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Mutualism: a model for risk management in peer-to-peer sharing?

Introduction

Of the various paradoxes of the sharing economy, none has been more intractable than the disjunction between the promises of sharing as a communal and service-oriented activity, and its reality as a sector dominated by for-profit market transactionalism. Why it is it that sharing, with its tenets of collaboration and co-production, seems to invariably gravitate towards models based on market rather than communal exchange is the paradox addressed in this paper. I propose that the problem lies in the legal infrastructures which facilitate sharing relations, specifically those which allocate risk between actors based on private property rights. These institutional rules on risk allocation and management bind sharing to the old transactional forms and hold back full collaboration, and they must be overcome for sharing as an alternative form of economic activity to realise its potential benefits.

Sharing proceeds under the auspices of private property; we are able to share because we own (Krecizer-Levy, 2021 in this collection; Kochan, 2017). Yet the recent phenomenon of platform-mediated access to the property of strangers has exposed the limits of operating a sharing economy with legal infrastructure developed for a model of exclusive ownership and use of resources. Without the trust and affinity that comes with strong social bonds, the issues of risk management and how to resolve adverse outcomes revert to predominant legal mechanisms of ascribing individual fault and responsibility which favour quid pro quo over collaborative exchange. To cultivate more communal sharing and lend potency to the disruptive potential of these new economic forms, new risk strategies which are tailored to serve the purposes of sharing, including changing the relationship between risk and property, need to be instituted (Morgan and Kuch, 2015).

In constructing such a risk system, mutualism suggests itself as a potential guiding model. Peer-to-peer (P2P) arrangements contain an inherently a mutualist structure, and the long tradition of mutualism and mutualist movements have strong resonances with contemporary sharing economy agenda which promotes sustainability, social over profit objectives, and providing services to the community (Jackson, 2016). My objective is to propose a system of mutual risk management which can be used on P2P sharing platforms, with the aim of fostering greater risk collectivisation and by extension more collaborative sharing. I only focus on P2P as opposed to other forms of access such as business-to-consumer, because B2C services do not carry the same normative injunctions for risk-sharing, as the financial positions and interests of the parties are too imbalanced. Such arrangements raise issues which more naturally relate to existing consumer regulations which generally place risk onto business actors and are outside the scope of my argument.[i]

I will begin by delineating how law constructs and privatises risk based on private property in section II, before exploring how this model is implemented in the sharing economy through platform service providers' user agreements contracts, and the problems these cause in section III. In section IV I introduce the idea of mutualism, how it translates into the P2P context, and how it can be used as a model for structuring P2P risk relations. Finally in section V I propose how such a mutual insurance scheme on P2P platforms might look in practice.

II. Law, property, and risk

That holding property comes with risks seems a foregone conclusion; there is not only the initial cost of acquisition, but also ongoing risks of malfunction, damage, injury to persons, and obsoletion attached to ownership of goods (Schaefers et al, 2016). However what appears to be an inherent aspect of tangible objects, that is their integrity or destruction, is actually a legally constructed relationship between the resource, its value, and the person who must bear any loss to that value, mediated through the institution of property.[ii] In other words, law translates the uncertainty of future events into discrete risks which are allocated to persons via means such as attributing liability, much like how insurance translates uncertainty into premiums using statistical actuarial calculations. And in the case of uncertainties relating to resources and their value, the primary means of distributing and managing risk in law is to append it to ownership.

2.1 Risk legally appended to property

That risk is a legally mandated appendix to property through the purposeful form of (private) ownership, rather than a natural aspect of holding or possessing property, is evidenced by the variety of non-ownership resource management structures which manage the burdens of adverse outcomes in different ways. The most apparent examples are common pool resources such as those documented by Ostrom, where a community collectively contributes to the maintenance of a common resource, receives benefits according to communally determined rules, and most importantly collectively bear the risks of adverse events such as natural disasters or bad harvests (Ostrom, 1990; Takasaki, 2011). Ostrom has noted that not all resources in a community are subjected to collective governance and stewardship, and many communities adopt a mixed approach with common pool resources existing alongside private modes of ownership (Ostrom, 1990). Historically the system of open field agriculture practiced in pre-enclosure England also operated on a logic of cooperative risk; arable land was allocated in such a way to ensure the burdens of poor quality land were shared amongst different families, non-arable and fallowed lands were grazed in common, and sharing the means of production such as

plough oxen was critical (Ault, 2006). The burdens of labouring the land and the risk of harvest from a particular furlong fell on individual tenants, but the risks associated with resource allocation such as allocating land and enforcing grazing rights fell to the collective. These examples show that uncertainty or risk does not arise passively from ownership but are determined through agonistic social choices. People are exposed to certain risks by virtue of being a contributing unit of a collective and being subject to communal institutions, rather than by deciding to establish a proprietary relationship with objects (Cole et al, 2014).

Viewed against this context, it is easier to see how the legal institution of ownership operates as a mechanism to bind risk to objects and by extension to persons with proprietary relations with objects. Ownership as a legal institution represents a different format for connecting the benefits of resources to its burdens and loss, whereby instead of apportioning benefits and burdens according to social norms of contribution and membership, it ascribes all outcomes whether beneficial or adverse to the exclusive responsibility of the proprietor. Put simply, the owner has exclusive access to the benefits of his resource including its use and exchange values but must also exclusively bear any burdens arising from the resource such as devaluation, harm caused to others, and destruction of the property. By ascribing exclusive control and responsibility, ownership bypasses the social and collective elements of uncertainty and transforms them into private risks based upon private property (see Rothstein et al, 2006 on the general topic of institutionalising risks). Thus, an entire neighbourhood may face and suffer the same risks from natural disasters, but losses are for each ownership unit to manage individually, whether through self-insurance or premium insurance.

2.2 The ideological drive for privatised risk

This privatisation of risk through binding it to property is not simply one method of risk management to be chosen amongst many but benefits from a strong ideological drive derived mainly from economics and is also advocated by proponents of private property. The process of transforming collective problems into individual ones roughly conforms to the economic concept of internalising externalities, and law internalises both costs and benefits of resource control through property rights and allocating these to persons based on their legal obligations as owners (Demsetz, 1967). This process is widely seen as necessary to achieving greater economic efficiency and avoiding a tragedy of the commons scenario, for the following reasons.

First is the much-rehearsed argument from incentive which states that to incentivise the commitment of labour and capital to the improvement of property, the proceeds of that investment must be guaranteed exclusively to the investor, for otherwise there will be little motivation to raise productivity or improve the stock of resources available to society as a rational actor would not work if he cannot reap the benefits. Many property theorists have advanced similar intuitions, from Locke's insistence that private property must be respected to

protect and reward productive labour (Locke,1690), to Nozick's argument that private property raises productivity far better than the alternative of common property (Nozick, 1974). The less rehearsed flip side of this argument is the notion that owners of capital should be rewarded for taking on the risks of ownership by being able to charge rents and to appropriate labour which others expend on their property (Heinsohn and Steiger, 2013; Harris and Mooney, 1994). Thus, while benefits patently incentivise production, risk can also have an incentivising effect as it drives owners to maximise the efficient use of their property as they expect a return in exchange for bearing risk.

A second argument is the commonly cited tragedy of the commons scenario which results from what economists term free-riding behaviour and externalities. Simply put, if one does not bear the full risks of one's behaviour, such as fishing in a common pond, then a rational actor will underestimate the costs of that behaviour, such as overfishing, with the result that the negative effects outweigh the benefits, such as depletion of fish stocks (Hardin, 1968; cf Cole et al, 2014). Free-riding behaviour is similar and occurs when actors can get away with not shouldering the burdens of the negative effects of their behaviour, so free-rides on the positive effects of others' actions. In short, both involve a divorce of risk from benefit and the inability to attribute the costs and burdens of adverse outcomes to those who gained a benefit at the expense of others. This is a problem which plagues many common pool resources and is usually checked by social norms of monitoring and sanctions. Private property ostensibly offers an alternative solution by parcelling resources into private lots and giving owners incentive to unilaterally police the use of their property. In other words, internalising the full costs of using a resource and decentralising the governance of those resources. This makes each owner's decision more rational and in aggregate should lead to an efficient outcome (Miceli, 1997: 119-126).

Arguments such as these are powerful ideological drives towards using private property as a means of organising resources, which is widely seen as superior to alternative models such as common or collective governance (Demsetz, 1967; Nozick, 1974; Waldron, 1988; cf Cohen, 1995). In these narratives the disciplinary function of risk in incentivising efficient choices is often implicit but no less integral. In privately owned property there is no opportunity to free-ride and any adverse outcomes are borne fully by the owner, which incentivises them to mitigate risks by maintaining and generally ensuring the continued value and productivity of the property.

The dominance of this ideological position has come under widespread critique, particularly in recent years for its inability to solve the problem of economic growth at the expense of intensifying ecological destruction (Ansari et al, 2013; Cobb, 2016). It is beyond the scope of this paper to mount a comprehensive critique of this ideology, so I will confine my argument to demonstrating that even within the logic of prioritising economic efficiency, privatising risk is not necessarily the most successful way of achieving these ends. And in the

case of P2P sharing, privatised risk may function to hinder rather than promote efficient activity.

2.3 Legal doctrine

Private law doctrine is crucial to the functioning of P2P sharing; the internal structure of legal rights and their conceptual underpinnings are of immediate significance to how sharing is conceptualised and enforced at law. As demonstrated by high profile cases such as Airbnb hosts inadvertently becoming landlords to their guests and unable to evict them (*Swan v Uecker* [2016] VSC 313), or Uber drivers contesting their status as independent contractors (*Uber B.V. v Aslam & Others* [2021] UKSC 5), doctrine determines the possible sets of legal relationships in sharing. Here I address the connection between doctrine and the ideology of privatised risk, before turning to its effects on P2P sharing relations in the next section.

Although private law is increasingly but not entirely influenced by economic considerations, there are many instances where doctrine reinforces the drive towards privatising risks in property. This is in part due to the structure of legal obligations which are constituted by sets of correlative individual rather collective rights (Hohfeld, 1978; Honore, 1961) and emphasises corrective over distributive justice (Weinrib, 2012). The persisting influence of the Law and Economics school and other functionalist approaches to private law also strengthen the move towards economically efficient legal resolutions. Regardless of the motivating factors, private law doctrine functions to reinforce the privatised approach to risk outlined above (Miceli, 1997: 116-118).

A prominent example is how tort liability is attributed to persons based on their legal relation to and control over property. Occupiers are an example of a class of persons whose liability depends on their exercising control over property which subsequently causes harm, as established by the *Occupiers' Liability Act 1957* (s.1). Strictly speaking they need not be owners of property, as being an occupier requires "a sufficient degree of control over premises" rather than merely proprietorship (*Wheat v E Lacon & Co Ltd* [1966] A.C. 552: 578 per Lord Denning). Nevertheless, owners are presumed to have responsibility and obligation to maintain the safety and integrity of their premises even in lieu of physical occupancy.

Another indication of doctrine reinforcing the connection between the risks of a property and its ownership are the rules on insurable interest which determine who may insure property. Summarily, any party who will suffer a loss has insurable interest, and prima facie this includes anyone with a proprietary or contractual interest in property, or a legal or contractual obligation towards the holder of proprietary interest, such as bailees and lessees (*Lucena v Crauford* (1806) 2 Bos & PNR 269; *Waters v Monarch Fire and Life Assurance Co* (1856) 5 EL & BL 870). The insurable interest of lessees is best viewed as deriving from their relationship with the owner rather than their relationship with the property, such that the

interest being insured is the personal obligation rather than the property per se. Bailees are an exception as they have an independent proprietary interest in possession and may insure the full value of the property regardless of their obligation to the bailor (*A Tomlinson (Hauliers) Ltd v Hepburn* [1966] AC 451; for argument based on commercial expediency see *Petrofina (UK) Ltd v Magnaload Ltd* [1984] QB 127: 135 per Lloyd J). While the rationale for insurable interest is to prevent fraud and purely aleatory contracts (*The Gaming Act 1845* (s.18)), nevertheless the function is to reinforce the connection between ownership of assets and the risks pertaining to them.

2.4 Atomised risk

The ideological conviction that privatised risk leads to more productive and efficient outcomes, coupled with the innate bilateral structure of private law obligations and its concern with individual liability, has resulted in an atomistic approach to risk. Risk relations are typically structured as exchanges of premium or consideration for indemnity, and it is difficult to construct a risk-sharing arrangement without also sharing ownership. While I am not rejecting wholesale the propounded connection between private property and efficient decision making, or the bilateral structure of legal rights, I am questioning whether in the platform-mediated P2P sharing context such arguments remain valid, or whether an alternative risk structure might better realise the goals that privatised risk purports to achieve. To that end, I will demonstrate how these practices create problems and inefficiencies in the context of P2P goods-sharing in the next section.

III. Risk in sharing; platform mechanisms and problems

Directly applying private law doctrines to sharing economies would lead to owner-providers of resources bearing the entire risks for sharing their property; not only those arising from damage or loss of the property, but also potentially harms caused by the property to other persons or property which may be attributable to providers as bailors or suppliers of defective or dangerous goods (*Houghland v RR Low (Luxury Coaches) Ltd* [1962] 1Q.B. 694; CPA 1987 (s.2)). Prima facie this is a barrier to sharing which would discourage all except the most altruistic sharers. Neither is it feasible to expect participants to arrange risk mitigation between themselves, as the costs of doing so would be prohibitive to the activity of sharing premised on low-cost and flexible access to resources. To overcome this barrier, many commercial and non-profit Platform Service Providers (PSPs) have constructed elaborate contractual regimes to manage risk. While these are effective in surmounting immediate concerns and facilitating the

continuation of large-scale P2P goods-sharing, they also raise further transaction costs and normative concerns regarding the fairness of risk distribution.

3.1 Platform mechanisms

Most PSPs which facilitate P2P sharing operate a business model which rewards maximisation of users and transactions (Evans, 2003; Evans and Schmalensee, 2016). Specifically, the more providers a platform has to contribute resources for sharing, the greater is its attractiveness to potential consumers and its ability to create market depth (Evans and Schmalensee, 2016). Offering mechanisms for risk mitigation to reassure providers and incentivise them to contribute is therefore crucial to PSPs' core business. To do so entails circumventing or replacing the de facto legal rules on property and risk. Diverse platforms have employed very similar means, typically through determining obligations of participants through their user agreements (hereafter Agreement) and arranging insurance.

The foremost commonly pursued method is to shift risk from provider to consumer by inserting an Agreement clause which places strict liability for all damage to property onto the consumer for the duration of sharing, effectively making them insurers of the good. Such clauses are found not only on commercial platforms such as Airbnb and Turo, but also non-profit and community platforms such as ShareShed and Library of Things. Sometimes the PSP contractually undertakes to act as guarantor for the consumer's obligations as an additional assurance to the provider, such Airbnb and By Rotation. The result is to anticipate tort liabilities by determining them ex ante in contract, thereby increasing certainty and potentially allaying costly disputes (Posner, 2014). However, shifting risk between private individuals with similar financial means achieves little cost or efficiency gains, and in particular shifting risk from owners who may already have insurance in place, onto users who have little opportunity to arrange risk mitigation, is of dubious fairness.

A more formal method is to arrange insurance for users directly or extend platform insurance to users. It is not only commercial platforms which pursue this method; community platforms such as Library of Things also provide public liability insurance to members for their use of borrowed items. Insurance has the benefit of shifting risk away from private individuals onto commercial parties with greater financial means, so achieves real efficiency and mitigatory effects. It is comparatively fairer and more efficient than solutions in private law. However, it is still costly since users pay additional premiums for 'top-up' of their existing insurance, and there are overlaps such as hosts and guests both paying to insure the value of the shared vehicle (Zhu).

3.2 Problems with current risk methods

The primary problem with platform risk mechanisms is their inefficiency which leads to higher costs than necessary. The platform insures each user as provider or consumer in a specific sharing transaction. This entails separating the activity of sharing into a series of independent actions and insuring each of these in turn. The provider is owning and renting, so their risks include liability for harms caused to persons and property by defects in his property, and damage and loss to his property. The consumer is hiring someone else's property, so their risks include liability to the owner for damaging the property and additional costs of sourcing a replacement if the initial property is defective. Both provider and consumer must mitigate their own risks by purchasing their own insurance, which leads to duplication. For example, on Turo both host and guest pay for insurance to cover loss to the shared vehicle and liability to third parties, instead of being allowed to contribute towards a joint insurance policy. Moreover, this policy is 'top-up' for the host's personal motor insurance which they are contractually obliged to maintain during their Turo listing. This is akin to the difference between adding your friend as a designated driver to your motor insurance, and requiring them to buy temporary cover every time they drive your car. The latter results in potentially higher financial and transactional costs.

These problems are largely caused by two constraints which limit ability to rationalise risk mechanisms. The first is how law allocates risk and responsibility, which I have established is based on private property and contractual interests. The risks of a provider and consumer must be deemed separate and independent because that is how tort law and regulation treat it. If an adverse event occurs the responsibility for the outcome must be allocated to persons according to tort and contractual liability, which most likely means shifting the loss between two private parties. While this approach works for parties engaged in specialised economic functions, it poorly reflects the economic dynamics of sharing where functions are distributed and risks are interdependent (Zhu, unpublished). Because sharing involves microtransactions, there is a limit to how much individuals can scale and diversify to mitigate the idiosyncratic risks of each transaction (Hopkin, 2018: c.1). The second constraint is the lack of suitable insurance products on the market, which I have demonstrated is directly influenced by the first constraint. Prior to the sharing economy a party renting out their property must have commercial insurance, and those hiring property temporarily were generally covered under specialised policies (ie. tenancy, temporary driver, bailee insurance), none of which are suitable for sharing (Zhu). Commercial platforms have used their clout with insurers to introduce novel products for their users (Sundararajan, 2016). The number of insurers who serve the sharing market has also increased (Guard Hog). But these policies have not deviated from the structure which I have demonstrated is the primary cause of inefficiency and higher cost.

The problem is platforms adopt risk mechanisms which replicate the approach in law. Their Agreements largely reflect and anticipate the allocation of liabilities in tort, and their insurance policies mirror existing policies on the market. Platforms, by streamlining dispute

resolution, intermediating payments, and acting as guarantor, can lower the costs of risk mitigation enough so that participants are happy to share. But fundamentally their approach is still inefficient for the same reasons private law and conventional insurance products are unsuitable for sharing. This claim is not without evidence; platforms are sensitive to this problem and adopt various means to alleviate it, as I will discuss in section V. Granted, platform mechanisms, albeit imperfect, are preferable to using private law. But they can be improved, and this section shows how law's drive towards privatising risk constrains options and drives inefficient practices in sharing.

IV. Mutualism

I propose mutualism as an alternative model for structuring risk relations in P2P sharing. Mutualism has many affinities with P2P structures, so using insurance techniques drawn from mutual insurance funds can help to construct a risk management structure that avoids the inefficiencies caused by privatised risk and better serve P2P economies.

4.1 Mutualism and P2P

Mutualism is an organisational principle which encompasses many types of distinct forms, including cooperatives and employee-owned companies (Birchall). Mutual organisations have a long and continuous history (Leeuwen, 2016: c.2), and there has been a resurgence of interest in them after the recent financial crises. There is also evidence of mutualism's comparative economic benefits (Birchall, 2021: c.2; Jackson, 2016; cf Cummins et al, 1999). Unlike cooperatives, mutualism is not a formalised concept, but fundamentally it emphasises communal aid and self-help by a group of members. An important factor that differentiates mutuals from other organisational forms such as joint stock companies or partnerships is how they internalise costs and benefits of the collective activity and pass these onto members. You can invest in a company by purchasing shares without contributing to either its business or operations, but you cannot become part of a mutual, such as John Lewis (EOC) or Fonterra (cooperative), without also becoming a central part of its operations, by being an employee or supplier respectively (REF). Correspondingly being a central part of its operations also gives you a claim to share in the wider benefits and exposes you to the potential risks in a way not applicable to shareholders.

P2P economies are a form of prototypical mutual: participants contribute to the group by supplying goods, and they are rewarded for that in either money, tokens, or access to other members' goods. There is no way of accessing the benefits of a sharing community except to participate, and by participating you are contributing to the community by providing goods, money, and labour (Zhu, 2020). This is true for both direct P2P exchanges where participants

access communal benefits transactionally (Zhu, unpublished), and banked systems such as a community library which receives donations from members in exchange for access rights. Both are P2P systems which create and distribute value which is then banked and intermediated by the collective.

4.2 Mutualism and risk

From the perspective of risk management, mutual structures such as mutual and takaful insurers differ from non-mutuals in that their policyholders are also their ultimate risk guarantors. The policyholders bear the responsibility for ensuring fund solvency. When the fund is in surplus, capital is distributed back to members as rebates, and when the fund is in deficit, members must either contribute more premiums or receive lower payouts (Kassim). The classes of 'insureds' and 'insurers' overlap; members collectively guarantee the fund's solvency and thereby indemnify each other and themselves. They do not shift the risk to a third party but retain it within the collective. The organisation can be seen as a conduit through which risk is pooled then shared amongst its members. In contrast for stock insurers, it is their investors, not their policyholders, who guarantee solvency. But in return any fund surplus is taken by the investors as profit. This represents a fundamental difference in risk strategy: mutual insurers share risk among its policyholders who are also the ultimate insurers, while stock insurers shift risk from policyholders to investors (Birchall). Aside from this, both mutual and stock insurers employ similar actuarial practices such as calculating risk premiums, using diversification and the law of large numbers to spread risk (Albrech and Huggenberger, 2017), and guaranteeing the fund through capital injections, reinsurance, and investment income.

In practice all mutuals and not just mutual insurers share risk as an inherent part of their structure. Consumer mutuals such as the Co-op in the UK mitigate risks of volatile commodity prices which its members cannot absorb individually, by coordinating buying and stockpiling decisions. Producer mutuals such as New Zealand's dairy co-operative Fonterra spread losses from price fluctuations between members and coordinate production decisions to influence market conditions in their favour.

4.3 Formalising mutual relations in P2P

The risk structure inherent in P2P sharing is already more mutual than private, but this is interrupted by the risk mechanisms of law and insurance which enforce the privatisation of risk rather than supporting its affinity of sharing risk. I propose to formalise the mutualist elements of sharing by instituting risk strategies to approximate a mutual insurance system, in order to facilitate risk sharing between participants of P2P sharing. This entails collectivising the risks faced by providers and consumers and spreading them across all participants, using the platform as coordinator, such that the risks created on the platform are mutualised and internalised by

participants rather than being sold to external insurers as they are now. This will allow platforms to operate more flexible and imaginative risk solutions which better reflect the economic logic of sharing, ameliorates the inefficiencies in cost and duplication, and are potentially more useful for non-commercial and cooperative platforms such as those discussed by Morgan (this collection).

It is important to clarify that my proposals aim to mutualise risk, not ownership. Sharing ownership is the most straightforward way of sharing risk, since the law by default allocates risk through proprietary interests. However much of the economic gains claimed for P2P sharing, such as flexibility and lower cost consumption, are directly dependent on private property rights which reduce the number of decision makers and distribute economic responsibility (Demsetz; cf Kreiczer-Levy). Mutualising ownership will simplify risk sharing, but it may also jeopardise the mechanisms that make sharing a worthwhile economic activity. Thus, the necessity of preserving private property as the starting point for P2P sharing also necessitates contriving mechanisms to mutualise risk to overcome the inefficiencies posed by privatised risk.

It is also important to clarify I am not suggesting the nature of insurers is important, and that by replacing the stock insurers platforms currently use (ie. Allianz) with mutual insurers (ie. NFU Mutual) will solve the problem. The problem is that P2P sharing inclines towards a mutualist structure, but factors such as legal rights and practices prevent the realisation of these tendencies. My goal is to use the actuarial principles and tools of insurance to contrive an alternative risk system that is closer to the affinities of P2P sharing. The aim is to manage the risks created by sharing internally within the sharing community, to improve regulation and potentially encourage greater collaboration. The result replicates a mutual insurance scheme, but that is a means to the end which is to facilitate risk sharing.

4.4 Caveats

Before advancing concrete proposals for a mutual risk system, I delineate some limitations of this approach. A foremost limitation of mutualism and P2P models is that they are essentially forms of self-help, which means the amount and types of risk covered cannot be too excessive or unpredictable. Identity theft, fraud, and other operational risks, as well as risks with indefinite losses such as personal injury are difficult for private individuals to guard against or absorb, hence they are not suitable to mutual management but must be delegated to PSPs. As such PSPs cannot be wholly mutualised, but should retain some financial independence and continue to charge for their services, much like how takaful insurance operate a system basis whereby the underwriting risks are borne by members, and business risks are borne by operators (Odierno et al, 2012). Another limitation is the risks should be somewhat homogenous in frequency and magnitude and be realisable within the time horizon of

contributions. While it is entirely possible to have mutual life insurers, it must be guaranteed by similarly long-term commitments from members. For P2P sharing which can often be ad hoc and episodic, the commitment time horizon limits the amount and types of risks mutualism can cover.

In response to these caveats I will limit my focus to P2P goods-sharing and its risks to tangible property. Risks of damage to tangible property can be easily collectivised because of they are tied to physical property and present ex ante determinable amounts of loss. They are homogeneously grouped on platforms which specialise in types of consumer goods of similar value. They also materialise quickly enough to be addressed within the timeframe of sharing. Probability of loss is random as between participants, so damage in one case does not affect the probability of damage in another. And participants can guard against moral hazard and adverse selection by monitoring the each other's behaviour and identifying bad actors by their proximity to the shared good, and exacting sanctions by reporting and barring them from participating in future sharing. These features of P2P goods-sharing conform to the principles of insurability (Rejda, 2011), hence making the risks of property damage in sharing a prime candidate for mutualisation.

V. P2P Mutual insurance

A P2P mutual insurance would essentially take the form of a secondary insurance scheme on top of the primary activities of P2P sharing, and participants contribute to and receive payouts from the insurance pool, which is coordinated and administered through the platform mechanism. To maintain flexibility contributions should be paid on each transaction rather than on membership. As to whether the scheme is run for the benefit of providers or consumers or both, and which party(s) should contribute can be calibrated to suit the particular purpose or situation on the platform, but generally those who contribute and those who benefit should be from the same class, in line with mutualist principles. In the following sections I delineate the design features of a mutual insurance scheme from a formal and analytical perspective, and where relevant using examples of extant platform practices to illustrate how my proposals might be implemented.

5.1 Features of mutual insurance

P2P mutual insurance for property damage will be very different from other, more conventional mutual insurance schemes. The limitations of P2P mutualism means only low-value losses can be mutualised, hence these schemes' primary function is not to insure, but to share and alleviate a small portion of the risks of sharing, and to promote collective

responsibility towards shared goods. As such constraints should be placed on P2P mutual insurance funds, including limitations on payouts and placing underwriting risk on participants. Whether participants would actually respond to these incentives is purely hypothetical, however for the purposes of good institutional design such considerations are important.

5.1.1 Actuarial features

The actuarial logic behind insurance is to balance future cash inflows (premiums) with outflows (payouts), informed by statistical projections of risk probabilities and magnitudes, and the opportunity to increase capital stocks through investment (Rejda, 2011). These future cashflows are discounted to present values using a discount rate determined by the risk-free cost of capital (Giaccotto et al, 2020). Predicting these factors accurately is vital to the sustainability of an insurance fund, and many guild funds became insolvent due to their inability to predict risk probabilities and balance loss ratios (Leewuen, 2016: 36-46). However, many of these features are not applicable to a mutual insurance fund administered through PSPs, which face greater uncertainty over future contributions levied on transactions as these are not guaranteed to occur, unlike conventional insurers who have certain future cashflows from premiums. Neither should PSPs invest users' insurance pool to meet future insurance obligations, as the interest of keeping sharing flexible and open demands that surplus funds should be redistributed to users whenever possible, both to fulfil the principles of mutualism and also to avoid locking users in to one platform.

The primary goal of mutual insurance for P2P sharing is to facilitate the sharing of risk and reduce transaction costs of risk management. Such a scheme should be simple and inexpensive, therefore there is no need to engage in complicated statistical modelling or discounting. This means all cashflows should be treated as present values; a dollar today is worth the same as a dollar tomorrow. Although it is foreseeable that future prices of sharing may rise owing to factors such as inflation, the short duration of sharing means damage can be discovered and claims processed quickly, so the lag time between contribution and payout sufficiently short to justify no discounting.

In addition to operating in nominal present values, contributions and payouts should also be determined as fixed amounts rather than proportional to the value of loss, which means giving less than full cover and placing upper limits on payouts. While conventional insurance typically covers full replacement value, such a strategy would not be optimal for mutual P2P insurance as giving full cover will result in less predictable outflows and expose the fund to potentially greater obligations than it can meet. This is because even though platforms specialise in types of goods, there are significant variations in the value and condition of goods which make their replacement value unpredictable and thus not sufficiently homogenous in terms of risk exposure. Stock insurers can address such variations by grouping policies and adjusting premiums according to their reference class, essentially by charging higher prices for

higher coverage. For the purposes of promoting more equitable and cooperative forms of P2P sharing such a policy would be self-defeating. Discriminating between users based on the value of their shared goods undermines the very purpose of mutual risk management and perpetuates the extractive market-exchanges by factoring risk as a private cost. Therefore adopting a one size fits all approach and ensuring it remains viable by offering low cover limits best serves the purpose of P2P mutual insurance. It also drastically reduces the complexity and costs of administering the scheme, as there is no need to predict the magnitude of payouts, only their frequency.[iii]

This means setting a ratio of contribution to payout is crucial to the sustainability of the fund. For example, a contribution of $5 for a payout of $50 assumes that only one in ten cases will payout, and as long as claims remain in that proportion the scheme will be viable.

5.1.2 Moral hazard

Moral hazard is a persistent danger in all insurance schemes (Arnott and Stiglitz, 1988), and in the P2P sharing context this means either the owner-provider or the user-consumer take less care in sharing and using the asset because of the presence of insurance. Stock insurers use tools such as fiduciary disclosure obligations, premiums and other financial incentives for good behaviour, and deductibles to counter moral hazard. I have shown why such a strategy is unsuitable for P2P risk sharing which should give fixed payouts of less than full value. Here I address in more detail how the dual constraints of capping payout and placing underwriting risk on participants can aid P2P mutual funds in countering the contagion of moral hazard.

Conventional insurance policies covering full replacement value combat moral hazard by shifting some risk back to the policyholder, such as charging a financially significant deductible to dissuade frivolous claims and incentivise risk mitigation (Mol et al, 2020). P2P risk mutuals which cannot feasibly adopt such a strategy should therefore adopt an inverse approach, of bearing only risks of low-level losses and leaving losses of greater magnitude to be borne by participants. This means losses which exceed the payout limit are not shared, so must be borne by either providers or consumers. Placing risk on either party can potentially create distortionary incentives for opportunistic behaviour, but on balance I would suggest that placing risk on the consumer is most efficient.

Providers who are indemnified by both mutual insurance and consumers' strict obligation to compensate damage will have less incentive to take care in choosing their transaction partners to guard against fraud or non-payment, or maintaining the property in working order to reduce the chance of cumulative wear and tear. Limiting the payout to a small but non-negligible amount gives providers a meaningful financial guarantee while limiting the distortionary effects on their incentives. The limit amount would depend on the average value of hosted goods and the average income relative to value generated for providers, and actual payout should be the lower of either the cost of repair or limit amount. For example,

the platform Style Lend which hosts clothing worth $250 or more and typically rented at 10% of market value gives insurance for up to $50 for minor repairs, which represents at least the income from two transactions, or at most 1/5 of the total property value (www.stylelend.com). Moreover, placing strict liability on consumers is not the same as insurance since the providers still must bear the risk of non or partial recovery. And the profit-incentive and effects of competition on providers are arguably sufficient to motivate them to offer well maintained and functioning assets.

Comparatively consumers have greater scope for opportunistic behaviour as they bear no risk for shared property beyond that stipulated by the sharing arrangement, so without the threat of liability they would effectively have no incentive to take care of goods in their possession. As such, platforms ubiquitously place strict liability onto consumers in the interest of certainty and countering moral hazard. Strict liability by itself is not necessarily conducive to responsible behaviour, since liability will follow regardless of how careful a consumer is, which can counterproductively lead to them taking less care and may even dissuade risk averse consumers from sharing. However, the availability of insurance changes that incentive structure such that more consumers may feel comfortable in accessing sharing, but without indemnifying irresponsible behaviour. Insurance alleviates consumers' liabilities, and depending on the payout limit and goods shared would cover most minor accidents and damages (see also Weber, 2014). Consumers remain strictly liable for any damage in excess of the payout, but should be able to offset amounts paid to the provider through insurance from their liability. For example, if a consumer purchased $50 insurance for $5 and the total loss is $250, then the first $50 should be deducted from their liability which would amount to $200. This would offer the consumer a measure of relief as their outgoings is reduced from $250 to $205. The first $50 of damage may be considered 'mutualised' while the excess remains 15privatised. Essentially this is the inverse of the deductibles system, in that insurance covers minor losses but leaves major losses at the risk of the policyholder. Under this system participants may have an incentive to enter spurious claims as there is no cost attached to claiming. This hazard should be countered through peer reviews and user track histories, with frequent claimants possibly debarred from accessing mutual insurance protection.[iv]

Finally, the moral hazard of both providers and consumers taking fewer precautions because of the presence of insurance can threaten the viability of the mutual insurance fund. For example, if past data suggests one in ten transactions result in a claim and contributions and payouts are determined on this basis, any increase in the incidence of claims will undermine the solvency of the scheme, unless extra capital is injected, or contributions are raised and payouts reduced. This danger is exacerbated if any shortfall in the fund is guaranteed by the PSP or its insurers and does not lead to negative consequences for participants. Hence the underwriting risk should be borne by participants, meaning any shortfall should be covered by raising contributions, lowering payouts, or both (Odierno et al, 2012). Calibrating contributions and

payouts is straightforward as these are levied on transactions instead of membership, but it runs the risk of earlier participants benefiting at the expense of others by taking advantage of generous insurance which raises the costs of insurance for subsequent participants. This could potentially lead to platform recycling as sharers flock to the newest platform with a clean insurance balance sheet in order to avoid these hazards. In practice this eventuality is quite remote, since the short time-horizon and open membership of mutual P2P insurance means the PSP is not 'stuck' with bad policyholders, as they can easily refuse to insure them by barring their participation on the platform. This means the other disciplining mechanisms such as public peer-reviews, fostering community loyalty, and social sanctions become more important to both maintaining the integrity of a platform and the financial attractiveness of its insurance (Leeuwen, 2014; Huurne et al, 2017).

5.1.3 Surplus

A distinctive characteristic which differentiates mutual from stock insurance is how underwriting surpluses are distributed. Stock insurers take it as profit, whereas mutual insurers distribute it back to members. Distributing surplus to sharing participants will reduce the overall cost of risk management and act as further incentive for good behaviour. Distributions should not be given to all existing members, but as far as possible limited to those who have contributed to the pool within a certain period, such as those who have participated in a minimum number of transactions in the past 12 months, which should be feasible for PSPs which maintain data records of all users' transaction histories (Srnicek, 2017). While such a policy can have a lock-in effect by rewarding greater loyalty, it also ensures fairness as participants who have contributed more because of their frequent transactions redeem more of the surplus.

5.1.4 Tokens

Finally, I briefly float the idea of a token system as an alternative to mutual insurance. A token system, whereby members gain tokens or rights to access common resources in exchange for contributing (eg. Love Home Swap offers points members can bank and spend against each other) has the side-effect of mitigating risk. Tokens bank a future stream of use value that an asset can support, which can then be used to access use value of other assets. Tokens are currency like fiat money, but they are mutual insofar as they keep the value circulating in the community. Like fiat, they can make disparate use values equivalent. For example, a drill of higher quality can earn more tokens than one of lower quality, to reflect the greater future utility stream it can support. Tokens also bank risk. If member's assets are damaged or destroyed they can use the tokens earned from contributing that asset to access replacements, so mitigating their loss of utility. Essentially tokens are visible representations of the mutualist benefit and risk dynamic in P2P sharing, but their logic is similar to insurance.

However, tokens can introduce unnecessary administrative complexity which may increase PSPs' operating costs and ultimately higher costs to participants. They require assets to be committed to sharing for a defined period, so reduces flexibility. They also introduce greater unpredictability and breach the zero-discount rate condition; if a participant can delay spending tokens for several years, the price of accessing assets may have risen since he accumulated those tokens, which would give him unfair entitlement over peers. It also rewards past rather than present participation, which is counterproductive to the ethos of community building.

5.2 Advantages

5.2.1 Collectivity with flexibility

The foremost advantage of such a P2P mutual insurance is to construct a risk system which better promotes the cooperative potentialities of P2P sharing, whilst retaining the transactional flexibility of market exchange. Collectivising ownership would simplify risk-sharing by collectivising risk from the outset, however that would create allocative inefficiencies as the supply of resources would not be able to adapt as quickly to market signals, and increase the costs of maintaining common resources.

Tokens can also reduce flexibility by tying sharers to one platform and preventing them from sharing their resources elsewhere. If tokens are given on each transaction, that would only cover a fraction of the entire utility of an asset which would be inadequate to remedying the provider's loss. If tokens are given in proportion to the asset's projected utility (ie. how much use it can support and what other people are willing to pay to access it), that would require the asset be committed to sharing for a considerable period, which reduces flexibility.

Mutual insurance has the advantage of flexibility over both collective and contribution-based models of risk, as it does not necessitate commitment of future time, membership, or contribution.

5.2.2 Applicability to different sharing models

Insurance also does not necessitate the adoption of any particular model of access as risk is severed from the ownership and benefit structure. Because it treats risk as an independent commodity, much like private property models, and institutes a separate risk management structure on top of existing benefit sharing structures, it can be used equally to facilitate market-exchange or membership-based open-access sharing. It can also apply to any type of resource, as its accounting unit is monetary which can be calibrated to the specific needs of any platform. For example, the sums involved in car-sharing will be much greater than those involved in sharing of household goods. It can also be combined with existing risk strategies such as private insurance, which can better cover the excess risks not covered under the mutual scheme. For example, the car-sharing platform Turo operates a scheme where the platform

covers the first £5000 of damage and the rest is covered by insurance provided through Allianz, which approximates a half-mutual half-private risk strategy. Since my primary objective is to ameliorate the inconsistencies between the privatised risks of shared resources and reduce the costs of risk management, mutual insurance is a suitable instrument as it can be easily grafted onto existing platform mechanisms without wholesale reform of their underlying property or sharing models.

5.3 Drawbacks

The primary drawback of my proposed scheme is its reliance on monetary value as the measure of contribution and compensation. While such a system may potentially reduce total monetary costs to participants and platforms, it may still prove too expensive for gratuitous and non-profit sharing. If sharing is gratuitous there is no apparent reason to pay for risk management ex ante; participants are willing to take their chance and distribute losses after they occur. This works because gratuitous sharing is more motivated by social incentives compared to for-profit sharing, and the financial stakes involved tend to be much lower.

While commercial and for-profit PSPs may have the incentive and means to institute a mutual risk scheme, they may be put off by the greater responsibility placed on them to administer this scheme. There is no clear incentive to take on additional costs when they can continue to outsource risk management to insurer partners as they do now. And while there may be benefits of mutualising risk for their users, there is little clear advantage for PSPs especially considering how the most established platforms such as Airbnb do not struggle to attract new users. Their adequate risk strategies, on top of their quasi-monopoly positions, means there is little reason to change.

This leads to the ironic outcome that those platforms which are most amenable in principle to mutualising risk cannot or will not afford it, and those platforms which have the means have no commercial or principled reason to do so. My response is the division is not so stark, as many commercial platforms already take on risk burdens for their users through voluntary guarantees (By Rotation), indemnities (Style Lend), and insurance obligations (Turo). Some non-profit but non-gratuitous platforms also purchase public liability for their users' sharing activities (Library of Things). These practices demonstrate that managing risks on behalf of users are commercially expedient. More broadly, mutualising risk need not only be through monetary or even insurance structures. Non-monetary and non-insurance approaches are conceivable, such as tokens, in-kind benefits, and membership systems. I have proposed a monetary insurance scheme because it can best integrate privatised risk, as my foremost concern is to ameliorate the deleterious effects privatised risk currently exert on sharing by shifting it closer to a risk-sharing paradigm. But the guiding principle of mutualism can be

applied in more fundamental ways such as building a fully mutual P2P cooperative platform (Morgan, 2021).

VI. Conclusion

Sharing access to resources represents an alternative way of distributing benefit and risk from the existing structures of private property and market exchange. However, it cannot fully realise its collaborative potential so long as legal and insurance mechanisms continue to prevent risk from being shared alongside benefits. I have proposed a mutual insurance scheme as a method of collectivising risk without disturbing the private property foundations of sharing, while gaining some economic and normative benefits. The principles of mutualism can be a valuable guide to the development of more diversified sharing models, away from the predominant market transactional form and towards platform co-operativism.

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[i] Consumer Rights Act 2015 Ch 2 places obligations on traders in consumer contracts to warrant quality and fitness for purpose, conformity to description, and other factors; Consumer Protection Act 1987 Part I places strict liability onto producers and suppliers of goods for damage caused by product defect.

[ii] Value can be understood in many ways, and in this paper I use the term to denote both the utility, or use-value of a resource as well as its exchange or market value. Hence depreciation of value includes both loss of function and loss of monetary value.

[iii] The distribution of their mean and variance, which if loss occurrences are stochastic should be the aggregate of their random spreads; Gray RJ and Pitts SM (eds) (2012) Short term risk models. In: *Risk Modelling in General Insurance: From Principles to Practice*. International Series on Actuarial Science. Cambridge: Cambridge University Press, pp. 90–146.

[iv] Many platforms already use ratings and other incentives such as priority listing to reward good performance; see Gunter (2018) and Teubner et al (2017). Insurance can be easily inserted as an additional incentive.

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