

共享经济

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共享经济的基本概念



- 共享经济：建立在资源共享基础上的社会经济系统
- 共享经济包含任何个体或组织共同创造，生产，分发，交易，以及消费商品或服务的行为
- 在个体层面，共享经济包含个体通过有偿或无偿分享自己的资源，为他人和社会创造价值的行为



物品 (goods)



金钱 (money)

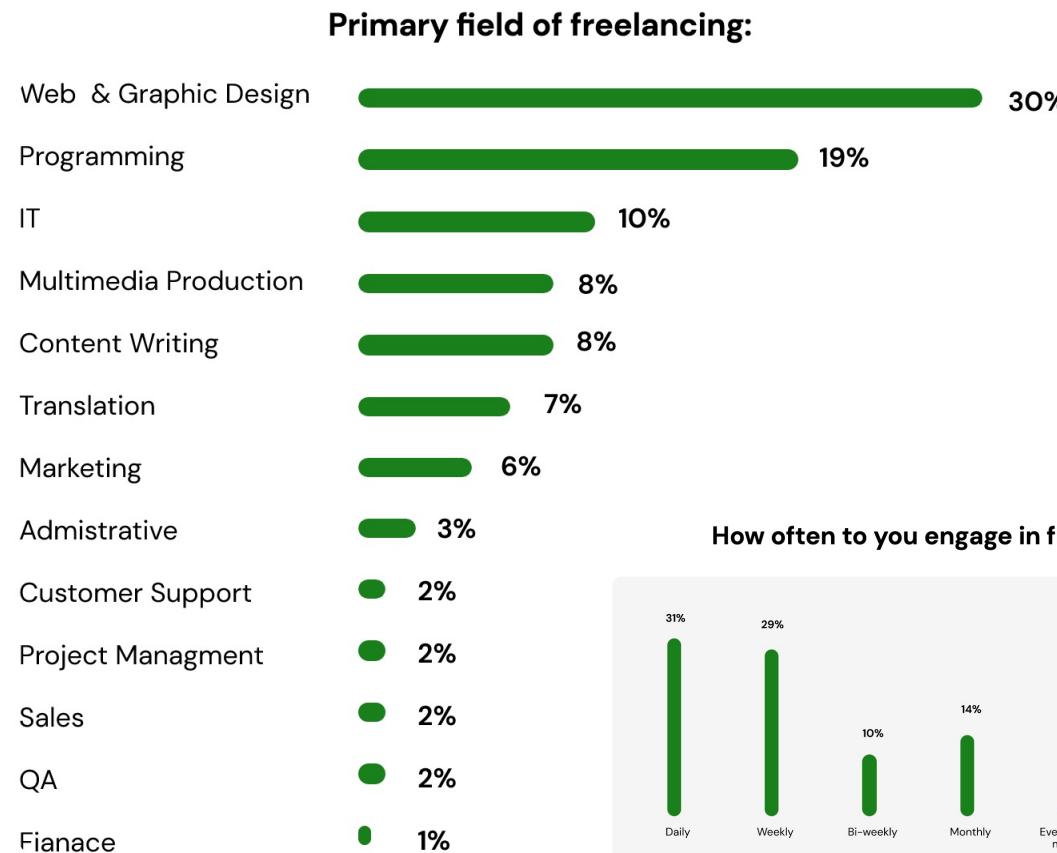


知识 (knowledge)



劳动 (labor)

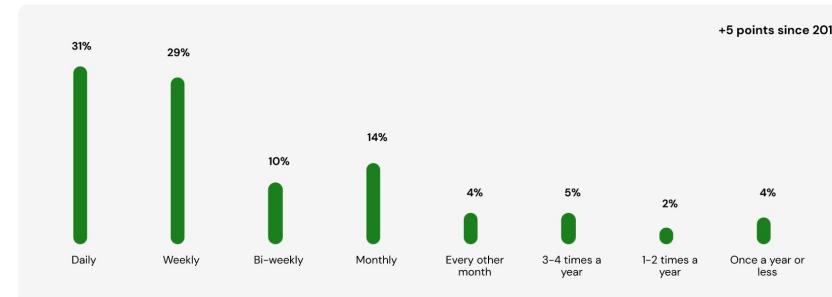
共享经济的发展：以数码游牧(Digital Nomad)为例



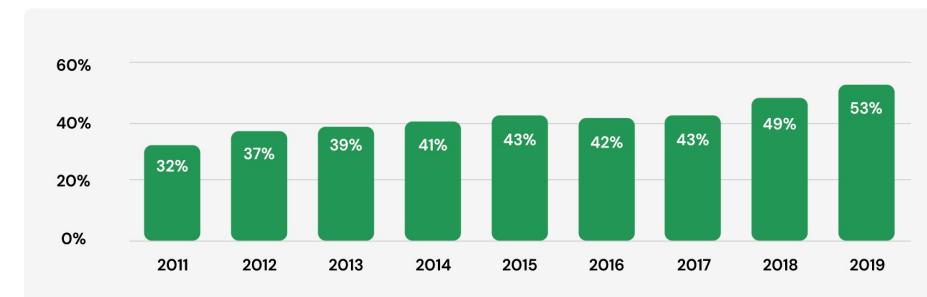
Projected gross volume of the gig economy (Billions USD)



How often do you engage in freelancing [freelancers]



Centage of full-time independent workers reports feeling more secure working independently



* <https://brodmin.com/case-studies/gig-economy-case-study/>, July 2021

数码游牧在中国的发展：直播+

头部平台竞争对比——抖音拉大用户规模优势

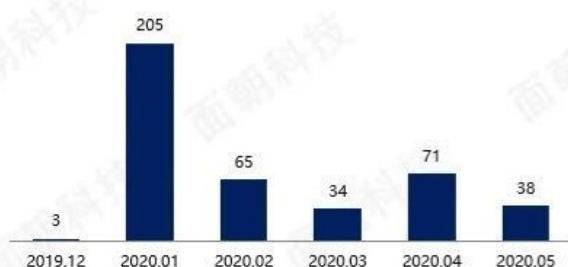


数据来源：艾媒北极星互联网产品分析系统 (bjx.iimedia.cn)

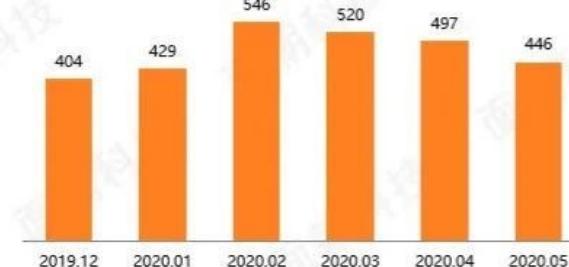
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* <https://www.iimedia.cn/c1020/78071.html>

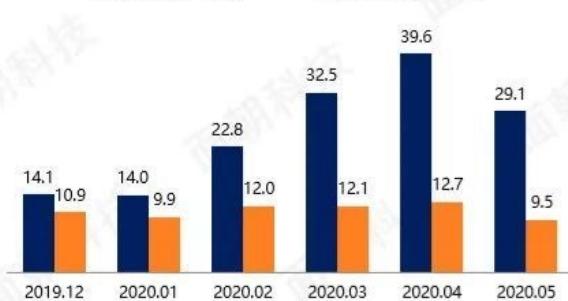
抖音直播间均在线人数峰值月度趋势
■ 均在线人数峰值 (人)



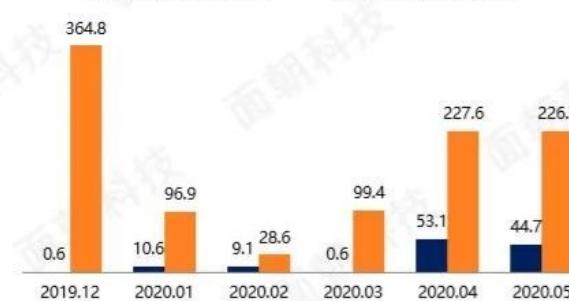
快手直播间均观看人数月度趋势
■ 均观看人数 (人)



抖音VS快手直播礼物收入月度趋势
■ 抖音音浪收入 (亿元) ■ 快手快币收入 (亿元)



抖音VS快手直播带货商品总销售额月度趋势
■ 抖音直播总销售额 (亿元) ■ 快手直播总销售额 (亿元)

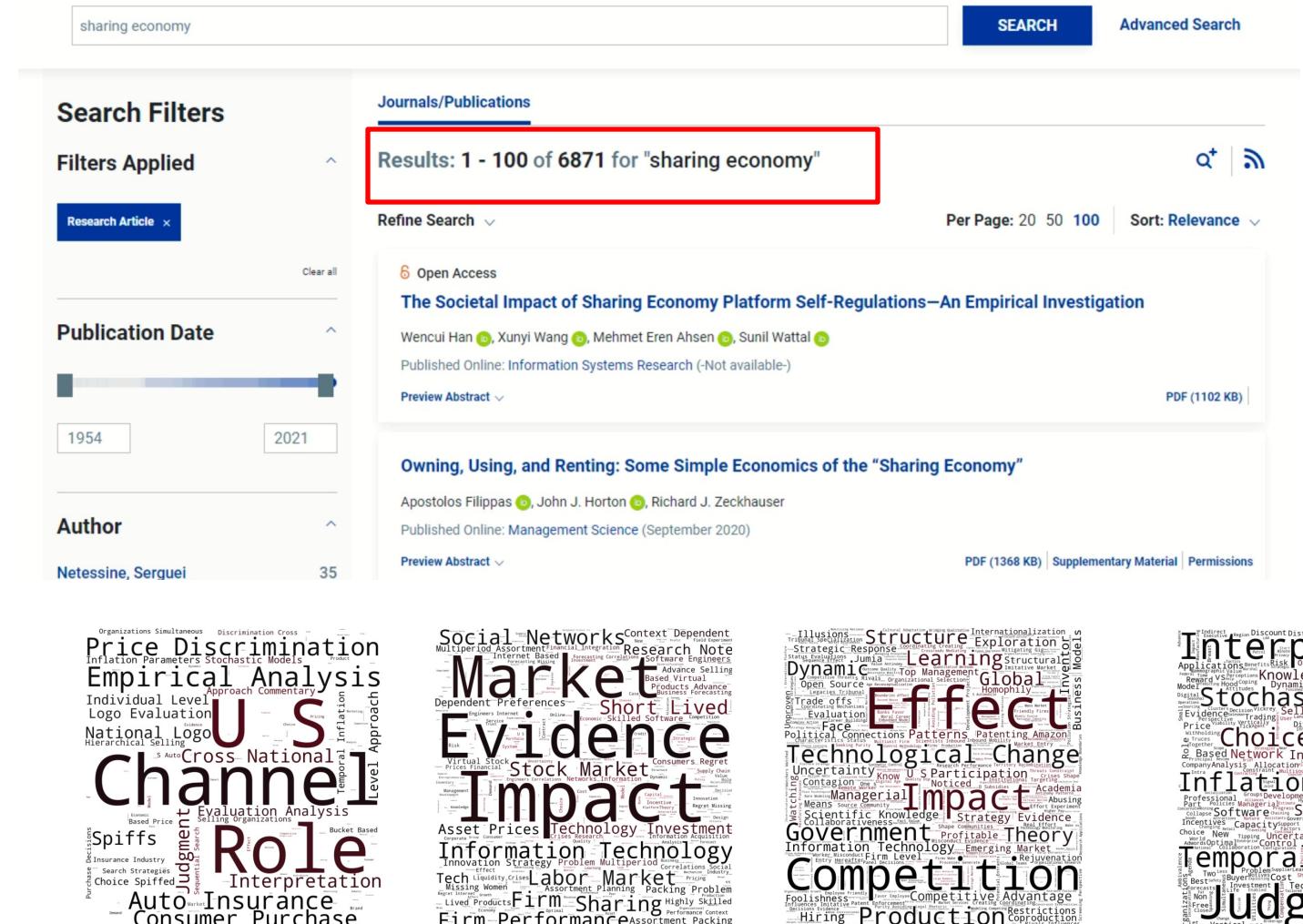


数据来源：飞瓜数据。统计时间：2019年12月-2020年5月。礼物收入指主播直播间用户购买虚拟礼物赠送给主播所花费的金额，不代表主播实际收到的金额。

* 2020年直播电商数据报告(抖音vs快手), <https://cbndata.com/report/2349/detail?isReading=report>



学界对共享经济的关注



<营销科学>

<管理科学>

<组织科学>

2010

所有文章标题的词云



2015

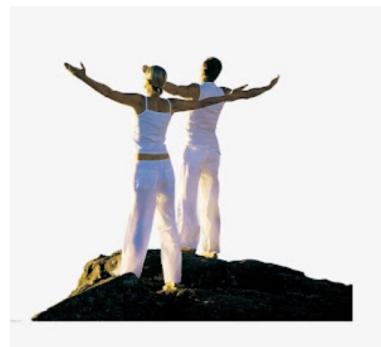
2020

共享经济中的一个根本性问题(1)

- 在个体层面的共享经济，本质上是个体分享自己拥有资源的使用时间，来换取利益或其他效用
- 子在川上曰，逝者如斯夫，不舍昼夜
- 时间的管理是个根本性问题，不仅对老夫子是个大难题，对任何个体都是个大难题
- 在共享经济的场景下暂时没有一个好答案

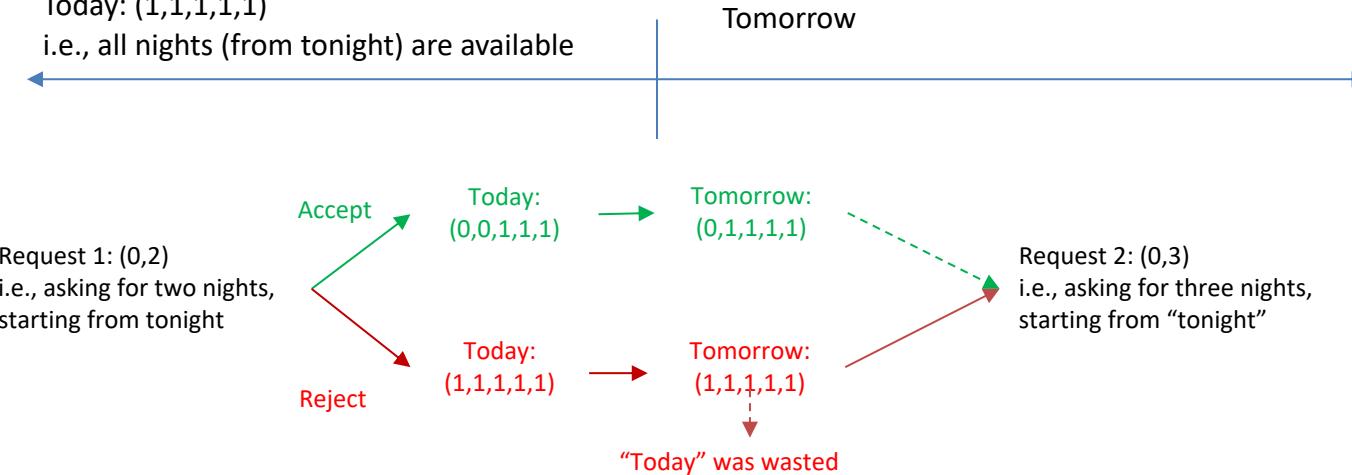
不負今朝
活在當下

vs.



共享经济中的一个根本性问题(2)

Today: (1,1,1,1,1)
i.e., all nights (from tonight) are available



Current period utility:

$$U_{it}(S_{it}) = \sum_{\tau=c_{it}}^{c_{it}+(d_{it}-1)} (\theta_{i0} + \beta^{\tau} (D_{it}\theta_i^D + \Delta_{it}\theta_i^{\Delta})) + \epsilon_{it}, \quad (7)$$

States and their evolutions

$$F(B_{it}) = (b_{i,t+1}, \dots, b_{i,t+4}, 1),$$

elements 2 to 5 in B_{it}

$$B_{it} \oplus (c_{it}, d_{it}) = (b_{i,t}, \dots, b_{i,t+(c_{it}-1)}, 0, \dots, 0, b_{i,t+c_{it}+d_{it}}, \dots, b_{i,t+4}).$$

Examples: $F((1,1,0,1,1)) = (1,0,1,1,1); (1,1,0,1,1) \oplus (1,1) = (1,0,0,1,1)$

$$B_{i,t+1} = \begin{cases} F(B_{it} \oplus (c_{it}, d_{it})), & \text{if } r_{it} = 1, \text{ and } a_{it} = 1, \\ F(B_{it}), & \text{otherwise.} \end{cases} \quad (1)$$

$$\text{Past transactions} \quad n_{i,t+1} = \begin{cases} n_{it}, & \text{if } r_{it} = 1, \text{ and } a_{it} = 1, \\ n_{it}, & \text{otherwise.} \end{cases} \quad (2)$$

$$\text{Inter-request time gap} \quad T_{i,t+1} = \begin{cases} 1, & \text{if } r_{it} = 1, \text{ or } T_{it} = \bar{T}, \\ T_{it} + 1, & \text{if } r_{it} = 0 \text{ and } T_{it} < \bar{T}, \end{cases} \quad (4)$$

→ Request arrival is governed by a hazard model: $\lambda_{it}(T_{it}) = \bar{\lambda}(T_{it}) \exp(\mathbf{X}_{it}^r \boldsymbol{\alpha})$,

Submitted to *Marketing Science*
manuscript MKSC-20-0420

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A Dynamic Model of Owner Acceptance in Peer-to-Peer Sharing Markets

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Online peer-to-peer (P2P) sharing marketplaces enable owners of resources to share their idle resources. A natural question facing an owner, when a renter asks for the resource, is whether to accept this request. Accepting the request helps the owner to fill up the idle periods of the resource and generate a payoff, but it hampers the owner's flexibility to serve a future request for a longer duration. This paper develops a dynamic structural framework of the acceptance decisions by owners in the context of P2P sharing, and applies it to a unique dataset from a leading P2P car sharing platform in China. The model explicitly accommodates two types of owners: Some owners are attentive to the availability states of their cars, while others make their acceptance decisions in a myopic way. Results suggest similar sizes of both owner types in the data, with female, experienced, and younger owners more likely to be strategic. Results also reveal the differentiated preferences of the two types of owners towards their renters. Building on model estimates, we calibrate the option value of each available day in the future for the strategic owners, and find it to first increase, then decrease. This suggests a higher value of having the resource available in between rather than too soon or further into the future. We also conduct two counterfactual analyses. The first analysis shows if the platform imposes a minimum rental duration of two days, strategic owners become more reluctant to accept requests, even when the current availability state entails a *higher* expected payoff. The second analysis shows that the platform can greatly improve the matching efficiency by optimal (re)allocation of rental requests with better understandings of its owners, which benefits all players in the business.

Key words: peer-to-peer market; sharing economy; intertemporal decision making; dynamic model

$$\begin{aligned} V_{it}(S_{it}) &= U_{it}(S_{it}) \\ &+ \beta E \left[\sum_{\tau=1}^T [\lambda'_{i,t+\tau} \beta^{\tau-1} p'_{i,t+\tau} \max\{V_{i,t+\tau}(S_{i,t+\tau}), V_{0,t+\tau}(S_{i,t+\tau})\}] | (S_{it}, a_{it}=1) \right] \\ &= \sum_{\tau=c_{it}}^{c_{it}+(d_{it}-1)} (\theta_{i0} + \beta^{\tau} (D_{it}\theta_i^D + \Delta_{it}\theta_i^{\Delta})) \\ &+ E \left[\sum_{\tau=1}^T \beta^{\tau} \lambda'_{i,t+\tau} p'_{i,t+\tau} \max\{V_{i,t+\tau}(S_{i,t+\tau}), V_{0,t+\tau}(S_{i,t+\tau})\}] | (S_{it}, a_{it}=1) \right] + \epsilon_{it}, \quad (8) \end{aligned}$$

Similarly, the value function of rejection

$$\begin{aligned} V_{0t}(S_{it}) &= U_{0t}(S_{it}) \\ &+ \beta E \left[\sum_{\tau=1}^T [\lambda'_{i,t+\tau} \beta^{\tau-1} p'_{i,t+\tau} \max\{V_{i,t+\tau}(S_{i,t+\tau}), V_{0,t+\tau}(S_{i,t+\tau})\}] | (S_{it}, a_{it}=0) \right] \\ &= E \left[\sum_{\tau=1}^T [\beta^{\tau} \lambda'_{i,t+\tau} p'_{i,t+\tau} \max\{V_{i,t+\tau}(S_{i,t+\tau}), V_{0,t+\tau}(S_{i,t+\tau})\}] | (S_{it}, a_{it}=0) \right] + \epsilon_{0t}. \quad (9) \end{aligned}$$

11/23

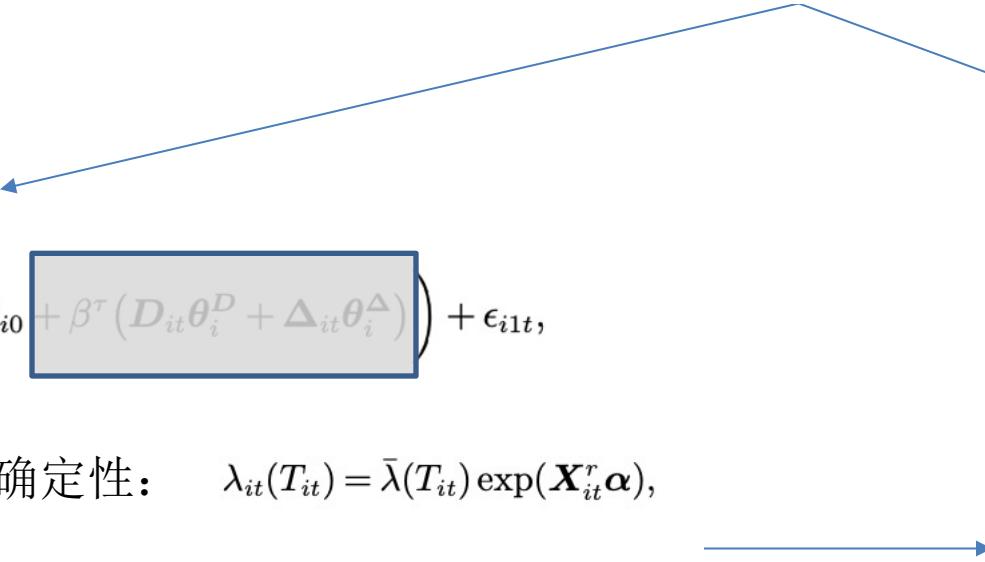
根本问题进一步简化

$$U_{i1t}(\mathbf{S}_{it}) = \sum_{\tau=c_{it}}^{c_{it}+(d_{it}-1)} \left(\theta_{i0} + \beta^\tau (\mathbf{D}_{it} \boldsymbol{\theta}_i^D + \Delta_{it} \boldsymbol{\theta}_i^\Delta) \right) + \epsilon_{i1t},$$

$$U_{i1t}(\mathbf{S}_{it}) = \sum_{\tau=c_{it}}^{c_{it}+(d_{it}-1)} \left(\theta_{i0} + \beta^\tau (\mathbf{D}_{it} \boldsymbol{\theta}_i^D + \Delta_{it} \boldsymbol{\theta}_i^\Delta) \right) + \epsilon_{i1t},$$

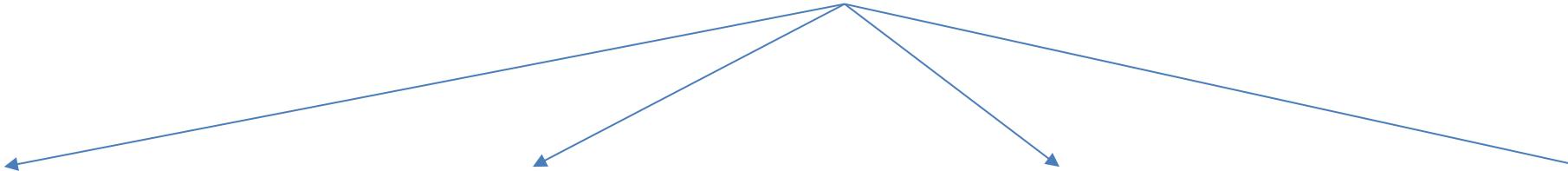
- +未来需求的不确定性: $\lambda_{it}(T_{it}) = \bar{\lambda}(T_{it}) \exp(\mathbf{X}_{it}^r \boldsymbol{\alpha}),$
- +物品状态的变化:

$$\begin{aligned} F(B_{it}) &= (\underbrace{b_{i,t+1}, \dots, b_{i,t+4}}_{\text{elements 2 to 5 in } B_{it}}, 1), \\ B_{it} \oplus (c_{it}, d_{it}) &= (b_{it}, \dots, b_{i,t+(c_{it}-1)}, \underbrace{0, \dots, 0}_{\text{elements } c_{it} \text{ to } c_{it} + (d_{it}-1)}, b_{i,t+c_{it}+d_{it}}, \dots, b_{i,t+4}). \end{aligned}$$

- 
- 希望能得出物主接受当前请求概率的解析解(closed-form solution)
 - 并进行一系列比较分析(comparative statistics)
 - 并得出不同情况下的参数可识别性(identification)
 - 正在进行中, **比较难!**

根本问题*稍微*复杂化

$$U_{i1t}(S_{it}) = \sum_{\tau=c_{it}}^{c_{it}+(d_{it}-1)} \left(\theta_{i0} + \beta^\tau (\mathbf{D}_{it} \boldsymbol{\theta}_i^D + \Delta_{it} \boldsymbol{\theta}_i^\Delta) \right) + \epsilon_{i1t},$$

- 
- 资源的使用价值有时高，有时低
 - 物主通过宏观上调节价格，以及微观上接受或拒绝当前请求，以最大化自己的长期利益
 - 进行中，**很难！**
 - 租客的请求同时到来，也就是说，多个租客可能在同一时间发起申请，申请在同一时段或不同时段使用物主的资源
 - 考虑进行，**极难！**
 - 资源的数目可以内生性地增加或减少，同时，资源的使用效率可以内生性地提高或降低
 - **非常非常难！**
 - 考虑研究什么因素导致资源数目和使用效率的变化(比如Duong, Chu, and Yao, MNSC 2021)
 - 当前时期资源的消耗到将来某个时间点才开始产生价值，或者能产生持续性价值，比如一个**审计项目**只有结束才有回报，又比如在线知识平台上生成的内容可以持续被其他人消费(阅读)
 - 有数据情况下可行，**有点难！**

其他的共享



众筹(金钱资源共享)



众包(劳动共享)



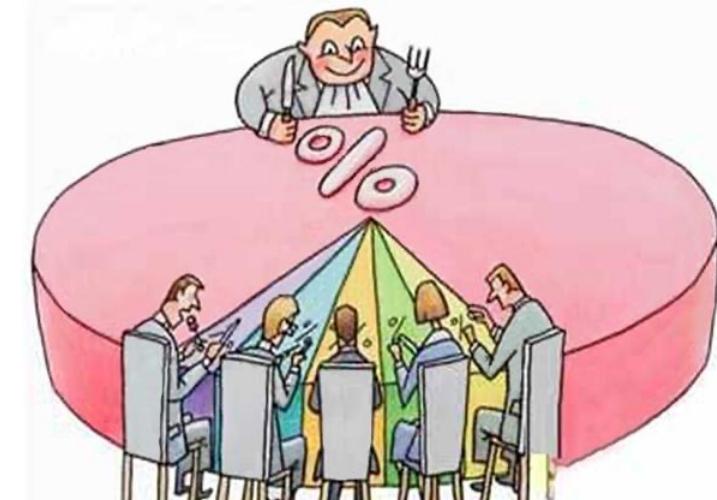
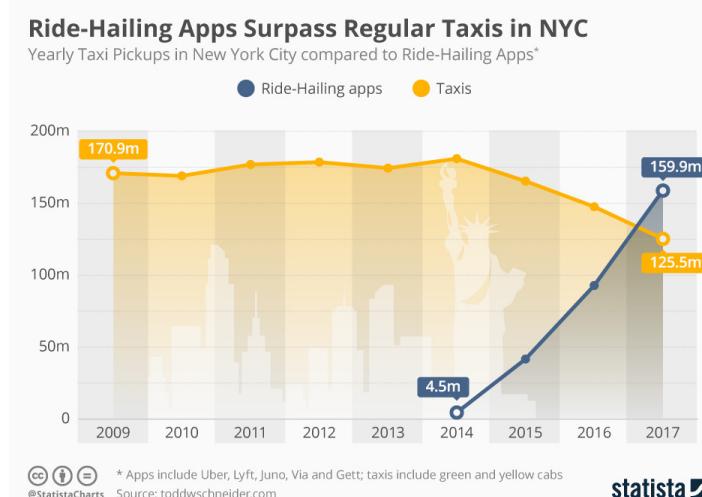
在线问答(知识共享, 众智?)



高不确定性反馈和工作效率：来自众包平台的证实(工作论文)

潜在金钱收益引发了免费内容的生成：来自问答平台的证实(工作论文)

共享经济中的问题



共享经济和其他



依赖于物主从社会关系中得出非金钱效用，或者需要政策以及其他约束(比如舆论)



元宇宙即用技术手段，创造一个或多个平行世界，从而有可能解决时间冲突的问题，也可能解决资源再配置问题

谢谢！

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