 26 even after its recent fall. Only Apple is in significant danger of seeing its margins squeezed by a gradual process of commoditisation.

COMPETITION BEYOND THE TECH GIANTS' CORE MARKETS

For all five companies, the question remains whether, in line with the pattern discussed in the introduction, they will be eclipsed (as opposed to displaced) by a rival – either another large established player or a start-up – becoming the dominant provider of a new, important product or service. Microsoft has already been surpassed by Apple, Amazon and Alphabet in terms of market capitalisation and all five companies are acutely aware of the potential threats – and opportunities – presented by new product markets and technologies.

Major product markets currently of interest – in addition to Amazon's 2017 move to transform grocery retailing by acquiring Whole Foods – are transport, home automation, entertainment, healthcare, business and professional processes, and a wide range of applications under the broad heading of IoT that will generate even more data – and further increase society's vulnerability to cyberattack. Key supporting technologies include AI, voice and visual image recognition, VR/AR, cloud-based services, payment systems and cybersecurity. All the tech giants are investing in



If any firm does overtake one of these firms in the next few years, it is likely also to be in or near Silicon Valley.



several of these, both organically and through acquisition. Their access to vast amounts of user data makes them well placed to spot trends early and their scale and profitability give them plenty of capacity to invest in and acquire new businesses and technologies.

The only national market of comparable scale to the US is China. Chinese retail e-commerce is booming, with an estimated value already more than double that in North America: \$1.15tr versus \$453bn in 2017, reports Digital Commerce 360. Chinese tech companies operate under tight government controls and a constant threat of having their activities curbed, but benefit from protection from foreign competition and a somewhat cavalier view of privacy, data security, corporate governance and intellectual property (not unlike the US in the 19th century), although IP protection may improve as they build up their own patent portfolios and brands.

China's "big four" tech companies are Tencent (mobile messaging and other content and services), Alibaba (e-commerce, digital entertainment and cloud), Baidu (search and AI) and Huawei (mobile devices). Reflecting broader differences in business culture, Chinese tech companies tend to be less focused than those based in the US, but the two are starting to converge as the top US tech groups diversify beyond their core businesses.¹⁸

We can expect to see more Chinese tech successes over the next 10 years, increasingly based on innovation as well as imitation and with growing international sales, in competition with the US players. However, their current activities are still largely focused on Greater China and there is no realistic prospect of their offering a major challenge to the US elsewhere in the next few years.

If any firm does overtake one of these companies in the next few years, it is more likely to be also based in or near Silicon Valley, for the reasons already discussed.

In conclusion, with the partial exception of Apple, the tech giants seem unlikely to lose their dominance of their core market(s) any time soon, although they all, to varying degrees, face competitive threats at the margin. They are at greater risk of being overtaken by another company building a dominant share of a new, bigger, market. If and when that happens, the successful rival – either another tech giant or a start-up – is also likely to be based in Silicon Valley.

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WHERE ARE WE IN GENDER EQUALITY?

Women have major barriers to reaching the top in ICT careers, and in just accessing technology in some countries – and all women face both offline and online violence, says **ADRIANA LABARDINI INZUNZA**

Imagine being at the IIC’s annual conference in the year 2028 with an equal number of women and men experts in the fields of ultrabroadband infrastructure, all-shared spectrum, data analytics, artificial intelligence (AI) and algorithms, robotics, automated vehicles, torts law for autonomous devices, cyber jurisdiction, virtual labour communities, meta platforms, collaborative media, internet governance and cryptocurrencies.

The IIC president took us through the technological and institutional evolution of society, citizens and ICT in the data economy since 2018. “The past 10 years have seen unprecedented transformation and yet, we are still witnessing violence and discrimination against women – but now coming mainly from autonomous machines that have been fed with centuries of gender bias, stereotypes and discrimination from a long prevailing sexist society,” she highlighted.

It is with that warning in mind that I highlight the topic of gender equality as a prerequisite to eliminate various forms of violence against women, the key to bridging the digital gender divide, and a proven way to increase profitability, productivity and innovation in any public and private sector organisation. Physical, sexual, psychological and economic violence and discrimination against women both offline and online are still common, but well-designed global and local policies and campaigns to fight it at home, school, work and in the media will contribute greatly to achieving the UN’s Sustainable Development Goal (SDG) 5 – which of course is gender equality. We have 12 years left.

The president added that with AI, equality has been a steeper cliff to climb. We must catalyse efforts to stop gender-based discrimination and violence in algorithms, data feeds, wearables, platforms and their online services, applications and content to give the younger generations the same progress we have achieved offline.

UNDERSTANDING GENDER EQUALITY

Let’s first try to understand gender inequality. Take violence: the 2011 Istanbul Convention states that gender-based violence is the result of a historic imbalance in power relations between women and men together with social and cultural structures that have kept women subordinated in public and private spheres. Other key factors impact inequality. According to a study by McKinsey, 15 indicators

grouped in four categories determine how equal a society is for women – work, essential services and enablers, legal protection and political voice, security and autonomy.¹

In the more developed nations, we are finally witnessing an improvement in gender equality with a reduction in physical violence against women and a major impact on the wellbeing of societies as a whole: more effective governments, more productive economies, more profitable industries, healthier citizens, happier children, and less crime. Importantly, we now envisage a freer, fairer, brighter life for men and women who share power, duties, rights, access to public speech, decision-making spaces, as well as domestic and family responsibilities in a more balanced fashion.

McKinsey, in another report, has found that a staggering \$12 trillion could be added to global GDP by 2025 by advancing women’s equality in the workplace.² That might be too much given the likelihood of job losses to automated processes and gender-biased AI decisions influencing management

and top executives, but it will still be a huge gain.

The journey will be long though. In 2017, only 7% of government leaders and 15% of corporate board seats were occupied by women.³ Only 3% of CEOs around

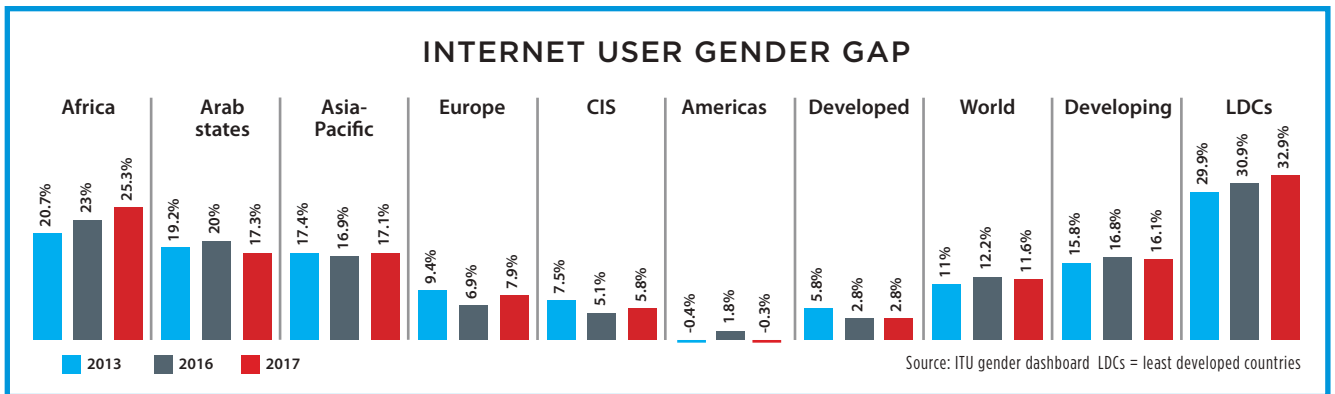


In most wealthy countries, there are now more highly educated women than men.



the world were women and only 21 out of the Fortune 500 companies were led by women (down from 24 in 2014) although in most wealthy countries, there are now more highly educated women than men. Taking a key part of our sector: female participation in the telecoms workforce varies widely among firms, ranging from 10% to 52%, but among the companies surveyed by the GSMA/A.T. Kearney in 2015, in 75% of firms, women accounted for less than 40% of the workforce.⁴

Those countries that have improved gender equality and implemented equal pay and career promotion policies for women and men, see parity or close to parity in female participation in decision-making positions in government, the judiciary, corporations, academia and nongovernmental organisations (NGOs). This has made a big difference in profitability, innovation, productivity, corporate image, democracy and liberty.



Aiming for parity requires recruitment and promotion procedures where the gender of the applicant is not revealed, flexible work schedules and locations, longer and more frequent leaves of absence for men, genuine part time jobs, and results-oriented work assessment. The commitment to take on the gender equality agenda is critical.

Transparency and regulation have also been critical to reaching this point, making disclosure of gender statistics mandatory for the payroll; for the share of men and women at every step of the organisational ladder – in promotions and recruitment, and for those who sit on boards and executive committees. Standardised data criteria have made the task easier for larger firms.

OECD countries have increasingly focused efforts to identify female talent and provide encouragement and scholarships for young female students to pursue STEM careers (science, technology, engineering and mathematics). It has been essential to re-educate parents, grandparents, teachers, children and the media so that they “unlearn” stereotypes and help women and men to overcome fears and other barriers in both public and private life, sharing responsibilities of family upbringing and care. By 2028 we will also promote more young women into economics, arts and behavioural sciences, putting “EA” into STEM – we call them STEEAM careers.

As of 2017, figures from the OECD show that the number of women graduates in ICT was alarmingly low. Several barriers are in play, one being that women do not see many females reaching the top in STEM. And the presence of more women in STEM careers does not secure gender equality in the workplace. As women advance professionally, we often start to see a narrower pipeline toward the top despite women’s knowledge and ambition to reach the summit being as strong as that of male peers. But it is likely that high-skills jobs such as data and computer science will be paid equally in the next 10 years simply because of the scarcity of professionals – the technology giants are already paying big salaries to people with talent in fields such as AI.

DIGITAL INCLUSION

When girls and women are kept from learning to use ICTs whether due to poverty, illiteracy, isolation, traditions, or social norms, this exacerbates inequality. We must keep an eye on digital inclusion. In fact, in some regions the gender digital

divide has worsened. As recent figures from the ITU show (see graph), the internet user gender gap has actually widened in Africa and barely changed in the Asia and Pacific region. Among the figures are that there are 184 million fewer women online than men in low- and middle-income countries, and globally 250 million fewer women than men online. Of course, there is the wider issue of the vast number of people with no internet access – although there are 4 billion people now online, the world’s population is now about 7.6 billion. In Latin America there are as many women online as men, so the gender gap has been bridged in my region.

While gender equality in developed countries has no doubt contributed to a virtual disappearance in the gender digital divide in Europe and the US, cultural barriers to the participation of women in the workforce and in using technologies such as smartphones persist in the less developed world. Such gender barriers have been highlighted for some time at the annual Internet Governance Forum (IGF), but the last meeting featured gender for the first time as a main session, rather than just in workshops, which was seen as a breakthrough.

Among the key messages from the main session were that the gender digital divide manifests in multiple dimensions, and discrimination on digital grounds is no less than a human rights issue. Efforts to enable women and girls to access infrastructure and digital technologies need to be complemented with promoting digital literacy, encouraging them to take jobs in technology fields, enabling them to create content that is relevant and valuable to their lives and contexts, and empowering them to contribute to internet governance and digital policy processes.

It was underlined that special attention should be given to gender related issues of subgroups (such as rural women, girls, women in refugee camps) and gender minorities, and the issue of online gender-based abuse and violence was highlighted as a challenge to be addressed by all stakeholders.

Two particular aspects have been raised time and again in past IGF meetings. The first is the cultural norms in patriarchal societies, where women are often expected to stay at home and not take up careers that would expose them to ICTs; further, even then they are deprived of access to the internet and smartphones owing to efforts by men to “protect” them from online harm, but with the result that all access can be denied. The second

GENDER POINTS AND PROJECTS

- SDG 5b aims to enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.
- An annex to the latest G20 Digital Economy Ministerial Declaration, “Bridging the digital gender divide – Delivering impact”, details actions such as raising awareness, gathering sex-disaggregated data, promoting digital skills, targeting women lagging in digital access and supporting women in digital businesses. It also says cyber violence against women and girls should be addressed. The OECD has produced a report informing the G20, also called “Bridging the digital gender divide”.
- There are several global initiatives for women in technology, including EQUALS, launched by the ITU and UN Women in 2016, which aims to develop access, skills and leadership,

- and #eskills4girls, which is tackling the gender digital divide in low income and developing countries.
- Publicising pioneering female internet figures such as China’s internet pioneer, Qiheng Hu, provides role models of women to take up ICT careers, and use them in everyday life. Research from Microsoft has shown that the number of girls interested in STEM across Europe almost doubles when they have a role model to inspire them.
- The term “dataveillance” is used to describe practices that aggregate large quantities of data, including biometrics, to monitor, track and regulate people and populations, and has gender, sexuality, race and disability implications. Campaigners are increasingly concerned about what they term the “informatisation” of the body.
- EROTICS, a project from Progressive

- Communications, is aiming to create better understanding of content and harm based on women’s experience of sexuality online.
- Points made at the last IGF meeting on online gender violence:
 - Online abuse against women is often sexualised and designed to not only push one woman offline but the whole female community
 - A disconnect exists between how offline and online harassment is treated by law enforcement
 - Victims should understand what their rights are on- and offline
 - Women abused online are also more vulnerable to a physical attack
 - Efforts by platforms to make certain materials harder to find may have the reverse effect, as Instagram found with content on self-harming
 - Female politicians face much online abuse. See the #NotTheCost campaign.

is the many initiatives that foster small businesses and entrepreneurship among women where ICTs are key enablers, in addition to ICT training and career opportunities in technology fields. See the panel for more about the issues and projects, not least a new G20 declaration on gender.

COMBATING ONLINE VIOLENCE

I turn now to the worst aspect of gender inequality: violence. According to the European Council, in 2014 12 women were killed every day in Europe; one in every five women has experienced physical or sexual violence at home in Europe.⁵ In Mexico, my country, seven women a day were killed in 2016; in the same year, 1.3 million women were victims of some kind of physical violence.⁶

Indeed, physical, sexual, psychological and economic violence against women and girls has been endemic, despite commitments of the international community such as the Belém Do Pará Convention, to fight all forms of violence against women, and 14 years later, the European Council’s Istanbul Convention ratified by the EU in 2017 and by most EU members (11 EU members pending in 2018).

It has taken a long time to realise that eliminating violence against women requires, among other conditions, equal access to power, but it is still not enough in the digital society. Life online is a hall of mirrors of our lives offline, with the best and the worst of the human race let loose.

Eliminating acts of violence online against women, whether through threats, stalking, harassment or hate speech, is a tough challenge. These threats can severely affect fundamental rights to freedom of speech, psychological and even physical integrity, privacy, honour and reputation. Although bad for male victims too, as of 2017,

women were 27 times more likely to be victims of cyber violence than men, which results in digital exclusion for girls and women, according to the UN Broadband Commission for Digital Development.⁷

A paper issued last year by the IGF’s Dynamic Coalition on Gender and Internet Governance, “An internet for #YesAllWomen? Women’s rights, gender and equality in digital spaces”, notes that there are five clusters of feminist principles for the internet: access, movement and public participation, economy, expression and “agency” – and it is this last one that is explored. Key issues in agency are consent, privacy and data, memory and anonymity. Consent is a critical women’s rights issue in the digital age. Women’s agency lies in their ability to make informed decisions on what aspects of their public or private lives to share in digital spaces – as information, data, text, images or video.

Take the posting of intimate images and data without consent, where the perpetrator can remain anonymous. Despite tools to identify the IP address (which is also one of many reasons to promote full migration to IPv6) and the take-down duties of search engines and content platforms, online violence on digital platforms is rising, and we need more effective collaborative efforts to combat it.

And as I noted, my concern is also about the use of AI and that the pace of new technology will outpace these efforts. We would all be better off had these tools been designed from the start by more women, and certainly with a gender perspective.⁸

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PLATFORM CAPITALISM

Big data, the driving force of platforms, is raising fundamental – and puzzling – issues about our current view of free market capitalism, as **ANTONIO NICITA** writes

“It’s all about data,” wrote Chris Chapman, president of the IIC, in Intermedia this year. And every day passed in the digital ecosystem shows how true this is for the future of communications. According to the IDC Data Age 2025 forecast, in the next 6 years the volume of data created in the “datasphere” is expected to increase by five times.

Beside volume, two other two v’s – velocity and variety¹ – will shape the nature of the datasphere in the near future, changing the nature of products and services exchanged in the digital ecosystem as well as the structure of digital markets, raising new trade-offs and dilemmas for regulators and policymakers.

As the digital ecosystem becomes fundamentally driven by datasphere growth, traditional value chains and vertical organisations in the communications industry will be rapidly transformed.² Their role will be redesigned in terms of producer and/or recipient of data, while algorithm-driven platforms will take centre stage, with data exchange at the core of economic transactions involving multisided markets.³

The 5G revolution, with the increase of IoT and M2M connections, will further reveal that data is king – the economic product which creates value in the new digital product cycle for “matchmaker” platforms,⁴ online advertisers, and so on.

As with any revolution, the emergence of the datasphere society generates important challenges for regulators and policymakers. The efficiency of platforms increases due to network effects and the value of data collected, which in turn improves the efficiency of algorithms and consumers’ welfare (in terms of reducing transaction costs). Thus, for a platform to be efficient, the expansion of the service’s scope and the extension of the markets

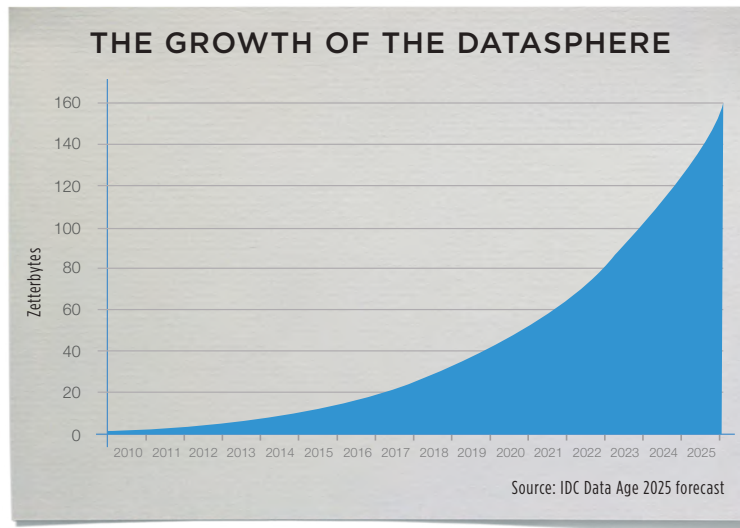
served will be a natural evolutionary process, aimed at capturing a consumer’s attention and time under the promise of satisfying all their needs, through the platform’s gatekeeper role.

As a consequence, under business as usual, i.e. absent any focused regulatory action, the spontaneous evolution of market forces will lead soon to structural changes in the traditional (and often locally based) vertical industry dynamics, inducing competition among (few) platforms for (many) global markets.

OPEN ISSUES

This ongoing process has already raised many policy questions,⁵ sometimes driven by partisan attitudes that are pro or anti platforms: do we care about this paradigmatic shift from traditional to digital (platform based) capitalism? Shall we apply traditional antitrust criteria and regulatory approaches to digital platforms, and their dominance over well-defined relevant product markets? Shall we instead change our perspective, given the benefits to consumers, who often pay lower (or even zero) prices for products and services implicitly exchanged for “attention”? Shall we consider big data a new entry barrier for many digital markets?⁶ Shall we consider inalienability rules for privacy of personal data, or shall we build (and stimulate) a competitive market for data, even by defining clear property rights on our own data (“propertisation”)?⁷

The debate is open, and answers are complex as they entail many interdisciplinary dimensions at the intersection between antitrust, privacy and communications regulation. One of the main points behind the debate concerns the relationships between platforms, big data and algorithms, as the value and impact of big data cannot be properly



assessed without taking into account the business model of the main digital platforms (including the apps downloaded by internet users), which is based on the value and impact of algorithms. Machine learning processes require a large amount of data to improve their performance. This is the main reason why efficient platforms need a large amount of big data to improve their algorithms and implicitly exchange (zero priced) services for users’ data. Moreover, the efficiency of algorithms improves the matchmaking performance of the platforms over multisided markets, offering users “what they want”, but also helping programmatic advertisers to properly reach a segmented and profiled audience.

The economic challenge here is how to provide good and efficient governance of the transition between the old and the new world.

The laissez-faire approach to platforms simply suggests that the evolution of digital capitalism should be governed by new (very light) rules. This means abandoning old paradigms (such as notions of dominance, market power, relevant market, monopolisation and so on) that would otherwise affect platforms at their core, as they would treat as “behaviour” what is, after all, just a business model performing both allocative and distributive efficiency – as consumers obtain a larger amount of services (included many traditional services offered by non-platform providers) at lower costs.

On the opposite side, a prudent approach – often supported by firms and unions belonging to the incumbent traditional industries – highlights the “new nirvana” of platform-based capitalism on the basis of the hidden social costs in terms of monopolisation and “monopsonisation” of affected markets (included the job market), generated by these new global intermediaries, thanks to their ability to gather, control and exclusively use personal data.

I will not choose here between the two approaches, but discuss some pervasive puzzles about the laissez-faire approach to platforms.

ECONOMIC NOTIONS

The tension between the two approaches can be summarised in terms of the economic notion of “externality”, i.e. of the indirect effect generated by production or consumption that does not pass through an explicit market exchange. Platforms manage and enjoy positive externalities, such as the voluntary “implicit” exchange of personal data by platform users. However, platforms also generate negative externalities on many traditional industries, demand for which is actually redirected towards the platforms’ (zero) priced services. By intermediating among many sided markets, matchmaking by platforms is able to extract a large amount of (informational) rents from any side. This means that platforms increase efficiency but also keep for themselves a large portion of the rents extracted from participants to the multisided markets intermediated by them.

As a consequence, this “structural efficiency” of platforms raises puzzles over the laissez-faire approach. Laissez-faire policies are generally based on the classical idea that free markets perform well and better compared with other (governmental or privately based) hierarchical or command-and-control institutions. However, this is possible because free markets – according to fathers of the free market paradigm such as Adam Smith and Friedrich Hayek – allow strong competition among participants, and, in turn, this is the result of economic agents publicly revealing their private information. Under well-functioning markets information is free, accessible and “observable” to all. On the contrary, in platform-based capitalism, “revealed” information is privately kept by the matchmaker in the form of big data and, moreover, this is precisely the source of a platform’s competitive advantage over competitors. So, how is it possible for the laissez-faire approach to reconcile, under a unified framework, the benefits of free markets with the emergence of platforms, whose main feature is preserving the gathered private information from being publicly revealed?

A second pillar of the laissez-faire approach is the central role of freedom to choose in enabling the mechanism of market competition. However, the hidden side of platforms’ network effects (which means that the benefit to consumers of being on a platform grows as long as the platform increases its dimension) is that they also constitute consumers’ opportunity costs to switch platforms. That means, in turn, that platform capitalism may weaken consumers’ incentives to switch, thus inhibiting one of the central mechanism of competition in free markets. Again, how is it possible for the laissez-faire approach to reconcile, under a unified framework, the benefits of free markets with the emergence of significant exit costs on platform users?

INFORMATION AS A PUBLIC GOOD IN THE FREE MARKET PARADIGM

To properly understand the value of big data in digital capitalism, a step back is needed into our understanding of the value and role of information as an economic good in well-functioning (or perfectly competitive) markets.⁸ Information is, on the one side, an essential input for well-functioning markets and, on the other, it is their worthy outcome. Markets are efficient (relative to any alternative institution) when they are able to convey dispersed information, on both the supply and demand sides, into “public” signals such as price and quantity, that reduce search costs⁹ and allow the optimal allocation of economic resources. As a consequence, markets’ (allocative) efficiency relies on the value of the information publicly released.

The information is an economic good and, moreover, in well-functioning markets it is a public good, being non-excludable and non-rivalrous in consumption, thus freely accessible. When information is private, or asymmetric, a market failure does emerge, leading to so-called agency problems, namely moral hazard and adverse selection: the market fails in performing its

allocative efficiency, precisely because information is private, so that other institutional or contractual arrangements are needed to let economic agents reach second best outcomes.

Now, two main efficiency paradoxes do emerge when considering the way in which digital platforms extract, gather and use information:

- The privatisation of public good information through big data extraction
- The informational capture of platforms' users through algorithmic profiling.

These are efficiency paradoxes as they are on one hand the result of platform efficiency, but on the other they weaken two main pillars of well-functioning markets:

- The efficiency of information as public good
- The role of consumers' freedom to choose as a competitive discipline device.

BIG DATA AS PRIVATELY HELD INFORMATION BY PLATFORMS

The first efficiency paradox for the datasphere society is that its core value relies on big data that is, indeed, privately held information, i.e. an economic good whose persistence would generate a market failure. Big data could eventually be accessible by many (depending on the nature of data), but, generally, it is not public good information. Algorithm-based platforms extract personal data through the implicit exchange between the product/service and users' attention, or any other form of personal information that allows users' profiling. These large amounts of data are, however, private as property remains in the hands of the platform, generally for business uses.

This is a paradox as long as it shows that the "efficiency of the platform" – based on cumulating the private information extracted from users – contrasts with the "efficiency of the market" – based on revealing, to all, public information otherwise dispersed and privately owned. Platforms reduce transaction costs in the form of search costs but only within the platform, while the efficiency of markets, in terms of search costs reduction, is not limited to specific firms or organisations as it is generally spread to all the economic agents participating in the competition game.

As a consequence, from an economic point of view, it is hard to reconcile under a unified framework the efficiency of the market with the efficiency of the platform: markets and platforms differ structurally in terms of the nature, public or private, of the information extracted from consumers. In turn, this affects the meaning and extent of the allocative efficiency: for a platform keeping private the information gathered from users to perform the same level of allocative efficiency of the market, that platform has to become "the market", i.e. it has to expand its activities to entirely cover all the sides of the market.

If this is true, then the normal efficient outcome of an expanding platform, focused on managing big data, should be as a monopolistic/monopsonistic platform acting as the sole matchmaker. Thus one should conclude that efficiency in platform

capitalism has to be coupled with competition for (being) the market, rather than with competition in the market.

This is not entirely new. In classical economic theory, Adam Smith and Léon Walras named, respectively, the Invisible Hand and the Auctioneer as the ideal matchmaker allowing dispersed information in the market to meet in equilibrium between demand and supply at selling prices equal to marginal costs of production. However, both were fictitious intermediaries – "as if" metaphors designed to explain the functioning of the markets when dispersed private information comes to be public thanks to the mechanism of free



Big data could be envisaged as an essential facility necessary to enter markets.



competition. On the contrary, platforms are matchmakers that privately hold the information they gather and do not share this information with rivals or "anonymous strangers" in the market. This is a paradox to the extent to which the

emergence of platforms is generally depicted as a natural consequence of market competition in the digital ecosystem: platforms emerging in free markets, indeed, generate a fundamental transformation in the nature and role of knowledge and information through the "privatisation" of big data extracted from users. Dynamic efficiency here is thus coupled with evolution towards monopolisation. Interestingly, this kind of monopolisation is not the result of having success in the market, but of a precise strategy of the platform concerning the (privately efficient) exclusive use of the information gathered through big data extraction.

Moreover, when the platform's informational rents refer to exclusive use of big data, gathered by the platform and due to the dimension of the platform, this process generates scarcity in access to relevant information. Then big data could, in principle, be envisaged as an essential facility whose access is necessary to enter the relevant markets.¹⁰

However, the process of monopolisation by a digital platform, on the other hand, does not necessarily mean that competition is out, for two main reasons. First, because competition might be "a click away", as drastic innovation may substitute existing platforms with new entrants, as happened with Yahoo versus Google or Nokia versus Apple and Samsung, and so on. Second, because some kind of big data (so-called structured data) could be easily replaced by alternative and competing platforms, so that the platform's informational rents generated by cumulating exclusive big data could easily vanish. Thus, in this case, one should ask whether the competitive advantage of the platform relies on having exclusive access to "scarce" big data or on being able, through the development of powerful algorithms, to use big data efficiently even when it is easy to replace.

Nonetheless, even when easily replaceable, privately held big data could constitute a barrier to entry in some other circumstances, increasing ➔

◀ the opportunity cost for switching platforms. In these cases, the barriers to entry are the users' exit costs, in terms of opportunity costs to leave the old platform for the new one. The bigger the platform, the higher would be the opportunity costs to leave it (i.e. in terms of losing the positive network externalities present in the incumbent platform).

This means, in turn, that the dimension of the existing platform plays a role also on the demand side. As the efficiency of algorithms depends on the dimension of big data treated, the combination of privately held big data, dimension of the platform and network externalities may ensure the enduring persistence of a platform against new entrants' competitive challenge, because of demand's inertia in switching platforms, together with the users' coordination costs needed to efficiently switch.¹¹

USERS' EXIT COSTS AND INFORMATIONAL AFTERMARKETS

A second efficiency paradox is the platform's ability to make discrimination strategies (price and non-price), thanks to user profiling from data extraction, while weakening consumers' freedom to choose.

Standard microeconomic theory suggests that there are forms of discrimination that increase allocative efficiency, because they enable consumption of goods and services by consumers willing to pay not less than the marginal cost of production. This also applies to indirect forms of discrimination that take place through bundling of services and products, at least in those cases where consumer preferences are negatively correlated for the different bundle's elements. However, it is well known that some forms of discrimination are inefficient as they may negatively affect competition. This happens when price discrimination is implemented at upstream level by vertically integrated companies controlling an essential resource; or when the discrimination is selectively practised by a dominant firm towards groups of contestable consumers.

The problem with digital platforms arises when the discrimination is allowed by the extraction of exclusive informational rent by the new data profilers in the digital ecosystem. This is not so much a classical matter of privacy or data protection, but due to the fact that the consumer ends up being screened from the competition and placed in a kind of informational aftermarket in which the expression of needs and market transactions become one-to-one relationships rather than one-to-many. Under "perfect profiling", the consumer loses incentives to even search for alternatives, as the platforms may understand, foresee and satisfy, in due time, any potential need.

Under exclusive access to big data, informational capture (and hence the informational rent gained) by the incumbent platform could be such to prevent any attempt by consumers to search for market alternatives (also because search activity is often known by the incumbent platform). This process increases endogenously the incumbent platform's market power vis à vis competing platforms as well as its bargaining power vis à vis final users.

This means that perfect profiling powered by consumers' inertia and behavioural biases fosters laziness, along with the paradox that the digital world of search becomes its opposite and creates happy and inert consumers.

Under an informational aftermarket, consumers continue to choose freely, but by means of customised menus and within the platform environment. It is true that these menus might be the "best choice" for the consumer (as the platform "knows" what the user wants). Nonetheless, under customisation, the degree of comparability among platforms by the user may get increasingly difficult. The paradox here is that a platform's efficiency may well satisfy a final user who lacks ability and even a chance to exert free choice among alternatives. If this is true, platform efficiency in profiling may generate the "end of the markets" and of competition dynamics, which will be replaced by a cluster powered by consumers' informational capture.

Of course, this might be a rather bleak picture, in which there is no room for disruptive innovations generated by competitive pressure, resulting in a limitation of the dominant positions. However, the point is that the magnitude of this potential outcome may depend on the degree of informational capture and the actual constraints to the consumers' rational and free choice among alternatives. The universe of markets, under this vision, sooner or later may fall into small star systems in which the consumers will only be able to



It is impossible to know if the digital capitalism black hole will come true or not.



observe orbits very close around them, exercising their "free" choice but only in a non-market context.

Today it is impossible to know if the prophecy of traditional markets, swallowed up by the digital capitalism black hole will

come true or not. The risk of informational capture, under exclusive use of big data, and the creation of informational aftermarkets, raise significant issues in this respect. A lateral paradox is that some privacy rules, as long as they increase transaction costs over the development of a free market for big data, may even exacerbate the above risks, by compelling the platform to make exclusive use of the big data gathered from users (i.e. not to share with third parties).

THE ROLE OF DATA PORTABILITY

Two possible exit strategies against the above risks are big data access and sharing, and consumers' management of property rights over their own data. The first strategy is hampered by the fact that it seems quite complex to define big data as an essential facility *tout court*.

The second strategy has gained strong support in the General Data Protection Regulation (GDPR) in Europe. The EU data protection legal framework ensures that personal data can only be gathered under strict conditions and for legitimate purposes and are protected from misuse. In particular, personal data must be:

- Processed lawfully, fairly and transparently
- Collected for specified and legitimate purposes
- Adequate, relevant and limited to what is necessary
- Accurate and, where necessary, kept up to date
- Kept in a form which permits identification of the person to whom the information is related for no longer than it is necessary
- Processed in a manner that ensures security and protection, e.g. against unauthorised or unlawful processing, accidental loss, destruction or damage.

In January 2017, the European Commission adopted a proposal to modify the e-privacy directive¹² and adapt the sector specific legislation to the GDPR.¹³ Key points of the proposal are:

- The application of privacy rules to new players providing electronic communications services (e.g. WhatsApp, Facebook Messenger and Skype)
- Privacy is guaranteed for communications content and metadata, e.g. time of a call and location, which must be kept in an anonymous form or deleted if users did not give their consent
- Simplification/streamlining of rules on cookies
- Protection against unsolicited communications (spam), e.g. by default or using a do-not-call list; marketing callers need to be identifiable
- The enforcement of the confidentiality rules will be the responsibility of data protection authorities already in charge of the rules under the GDPR.

One of the main novelties regards the user's right to the portability of their own data when switching provider. The real impact of this measure needs to be tested, but it constitutes a principle that goes in the right direction of:

- Defining property rights on personal data (protected by property rules)¹⁴
- Setting new default rules in digital transactions, by re-directing bargaining power over data use in favour of a platform's users,
- Allowing an effective freedom to choose on users' platforms
- Restoring, through freedom to choose, a degree of workable competition among platforms.

THE (PRIVATE) VALUE OF BIG DATA: THE AGCOM INTERIM REPORT

Data portability works well when a competitive market for big data is well-functioning. One of the main conditions for a market to work is to have well-defined property rights, high transparency and publicly revealed information. Exchange agents should be aware of what they exchange and about the value of what is exchanged.

But what are the private and market values of personal data? An answer comes from a joint enquiry on big data in Italy that has the aim of identifying the vast array of trade-offs and regulatory dilemmas surrounding big data management, by the communications authority (Agcom), the competition authority (AGCM) and the privacy authority (Garante per la protezione dei dati personali). The final report is expected at the end of 2018, but Agcom's interim report,¹⁵ released in June 2018, unveils some remarkable findings about the economic value of big data.

In particular, an econometric analysis on the apps available in Google Play reveals that there is a statistically significant negative relationship between the number of privacy licences signed by users on the use of their data by an app, and the price users are willing to pay for downloading the app. At the same time, on the supply side, app producers and sellers fix the price of an app on the basis of the number of licences they require users to sign. As a consequence, even if – according to a survey conducted by Agcom – only 60% of users are actually aware of the implicit exchange of personal data when they download apps or have access to a digital platform, there is a market value behind the implicit exchange of personal data against digital services and products.

Policymakers and regulators will need to make it explicit to consumers and platform users that there is a market for personal data, that the consumer may decide how to sell this data and to whom, using this bargaining power also as a mechanism to enhance competition among platforms. Data portability, in this respect, is one first step in the right direction.

CONCLUSIONS

Platform capitalism is based on exclusive access to big data and on platforms' ability to capture final users through efficient algorithmic profiling. "It's all about data", but as platforms' efficiency and barriers to entry both grow with platforms' dimension, regulators and policymakers will raise the issue of dynamic efficiency in a world where information is not anymore a public good in open markets and where consumers' inertia reduces incentives to switch platforms.

The debate is open and the increasing awareness of the implicit value of personal data – as shown by Agcom's interim report – reveals that new policy approaches are starting from consumers' empowerment over the use and sale of their own data.

Placing the platform user at the centre of the digital transaction on their own data implies giving centrality also to the issue of the appropriability and portability of the profiled data. This would enhance the user's ability to recover their own bargaining and contractual power towards the platform, by participating in the profitability generated by the digital transactions.

In turn, data ownership and portability, on the consumer's side, strengthen a user's freedom to choose among alternative platforms, while reducing the competitive advantage of the exclusive access to big data by the incumbent platforms.

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PUT CONSUMERS FIRST

Data privacy is rightly among the biggest concerns in the digital age but, as **DANIEL SEPULVEDA** argues from the industry perspective, a regulatory balance is needed between protection and the success of a data-driven economy

The recent global rise of law and regulation on data protection has elevated the issue to a high level of public scrutiny and industry engagement. As a result, the time is ripe for the establishment of baseline standards within and across jurisdictions for a set of ethical commercial practices in the collection, use and distribution of people's information.

The advertising and marketing technology industry plays a unique role in these discussions because our businesses rely on accessing consumer data to construct and deliver advertising that is relevant and effective for publishers, advertisers and marketers. Doing that in a way that all consumers can embrace and trust is our responsibility. Today, in the eyes of many consumers and policymakers, we are falling short. What to do?

The marketing industry is a trillion dollar industry, creating millions of jobs, facilitating the flow of commerce, helping sustain communities, financing the global open internet, and enabling free or subsidised access to information and services. At its best, it is undeniably a force for good. And as long as we live in a market economy, advertising is a necessity. At its worst or most poorly managed, it exposes people to harm, unfair discrimination or unwanted attention.

In this article, I highlight principles and ideas that show promise in recently enacted data protection legislation and proposals that empower consumers to protect their digital dignity without disabling commerce. I raise concerns about some assumptions that undergird other components of proposals in recent legal reforms that distort competition, put information in silos, or create unworkable enforcement formulas. I close with recommendations for a way forward.

The objective of my company, MediaMath, and the industry we are in is to ensure consumers grow to love data driven marketing rather than grudgingly tolerate it. To reach that objective, we need to make

The EU's GDPR and California's new CCPA: are they flexible enough?

it better as an experience and update and strengthen self-regulatory data protection standards, empower and educate consumers, and provide directional guidance to legislators for new law or regulation where it is considered necessary or useful.

CONSUMERS WANT CHANGE

Confusion, concern and distrust permeate the current market for people's information and the industry needs a new paradigm for public deliberation with policymakers and thought leaders on data protection and privacy. We believe that privacy is human right. That belief is what has driven us to the "consumer first" principle. And we believe that putting the consumer first is also a good principle for deliberation because regardless of whether or not others agree that privacy is a human right, putting the consumer first is a principle that all commercial stakeholders should be able to agree on because a happy consumer is a better customer and more content citizen.

We recognise the challenge to do better and want to work with anyone interested in a better digital future to deliver a better deal to consumers. We also recognise and accept that solutions will require stronger self-regulatory standards, new laws, or some combination of the two.

A vocal bloc of consumers are expressing their dissatisfaction with targeted advertising by adopting ad-blocking technology and pressuring policymakers around the world to pass new data protection laws. In the US, use of ad-blocking technology has gone from 16% of internet users in 2014 to 30% this year.¹ In California, the desire for action on privacy led to such strong support for a very poorly constructed ballot initiative that the legislature was forced to preempt it and pass the most sweeping state law on privacy in the US, the California Consumer Privacy Act (CCPA), by a senate vote of 69 to 0.² And in Europe, the use of ad-

blocking technology is the highest in the world and the most restrictive data protection rules for any western market, the General Data Protection Regulation (GDPR), went into effect this year.

It is critical that data-dependent companies meet consumers on terms and conditions that consumers embrace. At the same time, we need to recognise and preserve the value of the data-driven economy and the free and open internet. These goals are not incompatible, but they do require agreed rules and norms for the market as a whole to achieve them.

A recent letter from the Association of National Advertisers (ANA) to the National Telecommunications and Information Administration (NTIA) in the US, regarding potential changes to privacy law, lists the economic benefits of interest-based advertising. The authors cite a Harvard study reporting that the advertising-supported internet ecosystem generated more than a trillion dollars for the US economy and more than 10 million US jobs in 2016.³ That is real money going to sustain real communities and help people provide for their families.

We should not use public policy to discourage or block the flow of data across the ecosystem because it would come at immense economic costs. But we can and should use it to empower consumers to trade data for services in a transparent and inclusive market, protect consumers from harm or deception, mandate privacy by design, increase the control consumers have over who can access and use their information, and ensure that collected information is properly secured.

CONSUMER FIRST FRAMEWORK

Our test for supporting any specific change to market dynamics through increased self-regulation or new legal regulatory solutions is whether the proposal puts consumers and their interests first and preserves the free and open internet with low barriers to entry and participation. To answer that question, we think about what it is that we want the digital economy to enable and what proposed changes might mean for consumers in terms of increased control over their data, market competition, innovation, and better prices and access to services.

Getting data protection law and regulation right will ensure that people have greater control over their digital identity, participate in an explicit value exchange of data for services, and have their preferences respected throughout the life of their information in the ecosystem. Getting it wrong would lead to a less inclusive digital economy with large, concentrated pools of data in the hands of a few very large firms, and high barriers to entry into the digital marketplace.

BENEFITS OF RECENT ACTIVITY

What Europe's GDPR and most other recent initiatives including the new California act have got right is the need to place consumers at the centre of the digital ecosystem and to let them know and control who in the ecosystem gets access to their data, the volume of data they hold, and the way they use and distribute that data. It is also important that these new measures uniformly require that data be secured and provide for an expert agency or authority with the power and resources to enforce the rights that people should have in the digital economy over their information. Law and self-regulation should not leave consumers to their own devices in a complex marketplace for data.

To the degree that existing self-regulatory programmes do not encompass these principles, they should, as should any new law. Taken as a whole, these provisions make the existing implicit value exchange between the consumer and the array of market actors involved in the stewardship of their data explicit and place requirements on those entities to respect consumer preferences.

AREAS FOR CONSIDERATION

There are some areas where the discussions in various jurisdictions to date have either left some problematic ambiguity or are built on mistaken assumptions.

The free-rider challenge In the GDPR and CCPA there is a central question for the providers of advertising-supported services as to what they can or should do if a consumer chooses to reject behavioural advertising. Both the GDPR and CCPA argue that the privacy conscious consumer should suffer no penalty as a result of that decision. The outstanding question is what constitutes a penalty and whether or not the consumer should be allowed to use the service without payment.

It is our position that if a consumer is going to exercise his or her right to deny monetisation through interest-based advertising, that decision should not be penalised but neither should it be rewarded. The CCPA posits that a service provider cannot deny a service on the basis of a consent choice – but that it can make up the monetisation lost through some other form of compensation. Interpretation of the GDPR and the construction of the EU's draft e-privacy regulation have not made the European definition of "penalty" clear yet.

How best to execute the principle in question is a key challenge that deserves further analysis. The CCPA concept is good in the sense that it recognises that the provision of services is not free and service providers have a right to require some form of compensation if they cannot monetise through advertising. But by stating that the service provider can only charge an amount equal to that of the data lost, it creates a form of rate regulation that will be tough to understand, quantify and police. Further, unless the service is a necessary utility, the service provider should not be forced to provide services to anyone. While access to the internet may be considered a utility, necessity or human right, it is not true that access to all the services made available over the internet fall into that category as well.

First vs third parties First-party collectors of people's information are the companies and websites that consumers deal with directly. Third-party collectors are those that acquire information from a first party or public source and make it available to other parties.

There is an assumption inherent in some privacy proposals that the first-party collection and use of people's data should be preferred and encouraged over third-party collection and use. This may seem intuitive given that in our personal lives we trust people we know personally more than those we do not. While that rule of thumb works well in our personal lives, it is not particularly good for commercial relationships, nor would regulation that prefers first parties to third parties be good for consumers. It would simply empower huge, siloed datasets concentrated in a few companies over access to useful data for new entrants and general market use that when properly regulated is good for consumers.

Neither first nor third parties are inherently better at protecting consumer privacy due to where they sit in relation to the consumer. There are good and bad first-party stewards of data; there are good and bad third-party stewards of data. What matters most in the commercial stewardship of personal

← data is not whether the consumer knows the commercial actor but rather what data the actor collects, the context in which it was collected, the sensitivity of the data, how it is used and secured, and to whom it is disclosed and for what purposes.

What law and regulation should encourage is high standards based on fair information practice principles by any collector or user of personal data in the ecosystem, a preference for pseudonymous information, restrictions on data collection and use that could cause harm, and an allowance for the market to reward or punish the quality of data regardless of source. This means that in a transparent market where data holders respect consumer preferences across the ecosystem it shouldn't matter who is holding the data. The existence of third parties and who they are should be made transparent and companies who work with third parties must transmit consents and permissioned uses to the rest of the ecosystem, but there is no logical consumer-first reason to legislatively discriminate against third parties.

By placing a heavy emphasis on providing notice and obtaining consent from people for the use of their data, the GDPR and similar laws in other markets favour first parties, which have the easiest to use and most direct interface with the consumer.

The California law establishes an opt-out mechanism to deny companies the ability to sell consumer data but is unclear on first-party collectors that do not sell consumer data but monetise their first-party data through first-party directed advertising, including behavioural advertising. As Facebook CEO, Mark Zuckerberg, likes to point out, Facebook doesn't sell user data, it sells access to user audiences. The California bill isn't clear if it covers that circumstance or not and if not, why not.

As a result of these constructions, each of these models favours walled gardens within large first-party enterprises over an open ecosystem. Ultimately, that is bad for consumers, competition, and privacy because as you can tell from the problematic cases that we have seen recently, including Cambridge Analytica and Facebook, it is the largest collectors and holders of information as well as disseminators of media through a single platform that pose the greatest risk to consumers of manipulation or harm because they can transmit the most, and most sensitive, information broadly. An American framework should not make this mistake.

Risk of defining pseudonymous information as personally identifiable To recognise, understand and respect consumers, market actors need a mechanism for identifying them. We believe that enabling some form of pseudonymous identification for a unique user across websites and devices is likely to lead to better services and marketing for that consumer than a series of walled off and siloed buckets of data within first-party websites with personally identifiable information (PII) such as the names, addresses, and phone numbers of those consumers. Pseudonymous identifiers allow you to identify a device or



Current models do not have flexibility to allow for exceptions or experimentation with new technologies.



consumer without identifying who that person actually is. Though that does not prevent abuse targeted at specific people, it can reduce risk and should be recognised and valued as such.

Encouraging the development of first-party aggregators of large audiences that do not allow for a consistent, tailored, nonrepetitive message for that consumer across touchpoints will lead to consumers being mistargeted or excessively retargeted because marketers will be spending on advertising in buckets of nontransparent data.

The GDPR and CCPA have a very expansive definition of PII that includes pseudonymous identifiers. The incentive that creates is for firms not to go through the work of creating pseudonymous identifiers and to instead collect truly personally identifiable information and distribute it broadly. It is well understood that pseudonymous information can be de-anonymised to get you to a known person but that does not mean it has no value from a privacy perspective and that action can itself be banned or made illegal and should be.

Allowing for flexibility and innovation Lastly, current models including the GDPR and the CCPA do not create enough flexibility to allow for exceptions or experimentation with new technologies that may be in the public interest. The use of artificial intelligence (AI) and blockchain technologies may be hindered by requirements in some of the new laws being enacted. AI allows for automated decision-making by machines using data. The demand to require a specific explanation for each decision would make it difficult to use this new technology. Blockchain technology allows for an uncorrupted ledger of transactions thereby making the right to be forgotten or right to erasure difficult to execute.

The internet of things (IoT), much of which will have no screen or mechanism to convey notice and gather consent, could face similar challenges. And the prescriptive process-based mechanisms for legal compliance designed into the GDPR and the CCPA do not create space for the design of alternative mechanisms through government-approved self-regulatory standards to achieve the same level of compliance with principles through other means, and they should. For the purposes of experimenting with new technologies that may require waiving a right to notice and consent or the right to deletion of information held, there should be some mechanism for petitioning for allowance of use of those technologies on public or legitimate interest grounds as the GDPR allows but for which we have not yet seen specific decisions.

CONCLUSION

Privacy law need not make consumer data off limits to market actors trying to reach them. That would serve neither publishers, consumers, nor marketers. But we do need to make consumer data available on terms and conditions that consumers embrace, permit, and understand. That should be the goal of both updated self-regulatory mechanisms and new law where necessary.

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LESSONS FROM AUCTIONS

South Africa and other nations are under pressure to allocate spectrum by auctions but, as **CHARLEY LEWIS** details, it is important to take stock of what has gone right and wrong so far

Spectrum is widely viewed as a finite national and global resource that needs to be managed in the public interest to derive the “greatest benefit to the entire population”, as South Africa’s spectrum policy has put it. The ITU says the goals of spectrum management are to “stimulate social and economic progress” and to make “efficient and effective use of the spectrum”.

As ICT access, usage and consumption patterns swing from telephony interaction, through internet connectivity, to widespread broadband availability devouring multiple forms of data-intensive audiovisual content, the pressure on spectrum has never been more severe. The rising tide of connectivity – South Africa for example has over 92 million active SIM cards in a population of some 57 million, but still only 9.5% of households have internet access at home – along with the proliferation of smartphones, notebooks and tablets and the predilection for bandwidth-hungry online content and apps, has put increasing demands on operators to supply wireless access, services and content.

According to estimates reported by the UN Broadband Commission, “three-quarters of all internet use was via mobile by 2017, with a growing number of consumers around the world accessing the web on smartphones and tablets”.

South Africa may lag behind the global curve – it has dropped down the ITU’s ICT Development Index rankings – but the trend towards data and data-intensive usage is inescapable. Broadband access in Africa means providing wireless access predominantly, and wireless access requires spectrum. South Africa’s national broadband

A man on his mobile in a poor area of Kenya: are auctions taking account of social welfare?

strategy, SA Connect, places such emphasis on spectrum,¹ and spectrum was central to the recommendations of the country’s ICT policy review panel.² Mobile operators have long been complaining that a shortage of spectrum is hampering their ability to roll out services (and it is partly a cost trade-off: having less spectrum requires more base stations). Access to spectrum is also critical for the rollout of the planned, albeit controversial, wholesale wireless open access network (WOAN) in South Africa.

For some, access to spectrum is synonymous with auctioning and a double benefit: the release of spectrum into the market and an inflow of revenue for government. For example, an opposition member of South Africa’s telecoms portfolio committee, Cameron MacKenzie, has called for spectrum to be auctioned because “valuable revenue can [thereby] be secured for an increasingly cash-strapped fiscus”.

The country’s regulator, ICASA, seems to have had similar views, when in 2016 it issued an invitation to apply for 4 lots of high demand spectrum with an overall asking price of \$1bn – although this was subsequently halted by a court ruling, pending the finalisation of government policy on spectrum. Even the minister of finance, unsurprisingly, seems well disposed to the notion, putting the idea of a “well-designed telecommunications spectrum auction” into his recent medium-term budget policy statement, albeit without a specific proposal.

SPECTRUM MANAGEMENT

Spectrum management in general, and spectrum auctions in particular, have been the subject of ➔

◀ wide-ranging debate and the focus of academic research for a number of years. A search for “spectrum management” on Google Scholar yields 50,300 articles and papers, while a narrower search for “spectrum auctions” still returns an impressive 6,990 results.

Spectrum auctions, however, are but one of several mechanisms for placing spectrum. John Alden and Catherine Schroeder distinguish three models for spectrum assignment:³

- Administrative licensing
- Flexible rights-of-use
- Licence-exempt (or unlicensed).

Historically, most spectrum was awarded via administrative procedure, directly to government users, on a first-come-first-served basis to licensees, and by administrative tender in what is commonly known as a beauty contest (so-called because spectrum is awarded according to a set of criteria, often with a financial component in addition to broader public interest considerations, with a value judgement component in such awards underpinning the “beauty contest” epithet). This has also resulted in much painful, public litigation in those countries where the rule of law applies. Most jurisdictions employ a combination of the three methods.

Spectrum fees in this model may, or may not, include an up-front fee, as well as ongoing annual usage fees, such as under the administered incentive pricing (AIP) model⁴ employed by ICASA, which has a variety of factors to weight spectrum pricing to incentivise its optimum and efficient use (ICASA collects fairly substantial annual revenues for the fiscus from licence fees – \$20m in 2017).

The flexible rights-of-use model uses market mechanisms, principally “spectrum licence auctions [which] are widely recognised by economists as more efficient... [in accordance with the principle of] allocative efficiency [which] requires that the spectrum goes to its highest and best use”⁵ to determine how spectrum is assigned and priced. This approach usually includes a secondary spectrum market, which permits spectrum refarming, spectrum sharing and spectrum trading – all of which are, to varying degrees, also compatible with the administrative model. Primary revenue generation in this model occurs at the point of auction, with subsequent pricing determined in the secondary market, and revenues accruing to the owner of the spectrum. Annual usage fees may or may not be levied.

The licence-exempt model, rooted in the long-standing designation of industrial, scientific and medical (ISM) spectrum (used for Wi-Fi hotspots and car remotes), also includes the slightly more ideological “spectrum commons” approach, under which spectrum is made freely available, without individual or specific assignment, to users on an open access and self-managed basis.⁶ There are number of variants that have a greater or lesser degree of overlap with this approach. These include, for example, TV white spaces (locally unused broadcast channels) for the provision of wireless broadband access or for deployment in the internet of things (IoT).³ TV white spaces trials have been conducted in South Africa, Namibia, Kenya and Tanzania, among other countries in Africa and elsewhere.

Similarly, dynamic spectrum access (DSA) is based on spectrum sharing, enabled by specific technologies and software techniques to provide opportunistic assignment of spectrum on the basis of user demand and local availability.³ Both these approaches have been endorsed by ICASA.

Several things need to be noted about the three models. First, they are not mutually exclusive. Many spectrum management regimes will have some spectrum assigned by administrative procedure, some sold via some form of auction, and some set aside either directly as spectrum commons or earmarked for some form of sharing. The appropriate mix is likely to be country-specific, and to require careful, research-based consideration and public-interest formulation.

Second, each of the models has both advantages and shortcomings, supporters and detractors. For example, administrative assignment of spectrum can be cumbersome, does not promote allocative efficiency,

and can be open to corruption. Auctions, on the other hand, can undermine consumer welfare, favour licensees with significant market power and deep pockets, and may be deleterious for universal access and service (and may still offer opportunities for corruption, at the pre-qualification stage).

SPECTRUM AUCTIONS: COUNTRY BENCHMARKS

Pioneered by the FCC in the US in 1994, spectrum auctions are now widely viewed as part of international good practice in spectrum assignment.⁷ The number of countries that have undertaken spectrum auctions is now large, albeit with both positive and negative outcomes. It is therefore important to review, benchmark and evaluate that experience to inform South Africa’s own possible venture into the world of the spectrum auction.

The selection of benchmark comparator countries can be controversial. My selection is motivated by the qualitative nature of the analysis: countries in Africa with some auction track record, with the addition of two BRICS countries, a group of which South Africa is a member.

With new countries entering the auction fray all the time – Angola, Tanzania, and, potentially, South Africa – it is important to learn from those who have already ventured there.

(Note: figures in the country snapshots are mainly from news sources, in particular the excellent TeleGeography.)

BRAZIL Brazil has made widespread use of spectrum auctions over the years, with mixed success. A number of planned auctions have had to be cancelled. For example, in 2001, there were no takers for a pair of wireless licences with an asking price of \$560m. And the 2006 auction by the regulator (Anatel) of a series of regional GSM licences – its third attempt – was cancelled after the sole bidder failed to meet the required guarantee payment.

Others have been more successful. Anatel’s 2007 auction for 23 blocks of 2G mobile spectrum, with spectrum caps, raised \$188m, some 40% above the reserve price. A total of 20 blocks were sold, mostly to the main national incumbents. Later the same year, a number of blocks of 3G spectrum were auctioned off, attracting eight bidders and raising \$2.9bn, nearly double the reserve price. The auction did include universal and access stipulations, that “required operators to deploy services in a highly profitable area and in a lower development area simultaneously”.⁸ Once again most of the lots went to national mobile incumbents.

A further auction in 2012 of 4G spectrum met with mixed results. Although there were four successful bidders in the valuable 2.5 GHz band, there were no bids for the 450 MHz spectrum, more suited to rural deployment, on offer. Some \$1.3bn was raised, but the winners were again the country’s major mobile licensees. To increase universal access, the regulator decided to allocate some 450 MHz spectrum to each of the winning bidders, and to impose rural rollout obligations on them.

In 2014 the regulator auctioned six lots of

spectrum in the 700 MHz LTE band, some national and some regional. This generated \$2.4bn, just three quarters of its target, with only the largest three of the four mobile incumbents bidding, and two of the lots attracting no bidders at all. Mobile incumbent, Oi, marginally the smallest of the three large mobile operators, did not bid, and was teetering on the edge of bankruptcy, having defaulted on loans in late 2017.

In late 2015 the regulator auctioned two more lots, three blocks totalling 45 MHz in the 1800 MHz band, and a 20 MHz block in the 2.5 GHz band, as well as some 9,000 blocks at municipal level. The auction raised \$192m, well above expectations.

There does not appear to be any recent published research into the auction of spectrum and licences in Brazil, and their outcomes. It seems clear that the auction model is the primary one adopted by the regulator, Anatel, for high demand spectrum. One overview suggests that evaluation criteria consider more than just the “highest licensing price offering” to include “best coverage offering; best quality of use, taking into account the best possible use of the frequency range or channel, and priority of public interest services over restricted ones”.⁸ It is, however, hard to see how this would be effected, other than through pre-qualification requirements.

Certainly, revenue maximisation seems high on Anatel’s list of objectives, given the emphasis in its press releases on the prices realised. Most of the auctions have benefited the incumbents. Little attention appears to have been given to broader issues such as market development, universal access and service (the 450 MHz auction aside), consumer welfare, and broader benefits to the economy.

EGYPT

Spectrum in Egypt is assigned through administrative procedure, with auctions only having been used on a single occasion, and then largely as a threat against recalcitrant licensees. The country’s GSM market was first liberalised in 1998 with the award, by request for proposal or beauty contest, of licences to two new entrants for \$515m each. A third licence was awarded in 2006 for \$2.9bn.

The planned assignment in 2016 of 40 MHz of 4G spectrum to the four incumbent licensees, for \$50m per MHz, was met with protests from the three foreign-owned mobile operators, which claimed that the price demanded was far too high, and that the terms favoured the state-owned operator’s new entrant, Telecom Egypt’s

WE, which launched in 2017, as well as that the amount of spectrum on offer was much too limited. After the regulator, NTRA, threatened to auction the licences to international bidders instead, they came to an agreement, realising a combined total of \$2.2bn from the four spectrum deals.

In the context of cumbersome administrative processes for the award of licences and the allocation of spectrum, a recent GSMA-sponsored report laments the impact of the shortage of spectrum on the market in Egypt, and calls for spectrum auctions to be considered.⁹ The example of Egypt also illustrates the risks of excessive pricing of spectrum, along with the desire of incumbents to protect their status quo in the market.

GHANA Ghana recently ventured into the spectrum auction market, when the regulator, NCA, offered two lots of 2 x 10 MHz LTE spectrum in the digital dividend 800 MHz band in 2015, with a reserve price of \$67.5m per lot (the price had initially been \$92m per lot, but was cut after an outcry from operators). Under the management of audit firm KPMG, the auction was intended to raise revenue for Ghana’s digital migration, and was structured to favour “indigenous Ghanaian ownership” according to the NCA.

However, of the four companies that registered to bid, only dominant operator MTN (trading as Scancom) actually participated, and thus secured one of the lots at the reserve price. The decision to auction the spectrum has been described as “political”, with pricing well above what was “realistic in the light of cost of deployment and

what returns could be made from it within the short to medium term”.¹⁰ Not only that, the regulator has been accused of exploiting its privileged access to licensees’ financial information to price the spectrum at the very maximum level affordable to them.¹⁰ Another

“**The auction was intended to raise revenue for Ghana’s digital migration.**”

spectrum expert criticises the Ghana spectrum auction for its “inefficient allocation of spectrum” and for its “failure to achieve policy goals”, and points out that this resulted in MTN securing an LTE monopoly, leaving a number of “future policy challenges”.¹¹

Prior to this, in 2012, the regulator had awarded three broadband wireless access (BWA) licences in the 2.6 GHz band for \$6m each to indigenous companies, well below what it could have expected to raise, in the absence of set-asides. This was an administrative process, not an auction, but had equally poor outcomes: of the BWA licensees, only two are still operational, an outcome that has undermined the rollout and uptake of 4G.¹²

Both instances highlight the problems that can occur when extraneous policy exigencies (revenue maximisation, and local economic empowerment provisions, in this case) are allowed to override the best interests of the ICT sector as a whole. Thus Ghana’s 2015 spectrum auction has arguably failed the socioeconomic best interests of the country, and negatively affected its consumers, because short-term financial gain was allowed to trump longer-term public interest goals. The NCA appears undeterred and plans to auction the country’s last 4G spectrum, at an asking price of \$67m.

INDIA The spectrum management regime in India was several years ago described as an “extreme example of detailed spectrum management or micro-management by a regulator”, with access to additional spectrum contingent on the licensee’s subscriber base, further exacerbated by “long delays in decision making and intense controversy”.¹³ The country is also home to the notorious 2G spectrum scam, which saw spectrum corruptly

← assigned to certain licensees at low prices.

The first spectrum auctions in India were held in 1995, with two blocks of 4.4 MHz in the 900 MHz GSM band, spread across a number of regions or “circles” (there are 22) being sold. The outcome was problematic, leading to a post-auction cap being imposed on the winning bidder, and to some circles being re-auctioned, but nonetheless left some lots still unsold at the end of the process. However, after running a subsequent three-stage process to auction spectrum in the 1800 MHz band, India reverted to administrative allocation for a time. (It is unclear why this decision was taken: there seems to be no detailed account of the auction.)

Auctions were only undertaken again after the 2G spectrum scam, when a nearly annual series of auctions commenced:

- After 34 days and 183 rounds of bidding, seven of nine bidders were awarded spectrum in the 2010 3G auction, which raised \$17bn. Later the same year, six operators, out of an original 11 bidders, were to secure 44 4G licences between them raising \$5.5bn

- In 2012 the government put 271 MHz of spectrum up for auction, mostly GSM in the 1800 MHz band (following a Supreme Court ruling in the spectrum scam) but also several lots in the 800 MHz CDMA band. The CDMA auction was abandoned after all four qualifying bidders withdrew. With less than half the available spectrum being sold, the 2G auction too was described as a “flop”, undermined by reserve prices having been pegged too high

- The following year, 2013, saw a further auction for spectrum in the 800 MHz, 900 MHz and 1800 MHz bands. The latter two auctions had to be cancelled, as there were no bidders. There was only one bidder in the 800 MHz CDMA band

- Spectrum in the 900 MHz and 1800 MHz bands was again put on offer in 2014. After 68 rounds of bidding, spread over 10 days, the three bidders in the 900 MHz band secured seven lots, 62 lots of 1800 MHz spectrum went to seven successful bidders and \$9.9bn was raised

- There was a further spectrum auction in 2015, where spectrum in the 800 MHz, 900 MHz, 1800 MHz and 2100 MHz bands was put up for sale. This time nearly 90% of the available spectrum was sold, after 19 days and 115 rounds of bidding, raising a total of \$17bn. A subsequent court challenge to the spectrum caps imposed in the auction was recently overturned

- In 2016 a mass auction saw a further 2355 MHz of spectrum, ranging across seven bands), going on sale. However, only 40% of the spectrum was sold, because the reserve price had been set too high.

India has recently commenced what has been described as its largest spectrum sale, of more than 3000 MHz of frequencies in multiple bands, with the focus on 5G spectrum. Unsold 700 MHz spectrum is again on offer, but with the reserve price slashed by 40%.

India’s spectrum auctions – now effectively mandatory following the recent Supreme Court ruling – have been criticised as having been heavily focused on revenue maximisation at the expense of benefits to the sector and its consumers. An

MOROCCO

Like many other countries, Morocco first ventured into spectrum auctions via GSM with its associated spectrum. The country’s 1999 auction for a second GSM licence was widely regarded as highly successful, reaping the “highest prices ever paid for a mobile licence relative to population size”.¹⁵ It attracted seven bids, with the winning consortium paying \$1.1bn, well in excess of what had been expected, and had a credible regulatory framework, transparent tender process, and attractive terms for the licence,¹⁵ while the dotcom bubble may have played a part.

Morocco later turned to a beauty contest to award 3G spectrum in 2006. This produced positive market outcomes in the view of at least one

commentator, who suggested that the resultant “lower costs for operators”, together with the award of spectrum to a new entrant, Inwi20, resulted in “shaking up the existing duopoly and triggering intense competition in the mobile broadband market” and led to a 530% increase in mobile broadband subscriptions.¹⁶

Morocco returned to the auction model in early 2015, when three packages of LTE spectrum totalling 240 MHz were sold by the regulator, ANRT, via sealed bid, raising \$277m, modestly above the reserve price. The auction is regarded as successful, because of the “modest reserve prices” (compared for example with Ghana), but benefited only incumbents.¹⁷

independent report points to complaints that an “auction raised prices to unreasonable levels and forced [the operators] to take on high debt levels”.¹⁴ Worse, it appears that the government intervened to set reserve prices over a third higher than those recommended by the regulator, because the focus of the government has been overwhelmingly “on short run revenue maximisation at the expense of long run healthy growth of the sector and possibly also long run revenue maximisation for the government through higher tax earnings from a thriving telecoms sector”.

The report recommends:

- Making more spectrum available to licensees
- Keeping the cost of spectrum reasonable
- Improving auction design, and ensuring greater access to capital
- Encouraging spectrum sharing and trading.

MOZAMBIQUE Mozambique’s experience with spectrum auctions appears short-lived. In 2013, the regulator, INCM, announced plans to auction off five lots of 2 x 5 MHz in the 800 MHz band, each with a reserve price of \$30m. According to commentator Steve Song, the “auction did not attract any bids and was widely perceived to have an excessively high reserve price” with the result that it was “quietly withdrawn and no subsequent auction has been attempted by the regulator”.

NIGERIA Nigeria’s spectrum management regime calls for a “transparent, fair, competitive and nondiscriminatory pricing structure that include [sic], but not limited to, auctions, beauty contest and other internationally accepted methods” with the objectives of ensuring “uniformity, consistency and

efficiency...”, realising fair “market value” for spectrum, promoting “efficiency and competition” in the spectrum market, facilitating “access” to spectrum, and achieving “universal service goals”.¹⁸

The regulator, NCC, has had several encounters with auctions. Its 2001 auction for GSM licences (and associated spectrum), allegedly the world’s first combinatorial clock auction, resulted in awards to three bidders (including MTN), and was widely regarded as a success. The two GSM licences issued raised a total of \$570m (the high prices paid reflect the fact that the auction was for GSM licences as opposed to spectrum licences per se). The auction was notable for the complexity of its carefully planned approach, which included measures as finely scripted as keeping the five bid teams communicated in randomly assigned hotel rooms.

Subsequently, one of the three winners was to default on its bid, allegedly after discovering that the block of spectrum it had been assigned was the subject of litigation and effectively unusable (that was CIL, owned by Nigerian oil tycoon, Mike Adenuga, who later received a licence in 2003 operating as Globacom). Another, Econet Wireless (owned by Zimbabwe tycoon, Strive Masiyiwa), was subsequently to sell out, amid allegations of corruption and political infighting.¹⁹

In 2002, on the back of the perceived success of the GSM auction, the NCC went on to auction a series of regional fixed wireless access spectrum licences, also viewed as being a success. Of the 80 licences on offer, 67 were awarded, raising \$38m. It is unclear how many are currently still in use.

A subsequent auction in 2007 for 4 x 10 MHz lots of 3G spectrum in the 2 GHz band was cancelled when only four of the 19 applicants were able to pay the pre-qualification fee of \$15m. The ensuing licences were therefore awarded, at the reserve price, to MTN, Celtel, Globacom and Alheri Engineering (a non-telecoms company owned by local businessman, Aliko Dangote), raising \$600m. The latter was unable to roll out a network or services, and its licence was later sold to Etisalat, which became, via a complicated series of transactions, the ailing 9mobile, currently the subject of a troubled sale.

The NCC’s more recent 2013 auction of 30 MHz of spectrum in the 2.3 GHz band was also less than successful. It attracted only two bidders, with a wholesale wireless access licence being granted to Bitflux, a new entrant, for \$23m. Although it was “lauded as a success in bringing a new market entrant into the field of LTE services”, Bitflux has reportedly struggled to break into the market, according to Song.

In 2015, dominant mobile operator MTN became embroiled in controversy over the purchase of spectrum from the national broadcaster.

The 2016 auction for 14 lots of 2 x 5 MHz in the 2.6 GHz band was arguably even less successful, with the auction going ahead on the third attempt. Only dominant operator MTN (it holds a market share of about 40%) was prepared to meet the steep reserve price (\$16m per lot), and bought six lots for \$96m. The remaining eight lots were unsold.



It is clear that spectrum auctions in these countries have had mixed success.



SENEGAL The licensing of new operators has not always been transparent in Senegal, with the licences of both Sentel and Sudatel having been awarded under controversial circumstances. Towards the end of 2015, the regulator, ARTP, issued an invitation to apply for 4G spectrum, in 700 MHz (4 blocks of 2

x 20 MHz), 800 MHz (3 blocks of 2 x 30 MHz), and 1800 MHz (3 blocks of 2 x 30 MHz) bands. This auction attempt was, however, said to be boycotted by the country’s three mobile incumbents, which took the unusual step of collective and coordinated non-participation and in making a joint objection to the hefty \$50m reserve price, as reported by TeleGeography. The regulator announced it would restart the process, inviting bids from new entrants and international operators. In the meantime, it has renewed the licence of the fixed-line incumbent, Sonatel, adding some of the spectrum it proposed to auction to Sonatel’s mobile arm, Orange, at the reserve price.

UK AND EU The auctioning of a series of 3G mobile licences across some nine of the member states of the European Union between 2000 and 2001 provides a useful case study of auctions and their outcomes (and Paul Klemperer’s seminal work on the theory and practice of auctions offers a comprehensive analysis of the 3G auction process and its outcomes).²⁰ Klemperer suggests that only three can be considered to be successful, in terms of market diversification and revenue raised: the UK (which secured \$34bn, and ushered in a new entrant), Germany (with high revenues and a diversified market), and Denmark (high revenues and a new entrant).

Problems occurred in several of the auctions. For example, the auction in Austria was undermined by collusion between bidders. Those in Netherlands, Italy and Switzerland failed to secure the intended new market entry. Similarly, in Belgium and Greece, all the available spectrum was snapped up by the incumbent 2G licensees. Ewan Sutherland likens the 3G process to the “Charge of the Light Brigade”, with incumbent operators scrambling to secure spectrum, leading to a “positive feedback loop driving up prices”.²¹

The example of the first 3G auction – held in the UK by Ofcom in 2000, raising \$34bn – is instructive. It used the Anglo-Dutch model, with the final price pegged to that of the lowest of the winning bids, and included provisions designed to ensure a new market entrant. Some 13 bidders participated, engaging in 150 rounds of bidding over 7 weeks. Each of the four incumbents secured spectrum, alongside TIW (Three), which was the winner of the spectrum lot designated for the new entrant.

Klemperer lists the objectives of the auction as being threefold: “to assign the spectrum efficiently; to promote competition” and only lastly to “realise the full economic value” from the spectrum. Despite some “media criticism... about the bidders being ‘forced’ to pay too much for their

licenses”, he nonetheless judges the “actual outcome [as being] efficient or very close to efficient” in terms of achieving its objectives.

His view is echoed in Martin Cave’s extensive review of spectrum management in the UK, which concluded that there is “no strong evidence that consumer benefit would be reduced through higher prices or slower access to services”.²² The view of veteran telecoms economist, Bill Melody, however, is strikingly different. He describes “the early 3G auctions in Europe [as having] been framed, designed and implemented to extract maximum monopoly rents from an arbitrarily restricted number of incumbent and new 3G mobile operators in national markets”. Further, the outcomes served to “promote neither efficiency nor competition in either spectrum allocation or 3G network and service development”.²³

Sutherland describes the use of spectrum auctions as one of the central features of government policy in the UK, with government targeting the sale of 500 MHz of spectrum by 2010, and characterises the UK spectrum market as an “oligopsony” (a fancy phrase for a market in which there are only a small number of buyers for a specific product or service).²⁴

In 2013, Ofcom undertook a further auction, putting up some 250 MHz of 4G spectrum in the 800 MHz and 2.6 GHz bands, and attracting seven bidders. There were five winners in the auction, one of which was a new entrant, Niche, a BT subsidiary. A total of \$3.6bn of revenue was raised, with a claimed long-term consumer benefit of \$30bn.

An evaluation by the National Audit Office (NAO),²⁵ using broadly the same set of criteria as for the 2000 auction, was rather more equivocal in its findings, and made several key recommendations to Ofcom, in particular that it should:

- Conduct a review of the competitive operation of mobile telecoms markets before offering further spectrum for auction
- Monitor whether the \$30bn (£20bn) of consumer benefits from 4G services are being realised
- Select designs for future auctions that take account of the circumstances of likely bidders.

While the NAO felt the competitive nature of the market had been preserved, it noted that the structure of the auction made it unable to pronounce on whether the outcome was economically efficient, and had, moreover, reduced the revenue raised by some \$240m.

Ofcom recently proceeded with a further auction of spectrum in the 2.3 GHz (4G, 4 x 10 MHz lots) and 3.4 GHz (5G, 38 x 5 MHz lots) bands, using a simultaneous multi-round ascending auction (SMRAA) rather than the combinatorial clock auction (CCA). The auction imposed spectrum caps, because of Ofcom’s view that the “greatest concern to competition [stems] from asymmetry in the amount of spectrum held by different operators”. Almost all the spectrum was sold – more or less equally spread between the four main incumbents (EE, O2, Three and Vodafone), with O2 bagging all the 2.3 GHz spectrum on offer – raising \$1.75bn.

The auction had been delayed by litigation from

one operator seeking to strengthen the caps, but the High Court ruled in Ofcom’s favour. Ofcom does not appear to have complied with the first two recommendations above, despite including a regulatory impact assessment in its current foray.

LESSONS TO LEARN

It is clear that spectrum auctions in these countries have met with mixed success. Many have failed, while others can be viewed as problematic. Fiscal greed appears to have been a particular stumbling block, with regulators and governments overly concerned with revenue. In a number of cases, auctions failed or secured only limited participation because of the high reserve prices that had been set (Brazil, Egypt, Ghana, India, Mozambique, Nigeria, Senegal). In some cases, this was further compounded by the limited amount of spectrum on offer (Egypt, Nigeria).

Most spectrum on auction was bought by incumbent licensees, in some cases by the dominant operator alone (MTN in Ghana and Nigeria, Orange in Senegal). Most auctions, therefore, have effectively strengthened market concentration and benefited dominant operators. Few attempts to secure market entry through spectrum auctions – other than greenfield GSM auctions – have been successful, the exceptions being Three in the UK and marginal wholesale licensee Bitflux in Nigeria. Indeed, to the contrary, Brazil’s Oi may have been driven to the door of bankruptcy by auctions. And, in Ghana, set-asides for locally-based new entrants may have caused the auction to fail.

Most auctions have failed to pay attention to broader socioeconomic goals and outcomes. Universal access and service have featured in few examples. Almost no regulators have undertaken research studies into the outcomes of their spectrum auctions to ensure that they were undertaken in the public interest and that they promoted broader economic growth and social development, and led to increased benefits for business users and consumers. Corruption too may have played a role in the design and conduct of some of the auctions.

But the focus seems now to have shifted to designing auctions to achieve broader social and economic goals beyond simple revenue maximisation. Countries such as Germany and Denmark have been looking to tie spectrum awards to rural rollout of services.

In the next issue of Intermedia I will explore more issues with auctions, the current picture in South Africa, and implications for spectrum management.

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