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DVARA

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OVERVIEW

Digitisation is changing our experience of finance. On one level, digitisation is creating a convergence of processes, platforms and financial infrastructure. Simultaneously, it is also driving divergence in the form of "unbundling"—of financial products, and of traditional financial institutions themselves. In India, these changes are taking place within the context of a digital divide, where many low-income consumers experience variable levels and quality of access to technology and finance. Against the backdrop of these innovations, several foundational questions for financial regulation arise including the question: where should the boundaries of regulation lie?

These proceedings document and synthesise the discussions that took place on 5 and 6 April 2019 at the 4th Dvara Research Conference on the theme of **Regulating Data-driven Finance**. The motivation for the Conference was to bring together experts working on frontier issues relating to the digitisation of finance in order to reflect on the impact of these developments on the experience of low-income individuals in India, and consider how regulation should evolve and respond to any challenges.

In this context, the objective of this Conference was to convene a close, expert group to reflect deeply on the **optimal regulatory stance for data-driven finance**. The discussions benefitted from the participation of a carefully curated group of Indian and international academicians, regulators, financial service providers and policymakers with expertise in various aspects of data-driven finance.

The Conference focussed on three core themes, (i) consumer data regulation (ii) consumer data infrastructure, and (iii) suitability for consumer data use and product design.

Each chapter of these conference proceedings records the discussions that took place as part of presentations, panel discussions and participants' engagement. Chapters conclude with Dvara Research's reflections and present areas for future research on each of these themes.

CONSUMER DATA REGULATION

The first session of the 4th Dvara Research Conference discussed the theme of 'Consumer Data Regulation'. The discussion was conducted under Chatham House rules; therefore, no attributions have been made. We recommend supplementing this reading with the primer[1] on *Consumer Data Regulation*.

1. Introduction

The first session of the 4th Dvara Research Conference focussed on questions that arise from the use of personal data in finance and relate to regulatory approaches to personal data protection. These concerns continue to have a heightened relevance given the uptick in the policy movement in India to arrive at an overarching framework for personal data protection in the country.

The collection and use of personal data by the government and private service providers in the course of service provision is becoming ubiquitous. For the financial sector, digitisation and the enhanced use of personal data has the potential of reducing the costs and extending the reach of formal finance to historically excluded segments. It also presents the potential to tailor financial services to users' specific needs. However, it simultaneously raises concerns about privacy, discrimination and exclusion due to data quality issues or digital service failures.

In this context, the opening session of the Conference began with a lead presentation on *A proposed data protection model for India*. The presenters framed the key issues regarding data protection in financial services and presented an overview of Dvara Research's conceptual model for data protection in India. The lead presentation was followed by a panel discussion on consumer data regulation with Dr Katharine Kemp (University of New South Wales (UNSW)) and Justice B.N. Srikrishna (Retired judge, Supreme Court of India), and moderated by Alok Mittal (Indifi Technologies and Digital Lenders Association of India).

2. Lead presentation: A proposed data protection model for India (by Dvara Research)

The opening presentation began by addressing the question of why data protection matters for financial services. It considered the fundamental question *should consumer data use in finance be regulated?*. To respond to this question, and to outline the emerging regulatory thinking on this issue, the presentation was divided into two sections:

[1] This primer was created to provide background to the participants and support the discussions of this session. It is accessible at https://www.dvara.com/blog/2019/04/02/primer-on-consumer-data-regulation/

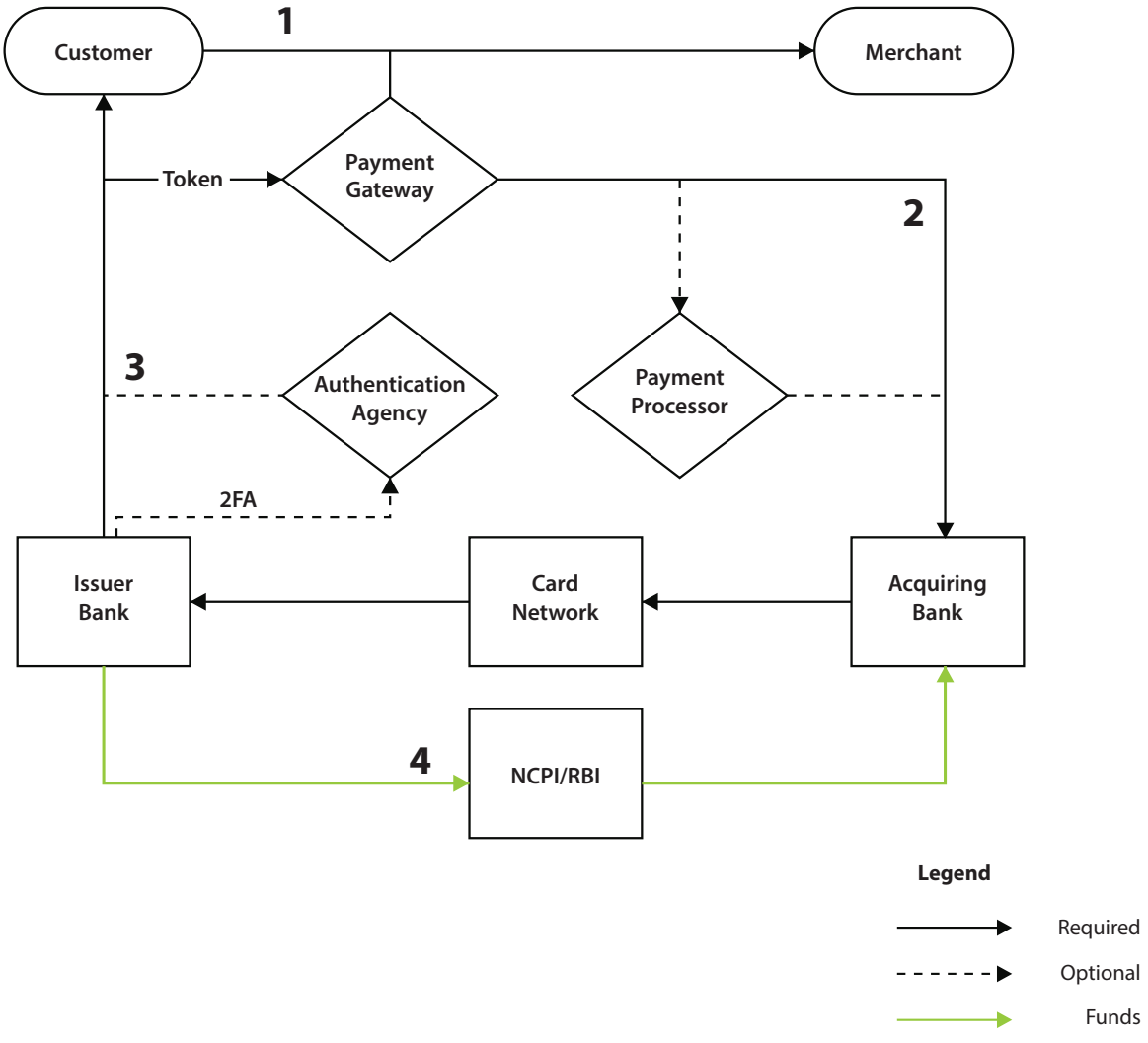
(i) an examination of the impact of enhanced use of personal data in the design and delivery of financial services, and

(ii) an overview of Dvara Research's model for regulating the use of personal data in the Indian economy.

2.1. Consumer data use in financial services

The presentation began by examining how the landscape of retail financial services had changed in India in the last decade. The presenters emphasised that two factors have reshaped the delivery of financial services, namely (i) increasing digitisation of the supply chain of financial services and (ii) an increased use of alternative personal information in finance. The example of a simple payment transaction between a customer and a merchant was used by the presenters to illustrate the number of actors involved, as well as the data flows that occur when a payment is made digitally.

Figure 1: Digital Payment Schematic (Card Not Present Transaction)



In an analogue world, a customer would merely hand over cash to a merchant to complete a transaction. Digital payments, however, have a larger number of players involved in the settlement of a transaction.

The schematic above gives a rough representation of the various segments of a digital payment transaction that is made remotely to a merchant or vendor using a card. In the first stage (represented in the schematic) when a customer seeks to use a card to initiate a payment to a merchant, the card details are transmitted by a Payment Gateway to the Acquiring Bank i.e. the merchant's bank (sometimes with the use of a Payment Processor). In the second stage, the Acquiring Bank passes the payment details to the Card Network. The Card Network then identifies and routes the card details to the Issuing Bank. In the third stage, the Issuing Bank (i.e. the customer's bank) receives and validates the card details (1st Factor Authentication). The Customer is asked to enter pre-set passwords, OTP, or other means of 2nd Factor Authentication, sometimes through an Authentication Agency. Finally, after all these data flows have been completed the funds are transferred from the Issuing Bank to the Acquiring Bank via payment networks.

This schematic illustrates transactions made remotely using a credit or debit card. It is just one of the many avenues and methods available to users to make digital payments. Direct account-to-account digital payments are now enabled in India through the Real Time Gross Settlement (RTGS[2]) system, the National Electronic Funds Transfer (NEFT[3]) system, the more frequently used peer to peer payments made over Immediate Payment Services (IMPS[4]), and the Unified Payments Interface (UPI[5]). These new digital systems co-exist with older forms of digital payments such as debit and credit cards which are also being increasingly used by consumers in India.

One of the most significant differences between a digital financial transaction and an analogue one revealed by this illustration is the immediate creation of data trails containing a consumer's

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[2] The acronym 'RTGS' stands for Real Time Gross Settlement, which can be explained as a system where there is continuous and real-time settlement of fund-transfers, individually on a transaction by transaction basis (without netting) (Reserve Bank of India, 2019).

[3] National Electronic Funds Transfer (NEFT) is a nation-wide payment system facilitating one-to-one funds transfer. Under this Scheme, individuals, firms and corporates can electronically transfer funds from any bank branch to any individual, firm or corporate (Reserve Bank of India, 2017b).

[4] Immediate Payments Services MPS provides instant, real time, interbank fund transfer that can be accessed on multiple channels like Mobile, Internet, ATM, SMS, Branch and USSD(*99#) (NPCI, 2020).

[5] Unified Payments Interface allows immediate money transfer through mobile device round the clock 24*7 and 365 days (NPCI, 2020).

personal financial information created by digital transactions. Typical digital transactions require consumer data to be shared among several entities that are embedded in different stages of the transaction. The creation of these data trails is valuable not only from a record-keeping perspective for the banking system, but also because it presents the opportunity to invert the information asymmetries that have traditionally acted as barriers to financial inclusion.

2.2. Potential for financial inclusion

Financial service providers are optimistic that the rich, digital footprints of consumers can remedy some of the old bottlenecks to advancing the reach of formal finance. Information asymmetry is one of the most salient barriers to the spread of formal finance (Stiglitz & Weiss, 1981). It especially constrains those individuals who either have no history of formal finance, or who may have little financial information by means of transaction history and relationship banking. It creates a vicious cycle where underserved and unserved segments are persistently unable to enter the fold of formal finance due to the lack of a deep, pre-existing association with formal finance. However, the use of non-financial, personal information can enable the sections of the population excluded from formal finance, to break away from this vicious cycle. Financial service providers and policy makers are increasingly looking to the use of alternative data in formal finance to increase the reach of suitable, cheaper financial solutions to those who have been hitherto excluded.

Emerging evidence from other jurisdictions shines a light on the potential of data-driven finance to further suitable financial inclusion. Studies conducted in the USA present early evidence that alternative-lenders[6] exhibit the potential to extend credit to those who were earlier unserved (FinRegLab, 2019; Jagtiani & Lemieux, 2018). This offers a promise of credit to those individuals who have no formal credit histories or records, also described as credit invisibles (Consumer Financial Protection Bureau, 2016). One study estimates that close to 350 million Indians did not have a formal credit history as of 2017 (PwC, 2017). This makes a strong case for expanding the access to finance through better use of personal data.

Additionally, better use of personal data such as data on behaviour, and demographic information can facilitate better product design to suit the needs and realities of consumers (Financial Stability Board, 2017; Kemp, 2017). Financial service providers are tapping into users' non-financial personal information to offer them personalised recommendations on improving their credit-worthiness, offer personalised advise on wealth management (The World Economic Forum, 2018), and offer flexible repayment schedules (Business Standard, 2019).

[6] Alternative lenders are defined as formal lenders that use personal, alternative data in addition to traditional financial information to assess borrowers' credit worthiness (Oliver Wyman, 2017).

There is significant potential for data-driven finance to enhance financial inclusion. Individuals, who were previously "invisible" to financial institutions due to a lack of formal financial and other records, can now potentially build digital footprints with the use of data to attest to their true credit worthiness. In this context, the lead presentation proceeded to focus on (i) new risks arising for consumers (ii) a regulatory position that helps to preserve the benefits of expanding data-driven financial services while preventing these new consumer risks.

2.3. New risks for consumers

While data-driven innovation in finance has the potential to extend the frontiers of financial services, regulators must concern themselves with new, unintended risks that accompany these new techniques of designing, delivering, and consuming financial services. Digitisation of financial services contributes to the use as well as generation of personal data. These rich digital footprints can create vulnerabilities for the consumers in two distinct ways, through (i) primary harms, and (ii) secondary harms.

(i) Primary harms: The presenters used the term *primary harms* to refer to harm to users' personal data, upon immediate breach, leak or unauthorised access. These correspond to the data-security risks associated with data collection and aggregation. There is a growing consensus that cyber security threats to personal information held with service providers is one of the most salient risks facing data-driven finance, with the Basel Committee on Banking Supervision elevating it to the level of a potential systemic concern (Basel Committee on Banking Supervision, 2018) for the financial ecosystem.

(ii) Secondary harms: The presenters used the term *secondary harms* to include harms arising from the misuse of users' personal data, resulting in further detriment to users. Data analytics can infer sensitive information from seemingly non-personal information, potentially affecting the suitability of financial services offered to them. In 2014, the Federal Trade Commission[7] conducted an in-depth enquiry into business models, and practices of nine data-brokers in the USA (Federal Trade Commission, 2014). The Report found that data brokers used advanced analytics to hyper-segment users based on sensitive parameters such as ethnicity, health-status, educational attainment, and income levels. It highlighted a particular segment of the 'financially challenged', which includes consumers "[i]n the prime working years of their lives, . . . including many single parents, struggl[ing] with some of the lowest incomes and little accumulation of wealth."

[7] The Federal Trade Commission (FTC) is a bipartisan federal agency that was created on 26 September 1914 when the Federal Trade Commission Act was converted into law. The mission of the FTC is to protect consumers and promote competition (FTC, n.d.).

> Such detailed segmentation could shift the power balance between the provider and the consumer, potentially giving the provider an opportunity to tap into the consumers' vulnerabilities. It could lead to exclusion, discrimination, predatory targeting of consumers and exposure of users to unsuitable financial products.

An understanding of these harms is still being formed in both international and Indian academic thinking, as society takes stock of the implications of digitisation and the use of data-driven technologies. Leading scholars around the world continue to examine the harms that can arise from an individuals' personal information being compromised. Academics Daniel Solove and Danielle Citron have considered data-breach harms—and even the risk of harm—as intangible and invisible harms, with significant implications for consumers (Solove & Citron, 2016). The lack of visibility of the harm or its anticipation can also lead to anxiety or emotional distress. These harms can also manifest as physical injury, mental injury or economic harm to an individual (Solove & Citron, 2016). Ryan Calo takes the existing conceptualisation of privacy harms (which states that it is a negative consequence of a privacy violation), and further classifies privacy harm as a unique type of injury with its own set of characteristics (Calo, 2011). He categorises privacy harms as subjective and objective. Subjective privacy harms occur when there is a perception of unwanted observation, resulting in anxiety and embarrassment. Objective privacy harms are caused by an unanticipated use of data, against the individual whose data it is (Calo, 2011).

In this context, even as academic understanding continues to evolve, it falls to the regulator to design appropriate regulatory responses. Regulation must strive to preserve and pronounce the benefits of using personal data in finance, especially for the underserved, and prevent and arrest any adverse implications it may have for consumers.

2.4. A positive vision for consumer data protection

Taking stock of the status quo, the presenters noted that individuals in India currently do not have meaningful protections from the new risks and harms they face in an increasingly digitised world. As Indians rapidly adopt and use technology, concerns regarding the safety and security of their personal information are also increasing. Some of these concerns were voiced in the responses collected by a deep qualitative study conducted in 2017 by Dvara Research, along with CGAP and Dalberg. The qualitative study sought to understand how individuals from low income backgrounds perceived and cared for their privacy (CGAP, Dalberg & Dvara Research, 2017). Several respondents expressed a lack of trust towards digital transactions because they, or someone they knew, had experienced fraud on such platforms (CGAP, Dalberg & Dvara Research, 2017). Trust was a central factor to information sharing for many of those interviewed, as were guarantees of safety of their information and a demand for clearer explanations of the benefits gained as a result of sharing their data.

These concerns are a call to action for financial service providers who seek to increase the confidence, security, and trust of their consumers in digital finance. Estimates suggest that around 400 million Indians do not have a formal credit history, although as many as 300 million of these Indians have a bank account (Economic Times, 2019a). For digital financial service providers, they represent the next frontier of the market. For many of them, their first experience of finance will be mediated though a digital, data-driven interface and service provider. Therefore, it is important to ensure that this experience helps individuals overcome any sense of mistrust they might feel when transacting over digital interfaces. Failing to do so risks turning them away not just from digital finance, but from formal finance as well. The regulatory imperatives to improve consumer financial protection and consumer data protection now stand amplified due to the extensive use of data and technology.

2.5. The Dvara Research model for data protection

Dvara Research's model for data protection in India recognises the limitations of a consent-driven model of data protection[8]. To address these limitations, this model of data protection rests on three distinct pillars, in addition to users' consent:

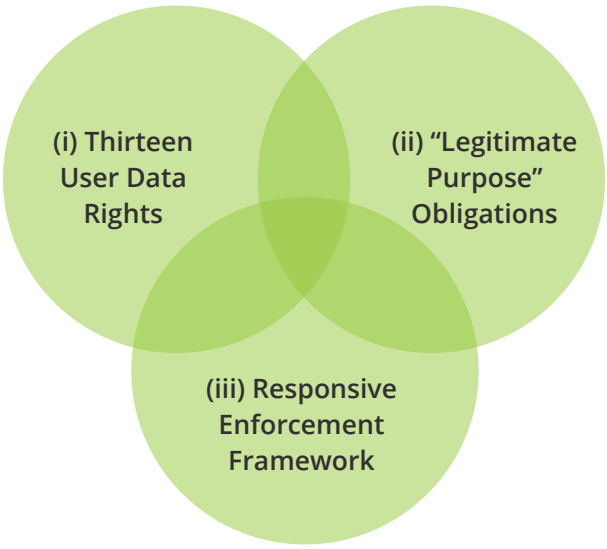
(i) a suite of thirteen user data rights that are guaranteed to all individuals, and are enforceable despite users consenting to the processing of their data,

(ii) a single test of *Legitimate Purpose* for all providers, to help them determine if their processing activity is permissible, and

(iii) an enforcement framework built on the principles of responsive regulation and risk-based supervision, to enable the proposed data protection authority to effectively implement a new data protection regime.

[8] The limitations of a data protection regime relying exclusively on users' consent are well established. Social science research shows that individuals are influenced by numerous cognitive biases, restricting them from weighing the costs and benefits associated with sharing their personal information with different providers. This is worsened by the sheer number of providers who seek users' consent on a daily basis, owing to the rapid digitisation of our societies. Together, they can overwhelm consumers and force them into making choices despite rampant information asymmetry and having little understanding about the consequences of their choices (Solove, 2012).

Figure 2: Key components of Dvara Research's model for data protection



Together these components can create an effective data protection regime that protects the users without compromising their autonomy.

The test of Legitimate Purpose can offer guidance to providers on the appropriate way of processing data, throughout the lifecycle of data. It offers a unique test that providers can apply to different stages of their data processing, from collection to deletion. When applied well, the test is flexible enough to lend itself to the unique business models of providers and preserve users' fundamental rights.

Further, the proposed regulatory framework encourages transparency on the part of the regulator. It emphasises on improving the certainty of the regulatory regime and credibility of the regulator which together enhance business stability. A principled-approach to enforcement, complemented with a risk-based approach to supervision ensures that the regulators' capacity is used judiciously, and regulation can meet its objectives effectively. The following section discusses this model in greater detail.

(i) User data rights: Users' rights, spread across the lifecycle of data processing, are an integral component of the data protection model proposed by Dvara Research (Dvara Research, 2018b). In a marked departure from the status-quo, these rights afford protection to users by safeguarding their interests through the course of collection, usage, deletion of their personal data, and even providing them the means to correct it. These rights also give rise to corresponding obligations for providers. Some of these obligations will be set by the horizontal, economy-wide, data protection law that covers all entities in India. Other obligations will be set by sectoral regulators guided by the principle of the respective user data right set out in the horizontal data protection law. These obligations reduce ambiguities for providers and help them ensure that their practices are consistent with the law.

The thirteen user-data rights are as shown in Table 1. They are also set out in greater detail in the draft 'Dvara Data Protection Bill' (Dvara Research, 2018c), which is a mock legal framework that translates the principles of data protection into draft legal language.

Table 1: Thirteen user data rights set out in the Data Protection Bill, 2018 by Dvara Research.

User right	Stage of Data lifecycle
Right against harm	Prior to collection
Right to informational privacy	
Right to consent for collection of personal data	At collection
Right to processing for legitimate purpose only	
Right to a clear, plain and understandable privacy notice	
Right to adequate data security	Post collection
Right against disclosure of personal data	
Right to access personal data	
Right to correction of personal data	
Right to data portability	
Rights related to automated decision making	
Right to privacy by design	
Right to breach notification	

(ii) The test of Legitimate Purpose for the providers: This test is designed to be applied by all kinds of providers at any stage of the data lifecycle to determine the legitimacy of their processing of users' personal data. Providers and the regulator can use it to assess whether it is appropriate to access and process personal data in a given situation. It is context-agnostic, i.e. it can be used by all types of providers. It is applicable throughout the lifecycle of the data. This allows providers to ensure that at each stage of the processing of data, users' right to privacy is upheld and that their data is used responsibly.

The Legitimate Purpose test comprises a three-part assessment. Any processing activity which satisfies the following three conditions is recognised to have a legitimate purpose for processing:

(a) Lawful: The test requires the use of personal data by the provider to be lawful i.e. not in contravention of any of the existing laws, statutes, and regulations,

(b) Necessary: The processing of personal data must be necessary to offer the proposed function, service or product. It encourages providers to avail of the least intrusive processing measures available; and

(c) Proportionate: Even where personal data is lawfully obtained and necessary for providing a service, providers need to take note of any prejudicial effects the processing can have on users and balance these against the providers' interests in processing the users' data. Further, the test proposes that if such processing overrides the interests or the right of freedom of users it would not be proportionate (Dvara Research, 2018c).

Providers can use this test to assess if their use of personal data is lawful, necessary and proportionate – and thereby ensure that data-driven service provision can continue in a way that does not harm users and their interests.

(iii) Enforcement framework built on responsive regulation and risk-based supervision: Dvara Research's model of data protection seeks to create a regulatory regime which utilises India's constrained state capacity effectively. The model seeks to deploy regulatory tools that can help the regulator identify vulnerabilities in the system before they translate into systemic risks and tangible harms. To achieve this objective, the model envisages a two-pronged approach:

(a) Enforcement toolkit built on the principles of responsive regulation: The responsive regulation approach is a well-developed academic theory (Braithwaite & Ayres, 1992), and a well-utilised regulatory practice (Ivec & Braithwaite, 2015). Responsive regulation provides a hierarchy of enforcement tools to a regulator for escalation of the issue. It encourages regulators to deploy soft law instruments such as *seeking information (on a speculated violation) from the providers* and issuing *guidance to providers.* These instruments do not impose heavy sanctions on the providers early on and allow them to correct their processing activities. However, in the framework continued contraventions or more serious contraventions from a provider attract severe punitive measures from the regulator. The magnitude of escalation, and the punitive effect of the regulatory response will depend on the nature of default. The regulator's choice of the sanction will depend on the context, the nature of the default, and the past behaviour of the faulting entity, among other factors.

For responsive regulation to be effective, it is crucial that the regulator is transparent about factors that attract escalation in regulatory sanctions. By setting out the rules for escalation, the regulator gains credibility, which in turn increases compliance with

its directions. The effectiveness of the model also depends on the regulators' ability to identify vulnerabilities in the system well before they evolve into systemic harms. This requires the regulator to have multiple, and active feedback loops to ensure that concerns from the users reach the regulator in a timely and consistent fashion. In the Dvara Data Protection Bill, the regulator is encouraged to periodically and frequently analyse the grievances received from consumers to bring to light any emerging system-wide vulnerability (Dvara Research, 2018c). This approach is inspired from the USA's Consumer Financial Protection Bureau (CFPB). It analyses its complaints database to identify surges in specific complaint types, patterns across geographic areas, companies, and consumer demographics. It uses these insights to prioritise its supervision and enforcement functions, often allowing it to detect and address minor issues before they aggravate into major problems (CFPB, 2016; Dvara Research, 2018a). In addition to grievance reports, the model also encourages the regulator to avail of media reports to generate intelligence on providers' activities.

Building on the theory of responsive regulation, and analysing the enforcement instruments employed by other regulators in India and data protection regulators in other jurisdictions, Dvara's model for data protection proposes the following pyramid of enforcement actions:

Figure 3: Regulatory pyramid depicting gradual escalation through enforcement actions (Raghavan, Chugh, & Kumar, 2019).

Regulatory pyramid depicting gradual escalation through enforcement actions

The pyramid arranges the enforcement tools that could be made available to a future regulator in increasing order of escalation.

(b) Risk based supervision of entities: Dvara Research's model for data protection also emphasises the use of a risk-based supervision framework to focus supervisory attention effectively across a vast regulatory space. This framework proposes the use of qualitative supervisory judgment supported by a quantitative classification matrix to assist a future regulator to identify entities that potentially pose more risk (to individuals and the system as a whole) when the personal data they hold is compromised. Focussing on the systemic importance of entities resolves two pressing concerns of a new authority (i) where to begin regulating, and (ii) how to allocate precious regulatory capacity.

The theoretical underpinnings of the model draws heavily from the nature of post-crisis financial regulation. The Subprime Crisis of 2008 revealed the disproportionate systemic risk generated by large, interconnected financial institutions (Restoy, 2017). It also exposed the limitations of the too big to fail approach and justified directing greater regulatory attention toward systemically important entities (Ceccheti, 2011; Raghavan, Chugh, & Kumar, 2019).

Building on this intuition, the proposed framework uses the following two components to identify systemically important entities:
1. A qualitative component accounting for supervisory judgement
2. A quantitative component using multiple indicator-based measurement to arrive at a risk- classification matrix.

The regulator's qualitative judgment is aided by a quantitative matrix of indicators that approximates the risks posed by entities. The quantitative assessment is designed only to support the regulator's qualitative judgment since no measurement index can perfectly capture the data risks posed by entities. These two components of the risk-based supervision framework are set out below:

> **1. Supervisory Judgement:** The qualitative supervisory judgment is the primary factor for initiating enforcement actions based on the regulator's assessment of risk posed to the personal data by an entity. Effective data protection enforcement agencies, globally, avail of several channels such as media reports, their own complaints database to gather information about providers' data practices and proactively launch enforcement actions (FTC, 2018.; FTC, n.d.). These authorities also use the information appropriately to keep pace with new technologies and uses of personal data, to enforce the timeless guarantees of a data protection regime. Regulators' qualitative judgment finetuned by years of observation and analysis is an integral component of effective supervision of the data protection regime (Raghavan, Chugh, & Kumar, 2019).

2. Risk-based Classification Matrix: The quantitative component of this methodology consists of a measurement framework designed to identify *systemically important data entities* using a set of objective and measurable indicators. This approach is inspired by the methodology proposed by the Basel Committee on Banking Supervision for assessing systemic importance of Global Systemically Important Banks (G-SIBs) (Bank for International Settlements, 2011). This quantitative indicator-based classification matrix is used to provide a risk score to all entities. The entities' risk scores correspond to the impact they are likely to have on individuals and the system as-a-whole, if they suffer an occurrence of failure. Occurrence of failure is defined as the compromise of personal data collected, stored or shared by an entity due to unauthorised use or breach of such data (Raghavan, Chugh, & Kumar, 2019).

Methodologically, the matrix divides each of these two criteria into two indicators and each indicator is measured using a set of variables. To measure the systemic implications of the occurrence of failure in entities handling personal data of users, the methodology focuses on two broad criteria- Connectedness and Concentration.

- Connectedness: Connectedness is a measure of the number of entities which will get affected due to the occurrence of a failure in the defaulting entity, and
- Concentration: Concentration assesses the number of individuals that will get impacted by the occurrence of a failure, given the size of the organisation.

Table 2 provides a snapshot of the criteria and indicators that make up this matrix, which are then unpacked and explained in further detail.

Table 2: Indicator-based measurement for identifying systematically important data-entities

Criteria	Weight	Indicator	Variable	Sub-weight
Connectedness	50%	Interconnectedness	Number of inward connections	10%
			Number of outward connections	10%
			Whether entity is part of a large group structure	10%
			Whether entity has centralised data storage	10%
		Cross-jurisdictional Activity	Transfers with countries without data protection law	10%
Concentration	50%	Size	Count of data records with personal data processed/accessed in last year	20%
			Revenue of firm in the last financial year	20%
			Revenue of firm in the last financial year	5%
		Substitutability	Number of entities performing similar functions	5%

The table above presents the indicators used to design the risk-classification matrix for identifying *systemically important data entities*. The objective is to prioritise the supervision of those entities, where a lapse in protecting users' data could affect the user and the functioning of the complete system.

Both criteria, together, gauge the scale of impact an entity may have in case of a data protection failure.

This matrix scores entities based on the impact that a failure on their part will have on the consumers and the system. Entities that can affect the individuals and the system significantly are awarded a higher score in this matrix, and are identified as *high-risk* entities, while those with

a lower impact are classified as *medium-risk*, and the entities with the lowest impact are identified as *low-risk*. This matrix provides a risk score which may be iterated and finetuned when the regulator gains more information about the market and the entities within it.

However, the possibility exists that the matrix, and the risk score it provides may be manipulated by entities or may not be able to fully capture the nuances that should guide a data protection regime. Therefore, it is reiterated that this quantitative approach should complement and support the qualitative judgement of a regulator, rather than pre-empt it.

3. Discussion

The lead presentation was followed by audience engagement and panel discussion with Dr Katharine Kemp (UNSW) and Justice B.N. Srikrishna (Retired Judge, Supreme Court of India), and moderated by Alok Mittal (Indifi Technologies and Digital Lenders Association of India). These are summarised below.

3.1. Regulator's response to innovation in finance

The discussion among participants focused on the appropriate regulatory response to the burgeoning technological innovation in finance. The group was divided in its assessments of the merits of innovations in finance, and the regulatory treatment it must attract. They discussed a variety of perspectives when reconciling regulatory objectives with the objectives of technological innovation.

One group advocated for not regulating innovations until they have matured. This was rooted in the argument that regulation during the early stages of a business can stifle innovation and obstruct the path of financial inclusion through technological innovation. The counter point of view emphasised that innovation was not an unadulterated good, and that regulators must be attentive to the potential harms that it may cause. However, it was also noted that the function of regulation was not to hinder innovation but to ensure responsible innovation in a manner that does not cause harms to consumers, especially to those who may be first-time digital users.

To overcome this dichotomy that pits innovation against regulation, one clear way forward was to ensure alignment between legal and regulatory frameworks. This could be realised by designing technology in a manner that upholds the legal promises, and therefore helps create better market and consumer outcomes. By aligning technological and legal guarantees, the common objectives of creating a stronger, more stable, and inclusive financial system appear more achievable.

3.2. Data-driven Finance: Inclusion or exclusion?

The use of personal data in finance can potentially widen the reach of formal finance to include those who have not been able to avail of traditional formal financial services. The use of personal data in new and innovative ways helps identify, verify, and appraise financial needs and abilities of potential consumers and enable financial inclusion. For instance, mobile usage, geo-location, and social media data used in alternative credit scoring is premised on the idea that such information may aid in the provision of credit to those individuals who were previously excluded by traditional channels, mainly due to a lack of data that could assess their credit-worthiness.

Evidence pointing towards the benefits of using personal data in finance is still emerging and mixed. Studies conducted in the USA present early evidence to suggest that alternative-lenders[9] exhibit the potential to extend credit to those who were earlier unserved (FinRegLab, 2019; Jagtiani & Lemieux, 2018). On the other hand, emerging research also shows that the use of existing datasets of personal and related historical information for training algorithmic decision engines can exclude some groups, even when the computing process is fair and well-intentioned (Zliobaite, 2015). This can occur due to poor quality of data or inaccuracy of the data used about individuals, leading to the creation of incorrect inferences. In automated systems, algorithmic discrimination can also occur due to the discrimination that is built into historical data that designers of the algorithm may not recognise. For instance, women may be under-represented in historical data sets of borrowers due to their hitherto poor access to formal finance. This may not reflect the creditworthiness of an applicant for a loan who happens to be a woman. In retrospect this concern is rather ominous. As was seen towards the end of 2019, Apple's newly offered credit card was found to discriminate against women even when their credit score was comparable to, or in one particular case, better than their male counterparts (The Independent, 2019).

In the USA, there are legislations such as the Fair Credit Reporting Act (FCRA) that protect consumers from inaccurate information in their credit files and prevents unfavourable outcomes with regards to the same. It also protects consumers from discrimination based on protected characteristics such as gender, and race. Similarly, the Equal Credit Opportunity Act (ECOA) in the USA also prohibits credit discrimination on the basis of protected characteristics such as race, religion, gender, marital status etc (Federal Trade Commission, 2018). There is a lack of equivalent legislations in India that expressly protect consumers from discrimination in the credit decisioning process and mandate fair lending.

[9] Alternative lending takes place over online platforms that use technology to bring together borrowers, who are generally underserved by traditional lending institutions and loan investors who seek attractive yield-generating investments. Alternative lending platforms seek to streamline the traditional lending process by bringing borrowers and loan investors together, and by using technology-enabled models to rapidly underwrite borrower credit risk to determine appropriate loan pricing, terms and amounts offered to borrowers (Michlitsch, 2019).

This mixed evidence resulted in a deeper discussion amongst participants about the thin line between personalisation of financial services, and discrimination based on the use of personal data. Many of the requirements for equality and non-discrimination are identified in the Constitution of India. It guarantees people equality before law, and prohibits discrimination on grounds of religion, race, caste, sex or place of birth (see Part III (Fundamental Rights) of the Constitution of India). However, these are not justiciable against private financial service providers. As such, there are some open-ended questions regarding discrimination, and exclusion due to the absence of specific regulatory or legislative guidance for the processing of personal information in financial services. In the Indian context, big data analytics and predictive tools have the potential to reinforce the structural weakness experienced by historically vulnerable groups such as lower-caste individuals or religious minorities (Favaretto, De Clercq, & Bernice Simone, 2019). Considering their weaker historical record of property ownership (and by extension credit worthiness) predictive analytics can continue to limit the supply of finance available to them, instead of correcting this trend. This could prove to be a setback to the promise of financial inclusion extended by data-driven finance. The participants were divided on how these constitutional objectives could be reconciled with the practices of private financial service providers, especially in the time of widespread use of big data and analytics.

(i) The impact of automated processes in finance: The discussions also considered the impact of automated decision-making in data-driven finance. Automated decision engines used by providers have helped in improving the experience of financial services for consumers. They have reduced turnaround times on credit decisions and helped segment and serve consumers appropriate products. However, data quality issues and inaccurate inferences from such automated systems are hard to detect and could create adverse outcomes for individuals if undetected.

Given this dilemma, participants discussed safeguards and approaches to improve the fairness and accountability of automated decision-making systems. One approach suggested at the level of the algorithm, was to monitor or audit the outcomes of the algorithm at work. If the analysis of the decisions made by the algorithm suggests that it causes harm, then the entity must work to reduce the margin of harm that is being caused (Matthan, Venkataraman, & Patri, 2018).

Another perspective was that credit decisions, by nature, are exclusionary. Based on this assumption, it would be unfair to bring regulations that interfered with the financial providers' ability to take decisions. However, this was countered with public policy motivations to avoid unfair discrimination. A distinction was drawn between discernment i.e. discerning the credit worthiness of an individual, and discrimination i.e. exclusion or harmfully targeting an individual merely because they were a member of a group with a particular characteristic.

One approach to data protection has been the categorisation of certain types of personal information as "sensitive personal information". This category of information merits higher levels of protection and its use in decision-making is closely monitored. This provides some safeguards against unlawful discrimination. This categorisation is generally defined by national legislations and varies based on differing cultural contexts and histories. However, a ban on using protected characteristics may not always be a meaningful policy stance. For instance, sometimes adding protected characteristics may help balance the training dataset, and lead to better outcomes, and ensure that implicit discrimination or discrimination by proxy does not occur (Zliobaite, 2015).

The participants also discussed the possibility of the problem of discrimination being solved in a competitive market. If the market for providing financial services to the historically favoured individuals or those with rich digital footprints is saturated, the competitive market mechanism would then push new market entrants towards the underserved groups of individuals. Consequently, all consumer segments of the market would be served. However, this approach risks creating an artificial hierarchy in the servicing of consumers and argues that the financially excluded must wait for the market to reach them. This does not appear to be an improvement over the status quo. Moreover, some participants worried that despite being a good credit user, an individual may never be able to participate in the credit market as an equal as a result of belonging to a historically vulnerable group.

(ii) The Explainability of Algorithms: The attributes of 'explainability' and 'interpretability' of algorithms are emerging as crucial policy concerns in the regulation of algorithms. Interpretability concerns itself with the extent to which a cause and effect can be observed within a system. Or, to put it another way, it is the extent to which providers are able to predict what is going to happen, given a change in input or algorithmic parameters (KD Nuggets, 2020). Explainability, meanwhile, is the extent to which the internal workings of a machine or deep learning system can be explained in layman terms (KD Nuggets, 2020).

While explainable algorithms will always be interpretable, the reverse may not be true. This distinction is important to consider as new financial services providers move towards advanced predictive data analytics for their operations. Increasingly, jurisdictions are looking at enforcing explainability of algorithms as a tool to prevent discriminatory decision-making (The Royal Society, 2018).

It is in the interest of developers to improve the interpretability of algorithms, i.e., how the algorithm will behave given a set of input variables. The black box nature of the proprietary algorithms used by providers, i.e. the inability of a user or the developer to understand how particular results have been generated can deter them from explaining causes of potential discrimination.

Many jurisdictions are considering the inclusion of explainability of algorithmic decisions as a prerequisite to help combat unfair, or inaccurate results regarding the creditworthiness of individuals. For instance, the ECOA in the USA provides that no individual can be denied an opportunity to credit based on their race, colour, religion, national origin, sex, marital status or age. The scope of the ECOA extends to the explanation of lending decisions to individuals with respect to both traditional methods of assessment by credit officers, as well as statistically developed techniques such as credit scoring (Consumer Financial Protection Bureau, 2013). Similarly, the EU GDPR upholds a *right to explanation*, which mandates that entities that deploy algorithms to make decisions about EU citizens should provide citizens "meaningful information about the logic involved" in automated decision-making systems (European Parliament and the Council of the European Union, 2016; Vogl, Farhangi, & Casey, 2018). However, there are concerns associated with this regulatory approach. The most pressing one being the lack of regulatory capacity to undertake such supervision. Others worried that explainability obligations will stifle innovations in data mining and experimentation with different data variables.

An alternative to achieve explainability is to have access to the input variables of algorithms that are used by providers. But the participants noted that because algorithms are often treated as the intellectual properties of providers, it may not be feasible to give a regulator access to these input variables. Another suggestion was to have human 'inspectors' as part of the process to improve explainability of algorithmic decisions. This too was flagged as an inadequate measure as it would place the onus of explaining decisions on the subjective capacity of one individual, which may have limited effect on how entities designed algorithms.

3.3. Bridging the gap between regulation and technological advancement

Regulatory design for future data protection must incorporate an effective enforcement regime that incentivises responsible innovation and creates accountability for harms to consumers as a result of such innovations. At the same time, wrongful or irresponsible behaviour must be disincentivised. However, in the case of India's regulatory stance, it was seen that there was a tendency to disincentivise entire activities themselves rather than malpractices specifically. Further, the need to reconcile the accountability of the individual and the institutions was emphasised. In this regard, the Senior Managers Regime (SMR) of the UK was mentioned as a useful accountability model. The SMR is part of UK's prudential financial regulatory framework (Bank of England, 2020). It was created to increase the accountability of the senior management of firms in the financial industry. Under the SMR, senior management may delegate tasks to the lower staff but accountability for oversight, and the final results of actions taken could not be delegated, and remained with senior managers (Bank of England, 2016). It was suggested that a similar accountability framework could be considered for a data protection regime in the financial sector in India.

An overarching concern that was voiced was the anxiety about over-regulation of the use of personal information at a very early stage in the technology industry's growth. Data protection and privacy regimes across jurisdictions emerged based on the organic trajectory of events, and cultural movements that occurred there. The concern was that simply picking regulatory designs from other jurisdictions and transposing them to the Indian context was unwise and not a robust approach. Providing rights to individuals with respect to their data at such an early stage of the development of privacy rights was considered by some participants as too absolutist an approach to regulation. Additionally, providing rights to users at every stage of the data cycle was also considered too intrusive in a technology landscape that was still evolving. However, given that India's experience with technology deployment in governance and in private sector is now widespread and long-standing, the question arose as to when the market will be considered "mature" and how long the posture of regulatory forbearance was appropriate.

Lastly, participants discussed how regulation could address the role of BigTech companies in relation to users' privacy, and data protections. Large technology companies are involved across multiple sectors, including finance. It is difficult to predict how the data collected by such providers across all these sectors would be processed and used. Sector-specific data protection laws may be ineffective or insufficient given the cross-sectoral flow of data that may occur within BigTech companies.

3.4. Accountability when processing personal data

A persistent concern about the current data and privacy protection measures used by providers is the dominance of the notice-and-consent model. The notice-and-consent model relies on providing consumers disclaimers or legal notices which are often verbose, and unclear regarding the data being sought from consumers, and for what it will be used. Consumers almost immediately consent to sharing their data, despite incomplete understanding of the notice, to avoid denial of service. The participants at the conference discussed the insufficiencies of this model from a consumer protection perspective. The inadequacies of notice-and-consent are well-established in literature, and this has also been acknowledged in the final report of the Committee of Experts under the Chairmanship of Justice B.N. Srikrishna (A Free and Fair Digital Economy, 2018).

(i) The limitations of consent: There was a broad agreement among the participants that excessive reliance on consent as grounds for processing personal data places an unfair burden on consumers. Notices, in the form of terms & conditions documents or privacy policies, are often complex and cumbersome. Research shows that there are several behavioural biases, and cognitive limitations that operate on an individuals' decision-making

ability about her personal data (Dvara Research, 2018; Solove, 2013). Separately, the take-it-or-leave-it approach of most privacy notices do not leave users with much choice with regards to giving consent for their data collection and processing (Barocas & Nissenbaum, 2009).

(ii) Alternative approaches to enforce accountability in data practices: Alternatives to the notice-and-consent model were also discussed in detail. Some of the suggestions were:

(a) Applying product liability for privacy notices: The report by the Committee of Experts under the Chairmanship of Justice B.N. Srikrishna presented the idea of applying product liability to privacy notices (A Free and Fair Digital Economy, 2018). The report suggested treating online privacy notices as 'objects' purchased by consumers. Incorporating product liability in online privacy notices places the liability of potential harm to the consumers on the providers of the notices.

(b) Using the law on unfair contract terms regarding privacy disclosures: In Australia, the Australian Competition & Consumer Commission (ACCC) views privacy notices as contracts served by one party (usually the digital platform in question) to the consumers or users of such a service. The ACCC has found that unilateral variation of clauses (which are common in digital platforms' privacy policies) do not accurately communicate to a consumer the repercussions of agreeing to such a privacy notice. Unilateral variation refers to the ability of one party to modify the terms of a contract in an unconstrained manner. These modifications may have significant impacts on the other party (Australian Competition & Consumer Commission, 2016). In the Preliminary Report of the Digital Platforms Inquiry, the ACCC recommended that contract terms in privacy notices should be checked for unfairness (Australian Competition & Consumer Commission, 2018b). Under the Australian Competition and Consumer Act 2010, unfair contract terms are not simply declared void, but are rendered illegal leading to pecuniary penalties (Australian Competition & Consumer Commission, 2020). The civil pecuniary penalties can be as high as AUD 10 million or 10% of the firm's national turnover. This is to effectively deter digital platforms from leveraging their bargaining power over consumers (Australian Competition & Consumer Commission, 2018b). This marked departure from simply rendering unfair terms void because the measure is considered ineffective in redressing the harms that a consumer may face due to unauthorised processing of their personal data. Monetary compensation to consumers may go some way in redressing the harms that may have been caused.

(c) Employing competition law to address abuse of dominance by firms aggregating personal data: In Germany, the Bundeskartellamt prohibited Facebook from combining user data from different sources pursuant to section 19(1) of the German Competition Act (GWB) that deals with abuse of dominant position (Bundeskartellamt, 2019b). Bundeskartellamt's preliminary findings were that Facebook did indeed have a dominant market position among the social media platforms available in Germany. While several smaller social and professional network services existed, they were often treated as complementary to Facebook and not as its substitute. Due to this, Facebook had superior access to the personal data of its users which could then be used for product design as well as monetisation of services. It was also found that Facebook was collecting the personal data of its users not just on their own website, but also on third party interfaces. The Bundeskartellamt also found that there was no effective consent from the users pursuant to Article 6(1)(a) of the GDPR which requires that "the data subject has given consent to the processing of his or her personal data for one or more specific purposes". Users were found to simply consent to Facebook's terms and conditions to conclude the contract and use the service (Bundeskartellamt, 2019a).

It was observed that the section of GWB under which Facebook was prosecuted by the Bundeskartellamt is comparable to section 4 of the Competition Act, 2002 in India. This section of the act prohibits the abuse of dominant position by any market player (Competition Commission of India, 2003). While this lens of exploitation of dominant position has not been used by the Competition Commission of India to curb unfair practices by data-processing entities, in light of the global experience it is not impossible to conceive of such action in the future.

The use of consumer data has immense opportunities for financial inclusion and can help create avenues for access to formal finance where traditional financial institutions have failed. It also poses new policy questions for financial regulators on issues they have not had to contend with previously. Moreover, it also requires them to build regulatory capacity that matches the technological prowess of the providers. Financial service providers are torn between fears of over-regulation, and a regulatory vacuum. They worry over-regulation could stifle innovations, whereas an ambiguous regulatory environment could create unruly business uncertainty for them, which is also not conducive for progress.

The release of the draft Personal Data Protection Bill (draft PDP Bill), 2018 was an encouraging signal from the Government of India that it recognises the importance of protecting users' data. Ideally, the regulation of data protection will be complemented by a strong Data Protection

Authority (DPA) that is equipped with suitable enforcement tools to engage with providers meaningfully, ensure compliance with the data protection regime without introducing business uncertainty, and afford robust rights to consumers.

In the absence of a data protection regime, digital financial providers and their consumers operate in a regulatory vacuum. The rights of consumers and obligations of providers have yet to be set out, creating significant uncertainties for both. Providers are struggling to identify actions that are permissible for them and the conduct that is expected of them. Consumers still do not have a framework that will protect their personal data despite its increasing use and nearly three years after the Supreme Court upheld the right to privacy as a fundamental right.

4. Concluding Reflections

- The dichotomy between innovation and regulation is ill-conceived and creates artificial conflicts between the providers and the regulators. The regulator's objectives are to preserve and pronounce the positive effects of data-driven finance while arresting and preventing adverse implications to consumers' welfare. To achieve these objectives, regulators must rely on and actively encourage, stable and competitive markets having multiple providers. This regulatory objective resonates with the providers' need for business certainty, ease of doing business, and the ability to expand to serve new consumers. Neither the regulator nor the providers or consumers stand to gain from over-regulation, which can stifle innovation and limit access to finance. All stakeholders will benefit from optimal regulation of data-driven financial services that guides providers on reconciling their business objectives with users' rights and interests, leading to an expansion of suitable formal finance.

- Policy concerns arise from providers' inability to explain their decision-making process. This inability to explain algorithmic decisions reduces the regulators' trust in these programs and increases the fear of discrimination against vulnerable groups. Explainability on the part of providers is, therefore, a pressing policy objective for the regulator.

- Regulators will have to build the capacity, and technological skill set required to regulate data-driven finance. The use of enforcement instruments from analogue finance may increase the compliance cost of regulation for providers, and still not satisfy the regulatory objectives. Regulators will have to develop technological know-how to comprehend the providers' use of data, and their algorithms and oversee their operations.

- Proportionality of regulatory responses can reconcile the anxieties of over regulation, and the demands of consumer protection. We propose a risk-based framework for identifying systemically important entities to help the regulator prioritise their supervision activities and

ensure regulation does not disproportionately burden providers. Additionally, the use of responsive regulation can help the regulator crowd in relevant information from providers, and address vulnerabilities before they manifest into systemic harms. It can also ensure that regulatory sanctions are proportionate to the contravention and the harm arising from it.

II

CONSUMER DATA INFRASTRUCTURE

1. Introduction

The second session of the 4th Dvara Research Conference delved into the topic of *Consumer Data Infrastructure*, anchoring its discussions within the financial sector. The first session on consumer data regulation had acknowledged the vast amounts of data about consumers that is now being used by various institutions involved in the chain of financial services provision. These data flows necessarily are supported by large-scale data infrastructures, created by private players or as public goods. In India, many of these infrastructures (such as the proposed Public Credit Registry (PCR), the GSTN system, and the Indiastack) are created by the State, raising foundational question on the State's role and of the regulation of these infrastructures.

This session accordingly discussed the design principles that should govern the creation of a large-scale consumer data infrastructure, and how that should interact with the existing financial infrastructure. The discussants also reflected on India's experience with large-scale consumer data infrastructure, such as Aadhaar, UPI, IndiaStack and Credit Information Companies. The discussion proposed and debated some lessons in regulatory and technological design that could guide the design and implementation of proposed consumer data infrastructure, such as the PCR and Account Aggregators. The session dwelt on these concerns as well as others raised in the primer[1] for the session.

In this context, this session of the Conference began with a lead presentation on *Emerging Data-sharing Models to Promote Financial Service Innovation*. The presentation framed the key issues regarding the design and operation of large-scale public, digital infrastructures built to enable the flow of consumer data in India. The lead presentation was followed by a panel discussion on consumer data infrastructure with Prof Subhashis Banerjee (Indian Institute of Technology, Delhi (IIT-D)), Mr Dilip Asbe (National Payments Council of India (NPCI)), Mr Rafe Mazer (then at FSD Kenya) and moderated by Ms Malavika Raghavan (Dvara Research).

2. Lead presentation: Emerging data-sharing models to promote financial service innovation

The lead presentation titled *Emerging data-sharing models to promote financial service innovation* was based on Rafe Mazer's paper by the same name (Mazer, 2018). It defined data-sharing models to include platforms that collect the digital records of individuals, and mechanisms that

[1] This primer was created to provide background to the participants and support the discussions of this session. It is accessible at https://www.dvara.com/research/conference2019/wp-content/uploads/2019/04/Primer-on-Consumer-Data-Infrastructure.pdf

allow individuals to determine when and how their data should be shared with multiple third parties. The presentation reviewed data-sharing models in different countries and synthesised findings to propose ten factors that must inform the design of data-sharing models.

2.1. The rationale for creating data-sharing models

In rapidly digitising economies the ease with which firms can access data affects the level of competition in the economy (United Nations, 2019). Therefore, mechanisms for data-sharing among market participants have strong distributional and competitive effects that merit greater investigation. Considering that data is non-rivalrous, it can be used by multiple firms simultaneously, increasing the opportunities for innovation in the economy. Wide data-sharing in the economy, in principle, can increase economic and social welfare (European Parliament Research Service, 2020). However, for these welfare gains to be realised, it is crucial that data sharing models are designed and governed appropriately. Individuals and firms can be exposed to a range of risks and harms if their personal data is misused or compromised in large consumer data infrastructures (European Parliament Research Service, 2020).

2.2. Leveraging data-sharing: Examples of private sector data-sharing models

The lead presentation began by sharing the innovative ways in which private practitioners use consumers' personal alternative data to offer financial services to consumers. For instance, some financial service providers digitise non-financial data of farmers such as invoices, mobile bill payments data, and e-KYC records. They augment this non-traditional financial information with traditional financial data, such as a farmer's property title to offer them financial solutions such as loans. Other providers use similar datasets to help users open bank accounts or get formal savings products (Mazer, 2018). Some prominent use cases are set out in Table 1:

Table 1: Examples of private-sector data-sharing models, adapted from 'Emerging data-sharing models to promote financial service innovation: Global trends and their implications for emerging markets' by Rafe Mazer (Mazer, 2018).

Consumer-centred, open networks	These providers create a platform that allow multiple firms to share and access consumers' data. The rules of the platform are set by providers. This arrangement resembles an open data sharing system but limited to a select number of participants. Some examples of consumer-centred open networks include Nigeria's Open Banking Nigeria (Open Banking Nigeria, 2019) and MyData (MyData, 2020).
Personal data management services	These providers help users aggregate traditional and alternate data from multiple sources and create their digital identity. Some providers also allow users to create their own data-sharing contracts with third parties that seek access to their data. This is a marked departure from the existing practice of providers offering a non-negotiable, straitjacket contract of data-sharing to consumers. Some examples of personal data management services include Digi.me (Digi.me, 2020), Optimetriks (Optimetriks, 2020).
Private marketplaces	They facilitate the use of consumers' financial and other information to expand consumers' access to financial services. One use case for instance, provides an app to digitise the financial transactions and data of informal savings groups, creating a financial footprint of informal organisations. Other providers generate credit scores for users, using multiple data points such as the information collected from credit information bureaus, telecom data etc. They present the credit score to prospective lenders, conveying the consumers' creditworthiness without exposing their personal data to the lender. An example of such a private marketplace is Safaricom Credit Score.
Real economy data aggregators	These providers help entities in the informal sector create a digital financial footprint of their real-economy activities. Typically, these providers aggregate data from their daily business activity, and their value chain. For example, in one use case, providers offer accounting and inventory services to small chemists enabling them to use this data to demonstrate their creditworthiness. Some examples of real economy data aggregators include Maisha Meds (Maisha Meds, 2020).

The models discussed in Table 1 demonstrate the potential of data-sharing models in improving consumers' access to financial services. However, to realise the gains of inclusion from these services, adequate safeguards must be built into the design and governance of data sharing infrastructure. Safe-handling of their data engenders trust among consumers and increases their propensity to use data-driven financial solutions.

2.3. Inefficiencies caused due to sub-optimal data-sharing

The presentation emphasised that poorly designed data-sharing models can often lead to sub-optimal data-sharing. For instance, data-sharing models guided by reciprocity of participants, instead of a statutory mandate, may not effectively dissolve barriers to data-sharing. Reciprocal models may incentivise providers to form exclusive, invite only groups that obstruct the free flow of data to non-members. It can create a highly concentrated market with a few entities reaping large benefits from exercising control over consumer data. These limitations of reciprocal and private data-sharing arrangements should be considered when weighing the merits of a legally backed data-sharing model.

2.4. Considerations for designing and regulating data-sharing infrastructure

Several developed and emerging economies are creating data-sharing infrastructure to facilitate the flow of consumers' data within the economy (Mazer, 2018). However, the design of the data-sharing model must be sensitive to the local context and its characteristics such as the level of digitisation, the ease of access to smartphones in the country, the size of the unregulated sector among others (Mazer, 2018). A comparison of data-sharing models, across different jurisdictions, suggests that infrastructure models tend to differ from each other on at least four counts:

(i) The choice of the regulator steering data-sharing and its jurisdiction: The supervision of data-sharing models rests with different regulators in different countries. In some jurisdictions, a universal data-sharing model may govern the sharing of data across different sectors of the economy. Other jurisdictions, may however, choose to design sector-specific data sharing models across different sectors of the economy. For instance, in the UK, the Competition & Marketing Authority (CMA) helms open banking and data portability in the financial sector, while in Australia a universal right, 'Consumer Data Right' afforded to data subjects via the National Treasury enables the sharing of personal data (Mazer, 2018).

(ii) The statutory treatment of data-sharing: Data-sharing models in some jurisdictions mandate the sharing of data by law, while in others the sharing of data may be left to the volition of the market participants. For instance, data sharing in Australia is mandated by the Consumer Data Right Law (Australian Competition & Consumer Commission, 2018a). In

stark contrast, data sharing in Nigeria relies on the reciprocity among market participants that are organised via an industry driven, not-for-profit initiative 'Open Banking Nigeria' (Mazer, 2018; Open Banking Nigeria, 2019).

(iii) The point of aggregation: Data-sharing models can be designed either around a centralised point of storage or have a decentralised model of data aggregation. The Unique Identification Authority of India's (UIDAI's) Central Identities Data Repository (CIDR) is a centralised database, whereas the open-banking data sharing model in the UK is a decentralised model that uses Application Programming Interfaces (APIs) to port data bilaterally between banks (Mazer, 2018).

(iv) The role of the government: Different data-sharing models also differ in the level of government intervention that they require. In some jurisdictions, government agencies operate and regulate public infrastructure such as the UIDAI that oversees India's identity system, Aadhaar (Unique Identification Authority of India, 2020). In some other designs of data-sharing models, government participation is limited to setting standards such as that in the UK. In the UK, Open Banking Limited, a Special Purpose Vehicle composed of the industry and chaired by an appointee of the Competition and Market's Authority ensure that banks agree on the standards of API and that these features are standardised across banks and customers (Mazer, 2018).

The presentation summarised the central findings of the paper, the ten considerations for the design of data sharing models (Mazer, 2018). These are presented below.

Table 2: Considerations for developing data sharing models, adapted from 'Emerging data-sharing models to promote financial service innovation: Global trends and their implications for emerging markets' (Mazer, 2018).

Level of public vs. private-sector leadership	Would a government-led data sharing model be appropriate and feasible, or are fully private models a better approach?
Strength of existing policy mandate: Competition and coverage	Is there a strong competition or similar such mandate to impose data sharing requirements on providers? Is there wide regulatory coverage of financial service providers and technology firms to ensure a level playing field?
Data sharing: Mandated vs. voluntary	Is data sharing voluntary or mandatory, and which sectors and information types does the mandate cover?
Data categorisation: Level of openness	Is the data restricted to specific types or industries (e.g. official IDs, bank data) or open to wide-ranging traditional and alternative data?
Data privacy, protection and liability laws	Are there existing data privacy laws or regulations that cover topics such as consumers' rights to data security; consumer control over sharing of their data; rules on providers' data handling practices; and liability for data breaches?
Consumer control over data: Direct versus indirect	Are consumers given case-by-case control over the sharing of their data and revocability of such permissions; or are providers permitted to use general consent to share data with third parties at their discretion and with limited consumer visibility?
Data storage: Centralized versus dispersed	Is data stored in a centralized location or dispersed across various data collectors?
Minimum digital financial infrastructure	Do the preconditions for financial inclusion exist, including high digitization of financial services and interoperability?
Government infrastructure	Is the government at a minimum providing a reliable, electronic identity verification system? Beyond ID, are there governmentcontrolled economic information sources (e.g. tax records, property records) that are made available to consumers?
Inclusiveness of approach for base of the pyramid consumers	Does the model have an explicit objective to serve base of pyramid consumers and the financial services and providers they use? Is the model not easily accessed by base of pyramid due to technology interface (e.g. personal computer, smartphone app) or data types (e.g. bank records only)?

Each of these considerations will affect the design of the data-sharing model, and the impact it has on consumer welfare and competition in the digital economy. For instance, the design and regulation of data-sharing infrastructure must reconcile the legislative guarantees of consumer data protection and privacy. Jurisdictions where privacy protection is weak or absent, may deliberately want to limit the scope and size of data-sharing models (Mazer, 2018). The level of digitisation of government data and financial services are also important preconditions to consider before decisions on creation and design of data infrastructure models are made.

2.5. Considerations for data-sharing models in India

The presentation concluded with some open questions about data-sharing models in India. Despite its rapid digitisation, the Indian economy has some limiting characteristics of its own. It is characterised by a large informal sector which typically tends to be unregulated, has a sizeable usage of feature phones, and low levels of technological literacy[2]. Additionally, although privacy is recognised as a fundamental right of Indian citizens[3], India still does not have a data protection regime to guide the aggregation and sharing of the personal data of users. Considering these factors, the presentation emphasised on some specific considerations for future data-sharing models in India:

(i) The need to contend with a vast unregulated financial sector: The Indian financial sector comprises a sizeable proportion of unregulated entities. When designing data-sharing models, it will have to design relevant regulatory tools to include the informal sector in data-sharing agreements.

(ii) The need to enforce data protection and protect consumers' privacy: In the absence of a strong data protection regime, data-sharing models can cause more harm than good in the economy (Mazer, 2018). Thus, data sharing models must adhere to strong data protection principles and their scope should be limited if strong data protection legislation does not exist. Separately, regulation in the financial sector can focus on providing guidelines for portability standards, storage, and retention of data in the sector to embed data protection principles in data-sharing models and data infrastructure.

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[2] Research suggests that a sizeable proportion of the Indian population (close to 47%) owns feature phones and finds it hard to connect to the internet (Pew Research Centre, 2019). Other estimates suggest that 40% of the population has internet subscription, and only about half of the total population accessed the internet as of 2018 (McKinsey Global Institute, 2019).

[3] In August 2017, a nine-judge Supreme Court bench unanimously held that privacy is a fundamental right protected by the Indian Constitution. The judgment was made in the case of Justice K.S Puttaswamy and Anr. vs Union of India, 2017 ((2017) 10 SCC 1).

(iii) Designing for lower levels of technological sophistication: Aggregation and portability of data quite often require technologically sophisticated devices and individuals. When designing data-sharing models for India, it is important to consider their functionality in a low-tech environment. As discussed earlier, access to the internet in India though expanding rapidly is still limited and a significant proportion of population continues to use feature phones (McKinsey Global Institute, 2019; Pew Research Centre, 2019).

(iv) Data sharing rules for providers: The impact of creation of new data-sharing models on existing infrastructure need to be considered. The rules for providers should be designed carefully to avoid conflict between different models. For instance, the implications of the creation of a PCR in India on credit bureaus and the financial system should be carefully examined before deciding its operating model.

(v) Stipulating standards for data categorisation: Design of data-sharing models should consider the need for stipulating standards for data categorisation. Identification of relevant types of alternative data and setting standards around their collection and sharing can improve the functionality of data-sharing models.

(vi) Considering the relative merits of dispersed databases: The design of data-sharing models should consider the advantages of creating a dispersed database which is linked through API-based bilateral consumer requests. This might reduce the risks associated with centralised databases being central points of failure, and easy targets for data breaches.

Regulatory policies need to ensure that data-sharing models are consumer centric and dissolve the barriers that providers face in accessing their data. The implications of data-sharing models for consumers' welfare are determined in large parts by the effectiveness of the data protection regime, privacy protection, and governance frameworks that accompany them.

The lead presentation was followed by a panel discussion on consumer data infrastructure in India. The Indian financial sector already deploys several pieces of consumer data infrastructure for sharing data for various objectives, such as strengthening the credit information market, bolstering financial inclusion, and aiding the regulator in supervision. Some consumer data infrastructures have also been created to serve the objectives of specific statutes such as the *Information Utilities* (IU) created under the Indian Bankruptcy Code 2016 (Insolvency and Bankruptcy Board of India, 2019). The panel discussed the policy objectives being fulfilled by the existing consumer data infrastructures, as well as some lessons that have emerged from the Indian experience with consumer data infrastructure. The discussion of the panel is summarised in the following section.

3. Summary of discussions

3.1 Consumer data infrastructure and some technological concerns

(i) Defining consumer data infrastructure: Consumer data infrastructure is defined to include (a) the technological architecture using which consumers' personal data is collected and aggregated, (b) the manner in which data itself is categorised and organised into a database, and (c) the technological and regulatory rules related to governance of the database, such as access controls, authorisation rules, and protections against insider attacks.

(ii) Technological challenges in governing the database: The governance of data-sharing infrastructure must ensure the protection of users' data along its lifecycle. It must protect the database from unauthorised access. It must also ensure safeguards post-access, such as limiting the use of the data to the original purpose for which access was granted. In the vocabulary of data protection principles, this refers to the principle of purpose limitation[4]. Experts in the room observed that once an authorised party has accessed the database, it is technologically difficult to ensure that the data is used only for the stated purposes. The widespread use of Machine Learning (ML) further complicates compliance with purpose limitation. ML can generate inferences from data which may often be unrelated to the stated objective of processing. Moreover, these inferences can often not be anticipated ex-ante and are hard to explain ex-post. With the existing levels of technological sophistication, it may be hard to guarantee compliance with post-access data protection principles such as purpose limitation.

(iii) Technological limitations in securing users' privacy: Technological solutions to secure data privacy also have their limitations in the context of large data infrastructure. Anonymisation[5] techniques may have limited utility since the database might lose its functionality if it gets completely anonymised. Technological solutions used for protecting

[4] In the context of data infrastructure, purpose limitation requires authorised entities to use the data within the database for the purpose stated by them and upheld by the law. The European Commission summarises purpose limitation as a data protection principle which limits how data controllers can use the consumers' personal data: "The concept of purpose limitation has two main building blocks: personal data must be collected for *specified, explicit and legitimate* purposes (purpose specification) and not be 'further processed in a way incompatible' with those purposes (compatible use)" (Article 29 Data Protection Working Party, 2013).

[5] Anonymisation is the process of removing personal identifiers (both direct and indirect) from the data or a database to prevent an individual from being personally identified. Direct identifiers include name, address, photograph or image, while indirect identifiers include place of work, postcode or health diagnosis etc. (UCL, 2020).

individuals' privacy may have to be reconsidered since databases require a minimum identifiability to function.

(iv) Adapting technology and design of data infrastructure to uphold regulatory promises: For the effective governance of data infrastructure it is imperative that technological deployment and policy developments occur simultaneously. Developing policy after the deployment of technical architecture can result in building an architecture that may not support regulatory guarantees, making them meaningless. It can create systems without adequate governance safeguards, potentially exposing consumers, and the entire system to risks. Early alignment of regulation and policy thinking on design principles of data infrastructures can create secure and trustworthy data infrastructures.

3.2. The need to assess the impact of data infrastructure

The panel was ambiguous in its evaluation of the impact that data infrastructure had on the Indian financial sector. It was noted that although the UPI[6] had encouraged new participants in the payments space including BigTechs, two providers, GooglePay and PhonePe together accounted for 80 per cent of the market share (Rao, 2020). This calls for a deeper analysis of the implications of the UPI on the competitiveness in digital payments. More evidence is required to assess if the creation of data infrastructure has reduced the cost of financial transactions, and if this benefit is being transferred to the consumers. This ambiguity was not exclusive to India. Experts from other jurisdictions, such as Australia, also expressed similar ambiguity when assessing the impact of data sharing on consumers' surplus in those jurisdictions.

3.3. Design choices for data infrastructures in India

The panel observed the need to weigh the relative merits and limitations of defaulting to large, centralised, publicly created data infrastructure for improving the flow of data within the economy. It discussed India's experience with different models of data infrastructure, and their relative strengths in ensuring interoperability, and enabling data-sharing. Some of the alternative models of data infrastructure that were discussed include:

(i) Enabling the creation of multiple, competing, private credit information companies: The Indian Credit Information Market is quite young and characterised by four credit information companies (CIC). TransUnion CIBIL, the country's oldest CIC, was incorporated in 2000 and commenced commercial operations in 2006. Three other CICs have emerged

[6] The UPI is an instant payment system which was built over the Immediate Payment Service (IMPS) infrastructure to enable instant transfer of money between the bank accounts of any two parties. It was developed by the NPC, which is an RBI regulated entity. The pilot launch for the system was done in April 2016 (NPCI, n.a.).

over the years. They are governed by the Credit Information Companies (Regulation) Act, 2005 (CICRA) (Government of India, 2005). Under section 15 of the statute, all banks and NBFCs are required to be a member of at least one CIC. Section 17 of the statute allows a CIC to call for credit information from its peers. However, reciprocity among CICs has limitations as a sustainable data-sharing mechanism. Quite often it was found that CICs were not sharing the historical records of borrowers freely among each other (Reserve Bank of India, 2015, 2014b). Pursuant to these enquiry reports, the RBI directed all credit institutions (defined under section 2(f) of the CICRA as including banks, NBFCs, public financial institutions etc.) to report data to all Credit Bureaus (Reserve Bank of India, 2015). Currently, financial institutions share data with all four CICs. This raises concerns over the efficiency of the arrangement due to inconsistencies in reporting formats, and the duplication of reporting efforts.

(ii) Enabling the creation of multiple, competing, private data-sharing systems with ex-ante interoperability: This model of data infrastructure in India emphasises on the creation of multiple, competing, private entities with the legal mandate to be interoperable in India. The National Securities Depository Limited (NSDL) and the Central Depository Services Limited (CDSL) were built on this format to compete while being interoperable. However, experts observed that a similar model adopted for IUs under the Indian Bankruptcy Code (Insolvency and Bankruptcy Board of India, 2019) did not realise the same success. Discussions suggested that this can potentially be attributed to the high thresholds of minimum capital imposed on IUs and seemingly extraneous burden within the IU to ensure data quality.

(iii) Publicly built and operated large scale data infrastructure: This model has been adopted widely, including for building India's identity system Aadhaar, and the upcoming PCR. Experts in the room strongly urged against expending scarce state capacity on building and maintaining large data infrastructures. It was noted that when state capacity was in short supply, state-owned data infrastructure was likely to be of poor quality.

4. Concluding Reflections

- A well-functioning data infrastructure enables safe data-sharing. This can promote competition in a digital economy, dissolve the higher barriers to entry, and reduce the monopolistic advantages that are generated by select providers' exclusive control over data. It can also address friction in the market by bridging information asymmetry between participants, thereby unlocking greater welfare. However, these promises of data infrastructure require that specific preconditions such as high levels of digitisation in the economy, ease of access to technology, and interoperability among data infrastructure exist in the economy.

The existence of a strong data protection regime in the country is also crucial to the success of data infrastructure. The data protection regime sets the legally permissible boundaries within which people's personal data can be aggregated and exchanged. It provides clarity on the types of data that can be aggregated, and the protections they attract, making it easier to design data infrastructure. It also lays down the ground rules for consumer's access to their data, and their rights to portability which are significant design considerations in data infrastructure (Mazer, 2018). Finally, a pre-existing data protection legislation can strengthen governance mechanisms by emphasising on the inherent rights of consumers in relation to their data, and the liabilities of parties that process the data.

- The choice of design of data infrastructure in India must be carefully guided by at least three considerations:

  (i) Data infrastructure should be sensitive to the level of technological access: The design choice of data infrastructure must respect the access limitations faced by a majority of the population and its local context. Though rapidly digitising[7], India's absolute level of digitisation is still quite low. Close to 47% of the population reports using a feature phone and having difficulties accessing the internet. Close to 560 million Indians (around 50% of the population) had accessed the internet as of 2018 (McKinsey Global Institute, 2019). For materialising real gains for the population including financial inclusion, the data infrastructure must serve the low-tech environment adeptly.

  (ii) Governance mechanisms of data infrastructure need to be strengthened: A strong governance framework is necessary to realise the full potential of the underlying technological architecture. The case of India's identity system, i.e. the Aadhaar database shows that technological benefits can be diminished in the absence of strong governance frameworks. The Aadhaar database was created and regulated by the same entity, the UIDAI which raised several concerns relating to its governance framework (Bhandari & Sane, 2017a). It provided a limited grievance redress framework, with physical touchpoints available only in eight geographical locations clustered in tier 1 cities (Bhandari & Sane, 2017b). While technological lapses affected the allotment of people's social entitlements, the lack of adequate grievance redress made it harder for people to seek redress or remedy (Khera, 2019). Together, these issues affected people's social entitlements and trust in the system and riddled the system with inefficiencies.

  (iii) Impact of creating new, publicly funded data infrastructure on the existing data infrastructure: The interaction of new data infrastructure with existing infrastructure and its effect on the wider system must be carefully examined. This is of heightened

[7] Estimates suggest that the rate of adoption of digitisation in India between 2014 and 2018 was close to 90%, making India one of the fastest digitising countries in the world.

relevance in the case of the PCR which is envisioned to exist alongside the CICs. The CIC's services are getting increasingly integrated in the lending decisions of financial institutions (Mishra, Prabhala, & Rajan, 2019). Their coverage of the population, and the depth of the information covered by them are also on the rise (The World Bank, 2018a, 2018b). Therefore, as the CICs begin to have an impact on expanding access to credit and making credit decisioning more robust, it is important that the new infrastructure furthers this progress. The design of the PCR should be intended to complement this progress of the CICs, and be mindful of the potential to disrupt the progress that has been made (Chugh & Raghavan, 2019). It must account for the impact on existing channels of credit information, and the effects on lending institutions. More generally, the decision to create new infrastructure, and the choice of its design should be informed by the effect it will have on the existing infrastructure and the system as a whole.

III

SUITABILITY FOR CONSUMER DATA USE AND PRODUCT DESIGN

1. Introduction

The third session of the 4th Dvara Research Conference explored the role of consumer data in designing suitable financial products. The first two sessions focused on the increasing use of consumers' data in the provision of financial services and the creation of large scale private and public infrastructure to enable that use. They discussed the safeguards needed to ensure that users and the system were not exposed to harms because of the widespread use and sharing of consumer's data.

This session focused on providers' use of consumers' data to inform the design of financial services offered to them and improving the consumers' outcomes. It assembled a group of financial service providers to share their experience of using consumers' data to design financial services, and leading academics to discuss how that might affect users' outcomes and lived experiences of finance. It also discussed the regulatory safeguards that were needed to protect users from harm in the context of tailored financial services. The session dealt with these and other frontier questions raised in the primer[1] on the session.

The session was designed as a discussion between financial service providers and academics on the use of consumers' data to improve the design of financial services and its implications for consumers. The discussants included Ms Buhle Goslar (Jumo), Mr Satish Pillai (TransUnion CIBIL), Mr Sanjay Jain (Bharat Innovation Fund), Dr Janaki Srinivasan (IIIT-B) and moderated by Mr Greg Chen (CGAP).

2. Discussion

When finance works well, it empowers individuals or firms to move resources smoothly across time and across different states of their lives (such as good health and ill health) (Ananth & Mor, 2009), allowing them to preserve and improve their well-being. In stark contrast, poor financial decisions can trap individuals in inferior equilibria, significantly affecting their overall well-being. Financial service providers rely on the doctrine of *caveat emptor* — let the buyer beware — while offering financial solutions to consumers, externalising the consequences of financial decisions on them (Government of India, 2013).

[1] This primer was created to provide background to the participants and support the discussions of this session. It is accessible at https://www.dvara.com/blog/2019/04/03/primer-on-suitability-for-consumer-data-use-and-product-design/.

At Dvara Research, we have been actively advocating against this product-led approach of offering financial services due to the disproportionate burden it puts on consumers (Prasad, 2014). Consumers may not completely understand the financial risks they face, the financial protections they need, and the financial functions that financial instruments offer. They are severely constrained by information asymmetry and bounded rationality while making financial choices (Sahasranaman, 2011).

Instead, a suitability-based approach to providing financial solutions can remedy these imbalances between the providers and consumers in the financial market. This approach to the provision of financial services obliges providers to assess if a product is suitable to a consumer, prior to sale. If at the point of sale, it is ascertained that the consumer is likely to face substantial hardship through the tenure of that product, or because of that product, such a product is considered unsuitable (Sahasranaman, 2011). This approach advocates that providers, as designers of financial products, are better placed to assess the appropriateness of financial products for a consumer. Therefore, better consumer outcomes are achieved when the responsibility of selecting an appropriate financial solution is shifted from the consumer to the provider. In India, financial sector regulators have supported the suitability-based approach to varying degrees. The Reserve Bank of India (RBI), for instance, upholds a consumer's 'Right to Suitability' in its Charter of Customer Rights (Reserve Bank of India, 2014c).

Practitioners have often asserted that suitability is challenging to implement because of the costs of granular suitability assessments, and the absence of detailed consumer information needed for them. With the growing use of personal information and analytics in the provision of financial services, that challenge appears surmountable. Access to alternative data can enable providers to undertake suitability assessments when selling or designing financial products.

This session delved into the use of alternative data for enabling suitable financial inclusion. The objective of the session was to understand advances in providers' use of consumer data and its implications for consumers' outcomes. Presently, there is little published academic literature on the data-driven techniques used by practitioners to understand the needs of users, segment them into different profiles and provide tailored financial solutions to them. The session was designed to bridge this gap. Key insights from the discussion are set out below.

2.1. Data-driven financial solutions can increase access to suitable financial services

The lack of access to formal finance, in general, and suitable formal finance, particularly, has been a longstanding policy challenge in India. The supply of formal credit falls painfully short of demand. Recent estimates suggest that Indian MSMEs face a credit-gap of US$240 billion (INR 16.66 lac crores) (IFC, 2018). In addition to supply constraints, the distribution of such supply is

also lopsided. The spatial distribution of credit in India is highly uneven. In 2011, the credit depth (i.e. the ratio of credit to GDP) at the national level was estimated to be 88% (Kumar, 2017). Yet its distribution across and within states was highly skewed. For instance, in the state of Tamil Nadu, the district of Chennai reported the highest credit depth, at an astronomical 561%, in stark contrast with Thiruvaluvar at 15%, and a state average of 72% (Baby & Kumar, 2016). Similarly, women's access to credit in India is also highly constrained. For example, distribution of outstanding credit in small borrower accounts shows 24.5% share of female account owners against 72% of male account owners, as on March 2017 (Financial Express, 2018).

While large swathes of population struggle to access credit, some others experience a decline in their financial well-being on account of servicing unsuitable debt. Our analysis of primary evidence gathered from 400 active borrowers in rural South India indicated a high incidence of borrower over-indebtedness, financial distress and debt dependence (21% of the sample), and a high incidence of mis-selling (33% of the sample) due to faults in credit bureau data (Prathap & Khaitan, 2016). Thus, there exist users who have access to more debt than they can afford, exposing them to financial hardship.

This skew in access, and lack of access to suitably designed financial solutions is true for financial products beyond credit as well. More than 75% of Indians do not avail of insurance of any form. Of the miniscule minority that is insured, they are severely under-insured (Singh, 2019). The travesty of the insurance sector is paled by the "near absence of pension products in the country" (Reserve Bank of India, 2017a).

There is an emerging and intensifying consensus that the use of alternative data can significantly increase access to suitable financial inclusion by:

(i) Expanding access to formal finance: The use of alternative data can enable financial service providers to reach consumer segments that were previously excluded. Personal alternative data can become a viable substitute to credit-history, without which first-time users or infrequent users of finance find it difficult to break-into the formal financial sector. Access to alternative information, such as frequency of utility and mobile bill payments can facilitate the creation of credit scores for "thin-filed" consumers (IFC, 2018).

Similarly, the lack of physical collateral raises significant barriers for MSMEs to access formal credit. Alternative data, with its wide variety of indicators can potentially help providers estimate a prospective borrowers' ability and willingness to repay, thus helping them assess the associated credit risk. As a result, lenders can offer credit even in the absence of physical collateral or a credit history (Global Partnership for Financial Inclusion, 2017). This also enables lending to borrowers with uneven or irregular cash flows.

(ii) Improving the affordability of products by reducing operational costs: Substituting alternative data for traditional underwriting mechanisms can also reduce the operating costs that lenders incur in providing loans. For instance, the discussants reflected on the high costs of inspecting collateral, verifying its ownership, which increases the operating costs of lending. Moreover, these costs do not vary with the size of the loan ticket, making it inefficient for lending institutions to incur high costs on small ticket size loans (IFC, 2018). In contrast, data driven underwriting could prove to be cheaper, leading to significant gains in the lenders' operating costs (Global Partnership for Financial Inclusion, 2017). These efficiencies could be passed on to the borrowers, making loans more affordable for them (J-PAL, 2018). Using alternative data can also help providers detect frauds, and further reduce operating costs on account of fraudulent transactions.

Similarly, discussants emphasised that efficiency gains can also be realised from partnerships between smaller, specialised firms offering suitable product design, and larger players in the ecosystem with well-entrenched distribution channels. The economic efficiency from the partnership can be passed on to the consumer in the form of cheaper loans and therefore, emphasised the need to create such partnerships.

(iii) Improving consumers' understanding of financial products and optimising their behaviour: Providers on the panel shared that alternative data is also used to optimise customer journey, post the sale of the financial product. Providers use the patterns of consumers' early interactions with the products and apps to assess their digital sophistication, and level of financial literacy. This enables them to distinguish between first time or uninitiated users, and the digitally savvy and financially aware users. This information enables providers to customise the form and frequency of key communications. The consumer is assisted through frequent communication on repayment or saving reminders and other product features. This reduces the risk of default, increases the consumers' levels of financial literacy, and comfort with the financial product.

2.2. Data-driven financial solutions can increase consumers' financial well-being

The crux of suitability is to offer products to consumers that are relevant to their real financial needs. Viewed in that context, the role of financial providers is not limited to merely offering products that the consumers demand. Providers should also endeavour to offer solutions that de-risk consumers from the risks they face, even when the consumers themselves do not understand the risks or have the vocabulary to express them. Thus, the mandate of suitability requires the provider to offer financial solutions that meet a consumers' needs, objectives and financial situation, both at the point of sale and through the tenure of the product.

The high costs of customised financial solutions (which are disproportionately higher for retail consumers) often keep providers from offering these services. Consequently, the consumer is often found trying to fit her way of living and cash flows into the requirements that the product demands, instead of it being the other way around. However, providers on the panel appeared confident that the use of alternative data can generate insights which can improve product design at scale. Some of these improvements in product-design are apparent from the nature of data-driven credit solutions itself — they tend to be of a shorter-tenure, and of a smaller ticket size. Data-driven credit is also becoming deeply embedded in various value chains in the real economy which reduces friction in the lending process and makes the provision of credit to the consumer more intuitive. The data on changing composition of credit which reflects greater share of unsecured loan, increase in the financing of purchases through EMI and a reduction in ticket size of loans in India (from average INR 95000 in 2019 to INR 35,000 in 2020), support this intuition of the discussants (Dugal, 2020).

The discussants shared the ways in which alternative data enhances the well-being of users:

(i) Alternative data can improve product-fit and reduce financial stress: Providers are trying to deepen their understanding of the nuanced needs of underserved consumers. Achieving this requires developing a rich qualitative understanding of their financial lives, including the seasonality of their income (as opposed to just the quantum), the lumpiness of their expenses, and their preferences for assets. These insights are being used to categorise prospective consumers into segments or personas in a process called segmentation[2]. This rich insight allows providers to map the suitable financial-solution set to each segment. Providers noted that customising at the segment level instead of the individual level, retains some economies of scale as well, making this business case viable for the provider. The discussants felt that smaller firms with a specialisation in segmentation could propel the industry towards operationalising suitability. In the experience of practitioners, partnerships between large lenders, and smaller firms that have specialisations in segmentation is one format in which suitability can be offered at scale.

Emerging literature in the domain of microfinance suggests that there are welfare gains to be made by improving the design and fit of credit products (Harvard Kennedy School: Evidence for Policy Design, 2019). This was also raised in the conference when participants emphasised that flexibility in designing microfinance products can reduce instances of financial stress among borrowers, reduce their rates of default, and improve performances. Most alternative lenders either offer or aspire to offer repayment flexibility in their loan products, potentially contributing positively towards consumers' financial well-being (The Economic Times, 2017).

[2] Segmentation refers to the practice of grouping customers based on common characteristics, behaviours, attitudes, needs, or interests (Maria Fernandez Vidal, Caire, & Barbon, 2019).

Providers also made the case for applying insights from alternative data for customising delivery channels, in addition to finetuning the product design, and improving the product-fit. Delivery channels need to be sensitive to the needs and access constraints of the segment and offer customised delivery solutions, at the segment-level. For instance, some segments may be better served via digital interfaces while others may need assistance from a person, such as employees or agents, to serve them better.

(ii) Data-driven financial products can address the real-economy needs of the consumer: Financial products are getting deeply embedded in the real economy of the consumers. Availability of financial solutions at the point of sale of real goods are making them more relevant and intuitive for users. The deep integration of financial solutions within the real economy, such as options to finance the purchase of electronic goods, allows consumer to achieve their real goals with lesser friction (Dugal, 2020).

Providers shared that the gig-economy, which simultaneously generates and consumes data to offer real goods and services, is benefitting from tailor-made financial solutions. For instance, in the ride-sharing economy, data on drivers' daily rides acts as a robust indicator of their willingness to pay. Financial service providers are building financial solutions, such as credit, atop these variables to support drivers in owning the cars they drive (Jumo, 2018). Providers are also experimenting with embedding repayment flexibility in the loans to serve the needs of those working in the gig-economy (Jumo, 2018; Avail Finance, n.d.). Financial service providers are extending products beyond loans and include the insurance of the income generating asset, such as insuring the outstanding vehicle loan in the case of ride-sharing economies (Ola, n.d.). General insurance, such as crop and cattle insurance, can cover the owner for any financial shocks that may arise upon loss or break-down of the income-generating asset (USAID, 2018).

2.3. Concerns emerging from data-driven financial solutions

While the use of alternative data can equip providers to offer scalable, suitable financial solutions to existing and new users of finance, this operating model also raises its own concerns. The session recognised that the untested robustness of data-driven models, and their vulnerability to bias and discrimination were some key concerns in the design of data-driven financial services. This section discusses the concerns raised, and ties it to some possible solutions which emerged during the discussion:

(i) The untested robustness of data-driven financial products: Providers often make some assumptions about the end-user when modelling for their creditworthiness, and their ability to pay. The suitability of the product, and the robustness of the model directly rest on the accuracy of the assumptions that have been made. For instance, most providers use the

digital footprint generated on people's mobile devices to underwrite the loan made to them. This assumes that a mobile phone is accessed only by one individual, which is atypical of many low-income households. Research suggests that borrowing mobile phones is common in developing economies such as India where 16% men and 47% women are likely to borrow someone else's phone (Barboni, et al., 2018). In the light of this evidence, credit-modelling based on the assumption of exclusive use and ownership of phones risks being inaccurate and consequently the loan provided risks being unsuitable for the household.

Similarly, the concerns around opacity in credit-decisioning resurface due to the use of algorithms in credit decisioning. Credit decisions have been opaque, historically, as they typically involve the use of proprietary algorithms. However, the use of Machine Learning (ML) can further exacerbate this opacity. ML is regularly referred to as a 'black box' because the relation between the input data and the outcome generated by the algorithm is hard to decipher, making the relations between the input and output opaque (The Lancet Respiratory Medicine, 2018). This restricts a users' understanding of why they were rejected for a product and makes it doubly hard for them to remedy their situation. This opacity also raises concerns around the ability to scrutinise these algorithms for any unlawful discrimination or bias that may have unintentionally affected the underwriting process (Gillis, 2019).

During the session, the discussants proposed some potential solutions to these issues:

(a) Users' right to explanation: The right to explanation is gaining salience globally. The European Union's General Data Protection Regime (EU GDPR) emphasises that European citizens' personal data should be processed in a "fair and transparent" manner. One mechanism under the GDPR, to ensure fairness and transparency, is to give users the right to access "meaningful information about the logic involved" in the automated decision-making systems (European Parliament and the Council of the European Union, 2016). Discussants agreed with the need to protect and empower users with a similar right or mechanism which provides them information, in an easily understandable form, about the logic of the decision.

(b) Emphasis on data quality: The quality of data used as inputs for designing financial products is critical for designing suitable, data-driven financial solutions. The data used for informing these decisions should not only be accurate, but also should not be easy to game. Gameable data i.e. data which can be easily manipulated by the consumer to their benefit, was recognised as a threat to the robustness of these models. Experts in the room shared that this risk manifested in Kenya where the consumers learnt to manipulate the system of digital lenders, by taking and repaying smaller loans. This led to the consumers becoming eligible for larger loans which they

eventually defaulted on causing them financial distress and increasing the default rates of the providers. Providers must consider having technological safeguards in place that are able to detect manipulation of the algorithm by the consumers (Mustafa et al., 2017).

(c) Using algorithmic tools to actively look out for biases in the model: Practitioners emphasised that Artificial Intelligence (AI) could be used to identify any unintentional biases in their algorithmic lending practices. Emerging research indicates considering the use of testing for discrimination through independent audits of AI outcomes (Gillis, 2019). Practitioners in the room shared that they were self-auditing their decisions to detect any biases and correcting the models in real-time.

(ii) Lack of clear market incentives to design suitable products: The discussion recognised that given the unmet supply of financial services in the country, there is high appetite among consumers for straitjacket products. Therefore, existing providers had little incentive to innovate to provide tailored products. While traditional providers often cited high costs of customisation as the primary barrier to suitability, new providers offering suitable solutions also appear to be facing significant challenges in delivering suitable financial products on the scale. These models are still striving to find an appropriate incentive structure to become scalable.

The discussions acknowledged that currently there was no framework within which the smaller, tech-savvy service providers specialising in segmentation could partner with larger organisations, such as banks. Moreover, this partnership is also hard to realise since questions of customer ownership and accountability become difficult to answer. The participants emphasised the creation of a regulatory framework that offers clarity on some of these issues could enable such partnerships, considering both partners have distinct niches (ABA Banking Journal, 2018).

2.4. Regulator's role in furthering data-driven suitable financial inclusion

Most discussants acknowledged that there was a significant role for the regulator to play in the space of data-driven suitable financial services. Practitioners emphasised that the regulator should steer clear of granular, prescriptive regulation, and focus on creating important guardrails. Regulation must focus on the use of alternative data in finance and articulate baselines with regard to consumer protection. Providers reflected on the significance of baselines and minimum standards in the context of low-income households. Active competition, in the absence of consumer awareness and agency, could result in a well-meaning provider causing harm to the user. In some cases, businesses may also not face any backlash despite

causing harm. For instance, the provider might not stand to lose market share to their competition as they continue to remain the least-worst provider. In such instances, a steer from the regulator can help prevent loss to consumers' financial well-being.

On a principle-level, the discussions resonated with the view that regulators must begin by regulating for "unsuitability". This would mean that a provider would be prohibited by regulation from offering products that are demonstrably unfit for consumers. This principle is reflected in the Report of the Committee on Comprehensive Financial Services for Low-Income Households and Small Businesses (CCFS Report), which recommends and emphasises on the need to identify products that are "globally unsuitable". The regulator could create regulations that prohibit providers from offering globally unsuitable products to households or businesses that fall below a certain income threshold or net worth, or to individuals above a certain age (Reserve Bank of India, 2014a). The discussants and the audience agreed that the principle of regulating for "unsuitability" may be efficient and easier on both regulators and providers.

2.5. Designing effective grievance redress for implementing suitability

The discussions emphasised the need for recalibrating the design of redress mechanisms in line with the objectives of suitability. For the product to be suitable for users, it must be sensitive to their needs and their sociological realities. Therefore, to improve the consumer-centricity of the product, it is important to gather and act upon the feedback received from them. Grievance redress mechanisms can form an important feedback loop for suitability assessment. It is important that the grievance redress mechanism is easy to access, enjoys the confidence of the consumer, and is mindful of the social and physical distance from the user. For this, the first point of redress should be cheap, familiar, and not intimidating for the user. Providers could consider using consumer-friendly channels such as messaging apps or other locally popular social media tools to gauge users' experience of any product.

Additionally, there should be institutionalised ways to act upon the grievances received. For instance, the analysis of the complaints database should be used as an important tool to inform both policies and providers. In this context, the practices of the American financial regulator — Consumer Financial Protection Bureau (CFPB) — were appreciated. The CFPB collects complaints from the consumers and forwards them to companies for their response. The complaint and the response from the company are published on their website. The regulator, therefore, helps in completing the feedback loop and incorporates users' voices in the market (Consumer Financial Protection Bureau, 2019).

3. Concluding Reflections

- There appear to be three kinds of personal data being used in financial services: (i) traditional financial data collected by credit bureaus, (ii) non-financial data, such as tax returns and property registration documents, predominantly issued by non-financial regulators, and (iii) alternative data, such as utility bills payments and social media activity, collected from diverse sources. The discussions in the session were focused predominantly on the use of alternative data and the concerns it raised when used for designing financial services.

- A horizontal data protection regime will help providers in designing business models and bring certainty to their operations. Providers in India worried that the lack of a well-defined data protection regime created significant uncertainties for them. Clarity on data security practices, consumers' rights and providers' obligations will favourably support partnerships between new and emerging providers, and established, regulated institutions.

- Most models of suitable financial services remain limited to those with access to data-generating devices such as smartphones. The usage of smartphones in India is still far from universal. Estimates of the proportion of Indians with access to smartphones vary, however, most sources peg this at 25-40% of the population (Pew Research Centre, 2019; Statista, 2019). A similar pattern is observed in MSMEs, where the latest NSSO data suggests that the use of computers and the internet among MSMEs is quite low. Around 5% of all MSMEs make use of computers, whereas approximately 4% use the internet (Chaudhary, 2019). By underpinning their models on access to digital interfaces, providers could miss out on these large consumer segments.

- Unbridled data collection raises privacy concerns, and increases the cost of handling and storage. This offers an opportunity for providers to be more selective about the personal data they collect and use. By relying on fewer, stronger alternative data-points, providers could perform favourably on the parameter of safeguarding users' privacy and create a niche for themselves. Considering the ongoing regulatory developments around the creation of a data protection regime, business models that adopt a parsimonious approach to consumers' data may stand to gain more in the future.

IV

ISSUES OF COMPETITION AND MISUSE OF MARKET POWER

1. Introduction

The fourth session of the 4th Dvara Research Conference focussed on the competition issues that may arise from the use of consumers' personal data in data-driven financial services. It focused on the novel ways in which access to users' data can increase providers' market power and the implications for the consumers' welfare.

The generation and consumption of consumer data has become integral to our rapidly digitising economies. Firms that have access to large amounts of consumer data are able to increase their market power substantially, and become immune to competition because of network effects[1] (UNCTAD, 2019). As a result, digital platforms and data-intensive economies raise new challenges for competition law. Competition regulators around the world are trying to understand the interface between consumer data and market power to address these challenges.

This session began with a keynote by Dr Katherine Kemp who discussed the issues of competition, and the misuse of market power in digital platforms and data-intensive economies. It also highlighted some data protection concerns that affect the market power of firms in data-intensive economies. This was followed by comments from Prof Ajay Shah on the history of competition issues in India, and the lessons that it offered for competition among data-driven financial service providers. This note summarises the discussions of the session and concludes with our synthesis.

2. Discussion

The rationale for promoting free market economies builds on the assumption that firms in a free and competitive market will constantly improve their products and lower their prices to better serve the needs of consumers. Firms that do not constantly improve products are expected to be driven out of the market by competitors that can better serve consumers' needs. In the process,

[1] Network effects refer to the effects that adding a new consumer has on a product by increasing its value for all the other existing and potential consumers (UNCTAD, 2019). Firms in data-intensive economies use consumer data primarily for two purposes. First, to improve the quality of the product depending on the consumers' needs. Second, to earn additional revenue that can be reinvested in the product, by offering consumer data to firms that will purchase it (for example, advertising firms that require consumer data for targeted advertising). Therefore, every new consumer adds value to the product through their consumer data, which firms use to improve their products and lock-in consumers (OECD, 2016).

the market is expected to correct itself for inefficiencies, benefitting consumers and the society as whole. However, sometimes the market does not correct market failures, which prevents benefits from reaching the consumers. One such market failure occurs when firms have significant amounts of market power (or enjoy a dominant position in the market), which makes them immune to competition. Dominant firms can offer products on inferior terms in the absence of competition, to the detriment of the consumers and the society. Competition law therefore serves two objectives: (i) it tries to preserve competitiveness of the markets when it exists, and (ii) it tries to prevent or penalise anti-competitive conduct of firms which suppresses competition.

The discussions in the session revolved around how wielding control over users' data puts firms in dominant positions and how the competition regulators could respond to these emerging issues. These discussions are summarised below.

2.1. Suppressing competition in the market

In an ideal free market, market power is distributed evenly across several firms so that no single firm has enough power to influence the price discovery mechanism or suppress competition. The free market is expected to eliminate market failures and maximise social welfare by allowing robust competition among firms. However, the market can fail to achieve this when firms suppress competition and increase their influence in it. The discussants highlighted the ways in which firms act to suppress competition –

(i) Collusion: In some cases, firms coordinate tacitly with each other or create cartels that eliminate competition and take control of the market. The result of this behaviour resembles that of a single dominant firm; operating without any threat from competitors (Marc Ivaldi, Jullien, Rey, Seabright, & Tirole, 2003). This was illustrated by using the example of the bread cartel in South Africa. Four major bread manufacturers in South Africa colluded to fix higher prices for bread between 1996 and 2007. Instead of competing independently, bread manufacturers colluded to set the price of bread. As a result, bread prices in the market increased, and consumers were forced to pay higher prices for purchasing staple food (OECD, 2015).

(ii) Market power: Market power is the ability of a firm to change the price or quality of its products without being constrained by competition in the market (OECD, 2002). Firms can increase their market power in different ways, such as by increasing their market share, being highly efficient in their operations, or by developing innovative technology and disruptive business models (Meschi, Mayal, & Mehrotra, 2018; Parsheera, Shah, & Bose, 2017). These firms can then misuse their market power to suppress competition and take control of the market. The discussants illustrated this with the help of the GlaxoSmithKline

(GSK) case in South Africa. GSK was a dominant pharmaceutical company manufacturing antiretroviral drugs in South Africa. In 2002, the South African Competition Commission found that GSK abused its dominant position by charging consumers higher prices and prevented the entry of new firms by obstructing their access to essential production facilities. Preventing new firms from entering the market and controlling the drug prices, amounted to GSK abusing its dominant position (OECD, 2014).

The discussants explained that when regulators investigate collusion complaints, they examine the interactions between players for signs of cartelisation or collaboration by fixing prices etc. However, identifying the misuse of market power is more complicated.

2.2. Misuse of market power

The discussants explained that dominant firms can afford to sell products at higher prices compared to their competitors without losing revenue or consumers. Similarly, dominant firms can sell inferior products without facing backlash from the consumers. In each of these cases it is difficult to assess if the dominant firm is misusing its market power.

It is difficult to determine if a firm is competing aggressively or if it is anti-competitive. If a firm drastically reduces its prices to compete, it is difficult to say if the firm is passing on its profit mark-ups to the consumers or if it is engaging in predatory pricing to suppress competition. This was the central question before the Competition Commission of India (CCI) in the case of Reliance Jio which the discussants referred to in a related context (Bharti Airtel Limited v Reliance Industries Limited & Reliance Infocomm Limited, 2017). Reliance Jio offered telecom services at prices which were much lower (or free, in some cases) than those charged by its competitors. This reduction in telecom prices by Reliance Jio forced its competitors to lower their prices and incur recurring losses. The CCI held that Reliance Jio was aggressively competing, but that it was not anti-competitive because it was not a dominant player (Bharti Airtel Limited v Reliance Industries Limited & Reliance Infocomm Limited, 2017). This stirred up a controversy considering Reliance's dominant position in Indian markets (Salman, 2017; Block, 2019).

The discussants underscored that regulators do not have adequate information to investigate misuse of market power. There is no method by which regulators can determine if a firm's business decision is aimed at expanding its own operations or is aimed at suppressing competition in the market. The misuse of market power was also indicated to be regulated differently, and to have different terminologies, in different jurisdictions. Some regulatory approaches for dealing with the misuse of market power are summarised in Table 1.

Table 1: Statutes regulating misuse of market power in India, USA, EU and Australia along with terminology used to refer to misuse of market power.

Country	Legislation	Terminology
India	Competition Act (2002), Section 4	Abuse of dominant position
United States of America	Sherman Act 15 USC, Section 2 (1980)	Monopolisation
European Union	Treaty on the Functioning of the European Union, Article 102	Abuse of dominance
Australia	Competition and Consumer Act 2010, Section 46	Misuse of market power

These regimes use different regulatory approaches to address issues stemming from dominant firms. Some prominent approaches that were explained by the discussants are:

(i) Capping a firm's market power: In this approach, regulators use market share as a proxy for a firm's market power[2]. This approach recommends that regulators must cap and split firms that obtain a certain level of market share. This was frequently practised in Europe, and the USA in the mid-twentieth century to constrain the powers and conduct of dominant firms (Hatfield, 1899). For instance, one of USA's largest telecom company AT&T was split into smaller companies in 1984 to enable robust competition in the telecom sector (Economides, 2005; Pollack, 1984). A similar approach was undertaken in India for regulating UPI. Decision makers limited the number of transactions that a payment company could support over UPI to address the growing concentration of payment transactions among non-bank providers (The Economic Times, 2019).

The discussants emphasised that the difficulty with this approach was in determining the market share at which firms should be capped, and how they should be split. Prescribing the wrong threshold for market share, or splitting firms in the wrong way can increase inefficiencies in the market.

[2] Market share refers to the portion of the market which a firm occupies, or the portion of total market sales or total market value that belongs to the firm (The Economic Times, 2019a).

(ii) Non-intervention in market activity: Next, the discussants shared the approach of non-intervention of regulators in the market. In this approach, dominance is considered as a position of privilege that a firm achieves due to superior performance. Scholars argue that the power to influence prices that rests with dominant firms encourages firms to strive for it, automatically correcting the market asymmetry (Hovenkamp, 2009). Regulatory intervention is regarded as unnecessary and expensive, preventing competitors from performing better. The discussants took the example of the USA, where regulators advocate for a hands-off approach for dealing with dominant firms in the belief that regulatory intervention could disincentivise them.

The problem with the approach of non-intervention in market activity is that dominant firms can also suppress competing rivals by misusing their market power. In such cases, competitors will be unable to correct for market asymmetry without regulatory intervention. Developments in the USA that took place after this keynote session suggest a change in the country's approach towards dominant firms (Stewart, 2019). The House Judiciary Committee launched investigations into antitrust practices of the BigTech firms in June 2019 (Cicilline, 2019). The Committee has a three point mandate: (i) documenting competition problems in digital markets; (ii) examining whether dominant firms are engaging in anti-competitive conduct; and (iii) assessing whether existing antitrust laws, competition policies, and current enforcement levels are adequate to address these issues (Cicilline, 2019). The CEOs of four major BigTech firms - Amazon, Google, Apple and Facebook - are likely to testify before Congress to support the proceedings of this Committee (Bloomberg Quint, 2020). The Department of Justice announced an antitrust review against dominant BigTech firms such as Facebook, Google and Amazon to investigate if their practices were stifling competition or causing consumer harm (The Washington Post, 2019). While the Department is yet to present its findings, it appears that issues of privacy violations, the unbridled collection of users' data could be considered as issues of market competition (The Washington Post, 2019). Senators and representatives have also called for reducing protections and splitting BigTech firms (The New Yorker, 2019). The Federal Trade Commission sanctioned a 5 billion USD fine against Facebook for violating user privacy in the Cambridge Analytica scandal.

(iii) Penalising abuse of dominance: In this approach, dominance is seen as an ordinary outcome of a firm's business activity. The approach does not call for regulatory intervention until a firm abuses its dominance to suppress competition, without increasing benefits for consumers or the market. Several countries have adopted this approach to address competition issues posed by dominant firms.

The discussants pointed towards the EU which had adopted the approach of penalising abuse of dominance in its rulings against dominant BigTechs such as Google (Satariano & Nicas, 2018; The Economist, 2019). The European Commission fined Google 1.49 billion

euros for abusing its dominance by restricting third party websites from providing advertising services to anyone except Google (European Commission, 2019). In earlier cases as well, the Commission had levied a fine of 2.42 billion euros on Google for favouring its own shopping services (European Commission, 2017). Google's abuse of dominance included displaying its shopping services on the first page of its search engine, and demoting competitors to subsequent pages, thus suppressing their visibility in the market.

Though based on a simple principle, this approach faces challenges in implementation. It is often difficult to prove that a firm has misused its market power without creating benefits for consumers and the market. Regulators need to assess a firm's unilateral actions in the larger economic context in order to argue abuse of dominance.

The growth of digital platforms and data-intensive economies based on consumer data further complicates this issue. The following section discusses the interface between competition law and data protection, and how the increased use of consumer data in our economies is creating new challenges for regulating dominant firms.

2.3. The interface between competition law and consumer data protection

Consumer data is fuelling the growth of data-intensive economies and digital platforms around the world. Extensive use of consumer data is allowing firms to explore new business models, and gain advantage over their competitors. These new business models and practices are challenging our existing understanding of market power and dominance in the market (Singh, Raghavan, Chugh, & Prasad, 2019).

Consumer data is helping firms generate more revenue and leverage greater market power either by improving their products, or by serving other consumers in multi-sided business models. Consequently, as firms serve more consumers, they also gather more consumer data. The discussants emphasised that providing consumers *free* services (or zero-price services) in exchange for more consumer data is one strategy for maximising the collection of users' data, which often entails significant economic losses for the consumer (Strong, 2018; Pani, 2018).

Network effects help firms attract more consumers to their digital platforms, and increase their market share rapidly (Ciuriak, 2018). Firms that have high market power and consumer data are also capable of entering new markets and displacing incumbent firms in the supply chain easily. Consumers are therefore becoming more entrenched with one dominant firm spread across different sectors (OECD, 2016). The discussants gave the example of Amazon which began as an e-book market, and slowly transformed into a dominant firm with a large consumer base in multiple markets because of network effects. This raised high entry barriers to new firms and monopolised the market (Ciuriak, 2018).

One school of thought argues that data protection concerns must be left to privacy legislations, and that competition law must be limited to address economic concerns. This school of thought considers privacy as a non-economic objective that has no place in competition law. The counter school of thought argues that the quality of data protection that firms offer to consumers forms an essential economic aspect of data-intensive economies. Consequently, if firms reduce the quality of data protection it can have an adverse effect on consumer welfare. The discussants highlighted four concerns that support the argument for considering data protection as an issue for competition law to deal with.

(i) Using consumer data in multisided business models can create monopolies: Transactions in traditional markets take place between a buyer and a seller. The growth of data-intensive economies has replaced traditional markets with digital platforms, where transactions occur simultaneously between multiple sellers and multiple buyers on opposite sides of the supply chain. Social media networks such as Facebook, search engines such as Google, or e-commerce firms such as Amazon are examples of multi-sided platforms which provide services to individual consumers on one end and simultaneously provide advertising services to firms on the other end to earn more revenue (OECD, 2016).

The discussants explained that firms engaging in multi-sided markets usually provide free services in exchange for personal data, that they in turn sell to advertising firms or to other buyers who value the data. Firms with large consumer base, further supported by network effects stand to gain significant market power in this context. Network effects endow these firms with increasing supply of consumer data that is sold to generate large advertising revenue (Khan, 2017). Equipped with rich data and economic revenue, these firms become well-poised to leverage this market power to enter new markets and replace incumbent firms.

In the presence of network effects afforded by consumer data, firms engaging in multi-sided market models are incentivised to degrade data protection for commercial benefit. In the absence of regulation, firms are free to collect, use and monetise consumer data, raising severe privacy concerns. Facebook's Cambridge Analytica case is a telling example, where consumer data was used to manipulate electoral choices in the USA (Hern, 2018). However, the discussants pointed out that with new regulations such as the GDPR, the California Consumer Protection Act, and India's draft PDP Bill, firms might be constrained from disproportionately benefiting from consumer data in the future (Graham, 2019; Sachdev, 2019).

(ii) Predatory conduct by digital platforms: Firms in data-intensive economies may develop new business models based on predatory conduct. In these business models, firms price their products as low as possible (sometimes at zero price) to undercut competitors in the market even if it leads to huge losses. In the process, competitors who can no longer

afford to make losses are forced out of the market by those which can. In the process, the predator firm acquires more consumers, a larger market share, and more market power.

The discussants observed that predatory pricing in India is typical of firms that are supported by large private equity funds, and are thereby able to provide large amounts of cashbacks (Parsheera, Shah, & Bose, 2017). Observers of the Indian digital payments market, for instance, noted that competition between digital payments firms such as Google Pay, PayTM and PhonePe is being driven by the value of cashback offers (Palepu & Sharma, 2019; Shashidhar, 2019). In the financial year 2019, the top four UPI-based payments providers in India spent close to 1 billion USD in advertisements and promotional rewards. Both the revenues and the losses for these providers were increasing with the volumes of transaction (Bloomberg Quint, 2019).

(iii) High entry barriers due to lack of access to data: Having access to large amounts of consumer data gives firms an advantage over their competitors. New entrants in the market that do not have access to consumer data face an uphill task of competing with data-rich incumbent firms. Competition regulators have mandated incumbents to share access to essential resources, in the past, in order to lower entry barriers. However, the discussants presented some compelling reasons that make it difficult to treat consumer data similarly.

Firstly, firms sharing consumer data with new entrants without the consumer's consent interferes with the consumer's right to privacy. Some regulators and courts have accepted this argument[3]. Secondly, unlike most resources, data is inexhaustive, and non-rivalrous. New entrants can compete with incumbent firms by curating their own consumer databases. However, it is yet to be seen if it is viable for new entrants to duplicate consumer data and compete with an incumbent dominant firm. Competition regulators, therefore, might need to find other ways to address high entry barriers raised by new firm's lack of access to users' data.

(iv) Direct exploitation of consumers: Dominant firms can misuse their market power by imposing unfair terms directly on consumers. In data-intensive economies this can include unfair conditions like forcing consumers to give firms wide powers to collect personal data

[3] For example, the Canadian case of Toronto Real Estate Board (TREB) v Canada (Commissioner of Competition). In this case, TREB maintained a record of real estate purchases that it shared only with its member real estate agents. The Competition regulator initiated anti-competition proceedings against TREB for abusing its dominant position by preventing access to an essential resource, and stifling innovation. During the proceedings before the Commission and in appellate courts, the TREB argued that it could not share the records because it needs to protect consumers' right to privacy. The courts accepted the TREB's argument about the importance to protect right to privacy. However, they held TREB liable for abuse of dominance because TREB did not share consumer data despite having consumer's consent to do so.

in exchange for services. The discussants took the example of the antitrust probe by Germany's Federal Cartel Office (FCO) against Facebook in 2019 (Bundeskartellamt, 2019b), where Facebook was accused of exploiting its users through its data policy, by collecting data from third-party websites that they browsed. While ruling on Facebook's data policy, the FCO examined the issue under the lens of the GDPR. It ruled that the policy was detrimental to private users, and competitors, and that it was the duty of the firm to protect user's rights[4]. Competition regulators in these cases must assess abuse of dominance by balancing the benefits of the conditions with the accompanying harms.

Exclusive control over consumer data and wide powers to collect it are fuelling the market power of firms in data-intensive economies today. Firms are incentivised to ignore considerations of data protection, and consumer privacy when designing their interfaces, which can diminish overall welfare. Therefore, when market power based on data is the reason for concern, competition authorities as opposed to data protection authorities may be better placed to regulate these practices (Buiten, 2019). Regulating firms under competition law to ensure fair data practices is crucial to both preserving privacy and ensuring competitiveness in the market. However, existing regulatory approaches discussed in the earlier sections can fall short of regulating these new business models properly. The following section explores some recent developments in competition policy that suggest a shift in regulatory posture towards tackling these challenges.

2.4. Policy developments in competition law in the context of digital platforms

The interface between competition law and data protection is slowly gaining traction around the world to help address the challenges created by digital platforms and data-intensive economies. Some major policy developments in the European Union and Australia discussed in the session were as follows.

(i) European Union: The European Commission released its final report on the *Competition Policy for the Digital Era* in April 2019. The report asserted that issues of data protection and competition cannot be looked at independently in the digital era. It emphasised on providing a "coherent overall framework that promotes the overarching goals of protecting individual rights, fostering innovation, and fostering competitive markets" (Cremer, de Montjoye, & Schweitzer, 2019). The European Commission had already noted in significant cases like the Microsoft/LinkedIn merger that privacy could be treated as a non-price competition factor when it affected the quality of services offered by a firm (Sakle & Chand, 2018; Microsoft/LinkedIn, 2016).

[4] Although the appellate court suspended the Commission's decision, it did so on the ground that the Commission did not prove detriment to users sufficiently. The Commission's appeal against the appellate court's decision is pending before the German Federal Court of Justice (Mundt, 2019).

(ii) Australia: The Australian Competition and Consumer Commission (ACCC) launched an inquiry into the effect of digital search engines, social media platforms, and digital content aggregation platforms on competition in media, and advertising markets, in 2017. It also investigated privacy concerns arising from digital platforms. It released its final report in 2019, which highlighted that existing regulatory frameworks for the collection and use of data were insufficient to address the challenges of digital platforms and data-intensive businesses. It recommended "a holistic approach that takes into account the close links between competition, consumer, and privacy issues." The report also recommended reforming privacy law to ensure that "consumers are adequately informed, empowered and protected as to how their data is being used" (Australian Competition and Consumer Commission, 2019).

3. Competition reforms required in the financial sector in India

The discussants analysed competition in the Indian financial sector to examine its implications for data-driven finance in India. They noted that competition in the Indian financial sector faces many challenges, which can be classified into old or persisting challenges that have been existing for some time, and new challenges that accompany the growth of the data-intensive economy[5]. Persisting challenges to competition in the financial sector were stated to include –

(i) Regulatory structure of the Competition Commission of India: The Competition Commission of India's (CCI) regulatory structure constrains its ability to regulate competition in the market. It does not have an executive board that can help the regulator make informed decisions. It has a common body that performs both executive and judicial functions, intervening in its duties to regulate competition. This severely constrains its effectiveness (Roy, Shah, Srikrishna, & Sundaresan, 2018). Discussants suggested the incorporation of recommendations from the report of the Financial Sector Legislative Reforms Commission (FSLRC) to create well-structured regulators. Broadly, the FSLRC requires regulators to have an empowered board with four kinds of members: the chairperson, executive members including an administrative law member, non-executive members and Government nominees. They are supported by experts-dominated, advisory council to help them on technical matters (Financial Sector Legislative Reforms Commission, 2013a).

The FSLRC also lays out action-points that can improve the interface between the Competition Commission and the financial sector regulators. These include (i) signing a Memorandum of Understanding to establish formal structures of co-operation between the regulators, (ii) empowering the CCI to input into drafts of financial regulations and financial

[5] This classification was made during the second Keynote session at the 4th Dvara Research Conference.

regulators must consider the representation made by CCI before finalising the regulations, (iii) review of regulatory provisions by the CCI to examine the effects of regulatory actions on competition and market structure on an ongoing basis, (iv) reference by CCI to a financial regulator, if the CCI initiates any proceedings involving a financial service provider, (v) reference by the regulator on any conduct of financial service providers that appears to it to be in violation of the Competition Act, 2002 (Financial Sector Legislative Reforms Commission, 2013a).

(ii) High entry barriers in the financial sector: The discussants noted that India's financial sector is characterized by high entry barriers created by sectoral regulations. Various regulations cutting across banking, insurance, payments et cetera prevent new age data-driven financial firms, or fintech firms, from entering and operating in these markets. Discussants worried that fintech firms in India are relegated to providing information technology services for legacy financial institutions. As a result, competition in India's financial sector is limited to legacy financial institutions that do not leverage the complete potential of fintech firms. Within legacy institutions, competition issues exist on account of ownership of firms. Financial sector entities owned by the government often attract differential regulatory treatment, further deepening the issues of competition in the country (Financial Sector Legislative Reforms Commission, 2013a).

(iii) Firms engaging in predatory pricing practices: Firms engaging in predatory pricing practices in order to acquire market share through network effects is a new concern arising from the expansion of data-driven finance. These patterns are visible among Indian firms that engage in predatory pricing in a bid to acquire greater market power and monopolise the market as quickly as possible. This is most telling in the Indian payments sector, where firms are relying on aggressive cashbacks to increase their market share. In the financial year 2019, the top four UPI-based payments providers in India spent close to 1 billion USD in advertisements and promotional rewards. Both the revenues and the losses for these providers were increasing with the volumes of transaction (Bloomberg Quint, 2019). Discussants worried that this form of competition is economically unsustainable and does not create long-term benefits in the market.

The discussants highlighted some recent policy developments such as the report of the FSLRC and the report of the Ratan Watal Committee on digital payments (Reserve Bank of India, 2016), that make recommendations for improving competitiveness in the Indian financial sector. The FSLRC recognised the importance of competition in the financial sector for consumer protection, and for enhancing consumer welfare. It suggested ways in which financial regulators could inter-act with the CCI to nurture robust competition in the financial sector as discussed earlier.

The Watal Committee released its report on digital payments in 2016 suggesting measures to strengthen the digital payments ecosystem (Reserve Bank of India, 2016). The discussants pointed out that

the Watal Committee drew upon some recommendations that were given in the report of the FSLRC. It cautioned against raising regulatory barriers that may prevent unregulated entities from connecting to the banking system, and therefore setting back innovation or consumer welfare. It also recognised that the payment ecosystem in India is primarily controlled by banks through the RBI or through the National Payments Corporation of India (NPCI), which is a consortium of banks. Therefore, it recommended opening up the payment ecosystem to non-bank entities allowing new firms including fintech firms to compete in the payments ecosystem and innovate along the supply chain.

The session concluded with a reinforced emphasis on ensuring and generating competitiveness in markets. In summary, the discussants cautioned that the three sources of market power (i) providers' control over proprietary data, (ii) network effects that underscore digital platform economies, and (iii) asymmetric regulations may unlevel the playing field for providers, and reduce the competitiveness of the digital economy.

4. Concluding Reflections

- Consumer data can afford dominant positions to firms in data-intensive economies. Network effects imply that the addition of a new consumer improves the quality of services for all existing consumers. This enables firms to serve more consumers rapidly and in-turn help firms gather more consumer data. Firms use consumer data to (i) customise their products to better serve the consumers, (ii) generate additional revenue by selling consumer data to third parties such as advertising firms and (iii) entering adjacent markets by building on insights offered by access to proprietary consumer data.

- The high amounts of consumer data and consumer insights enable firms to enter new markets easily and compete with incumbent firms by better catering to consumers' needs. This creates a reinforcing loop where firms that keep acquiring new consumer data can keep increasing market power and acquire more consumers. Typically, this rise in market power fuelled by strategies to maximise collection of consumer data raises issues for market competition and protection of consumers' data.

- There were crucial discussions on how firms misuse market power in data-intensive economies. Firms that accumulate significant amounts of market power can erode consumer welfare in the long-run by creating monopoly-like markets, offering inferior services and stifling innovation in the following ways.

    (i) Firms can lock-in consumers easily and provide inferior products. This allows them to offer poor quality products without facing the same, stern consequences as competitors with lesser market power. In the context of data protection this could mean poor quality

of privacy protections that could threaten consumer privacy and safety as seen in the Cambridge Analytica case in the USA, and the ruling of the German Competition Authority on Facebook's data protection policies (Bundeskartellamt, 2019b).

(ii) Firms with significant market power can generate richer consumer insights, and therefore enter new markets and monopolise them. Firms may use their strategic position as an infrastructure provider to access rivals' data and use it to undercut them. The losses made by undercutting rivals are cross subsidised by the revenue that they earn through personalised advertising (Khan, 2017).

(iii) Dominant firms in the Indian financial sector can also create systemic risks. Network effects in the data-driven financial sector can help fintech firms achieve dominant positions in the market and attract consumers in large numbers. As a result, they have the potential to become systemically important entities providing essential financial functions (such as payments) in the economy. This creates systemic risk as they can become a single point of failure and affect the functioning of the system as a whole (Carstens, 2018).

V

DESIGNING OPTIMAL REGULATION (FOR DATA-DRIVEN FINANCE)

1. Introduction

The fifth and final session of the 4th Dvara Research Conference focussed on designing optimal financial regulations for the new wave of technological innovations unfolding in the financial sector. It built on the discussions of the foregoing sessions to identify three differentiators between data-driven finance and *traditional* finance. First, data-driven finance is increasingly getting personalised i.e. the design and delivery of financial services are using more personal data and graduating to offering personalised services to consumers. Second, it is witnessing a greater degree of financial intermediation being enabled by technology-intensive, non-financial entities. Third, data-driven finance is witnessing greater convergence as financial solutions are getting increasingly integrated and are using similar technologies in their design and delivery.

The session discussed the effects of these features of data-driven finance on consumer protection and financial stability. The objective of the session was to identify the principles that must inform an optimal regulatory stance for overseeing data-driven finance. It was deliberate in its focus on optimal regulation, recognising the need for regulation to preserve the benefits of data-driven financial services while preventing and mitigating its potential harms. The primer[1] on *Designing Optimal Regulation* offers a background to these discussions.

In this context, the session opened with a lead presentation on *The Changing Regulatory Landscape in India and Emerging Prudential Considerations*. It led with the hypothesis that the emergence of data-driven financial services was endogenous to the financial system. The presentation set out the innovations in consumer-facing data-driven financial services available in India and the regulations they currently attract, providing the background for the ensuing panel discussion on the principles for regulating data-driven finance in India. The discussants on the panel shared their experience of regulating the financial systems in India and other jurisdictions, offering some early thoughts on the form and content of financial regulation. Panelists included Dr KP Krishnan (then at the Ministry of Skill Development and Entrepreneurship, previously Ministry of Finance), Dr Nachiket Mor (Former Director, Central Board and Regional Board in the Eastern area, RBI), Mr Sopnendu Mohanty (Monetary Authority of Singapore) and moderated by Ms Bindu Ananth (Dvara Research).

[1] This primer was created to provide background to the participants and support the discussions of this session. It is accessible at https://www.dvara.com/blog/2019/04/04/primer-on-designing-optimal-regulation/.

2. Lead presentation: The changing regulatory landscape in India and emerging prudential considerations

The lead presentation led with the hypothesis that the emergence of data-driven financial services is not an aberration. It traced the evolution of financial regulations to present the case that emergence of data-driven finance is a consequence of the steady adoption of technology in the financial sector and the regulatory changes that have accompanied it.

2.1. Emergence of data-driven financial services

The presentation proposed that the steady adoption of technology across the different functions of finance, set the foundations for data-driven finance. Some milestones in technological adoption in finance include the computerisation of services in the Indian banking sector as emphasised in the Committee on Mechanisation in the Banking Industry chaired by C. Rangarajan in 1984 (Reserve Bank of India, 1998). Further, in 1994 the Indian securities market adopted screen-based trading systems followed by dematerialisation of securities in 1996 (Shah & Thomas, 2002). In the area of payments, electronic funds transfer was started in 2005. This was followed by the introduction of online banking and Real-time Gross Settlement Systems (RTGS). The enforcement of the Payment and Settlement Systems Act (PSSA) in 2007 paved the way for non-bank entities to enter the payments system network. Together these created the foundation for the rise of data-driven financial services.

2.2. Evolution of the Indian financial sector

The presentation discussed the evolution of the Indian financial system from a traditional, paper-based system to that characterised by rising adoption of technology-intensive, data driven financial services (Ernst & Young, 2019). The Indian financial system is also graduating from being extremely fragmented and siloed, with deep sub-sectoral boundaries to a system with greater cross-sectoral activities enabled by the extensive use of technology (PwC & ASSOCHAM, 2019; Economic Times, 2019). In addition to the increased cross-sectoral interactions, service providers within the same financial function are also becoming more diverse. Financial services now differ on many counts including product design, features, ticket-sizes and delivery channels.

The presenters presented this shift in the composition of the Indian financial landscape through two contrasting diagrammatic depictions, also presented below.

Figure 1A: Integrated system of financial service provision

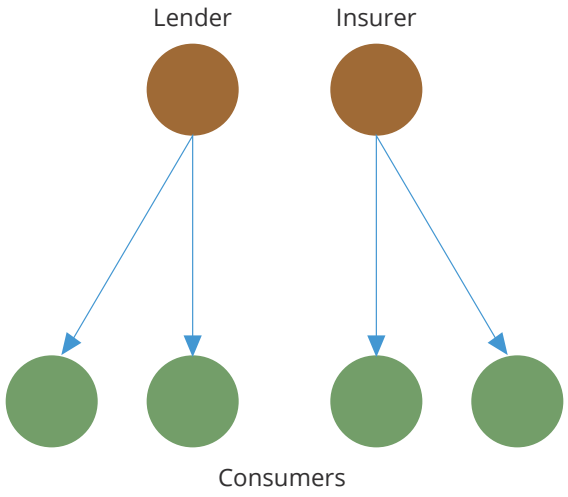
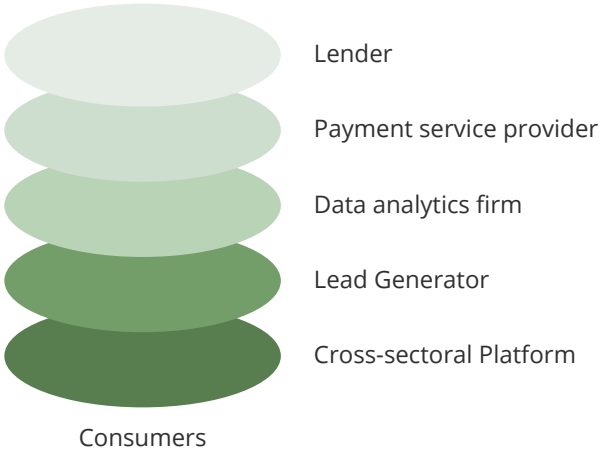


Figure 1B: Modular system of financial service provision



The figure in the left pane (Figure 1A) depicts the traditional financial landscape. It comprised linear and integrated value chains with few participants engaged in the process of designing and delivering financial services. Further it was a compartmentalised model, reflecting that various sub-sectors of finance had little overlap. This is now evolving into a modular system with multiple participants in the value chain of financial services, as depicted in the pane on the right (Figure 1B). This value chain is also made up of many non-financial sector entities such as technology service providers. Cross-sectoral platforms are also becoming increasingly integrated in the design of financial services.

A typical consumer-journey involves a consumer expressing interest in a financial service over a platform, which directs them to the underlying financial service provider via a direct sales agent (Deloitte, 2017). Technology service providers are further deployed for underwriting services and delivering the financial solution to the consumer. In the case of credit, the lenders employ both the traditional methods of underwriting and data analytics of alternate data to make credit decisions.

The participation of multiple non-financial technology providers creates new and several pathways for completing the same financial function. Consequently, the templates for financial transactions are not homogenous anymore. For instance, it is becoming increasingly common to be offered credit solutions at e-commerce platforms, option to defer payments for services such as cab rides and option to avail of loans through traditional financial entities such as banks. Short tenure, small ticket size loans embedded with features such as *pay as you go* and *pay later*, at scale are now becoming feasible. Financial solutions that were previously characterised as being homogenous, with limited ability to cater to users' distinct needs are now evolving to be more personalised and closely tied to their real economy needs.

This evolution in the Indian landscape is summarised through the comparative diagrammatic representation below:

Figure 2A: Landscape of traditional finance

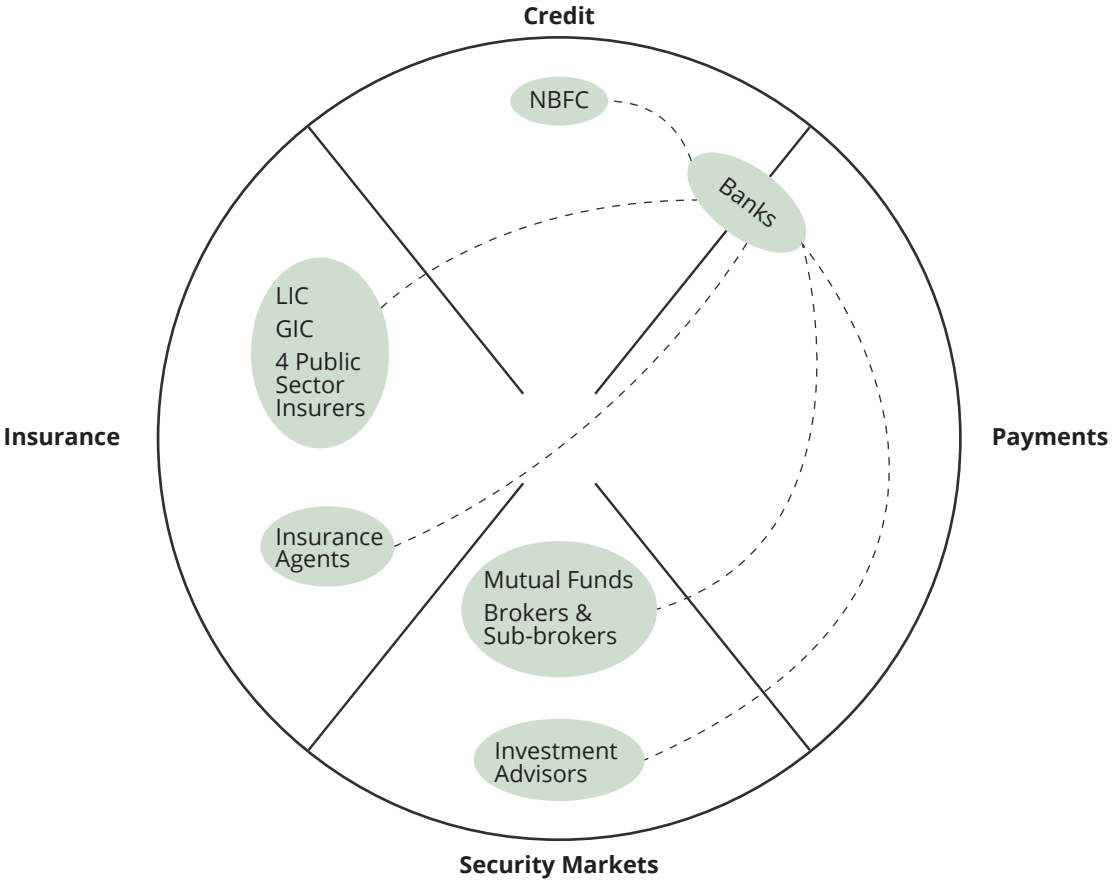
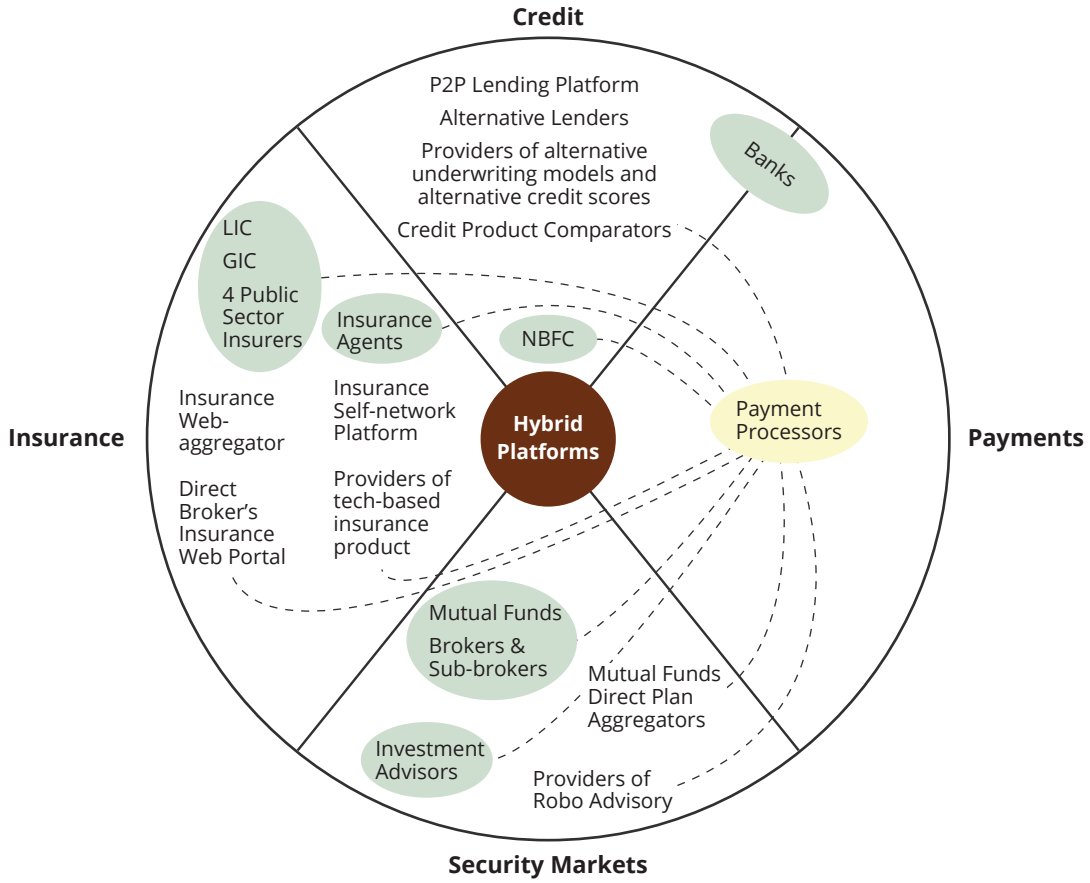


Figure 2B: Landscape of data-driven finance



The circles in the figure represent the universe of financial service providers and the demarcations in the circle represent the different financial sub-sectors. Figure 2A represents the traditional financial system. Each sub-sector is separated from the other, with deeply entrenched divisions reflecting a lack of cross-sectoral financial solutions. While in the case of security markets and insurance, the separation of entities is definite, banking entities lie between the payments and credit sector to represent the functionality of big banks as both creditors as well as gateways for making payments. Each sub-sector has few regulated entities, with most entities catering to most or all parts of the value chain of financial services. In contrast, Figure 2B reflects the landscape of data-driven financial services. While the sectoral divide between financial services still exists, it is more porous and permeable. This is due to the front-end and back-end convergence among providers of financial services.

In the specific case of credit, there exist P2P platforms which are technological intermediaries that match borrowers with willing retail lenders, banks or NBFCs at the back end (RBI, 2018). There also exist entities such as credit risk modellers that specialise in the function of creating credit-risk assessment models using alternative data. These models have disintermediated banks and human interfaces across the supply chain of financial services. Providers are no longer dependent on the data from relationship banking to offer financial solutions, or on human agents to originate consumers for financial services or on regulated entities to deliver the financial solutions. Figure 2B identifies various institutions across the different sectors, the centre of the circle representing a hybrid platform. This hybrid platform is a cross-sectoral front-end platform for the user which combines services across the financial sector. In this representation, we see that the old entities are not eliminated, but coexist with the newer entities. It is crucial to examine how this hybrid system of finance interfaces with the regulatory framework.

2.3. Regulation of data-driven finance: The status-quo

To offer an overview of the financial regulations applicable to data-driven financial services in India, Dvara Research presented their (then) ongoing work. The findings suggest that there are at least 14 types of consumer-facing data-driven financial services prevalent in India. The financial regulation applicable to each of these entities was also analysed to answer the question of how fintech is regulated in India (Chugh, 2019). It concludes that a discernible, ex-ante framework for regulating data-driven finance in India is absent. Similar functions of finance may be treated differently, and the rationale for it is not immediately apparent.

Figure 3: Regulation of data-driven finance (Chugh, 2019)

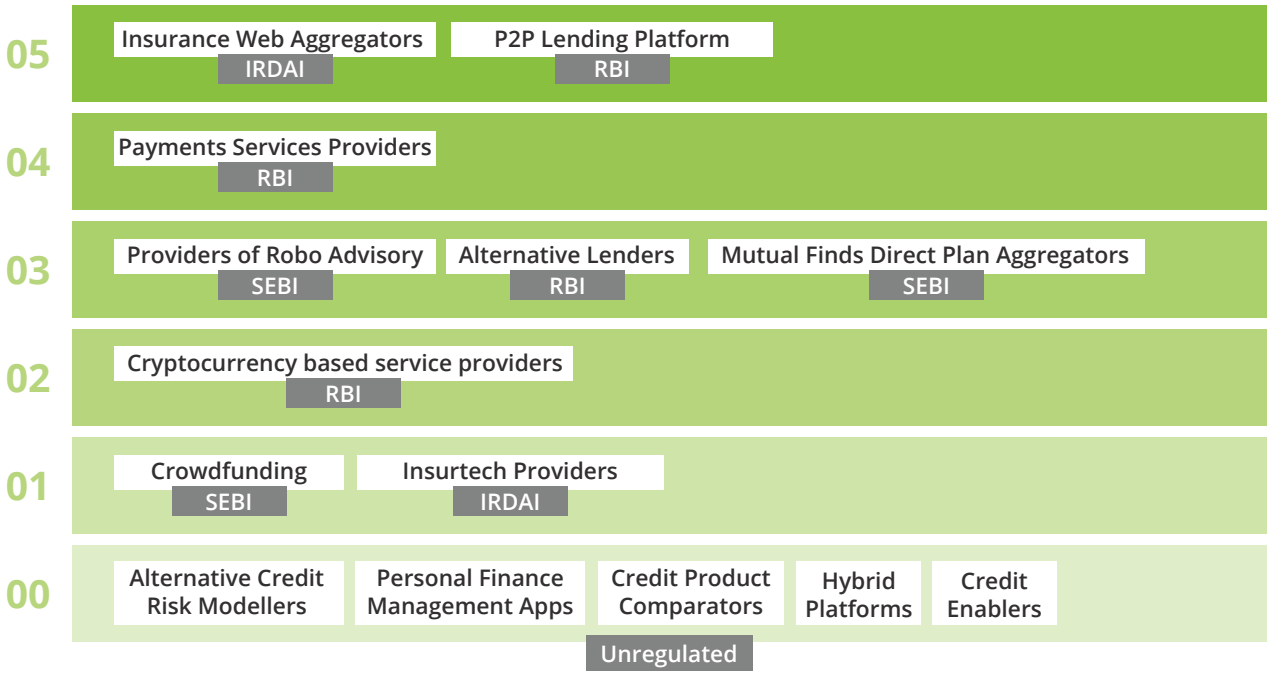


Figure 3 summarises the landscape of the 14 data-driven financial entities, arranged according to the extent of financial regulation they attract. The scores on the left-hand side reflect the extent of the financial regulation applicable to each type. As we progress upwards along the graph, the amount of regulatory oversight increases. This scoring is not a qualitative comment on the appropriateness, effectiveness or proportionality of the regulation. It only represents the amount of regulatory oversight the entities in the respective score class receive.

The research shows that (Chugh, 2019):

(i) Fintech activities are increasingly moving towards platform economies: At least five (Insurance Web Aggregator Platform, P2P Lending Platform, Crowdfunding Platforms, Credit Product Comparator Platform, Hybrid Platforms) of the 14 data-driven activities are designed as platform-based business models. Platform-based business models exhibit network externalities i.e. benefits accrued by each participant are positively related to the number of participants. Network externalities beget more users and more value for users (Bank for International Settlements, 2019).

(ii) Fintech business models are becoming increasing modular: Disintermediation of regulated entities is both a cause and effect of the rise of data-driven finance. This modularity implies that the same function may be performed through various permutations and combinations of entities and processes. For instance, a person wanting a consumer loan could avail of any of the four providers - (i) P2P Lenders, (ii) Alternative Lenders, (iii) Credit Enablers and (iv) Credit Product Comparators. While this increases the choice set of

providers available to the consumer, it is interesting to note that all providers do not offer comparable consumer protections. The providers may appear to be perfect substitutes in terms of the functions they perform but may offer very different protections to the consumers.

(iii) Regulators still assume an institution-based approach to regulation, which leads to regulatory arbitrage: Several instances of regulatory arbitrage, owing to institution-based regulation become evident in the spectrum. For instance, P2P Lending Platforms and Crowdfunding Platforms raise similar concerns for the lender/investor i.e. concerns around credibility of the borrower or business seeking investment, the riskiness of lending or investing and the uncertainty introduced by the sudden shut-down of the platform. While P2P lending platforms are regulated for these risks, crowdfunding platforms are currently unregulated.

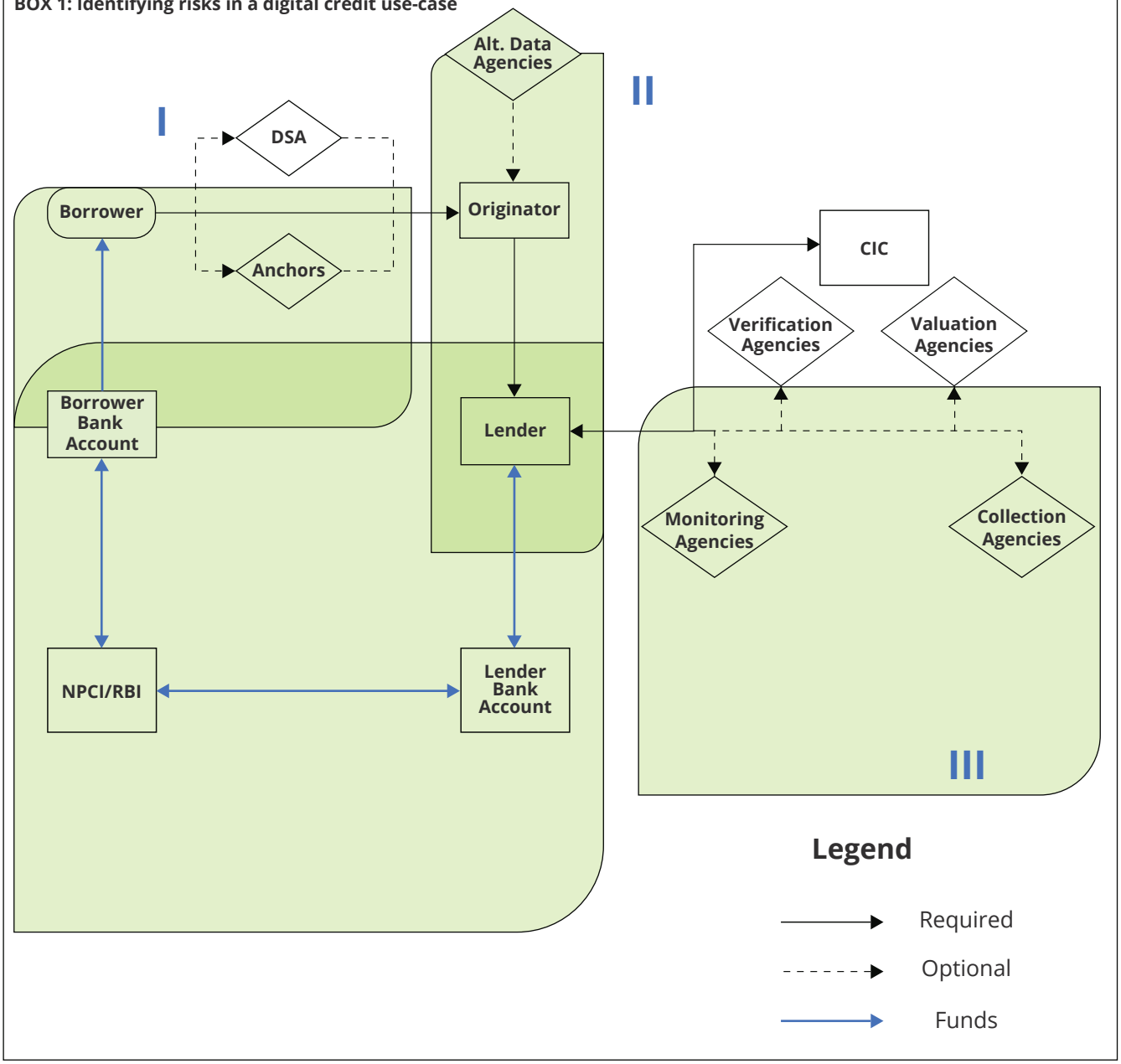
2.4. A framework for financial sector regulation

A clear understanding of the risks created by data-driven financial services and the gaps in the existing regulatory framework to mitigate them is crucial for optimal regulation of data-driven financial services. The presenters took the example of digital credit to highlight the risks created by data-driven financial services.

In the rapidly digitising financial landscape, several entities plug into different stages of design and delivery of financial services. These entities are involved in the origination of credit through lead generation, credit-risk assessment and post-disbursement processes such as collection and monitoring. The increase in the number of intermediaries between the borrower and lender gives rise to a multi-staged transaction, which is completed in very short intervals of time due to the extensive use of technology. The presenters analysed each stage of the transaction to determine if the entry of new players raised financial risks.

Figure 6: Schematic for digital credit

BOX 1: Identifying risks in a digital credit use-case



Stage I: Physical access to financial products through direct selling agents (DSAs) of banks and services is replaced by online platforms that do not appear to be regulated. This regulatory vacuum can potentially add to the risk of misconduct and mis-selling of products. These app based providers are reported to charge high interest rates, not disclosing the partner bank or NBFC, and harass consumers by calling them at odd hours or shaming defaulters with social media posts (LiveMint, 2020). Alternatively, the same risks faced during a traditional interaction between a consumer and a DSA may be replicated on the digital platform.

Stage II: Lenders partner with credit-risk modellers that use data analytics to determine the credit worthiness of consumers. While this may increase the efficiency and reduce the time taken to assess the creditworthiness of prospective borrowers, it may have implications for consumer

protection as well as the system as a whole. Regulators emphasise that data-driven financial service providers must assess the quality of data before using it in important banking decisions such as credit underwriting (Board of Governors of the Federal Reserve System et al., 2020). Other concerns include the ability to protect consumers' data and the relatively procyclical nature of alternative lending. Early on, the Bank for International Settlements concluded that the size of alternative lending currently is quite small to pose systemic risks. However, they noted that fintech credit provision could be relatively procyclical because of a deeper association with loss of investor confidence, especially during times of stress (Committee on Global Financial Systems & Financial Stability Board, 2017).

Stage III: Lenders use third-party agencies for functions of collection and monitoring of consumers' credit. While this is not a new practice, now, these entities plug directly into the banks' and NBFCs' data infrastructures. This calls for great caution in outsourcing these functions as a simple data breach on the third-party agency's infrastructure may compromise data being held with the bank or the NBFC. In the context of data-driven finance, operational risk on account of deficiencies in cyber-resilience of third-party providers is recognised as a potential source of systemic risk (Bank for International Settlements, 2018) .

These risks merit regulatory attention. Intermediation of financial services delivery by specialised entities introduces efficiencies in the entire system but can also introduce risks in the transaction value chain. In the traditional financial system, different processes of the transaction were handled by the regulated lenders in an integrated manner, internalising these risks. Now, the onus of identifying and partnering with secure and robust third-party entities rests with these regulated lenders.

The presenters reiterated that in India, there are two classes of regulatory actions available for non-bank financial entities — prudential regulations and conduct regulations. Prudential regulation refers to the set of laws and rules designed to minimise the risks banks assume and to ensure the safety and soundness of both individual institutions and the system as a whole. Examples of prudential regulation include lending limits, minimum capital adequacy guidelines and liquidity ratios (D'Souza, 2000). Conduct regulations include Fair Practice Codes (FPC), Anti-money Laundering (AML) codes and corporate governance rules. Regulator's decision to apply prudential or conduct regulation is governed by the underlying function being performed by the entity. The function of holding public funds attracts prudential regulation while the function of directly interfacing with the consumer and offering them a financial service attracts conduct regulations (George, 2019). Entities that perform both these functions such as microfinance lenders are regulated by both prudential and conduct norms. In the case of data-driven financial services, the regulators may have to widen their understanding of consumer interface to include the digital interface of non-financial service providers with consumers and regulate them as per suitable conduct guidelines (George, 2019).

Theoretically, the role of regulations in the financial sector is to prevent excessive risk-taking and maintaining systemic stability (Deakin, Mayer, & Partnoy, 2015). Other objectives of financial regulation include ensuring that markets function well and consumers are well-protected (Financial Sector Legislative Reforms Commission, 2013b). These concerns apply consistently to both traditional and data-driven financial services.

3. Discussion

The panel discussion and the audience engagement that unfolded in the session are set out below:

3.1. Interpreting optimal regulation for data-driven finance

Experts in the room emphasised that the institutional framework governing the Indian financial sector comprises a mosaic of legislations, some of which date back a century. Consequently, the existing system is obsolete in some parts, confusing, ridden with inefficiencies and can create many gaps in its regulation of data-driven financial services. A number of expert committees have pointed out these redundancies and have recommended an overhaul of the financial sector legislations to rectify them (Financial Sector Legislative Reforms Commission, 2013b). This includes the Dr L.C. Gupta Committee on Derivatives in 1996 (Parakh, 2002), the High-Powered Expert Committee (HPEC) on Making Mumbai an International Financial Centre chaired by Percy Mistry in 2007 (Ministry of Finance, 2007), Report of the Working Group on Foreign Investment chaired by U K Sinha in 2010 (Ministry of Finance, 2010) and the Report of the Committee on Investor Awareness and Protection chaired by Devendra Swarup in 2009 (Ministry of Finance, 2009) amongst several others.

Discussants recommended that the overhaul of the financial legislation should be based on sound principles that apply consistently to all entities across all regulators. This is likely to reduce the risk-arbitrage which is currently common in the system and provide for a coherent consumer protection framework. The experts observed that the issue of consumer protection in financial sector regulations in India does not get its due. They noted that the first financial sector regulation to expressly incorporate the mandate of consumer protection was the Securities and Exchange Board of India (SEBI) Act, stating investor protection as one of its functions (Securities and Exchange Board of India, 2014). The design of the new regulatory framework must ensure consumer protection as one of its central pillars, especially due to the enhanced risks they are now exposed to, as discussed during the lead presentation.

The Indian experts reminded the group of the report of the FSLRC which was an exercise aimed at restructuring the architecture of the financial sector, identifying principles for optimal regulations, creating strong regulatory institutions and adopting a universal grievance redress framework (Financial Sector Legislative Reforms Commission, 2013b). The FSLRC identified 9 key objectives that financial regulations must address in the Indian context. These include:

(i) Consumer protection by creating a comprehensive consumer protection regime that shifts the burden of consumer protection from the user to the provider,
(ii) Micro-prudential regulation to ensure that failure of firms does not adversely affect consumers,
(iii) Creating a resolution framework to help stressed financial firms to efficiently exit the system and protect the interests of small customers,
(iv) Capital controls rationalisation to ensure that restrictions on cross-border activity on the capital account comport with rules of public administration and law,
(v) Systemic risk measurement and undertaking interventions to diminish it,
(vi) Development of market infrastructure and redistribution based on sound principles of public administration and law,
(vii) Creating a sound monetary policy framework with clarity of objectives, powers and supported by accountability mechanisms,
(viii) Sound public debt management to enable low-cost financing in the long run, and
(ix) Creating stronger legal framework for contracts, trading and market abuse (Financial Sector Legislative Reforms Commission, 2013b). The experts emphasised that it may be worthwhile to revisit this framework and examine if data-driven finance called for any changes to it.

3.2. The need for specific regulations for data-driven finance

There was a sense of anxiety among participants that the new regulations may disproportionately apply to the newer, data-using entities to uphold consumer protection, but not to the incumbents who may subject consumers to the same risks. Providers in the group emphasised that data-driven financial services should not be penalised for their use of data or technology. They made the case for encouraging the use of data as availability of more and varied data can aid in identifying and eliminating risks better. These concerns can be assuaged by devising technology-neutral, proportionate and risk-based regulation for all financial sector entities. Technological-neutrality focuses on the nature of activity being performed and desired outcomes expected of providers without differentiating on the basis of the technology being used to offer the service (Asian Development Bank, 2019). The principles of proportionality and risk neutrality present timeless basis for devising financial regulation. Proportionality focuses on greater restrictions for greater risk while risk neutrality refers to equal treatments of equal risk (Financial Sector Legislative Reforms Commission, 2013b).

3.3. The proposed Data Protection Authority (DPA) and its interaction with the financial sector regulators

The Ministry of Electronics & Information Technology (MeitY) introduced the draft PDP bill building on the recommendations of Committee of Experts under the Chairmanship of Justice

B.N. Srikrishna in 2018. This draft Bill proposed the establishment of a Data Protection Authority (DPA) that would be responsible for the implementation of the provisions of the PDP bill (Ministry of Electronics & Information Technology, 2018). Presently, a revised version of Bill has been introduced in the Lower House of the Indian Parliament[2].

Considering the widespread collection and use of personal data in data-driven finance, financial sector regulators will need to coordinate with the upcoming DPA to ensure there are no divergences and scope for regulatory arbitrage. A timely interface between the authorities can reduce the scope of divergences that can potentially create confusion among participants and increase compliance costs. For instance, financial sector regulators in Europe have been expending considerable time and effort to reconcile the data protection framework set out in the EU Payments System Directive 2 (PSD-2) and the GDPR, in order to ensure regulated entities are able to meet requirements of both. The European Bank Federation set out guidelines for participating banks on complying with both the directives (European Banking Federation, 2019). Similarly, the proposed DPA and financial regulators will benefit from making pathways for effectively interfacing with each other and frame data protection regulations that are relevant to the needs of the financial sector.

3.4. Regulatory framework for the data-driven financial services: The Singapore experience

(i) Regulation of FinTech: In 2015, the Monetary Authority of Singapore (MAS) set up the FinTech and Innovation Group (FTIG) with the objective of developing regulatory policies, managing risks and enhancing efficiency of the financial sector (Monetary Authority of Singapore, 2019). The FTIG focused on understanding the nature of operations of data-driven financial services, the significant components and processes used by them, and deployed regulations in a stepwise manner to address each of the identified sources of risks and concerns. Some of the key initiatives of the FTIG include:

(a) Creating the Cloud Services Implementation Guide: Cloud computing and cloud storage were identified as significant platforms for technology driven companies. The MAS along with the Association of Banks in Singapore (ABS) co-created the Cloud Services Implementation Guide for the use of cloud services by financial institutions (FIs). This implementation guide addresses cloud services outsourcing by FIs, the due diligence to be conducted before the FI enters into an

[2] The Personal Data Protection Bill 2019 was introduced in the Lower House of the Indian Parliament in December 2019. This Bill has been referred to a Joint Parliamentary Committee. This Bill is a revised version of the draft Data Protection Bill that was submitted by the Committee of Experts under the Chairmanship of Justice B.N. Srikrishna to MeitY in 2018.

outsourcing arrangement and a minimum set of controls recommended for the outsourcing (ABS & MAS, 2016).

(b) Creating guidelines for financial service API(s): The MAS also revisited the outsourcing guidelines for third-party Application Programming Interfaces (APIs) used by the fintechs in Singapore. The MAS and ABS jointly introduced 'Finance-as-a-Service: API Playbook' that lays down the implementation and usage guidelines of APIs by FIs and provides a governance framework for the same (ABS & MAS, 2018).

(c) Formation of the Cyber Security Advisory Panel (CSAP): Singapore lacked cybersecurity guidelines within the existing financial structure. In 2017, MAS formed the Cyber Security Advisory Panel (CSAP) which advices the MAS and FIs in Singapore to build cyber resilience. The MAS also releases periodic notices on requirements of cyber hygiene by different entities (Monetary Authority of Singapore, 2019).

(ii) Regulation for payments systems: The MAS also revisited the payments regulation to incorporate four safeguards of customer protection, Anti-money Laundering & Countering Financing of Terrorism (AML/CFT), interoperability and technological risks. The payments system in Singapore was not interoperable. To solve this, the MAS and the ABS introduced PayNow, a P2P funds transfer service for retail customers that allows fund transfer, through mobile numbers or citizen/resident identification numbers (PayNow, n.d.) similar to the UPI in India.

(iii) Supervision Technology (SupTech): With the large number of entities in the financial system, one must recognise the limitations in the capacity of the regulator to regulate them. The MAS aims to move to supervision technology (or SupTech) system by 2022 with all their banks. This will automate the reporting duties of all banks by using APIs. Reports are created in machine-readable formats, allowing for data analytics. The MAS, for instance has created a data analytics system that examines Suspicious Transaction Reports (STR)[3] that FIs file with the MAS. This system uses Natural Language Processing (NLP) and Machine Learning to identify and segregate legitimate AML violations more efficiently (Broeders & Prenio, 2018).

The participants of the conference were convinced of the need to first understand the nature of risks generated by data-driven financial services and then designing proportionate regulatory responses to them. The participants sounded caution on having asymmetrical regulations for data-driven and traditional financial services, with

[3] Suspicious Transaction Reports (STR) on money laundering and terrorist financing risks (AML/CFT) that financial institutions file with MAS. About 3,000 STRs are filed with the MAS every month (Broeders & Prenio, 2018).

the former being penalised for their innovative means. Other discussants in the room emphasised the need for designing principles-based regulatory approach that reduces the risk of regulatory arbitrage, creates a robust consumer protection framework covering the financial service provider and extending to technology service providers if required.

4. Concluding Reflections

- Financial functions are more stable than financial institutions. In the words of Robert Merton "Functions change less over time and vary less across geopolitical boundaries; and competition will cause the changes in institutional structure to evolve toward greater efficiency in the performance of the financial system" (Dvara Research, 2017).

- In the context of data-driven finance, a functional regulation also tackles the concerns that arise when entities, such as technology service providers, who are unregulated by financial sector regulations face consumers. A risk-based approach focussing on functional regulation, irrespective of the regulated status of the entity facing the consumer, could manage the risks that are externalised on consumers in the current regulatory framework (Chugh, 2019).

- Currently, there are consumer level risks that arise due to data-driven finance, which were discussed in the previous sessions of the conference. These risks include the risk from data inaccuracies, the use of data that is based on uninformed consumer consent, the potential for discrimination, and heightened exposure to cyber risks (International Committee on Credit Reporting, 2018). There are also systemic risks that can arise due to the risk of concentration among providers, which were outlined in Session 4.

- This creates certain considerations and lessons for regulators.

  (i) There is a need for increased coordination among financial sector regulators. Coordination within financial sector regulators can lead to the creation of coherent consumer protection frameworks and reduce costs of financial transactions. Greater integration of financial products provides renewed impetus to a unified grievance redress agency. In this regard, the Report of the Financial Sector Legislative Reforms Commission offers a blueprint for the creation of a Financial Redress Agency (FRA) (Ministry of Finance, 2013). The FRA was envisioned as a consumer-facing front-end with offices at the district level capable of registering complaints regarding all financial products. Following the compliant registration, the FRA would channel the complaint to the appropriate regulator, and financial service provider in the backend through technology-intensive processes for resolution via mediation and light-weight adjudication (Department of

Economic Affairs, 2016; Dvara Research, 2020). Consumer protection will also benefit from a shared understanding and uniform application of conduct-guidelines across the sector to prevent any gaps in consumer protection, especially as financial products become more integrated.

(ii) Separately, there needs to be increased coordination between financial sector regulators and non-financial regulators. The discussions in the conference and prominent policy circuits emphasises the need to encourage greater coordination among financial sector regulators and non-financial sector regulators such as the data protection regulator and the competition regulator. Initiatives such as open banking, data portability in financial sector will require the three regulators to arrive at a common understanding of the scope of these initiatives, the types of data and entities that must be covered and the data protection safeguards that must be applied to them (Bank for International Settlements, 2019; Carstens, 2018).

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