

## **REGULATION IN A CONVERGED DIGITAL ECOSYSTEM**

### **1 Abstract**

Regulation has a key role to play in enabling the spill over of the benefits of the digital economy to the society at large. In an increasingly converged digital ecosystem regulators should gradually make the transition from ex-ante to ex-post market intervention, so that investment and innovation can thrive.

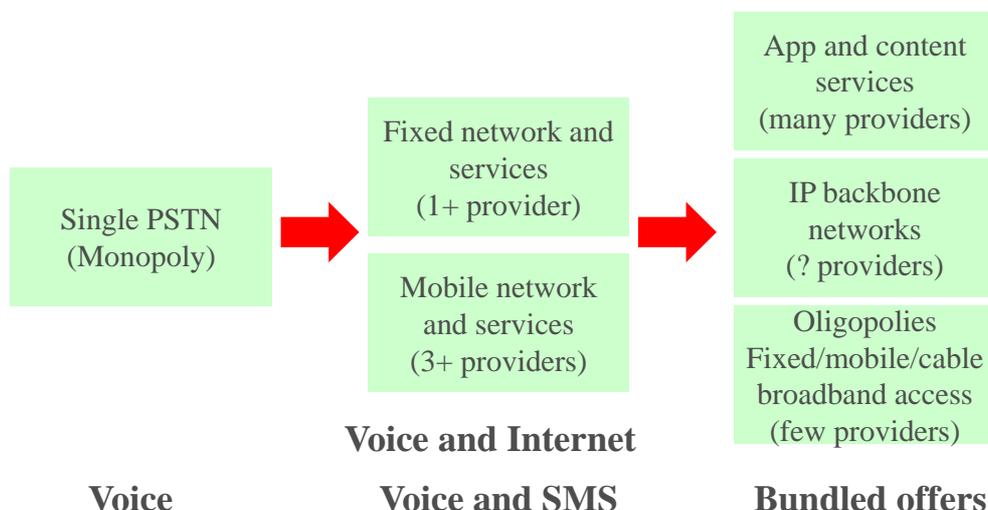
This paper firstly addresses the telecommunications sector regulation evolution based on the principle of establishing effective competition wherever possible and effective regulation wherever necessary. The Internet protocol, the emergence of online digital platforms, coupled with the growing need for broadband infrastructure and services to enable the digital economy, has caused increasing convergence of applications, services and tariffs within this economy and changed dramatically the market structure and competitive landscape. Secondly, it addresses the particular implications for the regulation of the new digital world of these online digital platforms and their special characteristics. It highlights different perspectives in what concerns the regulation of large online digital platforms and provides examples on how authorities in the European Union have been, sometimes in disagreement, trying to tackle competition problems. Finally, the paper notes that sometimes consumer welfare, itself a changing concept, will best be met by refraining from ex-ante regulation, while at other times regulation will be needed to curb anti-competitive or exploitative behaviour, especially of service providers that are dominant or with significant market power (SMP).

### **2 The digital supply side evolution**

Telecommunications services, namely voice services monopoly was the starting point for every country. Liberalisation, which started in the 1980s and spread widely in the late 1990s, initiated a period of wider choice and better service. Incumbent operators were privatized and new licences were issued, most significantly to operators of embryonic mobile telephone services. Initially these services were seen as high-value, high-price, specialist services, but as technology improved and prices fell mobile services became the new norm, especially among younger generations and especially for voice and text communications. As mobile services become more affordable the economic and social benefits of telecommunications spread to new communities and across countries where previously only a privileged few had access to fixed telephone lines.

Figure 1 provides a high-level picture of the two main stages of evolution that have taken place on the supply side of ICT services.

**Figure 1: Supply side evolution for ICT services delivery**



The Internet Protocol (IP) has created a second wave of digital revolution after mobile technology had provided the first wave. Once Internet access and use is widespread and high speeds are available (which IP networks enable), content and application providers and/or operators, which until recently had to negotiate with an internet service provider (or television operators) in order to reach users, no longer need to do so and are able to interact directly with the consumer through a web page. All content and application providers have a characteristic in common: they are on the edge of the network over which they are accessed or available, and whilst a connection to the Internet is needed, the provision of the service is independent of the provision of connectivity. The migration to IP allows decoupling the application from the transport and control network layer, enabling bundled offers such as triple and quadruple-play service provision by network operators, but also enabling third party application service providers to compete with the operator of the physical network in the provision of similar services. This decoupling of platform and application is at the centre of convergence. The gradual move to all-IP networks has, even setting aside the role of new online players at the edge of the networks, immediate implications for the traditional price regulation and cost modelling exercises that go along with it:

- The new architecture of these networks makes obsolete existing cost models.
- Decoupling of services from dedicated networks also changes the cost allocation criteria.
- Where copper legacy networks have considerable footprint, which is not often the case for Africa, the cost (price) of access may partly determine the level of investment in IP networks.

However, the transition to IP networks affects a lot more than the design of regulatory cost models. It changes the rationale for cost-based regulation, especially for interconnection services. The IP digital world is data driven whereby voice is a diminishing and insignificant part of the overall network capacity so cost-based voice termination is of marginal significance. In this new scenario, cost models for interconnection may not be needed at all, as competition thrives, there is potentially less SMP and less need for ex-ante regulation.

On the other hand, access to the core IP network, whether provided over fixed or mobile, is critical to service providers that are increasingly bundling their retail services: e.g. quad-play (fixed, mobile, internet and TV). This means that cost-based regulation may still be important and regulatory cost models necessary, but they likely to be used more in ex-post dispute resolution than in ex-ante price determination.

### **3 The emergence of online platforms**

The new competitive landscape is also one of a new and powerful generation of global competitors (e.g. Amazon, Google, Apple, Microsoft). Some of them are taking significant shares of the voice and text message market from both fixed and mobile players by offering not identical but similar services with differentiated quality of service and functionalities. These new players use existing telecom operator's connectivity to reach the end consumer.

As more and more content and services are the key differentiators of consumer's choices, these new players appropriate value from traditional broadband operators while at the same time their business models rely on non-bandwidth sources of income such as advertising or consumers transactions.

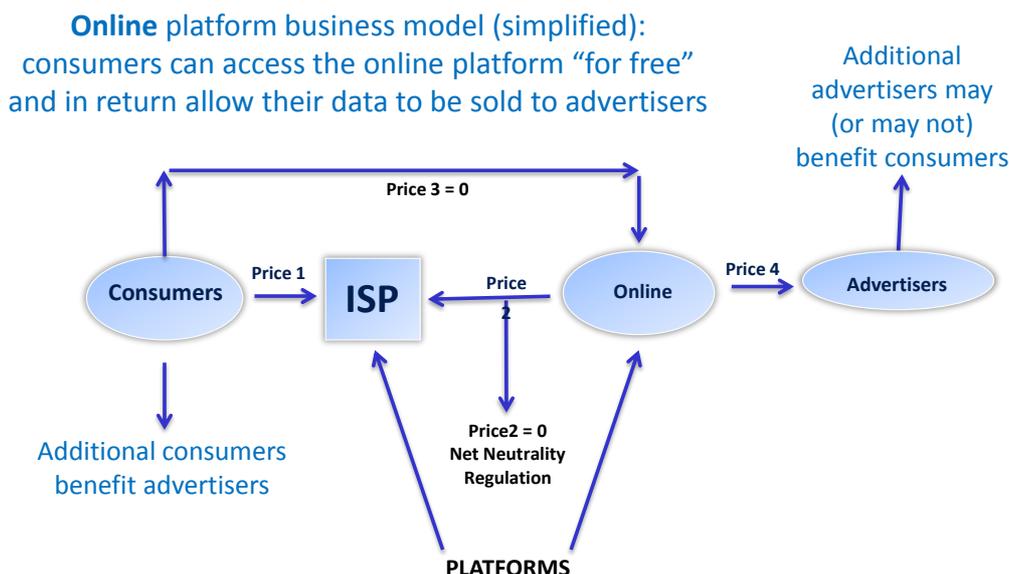
For many years now providers of connectivity have been claiming that they are at a competitive disadvantage in relation to online platforms because of asymmetric regulation. Where fixed and mobile telecom operators are subject to strict, country-specific rules for electronic communication services such as privacy and data protection obligations, taxes, identification and safety-related measures, all these regulations and financial burdens do not apply to online platforms offering services that in many cases, from the connectivity providers perspective, represent reasonable substitutes for the consumers. This new competitive landscape coupled with IP networks rollout has been quickly materializing and may have at least two fundamental implications. First, due to convergence and the need to offer bundled products, it may result in a significant consolidation of network operators, leading to a significant reduction in their number and therefore reducing the number of competitors. Second, it brings to the competitive arena, in each national jurisdiction, players with whom regulatory authorities will find hard to deal if, for some reason, there is a need to intervene. Most of the discussion has been about whether regulators should include these services in their periodic market analysis reviews, and to what extent these online platforms

should be regulated to level the playing field with traditional broadband suppliers. This has also become a common topic in the “net neutrality” debate. Net neutrality is the proposition that all traffic carried over the internet should be treated equally, so that there is no regulatory difference based on the end-user application involved. Nonetheless all these facts have policy and regulatory implications including implications for any approach to tariff regulation.

## 4 The online platform business model

The new online platforms operate in the market with different types of business models which they adjust constantly in search of better economic outcomes. For this reason Governments and regulators are now facing an increasingly dynamic ICT environment. Competition issues have become more complex as market definitions (and therefore relevant markets subject to ex-ante regulation) have become less clear and the market boundaries more rapidly changing. In addition, companies are moving in various directions along the ICT sector value chain, away from their traditional positions, which can cause the emergence of new dominant players. Moreover, due to their worldwide presence, online platforms introduce a global dimension that makes national regulation (or even regional regulation in geographical areas like the European Union) less effective. Figure 2 provides a simplified diagram of the new digital ecosystem.

**Figure 2: The new digital ecosystem**



In order to enjoy the online platform’s services, users need a device and Internet access through a connectivity provider (Internet Service Provider, ISP in the diagram). In the

current ecosystem consumers connect to the Internet using several optional devices: through a PC, a Smartphone a Tablet or enabled TVs. As said above, Figure 2 is a simplification of the digital ecosystem. Suppliers of devices or operating systems are not represented as players. However, some content and application providers are vertically integrated with device manufacturers or with the operating systems developers for these devices. Apple is a case of vertical integration with a device and operating system. The reason why this should be mentioned is that vertical integration may constitute a source of market power or allow anti-competitive behaviour among competing platforms. Also there is competition between connectivity providers, between platforms and between connectivity providers and platforms. When discussing regulation of the new digital ecosystem these are important issues to consider.

An important characteristic of the current digital ecosystem is that some of these online platforms are two-sided. This means that as economic agents they must manage the matching between two distinct groups of participants, one on each side: for example the consumers depicted in the diagram accessing Yahoo to make a search in the Internet will pay the ISP say a monthly price for connectivity (price 1) but will not pay Yahoo for making the search (price 3 equals zero). In turn Yahoo will sell data regarding consumer's behaviour to advertisers whom will pay Yahoo price 4. With this information advertisers can more efficiently target consumers which are online searching the Internet with Yahoo. Generally ISP's do not charge online platforms, even being those who are responsible for an exponential growth of data traffic. This capacity is what explains the tremendous success of online platforms namely a significant reduction of search and transaction costs.

Economic theory studying two-sided platforms is fairly recent and the most influential papers have been published by Rochet and Tirole (2003)<sup>1</sup> and Armstrong (2006)<sup>2</sup> who analysed the price implications in such platforms. Two-sided platforms economic theory shows us that when a platform owner sets the prices on each side generally it takes into account cross-group effects to maximise the participation on both sides (Rochet & Tirole, 2006)<sup>3</sup>. In most circumstances, a price change on one side impacts demand on *both* sides of the platform.

Therefore in these platforms a key issue is how prices can or should be set on each side of the platform. Setting the prices right is an important aspect to maximise the participation

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<sup>1</sup> Rochet, J. C. and Tirole, J.: "Platform Competition in Two-Sided Markets", Journal of the European Economic Association 1: 990-1029, (2003).

<sup>2</sup> Armstrong, M.: "Competition in Two-Sided Markets", The Rand Journal of Economics 37 pp. 668-691, No. 3 (Autumn, 2006).

<sup>3</sup> Rochet, J. C. and Tirole, J. "Two-Sided Markets: A Progress Report", The RAND Journal of Economics 37, pp. 645-667, No. 3 (Autumn, 2006).

on both sides of a platform. Not only the price level but also the price structure determines the demand in each side of the platform. Profit maximization requires price co-ordination across the different sides: platforms may set prices below marginal cost on one side to attract customers while they charge prices above marginal cost on the other side. This has important implications if price intervention is considered.

However, what makes two-sided platforms special is the presence of cross-group or indirect network effects. The stronger they are more value each side places on the other side. The strength of these cross-group externalities plays a decisive role. If they are positive on both sides they can allow platforms to become dominant through feedback loops. The effect from an online platform to consumers is particularly significant if consumers place a high value on the content or the applications. If that is the case it is important for an ISP to host such content and applications, which means that the ISP should offer the online platform their participation in favourable terms. On the other hand, if the online platform obtains a high value from users, for example, because this allows them to obtain important advertising revenues, the online platform optimal strategy is to offer more attractive terms to users and less attractive terms to advertisers.

## **5 New challenges to regulators and competition authorities**

Market definition is the initial stage in the well-established assessment of whether ex ante<sup>4</sup> regulatory intervention is required and in establishing whether a firm possesses significant market power. It also provides a framework for assessing anti-competitive behavior and merger control within the remit of competition law. Because of its characteristics the two-sided nature of certain online platforms introduces new challenges to regulators and competition authorities when addressing the definition of a market, when determining what constitute relevant markets or if and when the two sides should be taken into account in the analysis:

- Is there one or two related markets?
- Which price the hypothetical monopolist should be raising in a two-sided platform considering firms usually set two different prices, one on each side of the platform?

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<sup>4</sup> Specific telecommunications sector ex ante regulation has been introduced to foster competition. In many jurisdictions only wholesale markets are regulated whenever there is a find of an operator holding significant market power (SMP). Anti-competitive behavior or abuse of dominant position has been dealt with ex post under horizontal competition law.

- Whether one should consider profits on one or on both sides of the market considering that in a two-sided platform, demands on both sides are linked through cross-group externalities, and thus profits depend on the overall price structure?
- What constitute efficient prices on each side and therefore what should competition authorities do to figure out what the social optimum is?
- How to go about anti-competitive behaviour e.g. predatory pricing as it may be socially optimum to set the price to zero on one of the sides?

In the past prices have been taken as the indicator of consumer welfare. When the price is zero the direct competitive pressure shifts to product characteristics, service quality and innovative features.

The size and market power of some large digital platforms has been a growing concern among competition authorities. Should excessive market concentration be a concern? For market power assessments some economists argue that other criteria more relevant than market shares should be used. For example Evans and Schmalensee (2007)<sup>5</sup> state that platforms with bilateral positive indirect network effects create strong self-reinforcing feedback loops. Therefore they are prone to achieve a large scale. In their perspective five key factors determine the relative size of competing platforms (and therefore the prevailing market structure):

- The relevance of indirect network effects
- Economies of scale
- The prevailing types of use on the opposite platform side (single-homing/multi-homing)
- The degree of differentiation
- Congestion.

Other economists strongly dispute concerns about market dominance by large platforms, arguing that these concerns ignore important features of digital platform competition. These approaches support the view that the markets in which these platforms operate are more competitive than they appear, and competition for the market – in the form of potential technological disruption – is a permanent threat to established firms. In their opinion other fundamental factors may also contribute to explain the relative size of competing platforms for example:

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<sup>5</sup> Evans, David and Richard Schmalensee, "Industrial Organization of Markets with Two-Sided Platforms." *Competition Policy International* 3, 1 (2007): 27.

- the access to data:
- the innovation potential of digital markets
- digital markets dynamics.

Market share as a criteria to assess market power becomes less relevant or even meaningless. There is also some debate regarding the possession of large amounts of data acting as a barrier to entry which may foreclose competition. According to Evans (2017)<sup>6</sup> the history of rise and fall of platforms over the last twenty five years, refutes this claim as well as that the knowledge obtained from data processing with algorithms prevents entry or protects dominance. Many platforms, such as Orkut, holding large amounts of data have gone into decline while others, such as Tinder, have rapidly achieved a large scale without limited amounts of data. Others argue that access to data is a fundamental condition to enter the market and be able to compete with large and established platforms. Other arguments in defense of potential competition facing large online platforms are based on factors such as low investment requirements, the ease of innovating through new applications and that most platform markets are characterized by multi-homing and easy switch (Evans, 2017).

However, looking at competition in different market segments shows us that large scale online platforms are able to achieve significant shares at global level.

**Figure 3: Global market share of large online platforms**

	<b>Global market share April 2018 (%)</b>	<b>Business activity</b>
<b>Google</b>	90	Search
<b>Facebook</b>	66	Social media
<b>Apple</b>	45	Smartphone web traffic
<b>Amazon</b>	37	Online retail

Source: The Economist 30<sup>th</sup> June 2018, "Fixing the Internet", based on data from Global Stats Counter

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<sup>6</sup> Evans, David S., Why the Dynamics of Competition for Online Platforms Leads to Sleepless Nights But Not Sleepy Monopolies (July 25, 2017). Available at SSRN: <https://ssrn.com/abstract=3009438> or <http://dx.doi.org/10.2139/ssrn.3009438>

## 6 Competition law: how effective?

Economic theory has yet to produce more consistent conclusions regarding how to deal with this new digital world. Given the absence of clear economic theory support, different competition authorities and courts have reached different conclusions in similar cases. In 2015 the Higher Regional Court of Dusseldorf in Germany took the view that markets on which services are offered “free of charge” cannot constitute markets for competition law purposes. This has led to amendments to German anti-trust laws, in response to the growing relevance of digital platforms, where it introduced a number of additional criteria that the German competition authority and the courts now need to consider when assessing market power in platform markets:

- Direct and indirect network effects
- The parallel use of several services and user’s switching costs
- Economies of scale in relation with network effects
- Access to data relevant for competition
- Competitive forces of innovation.

But there are other examples. Recently competition authorities in several EU Member States have initiated investigations into hotel booking platforms. In the past several online booking platforms required platform members to accept a contractual clause prohibiting them from offering lower prices on other platforms, including their own websites, so they could claim that they always offer the best price available. Following the investigations by national competition authorities several online booking platforms, including Booking.com, have modified their agreements with hotels. The United Kingdom courts and French competition authorities also took opposite views about whether or not Google foreclosed a competitor in mapping: Streetmap in the UK and Evermap in France.

In recent years the European Commission has been fiercely targeting “Big Tech” companies such as Google, Facebook and Microsoft. For example a number of huge fines have been issued against Google which of course is appealing in the courts:

- EUR 2.4bn fine for discriminating against rivals in comparison-shopping (2017).
- EUR 4.3bn fine for forcing all Google-play services to be pre-loaded on smartphones (2018).

Competition law, contrary to ex-ante regulation, does not specify what firms should do, but only what they should not do: “it is Google’s responsibility to bring the infringement to an end”. It remains to be seen whether this approach is effective as none of the recent Commission’s antitrust actions appears to have done much to strengthen competition.

## 7 Regulation trends in Africa

African telecommunications national markets are far from homogeneous. Africa comprises 1.29 billion people<sup>7</sup> living in countries with very low income such as Niger, with USD 1.153 Gross Domestic Product (GDP) per capita<sup>8</sup>, or as wealthy as South Africa, with USD 13.403 GDP per capita, about eleven times more. Smartphone penetration can also be substantially different: as high as 41.6% in South Africa and as low as 5% in Ethiopia or Uganda<sup>9</sup>. Some countries, usually the ones with lower GDP, have more rurally dispersed populations.

In Africa's telecommunications sector, according to a World Bank report<sup>10</sup>, market structure exhibits a high level of concentration: 47% of mobile and wireless markets had a player with more than 50% market share. In a few others regulatory frameworks fostered fragmentation, with five or more mobile network operators (Tanzania, Ghana). Key segments of Africa's telecommunications services still exhibit monopolistic structures. High capital intensity and network effects make the telecommunications sector more prone to market concentration and anticompetitive practices. According to the above mentioned World Bank report<sup>11</sup> at the time of writing there were 11 existing monopolies in international gateway services and 6 in internet wireless services.

In spite of recent dramatic decrease in prices, African countries still pay the highest prices globally for mobile and broadband services. Price wars may exist in some markets, as data is being subsidized by voice services, but in others it has remained at very high levels. It is possible to draw a correlation between broadband Internet prices in Africa and market structures in terms of number of players: more competitive markets appear to deliver lower prices for consumers<sup>12</sup>. In the African continent affordability remains a tremendous demand side barrier to further access to the Internet and thus to the Digital

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<sup>7</sup> The current population of Africa is 1,297,378,881 as of Wednesday, October 24, 2018, based on the latest United Nations estimates. Available at: <http://www.worldometers.info/world-population/africa-population/>

<sup>8</sup> List of countries ranked by Gross Domestic Product per capita at Purchasing Power Parity (PPP), available at: [https://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_GDP\\_\(PPP\)\\_per\\_capita](https://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP)_per_capita)

<sup>9</sup> List of countries by smartphone penetration in 2018, available at: [https://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_smartphone\\_penetration](https://en.wikipedia.org/wiki/List_of_countries_by_smartphone_penetration)

<sup>10</sup> The World Bank Group, 2016: Breaking Down Barriers: Unlocking Africa's Potential Through Vigorous Competition Policy. Washington, DC. World Bank Group.

<sup>11</sup> According to the World Bank report, two or more of the largest telecommunications groups (MTN, Vodafone, Bharti Airtel, Orange and Etisalat) are present in 88% of African countries where jointly control over 70% of the mobile voice market.

<sup>12</sup> The World Bank Group, 2016: Breaking Down Barriers: Unlocking Africa's Potential Through Vigorous Competition Policy. Washington, DC. World Bank Group.

Economy. Therefore lower services prices are crucial to enable access, as well as the price of handsets.

The state's direct participation in the telecommunications sector, high mobile termination rates, price discrimination between on-net and off-net mobile voice calls, endless promotions and limited availability of spectrum are also factors that constrain competition in these markets. These findings are consistent with findings by Hawthorne (2016)<sup>13</sup> which identified access to spectrum as a key barrier to entry adding that while existing market players have access to spectrum, new spectrum is not regularly allocated to new entrants. Lack of competition coupled with low demand may also delay the roll-out of higher speed networks that can handle data traffic properly. In many African countries 4G networks are now being deployed only in main urban centers. 2G and 3G are still the dominant technologies to carry traffic in African mobile networks.

In Africa, telecommunications sector specific National Regulatory Authorities have been around for many years in most countries. Cost modeling to set regulated prices or monitor their evolution is now a widespread tool. Therefore the gradual move to all-IP networks and its immediate implications for the traditional price regulation and cost modelling exercises that go along with it should not be a major problem.

However, as the focus of sector regulation shifts from ex-ante to ex-post and away from price regulation, Africa is certainly less equipped to deal with emerging competition problems. For example the new online platforms that characterize more and more the future digital ecosystem operate in the market with business models that exchange personal data for advertising revenues. Setting aside the discussion on how to regulate application and content service providers and the problems associated with market definition and market power in these two-sided platforms, huge amounts of data including people's identity, their habits, beliefs and preferences are being stored and analysed by these service providers. According to Research ICT Africa<sup>14</sup> "very few African governments have enacted laws to ensure that as personal data is collected, it is recorded, stored and used in a manner that protects and promotes the privacy of the people to whom it relates. To date, only about 22 African countries have data protection laws". Kenya's example of a Policy and Regulatory Framework on Privacy and Data Protection referred by Research ICT Africa, appears to be a move in the right direction that should be followed by other African countries.

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<sup>13</sup> Hawthorne, R., Mondliwa, P., Paremoer, T. and Robb, G. (2016). Competition, barriers to entry and inclusive growth: Telecommunications Sector Study. CCRED Working Paper 2016/2

<sup>14</sup> Grace Mutung'u, research associate, Research ICT Africa: "Kenya has an opportunity to create a model data protection framework", available at: <https://researchictafrica.net/2018/09/24/kenya-has-an-opportunity-to-create-a-model-data-protection-framework/>

Ex-ante regulation targeting online platforms even based on adequate tools adapted to two-sided characteristics is a risky move that may reduce or totally remove the considerable benefits which online platforms have brought, namely to the ones that can afford less. As regulatory intervention is more and more justified ex-post, African countries are also less equipped with the necessary frameworks, namely competition authorities and competition laws. Most countries do not have a competition authority, though many were set up fairly recently but lack experience, and enforcement varies, especially when the state or privileged firms may take benefit from market regulations.

An interesting case is Zambia. The Zambia Competition Commission (ZCC) was established under the Competition and Fair trading Act Section 4 of Chapter 417 of the Laws of Zambia to prevent anti-competitive and restrictive business practices and to promote consumer welfare. Zambia has for a long time now established competition laws. The law came into force in February 1995. As early as possible the ZCC push the government, in its advisory role, to liberalise the telecommunications international gateway, or to end exclusive contracts between the Government departments and the state owned telecommunications operator and highlighted the importance of ex-post intervention in the context of converged telecommunications markets.

## **8 Conclusions**

Platforms cover a very broad range of services and use different business models. The issue of defining which services should be covered by regulation needs to be tackled before considering any regulatory measures aiming at digital platforms. In Europe a recent attempt by the European Commission failed at the European Parliament. Besides the differences in market power assessment in the case of multi-sided business models, there is no consensus among economists on what maximizes social welfare, a common objective among regulators. An example is whether the accumulation of user data creates barriers to entry that would require regulatory intervention.

Another question could be how many platforms make for an efficient outcome? A monopoly platform can be efficient because network effects are maximized when all agents manage to coordinate on a single platform. Some of the proposals from those concerned about platform dominance emphasize the need to shift from ex-post competition assessments and remedies to tough ex-ante regulation. However ex-ante regulation targeting online platforms risks reducing or removing the considerable benefits which online platforms have brought. Regulatory intervention is only justified if there is evidence of market failure. Regulation should avoid supporting those frustrated by their inability to respond to market demand and the needs of a competitive market place. Competition problems are most likely to arise from market power, but the market power of online platforms may be transitory and fragile. Competition enforcement should be targeted at specific harms based on a thorough analysis of the market. Intervention to prevent mergers and acquisitions may also be used to

address potential competition problems and more use could also be made of sector inquiries to enable better understanding of emerging competition problems in fast moving markets. But it has always to be remembered that dominance by itself is not unlawful, only its abuse.

Africa will continue to progress. Sub-Saharan Africa, according to GSMA<sup>15</sup>, will have the largest increase worldwide in terms of mobile penetration of population, between 2017 and 2025, 8%. Mobile Internet penetration will reach 40% in 2025.

Competition law is also growing in Africa. According to the World Bank report<sup>16</sup>, in 15 years the number of jurisdictions in Africa with competition law has almost trebled. A number of African countries have introduced or proposed new or updated legislation, and some jurisdictions have introduced guidelines and other policies to facilitate the enforcement of fines and remedies. Growth in competition regulation is happening not only at a national level, but also at a regional level. The Common Market for Eastern and Southern Africa ("COMESA") enacted competition legislation in January 2013. Other regional authorities including the Central African Economic and Monetary Community ("CEMAC") and the West African Economic and Monetary Union ("WAEMU") also have supranational powers to enforce competition law in member countries. This might provide an answer to smaller countries where scarce budgets, lack of skilled resources and increased bargaining power towards large dominant firms, which also operate at worldwide level, are a barrier to higher dynamism and effectiveness. Hopefully, personal data protection will gradually become part of the priorities in the short term agenda of Governments all over Africa.

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<sup>15</sup> GSMA, The Mobile Economy 2018

<sup>16</sup> The World Bank Group, 2016: Breaking Down Barriers: Unlocking Africa's Potential Through Vigorous Competition Policy. Washington, DC. World Bank Group.