



CGAP  
BFA

# FAIR PLAY

Ensuring Competition  
in Digital Financial Services

## ACKNOWLEDGMENTS

The authors are grateful to CGAP colleagues Greg Chen, Will Cook, Claudia McKay, Patrick Meagher, Joep Rost, and Stefan Staschen, and to BFA's Jeremiah Grossman for their valuable comments and feedback on earlier drafts.

Consultative Group to Assist the Poor  
1818 H Street, NW, MSN F3K-306  
Washington, DC 20433 USA  
Internet: [www.cgap.org](http://www.cgap.org)  
Email: [cgap@worldbank.org](mailto:cgap@worldbank.org)  
Telephone: +1 202 473 9594

Cover photo by Bernard Ndegwa, 2018 CGAP Photo Contest.

© CGAP/World Bank, 2019.

## RIGHTS AND PERMISSIONS

This work is available under the Creative Commons Attribution 4.0 International Public License (<https://creativecommons.org/licenses/by/4.0/>). Under the Creative Commons Attribution license, you are free to copy, distribute, transmit, and adapt this work, including for commercial purposes, under the following conditions:

**Attribution**—Cite the work as follows: Soursourian, Matthew, and Ariadne Plaitakis. 2019. "Fair Play: Ensuring Competition in Digital Financial Services." Working Paper. Washington, D.C.: CGAP.

**Translations**—If you create a translation of this work, add the following disclaimer along with the attribution: This translation was not created by CGAP/World Bank and should not be considered an official translation. CGAP/World Bank shall not be liable for any content or error in this translation.

**Adaptations**—If you create an adaptation of this work, please add the following disclaimer along with the attribution: This is an adaptation of an original work by CGAP/World Bank. Views and opinions expressed in the adaptation are the sole responsibility of the author or authors of the adaptation and are not endorsed by CGAP/World Bank.

All queries on rights and licenses should be addressed to CGAP Publications, 1818 H Street, NW, MSN F3K-306, Washington, DC 20433 USA; e-mail: [cgap@worldbank.org](mailto:cgap@worldbank.org).

# CONTENTS

<b>Executive Summary</b>	<b>1</b>
<b>Section 1: Why Does Competition Matter for Financial Inclusion?</b>	<b>3</b>
<b>Section 2: How Regulation Fosters—or Inhibits—Competition in DFS</b>	<b>7</b>
<b>Section 3: How Market Actors Can Undermine Fair Competition— and What Regulators Can Do</b>	<b>11</b>
<b>Section 4: Looking Ahead: How Big Tech and Big Data Affect Competition</b>	<b>16</b>
<b>Appendix: Glossary</b>	<b>21</b>
<b>References</b>	<b>23</b>



# EXECUTIVE SUMMARY

**T**HE ARGUMENT FOR ROBUST AND FAIR COMPETITION IN DIGITAL financial services (DFS) markets is persuasive. Competition serves customers by promoting innovation and efficiencies that lead to lower prices, greater choice, better quality services, and improved products. At a national level, competition can curb excessive concentrations of economic power and potentially reduce operational risks from service outages. From a financial inclusion perspective, more competition increases the likelihood that DFS will reach low-income people currently excluded or poorly served by the financial sector.

Yet in many emerging economies, DFS markets are limited to one or two major providers, reducing innovation and customer choice and potentially facilitating monopolistic or cartelistic behavior. Why are DFS markets prone to concentration? Is this a problem? In this paper, CGAP applies a simple framework to help answer these questions. In general, the barriers to effective competition stem from the following three categories:

- **Structural impediments**, which derive from characteristics of the specific product market that make it difficult for new entrants to challenge large incumbents. In the case of DFS, these impediments include network effects, sunk costs, and economies of scale and scope.
- **Strategic impediments**, which arise from the behavior of incumbent or dominant firms. Whereas structural barriers are usually beyond the control of market actors, strategic impediments result from deliberate behavior intended to deter entry or unfairly disadvantage rivals with less market power. Strategic barriers to entry in DFS can include limiting access to communication and payments infrastructures, restricting the use of agents through exclusive contracts, keeping data in silos, and refusing to interoperate.
- **Statutory impediments**, which stem from sectoral regulations that limit entry, favor incumbents or advantage a certain type of market actor. In DFS markets, regulations related to licensing and distinctions between requirements for banks and nonbanks can constitute statutory impediments to competition.

## Regulatory options

Regulation can have a substantial impact on competitive dynamics in the DFS marketplace, and policy makers can consider several options to promote more competition. To address issues arising from these impediments, regulatory levers include:

- Setting fair rules on market entry, including DFS licensing and capital requirements.
- Creating a level playing field for all stakeholders on issues such as agent networks, data, and customer due diligence.
- Requiring price transparency and disclosure to allow customers to compare terms and prices.

Regulators should be vigilant against anti-competitive behaviors that create strategic impediments, which can relate to access to communication channels and payments infrastructure, the use of agents, and interoperability.

## Big data and big techs

While competition issues will continue to challenge regulators and providers, market dynamics are rapidly evolving, which may render certain problems less relevant and introduce new ones. Looking ahead, we identify two significant shifts that will change the competitive dynamics of DFS markets and thus require the attention of regulators:

- **The entry of big technology companies (big techs)**, such as Google, Alibaba, and Facebook, into the DFS marketplace introduces complex competition questions resulting from both the behavior of the firms themselves and the responses of regulators.
- **The accumulation of customer data** by DFS providers and big techs gives rise to problems related to:
  - Market power created or strengthened by data.
  - Market concentration resulting from economies of scale.
  - Abuse of dominance by players who leverage data gleaned in one market to gain unfair advantages in another market.

Policy makers are responding with different approaches in different countries, including establishing data-sharing regimes and proposing a digital authority.

## Who should read this paper?

The primary audience is financial sector regulators in emerging markets who are not competition experts but who can benefit from a primer on competition issues in DFS. Several messages are also relevant for telecommunications regulators. The paper intends to speak to the needs of competition authorities as well. Its aim is to help regulators consider how new and existing policies and market behaviors affect competitive dynamics in DFS markets and to provide guidance on identifying anti-competitive behavior.

## SECTION 1

# WHY DOES COMPETITION MATTER FOR FINANCIAL INCLUSION?

**T**HE ARGUMENT FOR PROMOTING COMPETITION IN DIGITAL FINANCIAL services (DFS) markets in emerging economies is persuasive.<sup>1</sup> In broad terms, competition encourages firms to innovate and seek out efficiencies, lower prices, and improve quality. A competitive marketplace generally offers greater choice for customers, limits rent-seeking behavior (i.e., gaming the system), and curbs excessive concentrations of economic power (Martinez Licetti et al. 2017).

From the perspective of financial inclusion advocates, these outcomes are especially important for low-income people who are excluded from or poorly served by the financial sector (di Castri and Plaitakis 2018). Lower prices and greater affordability can make financial services more accessible for customers who do not have much money.<sup>2</sup>

Furthermore, research indicates that greater market power contributes to increased income inequality (Ennis, Gonzaga, and Pike 2019; Martinez Licetti et al. 2017). Innovation and efficiency encourage the development of new products that could target specific customer segments, including customers with low incomes.<sup>3</sup>

Pressure to improve quality and service standards can similarly help to ensure that products offer value and customers are treated well (see Box 1). A greater number of DFS market actors can also reduce operational risks associated with excessive concentration, potentially limiting the economic impact of a service outage.

- 1 Although the term “DFS” covers a broad range of services, in this paper, we focus on the issuance and transfer of e-money because it is the fundamental building block for all DFS. Financial products such as credit and insurance that are delivered digitally are touched on throughout but are not the focus of this paper.
- 2 Two-thirds of people without an account at a financial institution cite not having enough money as a reason. One quarter of them say that accounts are too expensive (Demirgüç-Kunt et al. 2018).
- 3 See Federico et al. (2019): “Competition policy seeks to protect and promote a vigorous competitive process by which new ideas are transformed into realized consumer benefits. In this fundamental way, competition spurs innovation.”

**BOX 1. Competition and consumer protection**

While competition can improve consumer welfare, it is not a substitute for strong sectoral regulation, especially not for a robust consumer protection regime. Similarly, “more” competition will not solve problems created by the lack of appropriate regulation and could, in some cases, make those problems worse. Stucke (2013) and Gabaix and Laibson (2006) describe how firms can compete to exploit consumers’ biases and lack of willpower rather than to provide high-quality products. In the credit card market, for example, “consumers choose credit cards with lower annual fees (but higher financing fees and penalties) over better-suited products [..., and] rational companies can exploit consumers’ biases” (Stucke 2013, p. 175). Thus, competition and consumer protection can mutually reinforce each other but are not substitutes. A paper cited in Stucke (2013, p. 184) explores the relationship between competition and financial stability and whether excessive competition encourages increased leverage and risk-taking among banks. These questions, while critical for financial sector regulators, lie beyond the scope of this paper.

Unfortunately, many DFS markets in emerging economies seem to lack competition. Two of the most well-known and often-cited examples of this are M-PESA in Kenya and bKash in Bangladesh, which have commanded upwards of 80 percent of market share in their respective markets.<sup>4</sup>

While M-PESA and bKash’s dominance arguably played a role in the rapid growth of mobile money in both countries, their continued dominance may lead to high costs and weak innovation. With the caveat that market share serves as a crude indicator of competitive dynamics, the extreme cases of Kenya and Bangladesh join many other DFS markets, such as Uganda and Zimbabwe, that are dominated by one or two providers. Beyond limiting customers’ choices, higher levels of concentration can facilitate abuse—when a dominant firm disadvantages its rivals or harms consumers—or cartelistic behavior (see Appendix, Glossary).

## Why are DFS markets prone to concentration? Is this a problem?

A simple framework can help answer these questions.<sup>5</sup> This framework classifies factors that impede fair competition into one of three categories: structural, strategic, or statutory.

**Structural impediments—also known as “innocent barriers to entry”—stem from the characteristics of the specific product market that make it difficult for new entrants to challenge incumbents.** DFS markets have several characteristics, such as network effects, high sunk costs, and economies of scale and scope, that can impede new market entrants (see Appendix, Glossary). These factors make DFS markets prone to concentration and can even lead them to “tip” to a winner-takes-all scenario. If these structural factors were

4 Information on Kenya market shares comes from the Sector Statistics Report of the Communications Authority of Kenya. Bangladesh statistics are from Roest (2018).

5 These categories normally refer specifically to barriers to entry. Here, however, they are used more broadly to categorize a range of factors that can limit effective competition from taking place.



the only reason for the high levels of concentration in DFS markets—and we saw no evidence that dominant firms were exploiting their circumstances to the disadvantage of consumers or competitors—then there may be no cause for concern.<sup>6</sup>

**Strategic impediments to competition arise from the behavior of incumbent or dominant firms.** Whereas structural barriers are usually beyond the control of market actors, strategic impediments result from deliberate behavior intended to deter entry or unfairly disadvantage rivals with less market power. Strategic barriers to entry in DFS can include limiting access to communication and payments infrastructures, restricting the use of agents through exclusive contracts, keeping data in silos, and refusing to interoperate. These examples are discussed in greater detail in Section 4.

**Statutory impediments to competition stem from sectoral regulation that limits entry, favors incumbents, or advantages a certain type of market actor.** Licensing requirements, for example, constitute a statutory barrier to entry that can limit competition. Intellectual property rights, such as patents, also limit competition by conferring a temporary monopoly status to the patent holder. Governments decide to enact such limitations in the interest of other public policy objectives. Licensing requirements help ensure stability and integrity; patents encourage investment in new knowledge. Ideally, regulators are aware of these trade-offs and have attempted to ensure an appropriate balance. However, this is not always the case. In DFS markets, regulation related to licensing and distinctions between requirements for banks and nonbanks can constitute statutory impediments to competition. For more on these examples and ways that regulation can foster greater competition, see Section 2.

The three categories are not always mutually exclusive. Statutory barriers, for example, could also be classified as strategic barriers if incumbent firms played a role in creating or strengthening legal requirements to weaken competitive pressure.<sup>7</sup> Firms can also strategically augment structural barriers such as sunk costs by, for example, investing in vertical integration (i.e., acquiring a supplier or distributor) and making it impossible for rivals to compete unless they make a similar vertical acquisition (OECD 2007).

Regulators in DFS markets that lack sufficient competition face considerable challenges in determining whether their current market structure stems from structural impediments only or whether strategic and statutory barriers are further restricting competition. **Because DFS markets embody structural factors that favor large or incumbent firms, it is even more important that regulators are attuned to competitive dynamics, which can come from regulatory frameworks and the behavior of market actors, to ensure that competition “on the merits” can occur.**

6 Markets with extreme structural barriers to entry are sometimes known as “natural monopolies” because it would be economically inefficient for more than one firm to exist. Examples include energy production, water systems, and other utilities. Rather than attempting to foster competition within these markets, regulators will encourage firms to compete “for” the market (through large government contracts), implement strict regulation (sometimes including price caps and service-level agreements), or do some combination of both. Although DFS markets share some characteristics with natural monopolies, these qualities do not rise to such a level that would compel regulators to treat DFS as such.

7 These could be achieved through more nefarious means, such as bribery or patronage, but those are beyond the scope of this paper.

Two other complications add to the challenges facing DFS regulators in many emerging markets. One is the limited market development in many of these countries. Regulators may hesitate to intervene for fear of stunting the growth of an inchoate market. Another is that regulators may not be able to respond appropriately to potential problems for several reasons, including capacity issues or lack of an explicit competition mandate. Although over 100 countries have a competition law (OECD 2014), this is by no means universal in emerging markets, nor does it ensure effective or consistent enforcement.

In countries without a competition law or dedicated competition authority, there may be a partial competition mandate for sectoral regulators. In the case of DFS, relevant sector regulators include the central bank, other financial sector regulators, and the telecommunications authority. Even though sectoral regulators may be able to intervene, the lack of a centralized competition authority can hinder a country's ability to develop expertise, complicate coordination among regulators, and lessen the priority of competition issues on the agenda of a regulatory authority that is balancing several different objectives. While providing guidance on developing a comprehensive competition policy and creating a competition authority is beyond the scope of this paper, it is important to acknowledge the importance of these institutional elements in ensuring effective competition.

## SECTION 2

# HOW REGULATION FOSTERS—OR INHIBITS— COMPETITION IN DFS

**M**OST COMPETITION CONCERNS ABOUT DIGITAL PAYMENTS CENTER on claims of abuse of dominance and are *ex post*—that is, they focus on how to address issues after the fact. They often call for competition authorities or sectoral regulators to implement remedies in response to anticompetitive behavior. However, regulation can help to strengthen competition *ex ante* (in advance) and thus lower the risk of abuse in the first place.

**Well-designed sectoral regulation can lower barriers to entry and promote competition.** For example, although PSD2 (the revised Payment Services Directive)<sup>8</sup> is not part of the European Union competition legal framework, it nevertheless creates a competitive environment across financial markets by allowing for more data sharing, breaking down data silos of incumbents, and creating new types of licensed entities.

On the other hand, sectoral regulation and its enforcement can also constrain competition through, for example, overly restrictive licensing requirements that impede new entrants. This is particularly problematic in cases with high levels of regulatory capture by incumbents who may lobby government to build or maintain legal barriers to entry.<sup>9</sup>

8 PSD2 aims to better integrate the market for electronic payments in the European Union, open the payments market to new services and providers, and protect consumer rights. It introduces two new types of third-party provider (TPP) licenses: Payment Initiation Service Providers, which can initiate payments on behalf of a customer, and Account Information Service Providers, which can aggregate customer payments account information and present this information back to a customer. By allowing these TPPs access to data held by banks under specific circumstances, PSD2 aims to equilibrate the current asymmetry of customer data in favor of banks, thus enhancing competition in the E.U. payments market. For more information, see <https://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32015L2366>.

9 Regulatory capture refers to "...regulated institutions exercis[ing] excessive influence on the regulator. A captured regulator acts primarily in the interests of the regulatees, rather than in accordance with their putative mandate to promote the common good" (Hardy 2006).

**There are three key policy areas that can strengthen or weaken the potential for effective competition in DFS markets: market entry, level playing field, and price transparency and disclosure.**

## Market entry

**To maximize consumer welfare, consumers need access to a wide range of affordable products that meet their needs.** In general, businesses operating in competitive markets strive to differentiate their products from those of their rivals, which results in more choices for consumers. Therefore, it is important that several different types of actors can “play” in DFS markets. Regulators determine who is allowed to play.

One example that has important competition implications is the e-money licensing regime. A licensing regime that does not allow a specific type of actor to be licensed (and this foreclosure is not objectively justified by the actor’s risk profile or other characteristics) or imposes unnecessary barriers to entry can create an unlevel playing field and thereby undermine competition. Furthermore, regulatory capture by the banking sector can exacerbate unequal treatment of different types of providers.

Often, the disadvantaged provider type in DFS markets is the mobile network operator (MNO). Regulations restrict the eligibility of MNOs and other nonbank entities in 23 of the 81 countries scored in GSMA’s Mobile Money Regulatory Index (Bahia and Muthiora 2019). Historically, regulation in Nigeria restricted mobile money operator (MMO) licenses to banks or nonbank players and excluded MNOs.<sup>10</sup> In late 2018, the Central Bank of Nigeria (CBN) issued operational guidelines that reflect expansive changes to its licensing regime, paving the way for MNOs to directly apply, through a subsidiary, for a new class of license—a payments services bank.<sup>11</sup> In Bangladesh, mobile financial services providers must be a commercial bank or a subsidiary of one. New licensees from 2018 onward need to operate as a subsidiary of a regulated commercial bank.<sup>12</sup> The subsidiary can take equity partners from other banks, nongovernment organizations, or fintech companies, but the guidelines explicitly exclude MNOs.

**Capital requirements that are disproportionate to the risks posed can also act as a barrier to entry and help incumbents maintain their market power.** In general, the restricted range of activities that e-money issuers (EMIs) are authorized to carry out makes them less risky than banks, which should result in lower initial and ongoing capital requirements. At the same time, regulators may wish to screen out applicants who are unlikely to survive before breaking even.<sup>13</sup> Thus, regulation should strike a balance and set capital requirements that account for market context and the risks posed by the permitted activities (GSMA 2019).

10 Central Bank of Nigeria, 2015, “Guidelines on Mobile Money Services in Nigeria,” <https://www.cbn.gov.ng/out/2015/bpsd/guidelines%20on%20mobile%20money%20services%20in%20nigeria.pdf>.

11 Central Bank of Nigeria, 2018, “Guidelines for Licensing and Regulation of Payment Service Banks in Nigeria,” <https://www.cbn.gov.ng/Out/2018/FPRD/OCTOBER%202018%20EXPOSURE%20PAYMENT%20BANK.pdf>.

12 Bangladesh Bank, 2018, “Bangladesh Mobile Financial Services (MFS) Regulations 2018,” <https://www.bb.org.bd/mediaroom/circulars/psd/jul302018psdl04e.pdf>.

13 See, e.g., Almazán and Vonthron (2014) who write that small profits emerge only in the second or third year of a mobile money operation.

## Level playing field

### **Agent regulations and customer due diligence (CDD) requirements sometimes differ for banks and EMIs.**

While these distinctions might be justified because they align more closely to a country's licensing framework, agent and CDD regulations tied to activities reflect a risk-based approach and better support fair competition between different types of institutions (Staschen and Meagher 2018). This is not always the case in emerging markets.

Until the passage of the National Payment System Regulations in 2014,<sup>14</sup> Kenya prohibited exclusive contracts between banks and their agents, but this did not apply to MNOs.<sup>15</sup> In Uganda, mobile money services providers could contract with agents several years before banks were allowed to do so.<sup>16</sup> In Indonesia and Malaysia, bank agents can open accounts for new customers, while agents of nonbank EMIs cannot (Aviles et al. 2019). This disparate treatment can limit consumers' access to a range of financial services.

### **Ideally, CDD requirements should primarily reflect the risks of the product and customer, not the type of entity offering the product.**

In some countries, however, tiered know-your-customer (KYC) requirements are available only to a subset of providers (Meagher 2019).<sup>17</sup> In Ghana, only EMIs can offer tiered KYC,<sup>18</sup> while in Pakistan, it seems the option is currently available only for branchless banking accounts (i.e., basic bank accounts serviced by agents) as tiered KYC does not appear in the recently issued EMI regulation and regular bank accounts must adhere to separate risk-based principles.<sup>19</sup> The requirements for complaint resolution mechanisms should also be equivalent across comparable services, regardless of provider (Aviles et al. 2019).

14 Kenya Gazette Supplement No. 119, Legislative Supplement No. 43, "The National Payment System Regulations, 2014," 1 August 2014. <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/08/NPSRegulationsLegalNoticeNo-2-109.pdf>

15 Central Bank of Kenya, 2010, "Guideline on Agent Banking," CBK/PG/15. Section 6.1.

16 Bank of Uganda, 2017, "Financial Institutions (Agent Banking) Regulations, 2017 [No. 39 of 2017]," <https://ulii.org/node/27643>; Bank of Uganda, 2013, "Mobile Money Guidelines, 2013," <https://www.ucc.co.ug/files/downloads/Mobile-Money-Guidelines-2013.pdf>.

17 In a tiered KYC system, customers can access a basic account with limited functionality (e.g., lower transaction and balance limits) with minimum identification and can gain access to more sophisticated products only after providing additional documentation. For more information, see Meagher (2019) and FATF, 2017, "Anti-Money Laundering and Terrorist Financing Measures and Financial Inclusion," November, <http://www.fatf-gafi.org/media/fatf/content/images/Updated-2017-FATF-2013-Guidance.pdf>.

18 Bank of Ghana, 2015, "Guidelines for E-Money Issuers in Ghana," <https://www.bog.gov.gh/privatecontent/Banking/E-MONEY%20GUIDELINES-29-06-2015-UPDATED5.pdf>.

19 State Bank of Pakistan, 2016, "Branchless Banking Regulations," <http://www.sbp.org.pk/bprd/2016/C9-Annx-A.pdf>; State Bank of Pakistan, 2019, "Regulations for Electronic Money Institutions (EMIs)," <http://www.sbp.org.pk/psd/2019/C1-Annex-A.pdf>. Anti-Money Laundering Act 2010; SBP, AML/CFT Guidelines on Risk Based Approach for Banks & DFIs, arts. 7–9.

## Price transparency and disclosure

**Basic pricing and contract disclosure regulations, though more often associated with consumer protection, are in fact critical for competition.** Without accurate information, customers cannot compare services, which can lessen competition. In 2016, the Competition Authority of Kenya required DFS providers to explicitly disclose costs for a range of services (Mazer 2018). Not only did this rule help customers avoid being unwittingly charged, it also helped them to compare costs across providers. Regulation on disclosure can also contribute to the previously mentioned level playing field issues, as evidenced by several countries in the Association of Southeast Asian Nations where they generally apply only to banks and not to e-money providers (Aviles et al. 2019).

## SECTION 3

# HOW MARKET ACTORS CAN UNDERMINE FAIR COMPETITION—AND WHAT REGULATORS CAN DO

**E**VEN IF APPROPRIATE EX ANTE ACTIONS HAVE BEEN TAKEN, competition issues may inevitably arise due to the inherent characteristics of the market or the behavior of market actors, especially as DFS markets mature. It is important to note that anticompetitive behavior can coexist with falling prices or increased innovation, and these phenomena do not mean that there are no competition issues. Prices may fall in a market, for example, but the pertinent counterfactual question is how much they would have fallen in the absence of anticompetitive behavior. This section addresses a few common problems but does not provide a comprehensive list of potential anticompetitive behavior.

### Access to communication channel

**Although smartphone adoption is increasing, unstructured supplementary service data (USSD) and SIM Toolkit (STK) applications are still an essential channel for DFS in emerging markets, particularly for low-income customers** (ITU-T 2017). Thus, questions surrounding fair and reasonable access to the channel are key. A common problem occurs when a dominant MNO (or duopoly) restricts access to its USSD channel or STK gateway.<sup>20</sup> This can happen through, for example, a combination of excessive pricing and other exclusionary behavior, such as strategically deteriorating service quality or foreclosing access—which occurred in Uganda (Amamukirori 2015), Colombia (Marulanda 2015), and Zimbabwe (Maposa 2013).

<sup>20</sup> For more detail on issues with USSD, see CGAP (2014) and Hanouch and Chen (2015).

**MNOs may strategically restrict access to their USSD channel to gain market share in the telecommunications or DFS markets.** This is an example of abusing the ownership of a potential “essential facility” (see Appendix, Glossary). Regulators have a wide range of approaches available to them, from communicating with other sectoral regulators and other stakeholders on access (e.g., Bangladesh [Plaitakis, Church, and Wills 2016]) or negotiating bilateral access pricing (e.g., Kenya [Mumo 2017]) to requiring fair, reasonable, and nondiscriminatory pricing (e.g., Peru and Colombia [CGAP 2014]) or defining a price or price range at which MNOs must offer access to the communication channel (e.g., India).<sup>21</sup>

**Quality is another important factor that can affect the viability of third-party use of the USSD channel.** When MNOs offer their own mobile money services and simultaneously provide third parties with access to their USSD channel, they can weaken the quality of a competitor’s mobile money product by degrading the quality of the USSD channel. In some countries, including Kenya, the Philippines, and Uganda, MMOs have complained about dropped USSD sessions and other quality-of-service problems (CGAP 2014). In certain cases, regulators have responded by creating “quality of service” provision requirements. For example, the telecommunications regulator in Colombia can accept and review complaints regarding price and quality on a case-by-case basis, and in 2016, it proposed—but never finalized—regulation requiring that 99 percent of USSD sessions be successfully completed.<sup>22</sup> CBN’s regulatory framework for using USSD in the financial system requires financial institutions and MNOs to enter into service level agreements benchmarked against regulation from the Nigeria Communications Commission.<sup>23</sup>

## Payments settlement infrastructure

**Another barrier to competition can emerge if banks or regulators unfairly exclude access—or use discriminatory pricing to impede access—of nonbanks to payments settlement infrastructures,** some of which may be owned or controlled by the central bank or a consortium of banks.<sup>24</sup> If incumbent banks with control over infrastructure perceive nontraditional providers as a threat, they may use this power to create barriers to entry that could amount to market foreclosure. It is generally infeasible and inefficient for excluded parties to create alternative settlement infrastructures. Economies of scale dictate that the number of settlement infrastructures in a market will remain limited.

21 See the Telecom Regulatory Authority of India’s 2016 Notification, [https://main.trai.gov.in/sites/default/files/TTO\\_on\\_Mobile\\_Banking\\_Nov\\_2016\\_22\\_11\\_16.pdf](https://main.trai.gov.in/sites/default/files/TTO_on_Mobile_Banking_Nov_2016_22_11_16.pdf)

22 Comisión de Regulación de Comunicaciones, “Revisión del Régimen de Calidad de Telecomunicaciones,” June 2016, [https://www.crcm.gov.co/recursos\\_user/2016/Actividades\\_regulatorias/nuevo\\_reg\\_calidad/Documento\\_Soporte\\_15-06-2016.pdf](https://www.crcm.gov.co/recursos_user/2016/Actividades_regulatorias/nuevo_reg_calidad/Documento_Soporte_15-06-2016.pdf).

23 Central Bank of Nigeria, April 2018, “The Regulatory Framework for the Use of Unstructured Supplementary Service Data (USSD) in the Nigerian Financial System,” [https://www.cbn.gov.ng/Out/2018/BPSD/USSD\\_Regulatory\\_Framework.pdf](https://www.cbn.gov.ng/Out/2018/BPSD/USSD_Regulatory_Framework.pdf).

24 Relevant infrastructures include automated clearing houses, interbank payments card processing platforms, and gross settlement systems.



**More than half of the countries surveyed in the latest Global Payment Systems Survey report that money transfer operators and MNOs are excluded from accessing automated clearing houses directly or indirectly** (World Bank 2018, Table III.9). The

survey finds that restrictions on nonbank entities are more common in lower-income countries, where they play a more significant role in financial inclusion. In India, for example, nonbank wallet providers cannot access the Universal Payments Interface (UPI) directly and instead must partner with a bank—although prepaid issuers may gain direct access in the future (Cook and Raman 2019). Nonbank providers do not necessarily need *direct* access to the payments infrastructure to compete on a level playing field. Providers can also access *indirectly*—that is, the provider does not participate in the system but gains access through another actor who does. If the requirements to gain direct access are too burdensome or costly, indirect access may be preferred, provided that indirect access is offered on fair terms (Garcia 2016; Aviles et al. 2019).

**Without direct or indirect access to key payments infrastructure, nonbank providers are disadvantaged.** As CPSS-IOSCO (2012) notes, however, infrastructures “should have objective, risk-based, and publicly disclosed criteria for participation, which permit *fair and open access*.” Thus, infrastructure operators must balance openness with risks to the system and its participants.

In a bid to spur greater competition, the Bank of England (BoE) announced in 2017 that nonbank payments firms that demonstrate compliance with BoE’s risk mitigation requirements would be allowed direct access to its real-time gross settlement payments system (Jones 2017). More recently, BoE shared plans to offer fintechs access to overnight deposit accounts (Giles 2019).

In 2018, the People’s Bank of China (PBC) created a separate clearinghouse for nonbank payments providers—in part to create a more level playing field. Beginning in 2019, PBC has also given nonbank payments providers access to its reserve accounts. These providers are required to store 100 percent of customer balances at PBC.

## Restrictions on agents

Agent restrictions may stifle competition. Often known as “vertical restraints,” the restrictions require independent agents to accept certain restrictive terms in their agency contracts with EMIs. The restrictions can include agent exclusivity as well as restrictions on the agent’s geographical placement and its use of branding and communications material. Vertical restrictions can create barriers to entry for new agents. Whether such restrictions are legally considered to be anticompetitive depends on the domestic jurisprudence on vertical restraints. Some jurisdictions, such as the United States, may see vertical restraints as generally procompetitive because they limit free-riding and encourage firms to invest (Pitofsky 1997). Other jurisdictions, such as the European Union, consider vertical restraints to have negative effects if (i) they are imposed by entities with some degree of market power and (ii) the agreement contributes to the creation, maintenance, or strengthening of that market power (Plaitakis 2019a).

In the early stages of DFS market development in emerging markets, agent exclusivity agreements were common and sometimes supported by regulators (e.g., India).<sup>25</sup> But over time, some countries, such as Kenya, banned exclusivity arrangements, and others, such as Ghana, Tanzania, and Uganda, mandated agent nonexclusivity.<sup>26</sup> The appropriate regulatory approach depends on the stage of DFS market development in a particular country. **The rollout of a proprietary agent network can be important for the initial launch and expansion of DFS, but exclusivity arrangements may prevent new players from entering the market and consolidate existing market shares when the market has matured.**

## Interoperability

**Despite debates on timing and mechanisms, regulators and providers agree that digital payments interoperability spurs competition and generates greater value for users.** The primacy of interoperability holds true for any networked product—for example, imagine if emails could only be sent within individual domains. However, a firm that holds significant market power has little incentive to develop interoperable arrangements. Thus, the question facing regulators is: What is the best way to achieve interoperability while promoting effective competition and not distorting incentives for investment?

This paper addresses interoperability at the platform level—that is, the ability of users to transfer money both on-net and off-net, without significant price differences between the two.<sup>27</sup> In general, it is difficult for a regulator to know when and how to intervene and require providers to interoperate. Additional complications can arise when firms develop bilateral agreements or use third-party solutions in the absence of full interoperability (Arabehty et al. 2016). Conventional wisdom suggests that regulators should err on the side of caution and refrain from intervening too early. This approach allows maximum opportunity for market actors to arrive at a commercially attractive and sustainable arrangement. Regulators may perceive the risk of “getting it wrong” as too high; intervening too early can stall market development and innovation. Ghana, for example, required interoperability in its initial 2008 branchless banking regulation but rescinded the requirement in its 2015 revision, citing slow growth and “unintended consequences” (GSMA 2015). Nonetheless, regulators may want to require interoperability at later stages of market growth, which is why Bourreau and Valletti (2015) argue that *ex ante* regulation should aim to guarantee that interoperability is technically feasible at a

25 Reserve Bank of India, 2010, “Financial Inclusion by Extension of Banking Services—Use of Business Correspondents (BCs),” Section 3, [https://www.rbi.org.in/Scripts/BS\\_CircularIndexDisplay.aspx?Id=6017](https://www.rbi.org.in/Scripts/BS_CircularIndexDisplay.aspx?Id=6017).

26 National Treasury, 2014, “National Payment Systems Regulations,” *The Kenya Gazette*, 1 August, <https://www.centralbank.go.ke/images/docs/legislation/NPSRegulations2014.pdf>; Bank of Ghana, 2015, “Agent Guidelines,” Ch. 3, Sec. 12, <https://www.bog.gov.gh/privatecontent/Banking/AGENT%20GUIDELINES%20UPDATED3.pdf>; Bank of Tanzania, 2015, “The Payment Systems (Electric Money) Regulations, 2015,” 36(2) (a), <https://www.bot.go.tz/PaymentSystem/GN-THE%20ELECTRONIC%20MONEY%20REGULATIONS%202015.pdf>; Bank of Uganda, 2013, “Mobile Money Guidelines,” Section 7(3)(b)(i), <https://ucc.co.ug/files/downloads/Mobile-Money-Guidelines-2013.pdf>.

27 The three levels of interoperability are (i) the platform level, as described in this paper; (ii) the agent level, where customers can cash-in and cash-out at agents of a provider different from their own; and (iii) the customer level, where customers can access their accounts using any SIM card on their network or access accounts from multiple providers on a single SIM. For more information, see Kumar and Tarazi (2012).

reasonable cost, while monitoring firms' behavior to ensure they do not erect barriers to future interoperability. If providers do not arrive at a solution on their own,<sup>28</sup> regulators or development partners should work with the sector to identify viable approaches.<sup>29</sup> **Where a dominant player refuses to interoperate, regulators face limited options and may need to resort to more interventionist approaches.**

28 When providers develop interoperability schemes, they will often need to obtain an exemption or waiver from the domestic and/or regional competition regulator(s) to ensure that the scheme does not violate anticartel or anticollusion regulation.

29 The International Finance Corporation played a role along these lines in Tanzania; for more information, see IFC (2015).

## SECTION 4

# LOOKING AHEAD: HOW BIG TECH AND BIG DATA AFFECT COMPETITION

**W**HILE THE COMPETITION ISSUES DESCRIBED IN THIS PAPER WILL continue to challenge regulators and providers, market dynamics are rapidly evolving. These developments may render some problems less relevant while introducing new ones. In particular, the increasing use of customer data and the entry of global big tech players will affect competition in DFS markets.

### The role of customer data

Certain competition issues arise with the accumulation of data, including (i) market power created or bolstered by the network effects of digital data, (ii) market concentration resulting from the economies of scale of digital data and the multisided nature of many platforms that focus on data collection,<sup>30</sup> and (iii) abuse by dominant players who leverage data they possess in one market to gain an unfair advantage in another market (Plaitakis 2019b). In the context of DFS, the last issue is the most prevalent. **Specifically, dominant players in one market segment, such as mobile telecommunications or mobile money, may leverage the customer data they possess in that segment to gain an advantage in another market.**

An example of this is Safaricom leveraging mobile telecommunications and mobile money data to gain an advantage in the digital nanocredit market in Kenya (Plaitakis 2019b). Alternately, such players may refuse to provide access to their proprietary platforms and their data to third-party services providers. In an example from a high-income country context, several

<sup>30</sup> In a multisided market, “a firm acts as a platform and sells different products to different groups of consumers, while recognising that the demand from one group of customers depends on the demand from the other group(s). Crucially, if this cross-platform network externality is present, this implies that the structure of prices that the platform sets will determine volume, not just the level at which it sets the price across the different sides of the market” (OECD 2018, p. 10).

large financial institutions in the United States briefly prevented third-party aggregators from accessing their customers' data in 2015, citing security concerns (Huang and Rudegear 2015). The banks quickly reversed course, however, in response to customer complaints (Castro and Steinberg 2017).

Lastly, lenders may not provide complete data sets to credit bureaus—for example, they may report only negative credit information—or they may selectively provide only certain data to preferred parties. If these are dominant lenders, particular issues of data access in credit scoring may arise as they did in a market inquiry into the competitive implications of negative reporting in Kenya (Competition Authority of Kenya 2016).

## The entry of big tech players

**The entry of large nonfinancial-sector multinational technology companies—big techs—into DFS markets (and digital finance more broadly) can introduce complex competition questions stemming from both the entry itself and the regulatory responses.**

The Bank for International Settlements (BIS) dedicated a significant portion of its 2019 Annual Economic Report to the opportunities and risks stemming from the entry of big techs in finance. Its analysis emphasizes the potential of big tech's ability to leverage its low-cost structure to extend the provision of basic financial services to excluded populations. At the same time, BIS warns of the risks to consumer protection, data privacy, and competition, urging regulators to collaborate across borders, ensure a level playing field between types of entities, and use competition, privacy, and financial regulation to harness the benefits offered by big techs while minimizing the risks.

Over the past several years there have been an increasing number of examples of technology companies offering payments services in emerging markets. Facebook, for example, partnered with PayMaya and GCash in the Philippines to offer mobile money payments through its messaging platform in 2017 (Desiderio 2017). The following year, Facebook launched a pilot payments service in India through its WhatsApp subsidiary, reportedly reaching a million monthly transactions in less than a year and threatening the dominance of PayTM, the Indian-based platform that has received significant investment from China's Alibaba (Murgia 2019). More recently, Facebook announced plans to introduce a global cryptocurrency (The Libra Association 2019). In the meantime, Google has also launched a mobile payments service in India—initially called Tez, but since rebranded as Google Pay (Sengupta 2017). Amazon, which has offered a prepaid wallet to Indian customers since 2016, announced in April 2019 that customers could use the service for person-to-person payments through UPI (Mishra 2019). The e-commerce giant also offers point-of-sale financing for some medium- to large-ticket consumer goods sold through the platform. Beyond the India market, Amazon offers prepaid cards in Mexico, and WeChat Pay and Alipay may soon launch in several East African markets through a partnership with Kenya's Equity Bank (Xinhua 2019).

On the one hand, the entry of new players has the seemingly obvious benefit of strengthening competition, which would likely lead to lower prices and greater innovation for consumers. At the same time, these developments and their implications for competitive dynamics raise

difficult questions that may not be apparent if observers examine only short-term price effects. Unlike smaller start-ups, the large technology companies often sit on significant amounts of capital in the form of cash and customer data. These companies are able to take on sustained below-cost pricing strategies and cross-subsidization of business lines and geographic markets to capture market share and then, once they control the market, to subsequently increase prices and decrease product choices.

**While customers may benefit in the near term, it is possible that the long-term harm to the competitive process will outweigh the short-lived benefits.** As Khan (2017) writes, the focus on consumer welfare (as measured by price and output) in contemporary antitrust blinds regulators to the actual harms of 21st century monopolists, who sustain significant losses through below-cost pricing while integrating across business lines.

The zero-cost point-of-sale financing offered by Amazon, for example, is the result of Amazon's partnership with every major Indian bank. The bank charges customers interest, but Amazon discounts the product price by the same amount.<sup>31</sup> Google offers its payments service in India at an essentially negative price since customers can transfer and receive money for free, all while earning referral rewards and scratch cards. At its launch, Google advertised that customers could earn up to 18,000 INR (around US\$250) through referrals and scratch cards—equal to approximately two months of per capita GDP.<sup>32</sup>

Google also worked with manufacturers of Android smartphones to arrange for the payments app to come preinstalled (BBC News 2017). Although such arrangements exist for other payments apps, including rival PayTM (Shambhavi 2015), the Google Pay-Android tying could raise questions given its resemblance to the issue at the heart of a 2018 European Commission decision that fined Google \$5 billion for violating antitrust laws. The violations stemmed in part from bundling Google apps with the operating system and paying phone manufacturers to exclusively pre-install Google's search app on their handsets (EC 2018).

Within India, competition authorities and regulators seem to have taken notice of and prioritized responding to these market changes. In 2018, India revised its foreign direct investment regulation for e-commerce, with an eye toward taming Amazon and Walmart's Flipkart by restricting their ability to sell their own inventory through their platforms. The modifications touched on several issues, but a key objective was to ensure that the giants either oversee the platforms or sell their products on the platforms, but not both, as that could lead to preferential treatment of the platform's products (Phartiyal 2019). Once the rules went into effect, Amazon removed from its marketplace products from its own brands and those in which Amazon has an equity stake.

India's response to big tech extends to the introduction of data localization requirements. In April 2018, the Reserve Bank of India (RBI) directed all payments systems providers to store payments data on transactions involving Indian customers exclusively on servers located in

31 See "Will My Bank Continue to Charge Me Interest?" Frequently Asked Questions number 7, accessed 3 June 2019, <https://www.amazon.in/no-cost-emi/b?node=14072630031>.

32 National Accounts Statistics, 2018, <http://mospi.nic.in/node/17651>

India, citing the need to “ensure better monitoring.”<sup>33</sup> Visa, Mastercard, American Express, Amazon, and PayPal expressed frustration with the regulation and unsuccessfully requested more time to conform to the new rules (Goel 2018). In June 2019, RBI assured the firms that it would reassess the rules (Kalray and Kumar 2019). Critics of data localization requirements contend that the rules amount to a trade barrier and put foreign businesses at a disadvantage through additional costs, using security concerns as a cover.<sup>34</sup>

In February 2019, India shared a proposed policy for the online shopping sector that would impose similar data localization requirements on e-commerce platforms (Kalray and Phartiyal 2019). India is not the only country with restrictive data localization regulation—approximately 25 countries have imposed similar requirements (Baur-Yazbeck 2018). Such policies, which may be intended to level the playing field for domestic firms, could do so at the expense of domestic consumers who face limited choices.

Identifying specific remedies for the challenges linked to customer data and the entry of big tech is beyond the scope of this paper. However, regulators could take several regulatory approaches to balance access to data. These include data-sharing regimes, such as PSD2 in Europe and Open Banking in the United Kingdom, and data portability, such as General Data Protection Regulation (GDPR). Another data-sharing approach is to allow the consumer to have joint control of data, as is proposed in Australia.<sup>35</sup> Yet another alternative is to establish a digital authority that would regulate the entire digital sector with regard to competition law and noncompetition goals, such as those in privacy, media, data use restrictions, and consumer protection (CSDP 2019). Such an authority, given its exposure to digital technology, would be able to quickly identify technical issues that give rise to competitive harm and to sanction accordingly.

Further, regulators should consider how they can use compliance data to monitor DFS markets and anticipate strategic barriers that are created through firm behavior. Financial supervisors, competition authorities, and financial regulators can, through RegTech solutions, analyze and visualize the data reported to authorities to identify any anticompetitive dynamics, as Mexico’s National Commission for the Pension System (Consar) was able to do in regard to a pension fund administrator cartel.<sup>36</sup>

33 Reserve Bank of India, 2018, “Storage of Payment System Data,” RBI/2017-18/153, 6 April, <https://www.rbi.org.in/scripts/NotificationUser.aspx?Id=11244&Mode=0>.

34 See, e.g., “2018 Fact Sheet: Key Barriers to Digital Trade,” Office of the United States Trade Representative, March, <https://ustr.gov/about-us/policy-offices/press-office/fact-sheets/2018/march/2018-fact-sheet-key-barriers-digital>.

35 The Australian Competition and Consumer Commission, 2019, “Competition and Consumer (Consumer Data) Rules 2019,” Exposure Draft, <https://www.accc.gov.au/system/files/Exposure%20draft%20CDR%20rules%2029%20March%202019.pdf>.

36 Consar launched an initiative in 2013 to fortify the pension system against emerging fraud risks and to promote financial inclusion. By replacing paper-based processes with digital documents and identities, Consar greatly increased its capacity to monitor compliance, prevent fraud, and detect collusion. This allowed it to find that several major pension fund administrators (known as *afores*) had conspired to prevent participants from switching between funds on several occasions between 2012 and 2014. As a consequence, in 2017 the competition authority levied the largest-ever fine (1.1 billion Mexican pesos) on four of the largest *afores*. See di Castri et al. (2018).

While competitive issues arising with the accumulation of data may not be manifest in emerging markets, governments should take a proactive approach. As the competition policy framework and institutions are often not yet established—or are still in institution-building mode—in emerging markets, there is an opportunity to develop a competition law framework from the outset. This framework should have a consumer welfare perspective that goes beyond narrow price effects and considers nonprice aspects of products and services, such as quality, choice, and data privacy, as part of its analytic approach toward competition. By integrating these elements, governments in emerging markets have the opportunity to leapfrog into developing relevant competition law and policy that align with their country’s social development goals, including financial inclusion.

DFS markets in emerging economies vary significantly in their stages of development. In nascent markets, regulators and development partners may be inclined to dismiss competition as a problem to address once the market has reached a more advanced level of maturity. However, as we show in this paper, competition issues should always be factored into policy decisions, even before specific challenges arise in a market. Although regulators in mature markets may be better positioned to address instances of abuse of dominance, regulators in nascent markets can still assess their existing regulation to ensure that they provide a level playing field and encourage effective competition.<sup>37</sup> In countries without a dedicated competition authority, it may be challenging for financial and telecommunications regulators to balance and prioritize competition issues. In these cases, the authorities may consider signing Memoranda of Understanding to allocate jurisdiction and identify priorities. Going forward, these issues are likely to gain prominence and will need to be addressed to ensure the development of a safe, competitive, and inclusive financial sector.

<sup>37</sup> Such an assessment could begin with the policy areas described in Section 2 or with a more formal process, such as the OECD Competition Assessment Toolkit (see <https://www.oecd.org/competition/assessment-toolkit.htm>).



# APPENDIX

## GLOSSARY

**Dominant firm.** A dominant firm typically commands a substantial share (40 percent or more) of a given market, with a sizeable gap between its market share and that of its closest competitor. Dominant firms can act independently of rivals by increasing prices above the competitive level, selling low-quality products, reducing supply, or slowing their rate of innovation below what would exist in a competitive market. Under competition law, holding a dominant position is not in itself illegal since it can come about legitimately by simply offering better products at better prices. Competition rules do, however, prohibit companies from abusing their dominance, which—depending on the jurisdiction—could include unreasonable prices, price discrimination, predatory pricing, price squeezing by integrated firms, refusal to deal/sell, tied selling or product bundling, and preemption of facilities.

**Economies of scale and scope.** Economies of scale are typically associated with supply-side dynamics (unlike network effects, which are on the demand side). In a product with economies of scale, production costs decrease per unit as volume increases, which confers cost advantages to larger firms. Economies of scope refer to situations in which firms enjoy cost savings by producing two goods or services, compared to producing them separately. The presence of economies of scope can make it difficult for firms to compete in one market without developing or acquiring a position in a related market.

**Essential facility.** An essential facility refers to a facility or infrastructure that would be impossible or impractical to duplicate and that competitors need access to so they can reach customers or do business. In general, essential facilities arise in the context of two markets (an upstream market and a downstream market), where one firm is present in both markets and other firms seek access to the downstream market but are denied through outright refusal, excessive pricing, or poor quality of service. In the context of DFS, the concept could apply to the market for USSD access (upstream) and the market for mobile money (downstream).

**Network effects.** The term “network effects” refers to the phenomenon by which additional users or customers of a product or service increase its value. Network effects, also called network externalities or demand-side economies of scale, are characteristic of many digital products and services. They are particularly relevant for competition because they can function as a barrier to entry for potential competitors who cannot compete against a provider with a large, built-in customer base.

**Sunk costs.** Sunk costs are a key factor in competition policy and antitrust actions. The term refers to expenses or investments that cannot be recovered or avoided even if a firm exits a market. They are relevant for competition because they can serve as a barrier to entry—the costs must be paid by new entrants and have already been paid by incumbents.

Source: Glossaries of the Organisation for Economic Co-operation and Development (<https://www.oecd.org/development/publicationsdocuments/glossary/>), European Union ([https://europa.eu/european-union/documents-publications/language-and-terminology\\_en](https://europa.eu/european-union/documents-publications/language-and-terminology_en)), and Concurrences (<https://www.concurrences.com/en/glossary/>).

# REFERENCES

- Almazan, Mireya, and Nicolas Vonthron. 2014. "Mobile Money Profitability: A Digital Ecosystem to Drive Healthy Margins." London: GSMA.
- Amamukirori, Betty. 2015. "MTN Ordered to Pay EzeeMoney Sh2.3b over Sabotage." *New Vision*, 17 November. [https://www.newvision.co.ug/new\\_vision/news/1411821/mtn-pay-ezeemoney-sh23b-sabotage](https://www.newvision.co.ug/new_vision/news/1411821/mtn-pay-ezeemoney-sh23b-sabotage)
- Arabehety, Pablo Garcia, Gregory Chen, Will Cook, and Claudia McKay. 2016. "Digital Finance Interoperability and Financial Inclusion: A 20-Country Scan." Working Paper. Washington, D.C.: CGAP. <https://www.findevgateway.org/library/digital-finance-interoperability-financial-inclusion-20-country-scan>
- Aviles, Ana Maria, Veronica Trujillo, and Djauhari Sitorus. 2019. "Advancing Digital Financial Inclusion in ASEAN." Washington, D.C.: World Bank.
- Bahia, Calvin, and Brian Muthiora. 2019. "The Mobile Money Regulatory Index." London: GSMA. <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/03/The-Mobile-Money-Regulatory-Index-1.pdf>
- Baur-Yazbeck, Silvia. 2018. "3 Myths about Data Localization." CGAP blog post, 21 August. <https://www.cgap.org/blog/3-myths-about-data-localization>
- BBC. 2017. "Google Launches India Mobile Payments App Tez." *BBC News*, 18 September. <https://www.bbc.com/news/technology-41306312>
- BIS (Bank of International Settlements). 2019. "Annual Economic Report 2019." Basel: BIS, 30 June. <https://www.bis.org/publ/arpdf/ar2019e.pdf>
- Bourreau, Marc, and Tommaso Valletti. 2015. "Enabling Digital Financial Inclusion through Improvements in Competition and Interoperability: What Works and What Doesn't." Policy Paper 65. Washington: D.C.: Center for Global Development, 1–30.
- Castro, Daniel, and Michael Steinberg. 2017. "Blocked: Why Some Companies Restrict Data Access to Reduce Competition and How Open APIs Can Help." Washington, D.C.: Center for Data Innovation. <http://www2.datainnovation.org/2017-open-apis.pdf>
- CGAP. 2014. "Mobile Payments Infrastructure Access and Its Regulation." Working Paper. Washington, D.C.: CGAP, May. <https://www.cgap.org/research/publication/mobile-payments-infrastructure-access-and-its-regulation>
- CPSS (Committee on Payment and Settlement Systems) and IOSCO (Technical Committee of the International Organization of Securities Commissions). 2012. "Principles for Financial Market Infrastructures." Basel: Bank for International Settlements, April.
- Competition Authority of Kenya. 2016. "Proposed Market Inquiry and Sector Study on the Kenya Banking Sector." *The Kenya Gazette*, 5 February. [http://kenyalaw.org/kenya\\_gazette/gazette/volume/MTI3OQ--/Vol.CXVIII-No.10#GAZETTE%20NOTICE%20NO.%20%20678](http://kenyalaw.org/kenya_gazette/gazette/volume/MTI3OQ--/Vol.CXVIII-No.10#GAZETTE%20NOTICE%20NO.%20%20678)
- Cook, William, and Anand Raman. 2019. "National Payments Corporation of India and the Remaking of Payments." Working Paper. Washington, D.C.: CGAP. <https://www.cgap.org/research/publication/national-payments-corporation-india-and-remaking-payments>
- CSDP (Committee for the Study of Digital Platforms). 2019. "Report of the Market Structure and Antitrust Subcommittee." Chicago: University of Chicago Booth School of Business, 1 July. <https://research.chicagobooth.edu/-/media/research/stigler/pdfs/market-structure-report.pdf?la=en&hash=E08C7C9AA7367F2D612DE24F814074BA43CAED8C>
- Demirgüç-Kunt, Asli, Leora Klapper, Dorothe Singer, Saniya Ansar, and Jake Hess. 2018. "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution." Washington D.C.: World Bank Group. <https://globalfindex.worldbank.org/index.php/#GF-ReportChapters>
- Desiderio, Louella. 2017. "PayMaya, GCash Link up with Facebook." *The Philippine Star*, 23 September. <https://www.philstar.com/business/2017/09/23/1741931/paymaya-gcash-link-facebook>
- di Castri, Simone, and Ariadne Plaitakis. 2018. "Getting Financial Inclusion Policies Right in the Digital Era: Focus on Competition and Innovation as Policy Objectives." Boston: BFA. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3267563](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3267563)

- di Castri, Simone, Arend Kulenkampff, and Matt Grasser. 2018. "Financial Authorities in the Era of Data Abundance; RegTech for Regulators and SupTech Solutions." Boston: BFA. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3249283](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3249283)
- EC (European Commission). 2018. "Antitrust: Commission Fines Google €4.34 Billion for Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google's Search Engine." Press release, 18 July. [http://europa.eu/rapid/press-release\\_IP-18-4581\\_en.htm](http://europa.eu/rapid/press-release_IP-18-4581_en.htm)
- Ennis, Sean F., Pedro Gonzaga, and Chris Pike. 2019. "Inequality: A Hidden Cost of Market Power." *Oxford Review of Economic Policy* 35, no. 3: 518–49.
- Federico, Giulio, Fiona Scott Morton, and Carl Shapiro. 2019. "Antitrust and Innovation: Welcoming and Protecting Disruption." *Innovation Policy and the Economy* 20. Chicago: University of Chicago Press.
- Gabaix, Xavier, and David Laibson. 2006. "Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets." *The Quarterly Journal of Economics* 121 (2): 505–40.
- Garcia, Jose Antonio. 2016. "Access to Payment Infrastructures." ITU-T Focus Group Digital Financial Services. [https://www.itu.int/en/ITU-T/focusgroups/dfs/Documents/09\\_2016/Access%20to%20Payment%20Infrastructures.pdf](https://www.itu.int/en/ITU-T/focusgroups/dfs/Documents/09_2016/Access%20to%20Payment%20Infrastructures.pdf)
- Giles, Chris. 2019. "Bank of England Intends to Open Its Vaults to Tech Companies." *Financial Times*, 20 June. <https://www.ft.com/content/148c3724-9376-11e9-b7ea-60e35ef678d2>
- Goel, Vindu. 2018. "U.S. Credit Card Giants Flout India's New Law on Personal Data." *The New York Times*, 15 October. <https://www.nytimes.com/2018/10/15/technology/visa-mastercard-amex-india-data-law.html>
- GSMA. 2015. "Regulatory Reform: A Conversation with the Bank of Ghana on the Journey towards the New Guidelines for E-Money Issuers." Mobile for Development blog post, 3 August. <https://www.gsma.com/mobilefordevelopment/country/ghana/regulatory-reform-a-conversation-with-the-bank-of-ghana-on-the-journey-towards-the-new-guidelines-for-e-money-issuers/>
- . 2019. "Are Capital Requirements Proportionate?" Mobile for Development. London: GSMA. <https://www.gsma.com/mobilefordevelopment/guide/are-capital-requirements-proportionate/>
- Hanouch, Michel, and Gregory Chen. 2015. "Promoting Competition in Mobile Payments: The Role of USSD." Brief. Washington, D.C.: CGAP. <https://www.cgap.org/research/publication/promoting-competition-mobile-payments-role-ussd>
- Hardy, Daniel C. L. 2006. "Regulatory Capture in Banking," Vol. 6. Working Paper No. 06/34. Washington, D.C.: International Monetary Fund.
- Huang, Peter, and Peter Rudegeair. 2015. "Bank of America Cut Off Finance Sites From Its Data." *Wall Street Journal*, 9 November. <https://www.wsj.com/articles/bank-of-america-cut-off-finance-sites-from-its-data-1447115089>.
- IFC (International Finance Corporation). 2015. "Achieving Interoperability in Mobile Financial Services: Tanzania Case Study." Washington, D.C.: IFC. <http://documents.worldbank.org/curated/en/740981531310065590/Tanzania-case-study>
- ITU-T (International Telecommunication Union—Telecommunication Standardization Sector). 2017. "ITU Focus Group Digital Financial Services: Main Recommendations." Geneva: ITU-T. [https://www.itu.int/en/ITU-T/focusgroups/dfs/Documents/201703/ITU\\_FGDFS\\_Main-Recommendations.pdf](https://www.itu.int/en/ITU-T/focusgroups/dfs/Documents/201703/ITU_FGDFS_Main-Recommendations.pdf)
- Jones, Huw. 2017. "Bank of England Opens up Payments Systems to Spur Fintech." *Reuters*, 19 July. [www.reuters.com/article/us-britain-boe-fintech/bank-of-england-opens-up-payments-systems-to-spur-fintech-idUSKBN1A4121](http://www.reuters.com/article/us-britain-boe-fintech/bank-of-england-opens-up-payments-systems-to-spur-fintech-idUSKBN1A4121)
- Kalray, Aditya, and Manoj Kumar. 2019. "India to Review Data Storage Rules That Irked U.S. Tech Firms." *Reuters*, 18 June. <https://www.reuters.com/article/us-india-data-localisation/india-to-review-data-storage-rules-that-irked-us-tech-firms-idUSKCN1TJOWN>
- Kalray, Aditya, and Sankalp Phartiyal. 2019. "India Proposes New E-Commerce Regulations with Focus on Data Rules." *Reuters*, 23 February. <https://www.reuters.com/article/us-india-ecommerce/india-proposes-new-e-commerce-regulations-with-focus-on-data-rules-idUSKCN1QC0LO>
- Khan, Lina M. 2017. "Amazon's Antitrust Paradox." *The Yale Law Journal* 126 (3): 546–907.
- Kumar, Kabir, and Michael Tarazi. 2012. "Interoperability in Branchless Banking and Mobile Money." CGAP blog post, 9 January. <https://www.cgap.org/blog/interoperability-branchless-banking-and-mobile-money>
- Libra Association, The. 2019. "An Introduction to Libra." White Paper, 23 July. <https://libra.org/en-US/white-paper/>
- Maposa, Kennedy. 2013. "E-Cash System Riles Zimbabwe's Banks." *Mail & Guardian*, 14 June. <https://mg.co.za/article/2013-06-14-00-e-cash-system-riles-banks>
- Martinez Licetti, Martha, Georgiana Pop, Sara Nyman, and Tania Priscilla Begazo Gomez. 2017. *A Step Ahead: Competition Policy for Shared Prosperity and Inclusive Growth*. Washington, D.C.: World Bank.
- Marulanda, Beatriz. 2015. "Going Mobile with Conditional Cash Transfers: Insights and Lessons from the Payment of Familias En Accion through DaviPlata Wallets in Colombia." Working Paper. Washington, D.C.: CGAP. <https://www.cgap.org/research/publication/going-mobile-conditional-cash-transfers>

- Mazer, Rafe. 2018. "Kenya's Rules on Mobile Money Price Transparency Are Paying Off." CGAP blog post, 4 April. <https://www.cgap.org/blog/kenyas-rules-mobile-money-price-transparency-are-paying>
- Meagher, Patrick. 2019. "Risk-Based Customer Due Diligence: Regulatory Approaches." Technical Note. Washington, D.C.: CGAP. <https://www.cgap.org/research/publication/risk-based-customer-due-diligence-regulatory-approaches>
- Mishra, Digbijay. 2019. "Amazon Bets Big on Payments in India." *The Economic Times*, 26 May. <https://economictimes.indiatimes.com/small-biz/startups/features/amazon-bets-big-on-payments-in-india/articleshow/69502810.cms>
- Mumo, Muthoki. 2017. "CAK Now Forces Safaricom to Cut the Cost of Mobile Banking." *Business Daily*, 16 March. <https://www.businessdailyafrica.com/corporate/CAK-forces-Safaricom-cut-cost-mobile-banking/539550-3852854-2nqj5y/index.html>
- Murgia, Madhumita. 2019. "WhatsApp's Push into Mobile Payments." *Financial Times*, 2 January. <https://www.ft.com/content/e045cdd2-0503-11e9-99df-6183d3002ee1>
- OECD (Organisation for Economic Co-operation and Development). 2014. "Challenges of International Co-Operation in Competition Law Enforcement." Paris: OECD. <https://www.oecd.org/competition/challenges-international-coop-competition-2014.htm>
- . 2007. "Competition and Barriers to Entry." Paris: OECD. <https://www.oecd.org/competition/mergers/37921908.pdf>
- . 2018. "Rethinking Antitrust Tools for Multi-Sided Platforms." Paris: OECD. <http://www.oecd.org/competition/rethinking-antitrust-tools-for-multi-sided-platforms.htm>
- Perlman, Leon. 2017. "Competition Aspects of Digital Financial Services." ITU-T Focus Group Technical Report, no. 03: 17–50.
- Phartiyal, Sankalp. 2019. "Explainer: What Are India's New Foreign Direct Investment Rules for e-Commerce?" *Reuters*, 31 January. <https://www.reuters.com/article/us-india-ecommerce-explainer/explainer-what-are-indias-new-foreign-direct-investment-rules-for-e-commerce-idUSKCN1PP1Y2>
- Pitofsky, Robert. 1997. "Vertical Restraints and Vertical Aspects of Mergers—A U.S. Perspective." Presented at 24th Annual Conference on International Antitrust Law and Policy, Fordham Corporate Law Institute, 16 October. <https://www.ftc.gov/public-statements/1997/10/vertical-restraints-and-vertical-aspects-mergers-us-perspective>
- Plaitakis, Ariadne, Bryan Church, and Thomas Kirk Wills. 2016. "Digital Payment Systems, Mobile Money Services and Agent Banking: Bangladesh, Nepal and Sri Lanka." Manila: Asian Development Bank, August. <https://www.adb.org/projects/documents/promoting-remittance-development-finance-tacr>
- Plaitakis, Ariadne. 2019a. "Modularization of DFS and Competition Issues." Competition and DFS Working Papers. Boston: BFA.
- Plaitakis, Ariadne. 2019b. "Digital Data and Competition Issues." Competition and DFS Working Papers. Boston: BFA.
- Roest, Joep. 2018. "2017 Global Findex: Behind the Numbers on Bangladesh." CGAP blog post, 24 July. <https://www.cgap.org/blog/2017-global-findex-behind-numbers-bangladesh>
- Sengupta, Caesar. 2017. "Introducing Tez—A Mobile Payments and Commerce App from Google, Made for India First." Google in Asia blog post, 18 September. <https://www.blog.google/around-the-globe/google-asia/introducing-tez/>
- Shambhavi, Anand. 2015. "Paytm, Jabong and Hotstar Tie up with Phone Makers in a Bid to Get Apps Embedded in Popular Smartphones." *The Economic Times*, 10 June. <https://economictimes.indiatimes.com/tech/hardware/paytm-jabong-and-hotstar-tie-up-with-phone-makers-in-a-bid-to-get-apps-embedded-in-popular-smartphones/articleshow/47607036.cms>
- Staschen, Stefan, and Patrick Meagher. 2018. "Basic Regulatory Enablers for Digital Financial Services." Focus Note. Washington, D.C.: CGAP.
- Stucke, Maurice E. 2013. "Is Competition Always Good?" *Journal of Antitrust Enforcement* 1 (1): 162–97.
- USTR (Office of the United States Trade Representative). 2018. "2018 Fact Sheet: Key Barriers to Digital Trade." Washington, D.C.: USTR. <https://ustr.gov/about-us/policy-offices/press-office/fact-sheets/2018/march/2018-fact-sheet-key-barriers-digital>
- World Bank. 2018. "Summary Outcomes of the Fourth Global Payment Systems Survey." Washington, D.C.: World Bank, September. <http://pubdocs.worldbank.org/en/591241545960780368/GPSS-4-Report-Final.pdf>
- Xinhua. 2019. "Kenya Bank to Boost WeChat Pay, Alipay Presence in Africa." Xinhuanet blog post, 25 March. [http://www.xinhuanet.com/english/2019-03/25/c\\_137922850.htm](http://www.xinhuanet.com/english/2019-03/25/c_137922850.htm)





