The Promise and Perils of the Sharing Economy

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1. The promise of the Sharing Economy
2. The perils of the sharing economy
3. Initiative on the sharing economy
4. A study on the impact of the sharing economy
80 million power drills in the U.S.
A power drill is used an average of 15 minutes over its lifetime.
There are **254 million** registered cars in the US (and **over 1 billion** in the world)
A typical car in the US is used less than 5% over its lifetime
Similarly for

– other privately owned **means of transport** (bikes, boats, airplanes)

– **space** (parking garages, office space, extra bedrooms in private homes, vacation homes)

– many categories of **household goods** (power tools; lawnmowers, snow blowers), clothes, and jewelry
The Sharing Economy

A growing trend marking a shift away from the exclusive ownership and consumption of resources to one of shared use and consumption.
The growth in the sharing economy is taking advantage of:

- excess capacity for many categories of products
- Online platforms that significantly reduce search costs and transaction costs, handle payment, and weed out bad actors (2-way reputation systems)
- Demographic and cultural trends (increased population density, drive for sustainability, and generational shift in attitudes)
The On-Demand Economy

On-demand access to products and services facilitated by online platforms and leveraging the crowds

Source: Altimeter Group 2014
Servicization

A shift from selling physical products to selling the functionality of these products

- Data storage instead of hard drives
- Printing services instead of printers
- Mobility instead of cars
- Power instead of engines
The Rise of the Platform

“Uber, the world’s largest taxi company, owns no vehicles. Facebook, the world’s most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. Airbnb, the world’s largest accommodation provider, owns no real estate. Something interesting is happening.”

—Tom Goodwin, in “The Battle is for the Customer Interface” (Goodwin 2015)
A Day in the life of the Sharing Economy

- **MONEY**
  - $285k items sold on Etsy per day
  - $285k projects funded on Kickstarter daily

- **GOODS**
  - 100,000 items traded on Listia each day
  - 13M Fon-shared Wi-Fi hotspots available each day

- **SPACE**
  - 140k people are staying in Airbnb rooms per day
  - $217 is the average HomeAway rental payment per day

- **TRANSPORTATION**
  - 375k Uber rides given each day
  - 157,143 miles of travel offered on BlaBlaCar per day

- **FOOD**
  - 850 meals delivered by Munchery per day from a shared kitchen
  - 450 meals served up on Blue Apron each day

- **SERVICES**
  - 16,666 jobs posted on Elance-oDesk each day
  - 6,666 people earning income with TaskRabbit per day

- **EMPOWERED PEOPLE**
  - 10 million

Source: Altimeter Group 2014
Peer-to-Peer Car Sharing

USA
- Getaround
- easyCar club

UK
- atzuche

China
- Carshare.hk

France
- iCars club

Hong Kong
- drivy

Singapore
- **Ford Credit** launched a pilot peer-to-peer car-sharing program for owners of Ford-financed cars

- In partnership with **Getaround** in the US and **easyCar Club** in London

- In 6 US cities (Berkley, San Francisco, Portland, Chicago, and Washington D.C.) and in London in the UK
Data Sharing

- China Mobile Hong Kong (CMHK) announced a **data exchange platform** that allows customers to sell extra data capacity to other subscribers.

- Customers can trade their capacity in units of 1GB, with each customer able to set their own price per unit at between HK$15 and HK$60.

- CMHK charges the sellers an **administration fee** of $15 for each gigabyte of successful transactions.
Digital Manufacturing Meets the Sharing Economy

- **Stratasys** announced a peer-to-peer capacity sharing platform that allows its customers to share excess capacity on machines they own.

- **Leveraging** an installed base of over 20,000 professional-grade machines.

- In partnership with **3D Hubs**, a network of 10,000 Makerbot hobbyist machines.
https://www.3dhubs.com/3dprint#:~:text=place=Minneapolis,%20United%20States&latitude=44.9759&longitude=-93.2166
https://www.3dhubs.com/3dprint#/3dprint?place=Doha, Qatar&latitude=25.2867&longitude=51.5333
https://www.3dhubs.com/3dprint - ?
place=Taipei,
Taiwan&latitude=25.0392&longitude=121.525
The Promise of the Sharing Economy

- **Generate income** for owners; monetize expensive and rapidly depreciating assets
- **Provide access** to those who may otherwise prefer not to own an expensive asset
- **Improve sustainability** (e.g., fewer cars, lower emissions, less congestion, less need for parking)
- **Create positive social interactions** and help build community
A source of **flexible income and employment** (providers decide on when, where, and how much to work/rent)

Consumers enjoy **higher levels of service** because platform are more effective at matching supply and demand (reliance on a large pool of assets and workers; flexibility in pricing and compensation)
• An opportunity for **business innovation** and **entrepreneurship** -- the opportunity exists whenever
  - there are high value but poorly utilized assets
  - trade is inhibited by high transaction costs or by other market friction (e.g., moral hazard)
To what extent does peer-to-peer sharing deliver on this promise and are there perils of which we should be aware?
“The average daytime speed of cars in Manhattan’s business districts has fallen to just under 8 miles per hour this year, from about 9.15 miles per hour in 2009. City officials say that car services like Uber and Lyft are partly to blame. So Mayor Bill de Blasio is proposing to cap their growth.”

“Taiwan's Ministry of Transportation and Communications (MOTC) is planning to press criminal charges to stop what it feels are illegal ride-sharing services offered by Uber Taiwan.”

CNA—December 5, 2015
“Airbnb is fighting concerns that its rentals may squeeze an already tight rental market and worsen local housing affordability by turning homes into perennial short-term rentals.”

Seattle Times—December 4, 2015
Mounting concerns that the sharing economy

- could lead to **more consumption** not **less**
- **Competes unfairly** against existing businesses
- Is **unfair to labor** and leads to a “gig” economy
- **Shifts corporate risk** to individuals
- **Leads to monopolies** because of strong network effects
Initiative on the Sharing Economy

- A University Minnesota-wide effort with participation from several department and colleges
- In partnership with industry and government
- Basic research to develop a deeper understanding of the economics and social implications of the sharing economy
- Development of analytics to support decision making at various levels and for various stakeholders (consumers, providers, platforms)
- A partnership with Singapore University of Technology and Design
Ongoing Projects

- Impact of peer-to-peer car sharing on car ownership and car usage
- Peer-to-peer sharing for 3D printing
- Contract design in the presence of data trading
- Inventory rebalancing over a network of shared vehicles
- Mobility as a service and cloud mobility
A Predictive Model of Peer to Peer Product Sharing

Owners:
- Incur purchasing cost
- Earn rental income
- Pay commission fee paid to the platform
- Incur moral hazard cost (extra wear and tear)
- Finding a renter is not guaranteed

Renters:
- Pay rental fee
- Incur an inconvenience cost
- Finding an available car is not guaranteed

Platform:
- Earns commissions at a specified rate
- May set the price and membership fees
The Platform’s Decision

- Given market characteristics (size of market, consumer usage profiles, cost of ownership, and market frictions – moral hazard and inconvenience cost), the platform chooses **prices** and other **contract parameters** to maximize its own profit.

- The market responds through an equilibrium that segments consumers into **owners** and **non-owners** and associated levels of **ownership** and **usage**.
A tool that can be used by

- the platform to make decisions and predict market outcomes
- But also by **policy makers** to predict the impact of sharing on social welfare (e.g., consumer surplus, environmental impact)
Some Key Findings

- Peer-to-peer sharing may lead to either higher or lower ownership and usage (surprisingly, higher ownership is more likely when the cost of ownership is high)
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- Peer-to-peer sharing is more profitable to a platform when the cost of ownership is “moderate”
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- Peer-to-peer sharing is more profitable to a platform when the cost of ownership is “moderate”
- Platforms may not have an incentive to eliminate all moral hazard cost
Takeaways

- The sharing economy (and more broadly the “on-demand” economy) could affect in fundamental ways the way we live, consume, and interact with each others
- An opportunity to tap into vast reserves of poorly utilized assets across many domains
- Significant opportunities for innovation and entrepreneurship; significant opportunities for leveraging advances in information technology
- Policy makers need to be aware of the economic and societal implications (environment, labor, consumer welfare) of the sharing economy and tailor policies accordingly
Is peer-to-peer sharing (and other forms of resource sharing) the first stage in an evolution toward an economy where we own very little and access everything?
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Final Thoughts

Is peer-to-peer sharing (and other forms of resource sharing) the first stage in an evolution toward an economy where we own very little and access everything?

- If so, what kind of society would this to?
- Is it necessarily more egalitarian, democratic, and sustainable?
Questions, Comments, ideas?
Digital Platforms

- Online matching platforms connecting owners & renters (providers and users)
- powered by real time data with location awareness
- supported with electronic and mobile payments (money transactions handled entirely by the platform)
- and 2-way reputation systems, with owners scoring renters and renters scoring owners
An Opportunity for the Deployment of Big Data and Analytics

- An opportunity for the deployment of big data
  - High volumes, velocity, and variety
  - Extensive analytics, with algorithms for
    - matching customer requests with providers
    - Pricing, promotions, wages, product design
    - Design of two-way reputation systems
“Uber, the world’s largest taxi company, owns no vehicles. Facebook, the world’s most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world’s largest accommodation provider, owns no real estate. Something interesting is happening.”
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A KPMG report predicts annual vehicle miles driven will skyrocket. Some forecasters have predicted that vehicles sales will fall in the future because urban-living millennials—and more importantly, the generation that follows them—don’t value car ownership. Instead, they younger generation will increasingly use alternatives like Uber, Lyft, and Daimler’s car-sharing service Car2go. The advisory arm of KPMG says this shift will cause an interesting side effect—and not the death of automakers as some predict. While car ownership—and in turn, sales may decline—the number of total annual vehicle miles driven will soar. U.S. cars will travel one trillion additional miles annually by 2050, or 35% more than the roughly 2 trillion miles traveled in 2015, according to KPMG. The company’s research, which consisted of consumer focus groups in Atlanta, Chicago and Denver, found that millennials and “baby boomers plus,” who range in age from 45 to 75, will be largely responsible for the increased driving.

“I’m not sure people understand the enormity of the change, nor are we ready for it,” says Gary Silberg, national automotive leader for KPMG. In KPMG’s view, this is a huge opportunity for the automotive industry. It will also require a business model that generates profits through tailored premium experiences inside a vehicle. Each age demographic will have their own view of what premium experiences mean. For instance, millennials might pay for a rolling office or a moving entertainment center, the report suggests. Experiences mean. For instance, millennials might pay for a rolling office or a moving entertainment center, the report suggests.
Some cities have decided to bypass on expensive, mass transit infrastructure — buses.

In Altamonte Springs, a city just north of Orlando Florida, officials had to abandon their plans to build a brand new, technologically advanced, on-demand bus system because of cost.

Instead, they've decided to use Uber.

Altamonte Springs city manager Frank Martz said he expects other cities in Florida will replicate the city's partnership with Uber.