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Collaborative Consumption, Market Failure and Governability A Study of Gig Workers in Bangalore

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RESEARCH PROJECT FOUNDATION TO AID INDUSTRIAL RECOVERY (FAIR) BANGALORE, INDIA (2022)

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In recent time the economic and business models are undergoing disruptive changes bringing in several issues of which pertinent is the market failure (or even state failure). The absence or failure of market poses challenges in terms of governance and governability. Climate change is one of the imminent fallout of this failure posing serious governability issues and challenges. Researchers for decades have also been engaged in discussing several such institutional failures in the context of natural resources like water, forest, fisheries, minerals, air quality. Institutional mechanism like collective action and conditions thereof, decentralized governance, interactive governance are some of the proposed models that have seen limited replicability and scalability. At the core of the institutional failure lies the collaborative consumption of the resources, rivalry and/or excludability in consumption leading to ill-defined property rights structure and hence market failure. These issues are not only imminent in the context of natural resource management and climate change but also in the rapidly emerging new economic activities like shared (or gig economy), cloud computing space, and emergence and wide applicability of Open Source Software (OSS). While in the context of natural resource management the general trajectory of institutional evolution is viewed as from 'informal' to 'formal' (though such ideas are contested) leading to various experimentations on its governance, in other three contexts, the evolution has been disruptive from a well-defined private property rights regime to a system of collaborative consumption that challenges the existing property rights regime. These raise several questions; whether market system would evolve to address the transactional dimensions of the new forms in shared economy, cloud computing and OSS space? Are there governability and governance issues in these rapidly emerging economic activities context? The trajectory of institutional evolution in these three contexts, whatever form may be, would be different from the way natural resource management has evolved. At the same time, the existing body of literature and experimentations in natural resource management and climate change management would provide plausible path to address the market failure and governability in these three and similar context.

Our attempt in this commentary piece is to explain the characteristics of collaborative consumption in the context of natural resources, shared economic models in services, cloud computing, and OSS. We would then explain the imminent reasons of market failure in each of these contexts that would raise governability issues. Drawing lessons from existing literature we would attempt to suggest what could be plausible paths for governing these rapidly emerging economic activities.

1. Sharing and Gig Economy: Collaborative consumption, Market failure, and Governability

Sharing economy is one the recent addition to the consecutive waves of two-sided technology led market models that has found global acceptance; the earlier models being e-commerce followed by social media. The term sharing economy represents an umbrella term and encompasses terms such as access economy, collaborative consumption, gig economy, collaborative economy etc. (Martin, 2016). This business model transcends multiple sectors such as travel, transportation, logistics, education, finance, health, people/ skills, household goods etc. (Biswas &Pahwa, 2015). According to PWC (2015) assessment, sharing economy businesses are estimated to be US\$15 billion in size (2015 estimate) and poised to grow to US\$335 billion by 2025.

Notwithstanding the plethora of definitions available in literature (Bardhi&Eckhardt, 2012; Richardson, 2015; Hamari et al., 2016; Barnes & Mattsson, 2016; Sundararajan,2016 ; Martin, 2016; Mair& Reischauer, 2017; Munoz & Cohen,2017; Bocker& Meelen,2017) over the period; the common attributes of the sharing economy can be summarised as following. The sharing economy is a (a) two-sided technology led business model (b) which facilitates access to resources, (c) between unknown set of peers, (d) may or may not involve financial transaction. For the purpose of this paper, we will use the definition put forth by Oxford dictionary; "An economic system in which assets or services are shared between private individuals, either free or for a fee, typically by means of the Internet" (Sharing Economy, n.d.).

Sharing economy focuses on access as the exchange logic (Bardhi&Eckhardt, 2012) in contrast to other transfer of ownership logic used in e-commerce model. Access implies temporary usage to a resource. The access spectrum can range from market and non-market exchange logics (Scaraboto, 2015) as rent and share respectively. For example, popular firms such as Uber, Ola, Airbnb could be classified near the rent side of the spectrum, firms such as Couchsurfing, BlaBlaCar and Quickride can be positioned around share side of the spectrum. Further, sharing as a phenomenon could be distinguished as having a communicative as well as distribution centric logic (John, 2017), the former used in social media models and the latter the focus of sharing economy model.

Share as an exchange logic is new to the domain of business and commerce, hitherto confined to a known set of people and governed by localised informal norms and customs. The usage or property rights are not clearly delineated (Sundararajan, 2016) leaving the system susceptible to maladaptation. This is clearly reflected in the multitude of issues and frequent run-ins with its various stakeholders. Potential market failures in the sharing economy can arise from information asymmetry, externalities, the blurring boundaries between the personal and the professional (Cohen & Sundararajan, 2015). In the absence of a core governance structure or mechanism, there exists problems of moral hazard and ample opportunities are available for self-serving opportunistic and guile agents to flaunt their behaviour available without worrying about repercussions (Hertog, 2010; Sundararajan, 2016, pg. 75). The issues relate to stakeholder concerns around safety, pricing, employment, monopoly concerns etc.

a) **Pricing issues:** Sharing economy firms have gain notoriety in recent years due to introduction of dynamic pricing or surge pricing as popularly known. While the firms justify this pricing strategy as a means to streamline demand-supply mismatches, many amongst

the user communities perceive this to a case of deliberate overcharging. Such is the scale of this issue that statutory authorities are increasingly stepping in to regulate the prices and bring some parity. In the context of "sharing/ collaborative consumption", pricing of services becomes a sensitive domain, which needs robust governance mechanism.

- b) Safety issues: In a scenario where in products/ services are channelized through an intermediary, an important question on the responsibility front arises. Essentially it centres on the participant's safety and the primary ownership of such a responsibility. For instance, in India, the incidences of providers molesting female users in Delhi, Bangalore and many other places gained a lot of media attention, digging a deep hole of distrust against the sharing economy firms. In a world of clearly delineated property rights, this question is answered easily through the notion of ownership. For example, in traditional models, employers are liable to provide safety to employees within duty hours and also liable to compensate users for any safety issues arising from the product or service. In the case of sharing economy, this aspect is questionable.
- c) Service related Issues: Users are often accustomed to certain acceptable level of quality and performance standards and carry a threshold level of performance expectations for any service (Sundararajan, 2016, p. 15). In the sharing economy, such issues can emanate from both the intermediary and the provider. It becomes difficult for a user to be tolerant about even isolated incidences of inconsistent services, creating a negative image of the intermediary and losing brand trust. At the same time, there are evidences of moral hazard (Sundararajan, 2016, p. 66) being displayed with the users showing a callous and apathetic attitude towards upkeep of the shared resource during usage. In fact, various Governmentsare ushering in policies / regulations to ensure standardisation of service delivery. For example, homestays/ Bed & Breakfast category providers in India are required to have a license to operate from the Tourism Ministry ("Guidelines for approval and registration of bed and breakfast establishments", n.d.) and devised service quality categories such as Gold and Silver to distinguish these homestays.

- d) Employment related issues: The sharing economy is also known as gig economy; defined in the Oxford dictionary as "a labour market characterized by the prevalence of short-term contracts or freelance work as opposed to permanent jobs" (Gig Economy, n.d.). The gig economy now has a separate standing of its own and includes all kinds of freelancing employment opportunities and contract positions. Within the sharing economy, the employment status of provider peers in the sharing economy is a very intriguing one. The lines that divide professional and personal, between formal and casual work are increasingly getting blurred (Sundararajan, 2016, p. 88). In the absence of clear definitions, the intermediaries often reaffirm their position that the provider peers are not employees but voluntary users in the system or at best independent contractors. However, in practice, the provider peers are subject to many restrictions by the intermediaries along the lines of employees in the formal sector, and the distinction is often getting blurred or even being taken advantage off. In early 2017, it was reported that around 100,000 drivers attached to Uber and Ola in India went on strike against exploitative practices adopted by them (Naishadham, 2017, Feb 24). Incidences such as these exacerbate the need for appropriate governance structures and mechanisms.
- e) Monopoly concerns: The tendency of firms to supress competition and become monopolies is well documented in market economies and sharing economy firms are not immune to such tendencies. For example, by offering deep discounts to users and incentives to providers, sharing economy firms continue in their ongoing efforts to out throw the other players as well as each other from the market and in the process establish as a near monopoly.

Is governability an issue?

Each of the above mentioned set of issues has had a profound influence on growth as well as on societal perceptions. Appropriate governance structures and mechanisms are needed to strengthen sharing economy model and refrain it from being collapsing under its own strain. In the absence of appropriate governance structures and mechanisms, the statutory bodies have time and again been obligated to issue guidelines and regulations to reduce such instances. However, such ex-post measures may not be optimal and lead to systemic level concerns. Regulations typically tend to

play the catching up game in its attempts to solve today's issues often with yesterday's solution and in a silo manner. Thus, inadvertently, they may end up constricting the sector's growth prospects rather than aiding its development. To summarise, while the growth prospects for the sharing economy business model seems bright, the increasing number of issues raises concerns around the governability of such a model and likely to constrain the model's future growth prospects and sustainability.

The continued existence of numerous issues from its inception, points to the extent of governableness of the sharing economy model. In a typical shared economy model, the nonstandard nature of contract as well as inadequate property rights allocation is possibly one of the primary reasons for the multitude of issues it is grappling with. While, the ownership of the resource tends to reside with the provider peer, the rules governing access or use are not clearly defined for "sharing" as an activity, leading to property rights issues. For example, if the resource in question is a vehicle, such as in the case of Uber, the ownership of the vehicle resides with the provider peer. There are, at best norms, which the user are educated to be aware of during sharing. However, such norms are not enforceable in the court of law. At this juncture, there is perhaps a need to qualify that "renting" as an activity is quite matured in commerce and is legally better defined in specific instances, such as in the case of real estate industry. However, the short temporal aspect of use, facilitated by a third party agency as in the case of sharing economy transactions currently renders them legally unamenable. In the absence of such property rights, issues are bound to crop up with relation to the judicious use of the resource in question.

Similarly, the possibility of moral hazard and adverse selection can potentially crop up between the actors in the sharing economy (Sundararajan, 2016, p. 73). The issues of agency, pertaining to moral hazard and adverse selection, usually surfaces primarily due to differences in risk taking ability, goal incongruence and information asymmetry between the principal and the agents, causing disturbances in otherwise cooperative behavior amongst them (Eisenhardt, 1989). Further, the agency theory advocates that such differences necessitate the alignment of incentives prior to the transaction and extensive monitoring by the principal (Jensen &Meckling, 1976). The fungible nature of user and provider makes the contractual arrangement ambiguous and tricky.

Hartl et al. (2016) in their study find support for formal governance amongst a majority of users due to the notion that governance tends to increase cooperation. However, they also identify there is strong opposition by many stakeholders who were worried about its negative impacts.Similarly, Bardhi&Ekhardt (2012) identified regulations as one means to effectively tackle the issue of commons in the sharing economy. Such discussions in extant literature lead one to focus on the state of governance void in the sharing economy. However while governance are likely to effective in the "rent" side of the access spectrum, they may not be so in the "share" side of the spectrum. The issue of governability or the quality of being governable is more pertinent when we consider share as the exchange logic.

What are the existing governance experimentation and plausible governance structures?

Literature refers to four broad approaches to regulation in the context of sharing economy, viz.governmental regulations, delegated regulation, self-regulation and peer regulation (Sundararajan, 2016, p. 77). The sharing economy is still in its infancy stages and while the stakeholders involved attempt to formulate policies or regulations, it should take extra care in not strangulating the sector growth and maturity. An ideal governance framework for the sharing economy will be one which can address the key concerns of actors as well as enable the growth of this model. While research is still underway, initial academic discussions point to self-regulation with some level of governmental oversight as an optimal way forward for the sharing economy (Cohen& Sundararajan, 2015; Koopman et al., 2015). For this to fructify, there is a need to change the mind set of viewing the intermediary firm as an entity to be regulated to one which is a key actor in the regulatory framework (Cohen & Sundararajan, 2015). In the interim period, the role of trust assumes predominance in such a system and all stakeholders should take care to ensure that the system is net trust positive.

2. Open Source Software (OSS): Collaborative consumption (CC), Market failure and Governability

Governance is defined as "the aggregate of governing activities carried out by societal actors in response to public needs and visions" (Kooiman and Bavinck 2013). The Governability is defined as signifying "the overall capacity of governance" of a societal system. The attitude of Information

Technology (IT) firms is shifting from the closed software or product development and services environment to open and collaborative development environment. IT firms started to realize the advantages of this move by witnessing the success of many open source software products and projects including After the success of the Linux operating system, Apache Web Server (Margan & Čandrlić, 2015), Mozilla Firefox, Perl, Python, Eclipse and several other OSS. More IT firms are adopting OSS and are considered it as a strategic need. The success of the collaborative development model of OSS projects is inspiring the software firms. They want to be a part of the OSS community either being a member or by initiating community groups. The Information and Communication Technology (ICT) plays a vital role in the development of such communities by providing efficient way of communication between members and reducing the demand-supply chain cycle time. Many firms now realize the potential of OSS communities and starting their own OSS communities by sponsoring projects in order to leverage the advantages. As per Statista projected report, the revenue of Open source services is expected to grow to 32.95 billion USD in 2022 from 11.4 billion USD in 2017 at CAGR of 23.65%*.

OSS is one of the oldest sharing economies which develops and shares open software products and services among community members including the developers and users (Selloni, 2017). The key characteristics of the CC applicable to OSS are online collaboration, online sharing, social commerce, collective purpose, and sustainability.

Online Collaboration: The motivating drivers are intrinsic (reputation and enjoyment) and extrinsic (economic incentive) in nature. The enjoyment comes from the activity itself and value derived from acting appropriately conforming to norms. The software developers contribute to open-source projects as a result of enjoyment and a feeling of competence (Lakhani & Wolf, 2005). **Online Sharing:** The open source software products and services are shared among the peers in the peer-to-peer network. Other digital goods and services such as specifications, design, models, and review are done using the online sharing.

<u>Social commerce</u>: In OSS software development the participants can be consumers, providers or both. The peer-to-peer interaction leads social influence exerted by peers on participation and contribution to the development community. The firms deploy resources to be part of OSS development communities and share the internal knowledge and also learn from the communities.

<u>Sustainability</u>: open source software development and participation in peer production (e.g., Wikipedia) are driven by openness and freedom of information. The projects are managed by defined internal procedures and processes. The users or developers attitude towards the OSS contribution and their behavioural intentions play a key role in developing a sustained product or service.

<u>Collective purpose (a common good)</u>: The OSS projects and related communities are initiated by individual or firms in order to develop a particular product. The interested individuals join the communities in order to either contribute or lean or both. The collective purpose of the team is to develop a common good beneficial for all.

The conflict between members in terms of solutions or approach could lead to a failure in terms of the team coordination. This could lead to division of the team which might lead to the start of another OSS project. Over controlling of the participants by the owners or collaborators also lead to increased interest among the developers. Outdated technologies lead to less attraction of developers.

Governance mechanism: Markus suggests six dimensions of OSS project governance namely (1) Community governance, (2) Ownership of assets, (3) Software development processes, (4) Conflict resolution and rule changing, (5) Use of information and tools, and (6) Chartering project (Markus, 2007). As suggested by Jensen and Sacchi, the governance mechanism in OSS can be understood using three levels namely micro-level, meso-level and macro-level (Jensen & Scacchi, 2010).

Micro-level: The actions, beliefs, and motivations of individual OSS project participants including the users, developers, collaborators, and owners.

Meso-level: The patterns of cooperation, coordination, control, leadership, role migration, and conflict mitigation, project alliances, and inter-project social-technical networking.

Macro-level: Project OSS ecosystems, OSS as a social movement and emerging global culture

Issues in Governance:

Micro-level: The defined process and procedure help in development of artifacts and each stage of the project development. The participants are educated to follow them and take accountability for

their work. For example pull request and merging contain all related information like what are fixes, who fixed it etc. These artifacts act as coordination resources for the participants who usually in different locations. A well defined approach for creation of such artifacts leads to effectively functioning otherwise the traceability to solve any problem will be highly affected.

Meso-level: The key governance elements in this level are collaboration, leadership and control, and conflict resolution. The communities develop guidelines and policies to be followed by the participants. The low level contributions require much less collaborating effort than more complex tasks like conflict resolution.

Macro-level: The key elements are the coordination, leadership and control and conflict resolution between OSS projects which are related.

OSS License: The OSS projects are governed by licenses. The The Open Source Initiative (OSI) lists different types of OSS licenses. These are grouped into different categories based on the restrictiveness (Midha & Palvia, 2012). Lerner and Tirole classify the licenses types into two major categories restrictive and non-restrictive (Lerner & Tirole, 2005). The access over ownership and transfer of ownership (Hamari, Sjoklint, & Ukkonen, 2016) of the OSS projects

3. Cloud Computing: Collaborative consumption, Market failure and Governability

With the increased reliance on internet-based applications and services, mobile and smart devices, internet based social media in our day to day interactions, computing resource is gradually becoming one of the basic needs of individuals as well as organizations. Similar to other utility resources like telephony, electricity, gas, today the universal availability of computing resource is no longer an ask but a minimum expectation. Cloud computing has emerged as a viable technology catering to this need. Because of its features like high availability, ease of access, on-demand services, elasticity, reliability with respect to data privacy and security as well as different modelsservice (IaaS, PaaS, SaaS), deployment (Public, Private, Hybrid, Community)& flexible pricing mechanism, it has become popular. This has led to the movement of many on-premise infrastructure, platforms and application to cloud-basedecosystem. For some consumers, the shift has been transparent, for example, individuals or small organizations/enterprises, as for them the underlying technology is not much of an interest rather the application, device, or platform is more important. However, for larger organizations or enterprises or even governments, this shift is part

of their overall organizational or national strategy. Recent studies conducted by Gartner(Gartner, 2016) suggests that the IT spending has been shifting more towards cloud consumption. In 2016, the overall shift has been nearly 43% in Business Process Outsourcing area, whereas Application Software segment has increased by 37% with respect to cloud computing resource consumption followed by system infrastructure (17%) and application infrastructure software (10%). Gartner in another study(Gartner, 2017)has highlighted how cloud computing technology will be complementing the upcoming technology trends.

Large resource base being made available for wider collaborative, on-demand and optimized consumption is not a new phenomenon. However, the nature of the underlying resource being exchanged, traded, or made available for a collaborative consumption for a wide consumer base, defines the dynamics of the ecosystem under which it operates. Compared to other utility services like telephony, gas, electricity, the nature of resource in case of cloud computing is quite different. It is important to understand the definition as well as characteristics of cloud computing ecosystem to appreciate the underlying interactions between several stakeholders engaged in the exchange of such resource. National Institute of Standards and Technology (NIST), in its definition, stresses upon the key characteristics like on-demand network access, shared pool of configurable computing resources, capability of rapid provisioning as well as deprovisioning (Mell & Grance, 2011). Some of the studies emphasize on characteristics like elasticity, scalability, QoS, reduced capital expenditure for IT infrastructure, measurability of the services provided(Marston, Li, Bandyopadhyay, Zhang, & Ghalsasi, 2011). These definitions highlights some of the key features of cloud computing and if we analyze it along with the available service models as described in NIST definition (Mell & Grance, 2011), it brings different possibilities of interactions among various stakeholders directly or indirectly involved in the trade/exchange of the resource. Similarly, the deployment models like public, private brings the context of ownership of the resources and potential situation of market rivalry and excludability of cloud computing ecosystem.

In cloud computing ecosystem, the same set of resources are shared between different parties. Each of parties have a partition or a bundle of resources available to them as owners or users or traders (Kim &Mahoney, 2005). Cloud computing has the characteristics of shared ownership. In such cases, differentiating each players' or party's rights becomes difficult and complex (Kim &

Mahoney, 2005). In the context of interactions of various players who are contractually bound, property rights bring clarity to many business phenomena especially in case of business decisions related to knowledge-based resources and intellectual property rights(Kim & Mahoney, 2005).It is even more important in case of cloud computing as the ownership, usage and trading of computing resource is not static or constant. It depends on the context in which an interaction is happening and related agreement between provider and consumer. The deployment models used in cloud computing (Public, Private, Hybrid, Community), defines the way the underlying resource to be used. The computing resources can be "Public" i.e. Non-Rival and Non-Excludable, or Club i.e. Excludable but not rival. In some cases, like Private Cloud deployment, it becomes exclusive and rival. Given shared ownership and the context of interaction between players, a clear and measurable agreement between players is required to avoid any situation of adverse selection leading to market failure. It is also important that right regulatory and governance framework is in place to ensure the smooth execution of these agreements between parties. Multiple studies have stressed upon the potential friction between players in case these agreements are not clearly defined or appropriately governed (Marston et al., 2011). Marston et al, have also stressed upon the need for standardization as well as specific guidelines at national level to tackle any such dispute between stakeholders. These policies and framework are important to build the trust in the ecosystem also as in case of cloud computing, the country where the cloud infrastructure has been hosted, might not be the same country whose data is being stored. Unless there's a high degree of trust in the government and the policies of the government, the consumers would be reluctant to use any such infrastructure or platform or solution(El-Gazzar, Hustad, & Olsen, 2016).

Additionally, in case of the cloud computing, some portion of resource need, is delegated by the consumer to the provider i.e. overall IT infrastructure, platform, software, storage etc. The providers look for profit maximization by increasing consumption and the consumers has intentions for cost optimization, competitive advantages, ease of operation, data security & privacy at their end. Under the context of this varying objectives, contracting needs to be governed closely.Without a proper governance of these varying interests under a proper regulatory framework, it would lead to a situation where one party loses out which is well elaborated by Eisenhardt (Eisenhardt, 1989)in the principal-agent problem and problem of information asymmetry.In cloud computing, the possibilities of dealing with geographically diverse and high number of regulators, law enforcement agencies, market, culture, consumers, competitors, vendors

etc. is natural phenomena. This is more evident in case of public cloud deployment. In such a diverse context, regulations play a critical role in guiding the contract/agreement formation as well as execution as Marston et al have called out(Marston et al., 2011).

In the context of cloud computing it is important to evaluate different aspects of contracting e.g. measurability, programmability, pricing as well as aspects of the consumers e.g. type/segment of consumers, their typical computing needs, priorities, competitions, capabilities, knowledge, financial abilities, current state of IT maturity to ensure that the information asymmetry is reduced and creates a WIN-WIN situation for both the consumers as well as the providers. Other environmental factors and most importantly the regulation at national and international level would play a key role in ensuring the ecosystem of cloud computing market is well supported by standardized guidelines and regulations. Absence of such a governance framework to lack growth in the same sector as well as might as well lead to market failure.

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