Micro-Level Evidence of a K-Shaped Economy

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Overview

Looking now

1. Is there evidence of K-shaped economy in household finance data?

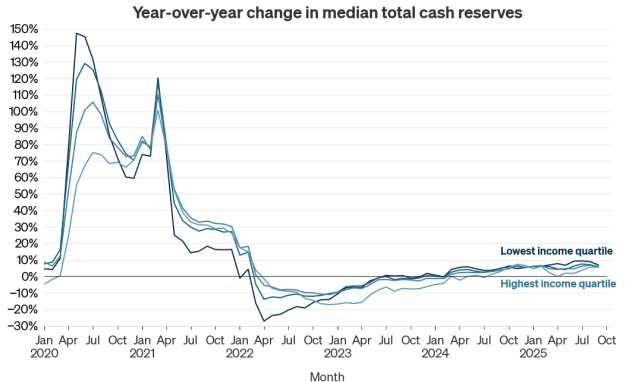
Looking forward

2. Would safety net be resilient to AI-induced layoffs?

3. Could AI-driven autonomous vehicle technology drive K-shaped inequality?

What are we seeing in the data now? Cash reserves

Nothing that looks K-shaped (rising inequality) at the moment.



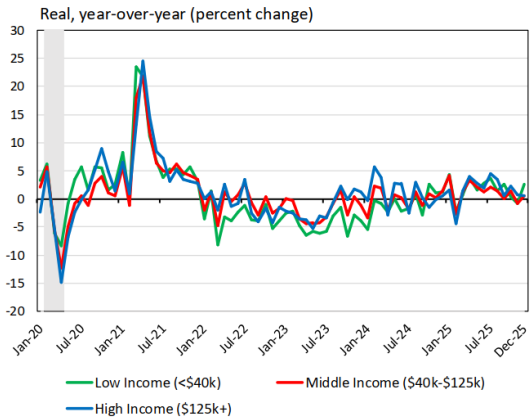
Note: Households are assigned to income quartiles based on the relative rank of their annual incomes in 2019 through 2024. Total cash reserves represents an approximation of balances across a household's full set of liquid accounts, including bank accounts and investments. We assume that balances in investment accounts accrue gains that match S&P 500 returns and other accounts (such as savings accounts, money-market accounts, and CDs) earn returns equal to the 1-month Treasury yield. Total cash reserves have been adjusted for inflation using the Consumer Price Index (CPI) for All Items with a January 2019 reference point. Cash reserves are seasonally adjusted using X-13ARIMA-SEATS.

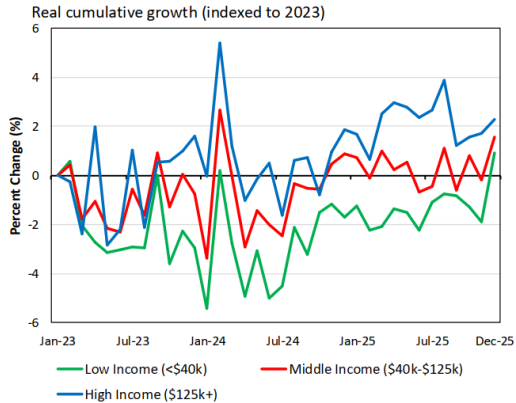
Source: JPMorganChase Institute

Source: JPMC Institute

What are we seeing in the data now? Consumer spending

Year-over-year growth rates similar now, though 1ppt difference if you cumulate since Jan 2023.





Source: New York Fed

Outline

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2. **Would safety net be resilient to AI-induced layoffs?**

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Is there a problem going forward?

A lot of recent public discussion has focused on the possibility of widespread job loss. Whether or not this will actually come to pass is unclear:

- We don't yet know which jobs AI is a substitute or a complement for
- A lot of labor market reallocation happens by slowing the rate of new hiring (rather than more layoffs)
- However, companies that announce layoffs are increasingly blaming AI

Since this **might** happen, useful to think through what would happen if AI caused a big wave of layoffs. Two possible visions of job loss:

1. 6.6 million transportation and warehousing employees
2. White collar—Dario Amodei (CEO of Anthropic) routinely predicts that AI could wipe out half of entry-level white collar jobs over 5 years

Assume that overall the economy is growing with the advent of AI but that there is also a lot of AI-induced job loss.

Could the benefit system handle AI-induced layoffs? Yes, easily

Given the pandemic, people often worry if the benefit system could handle a large number of AI-induced layoffs.

Answer: Yes, easily.

- If an additional 10 million workers were laid off in the coming 12 months and all of them claimed UI, the weekly inflow rate to the UI system would double
- This is **lower** than the entry rate at the start of the Great Recession, and similar to the entry rate in the 2001 recession
- UI is generally thought to have been able to handle those caseloads without trouble
- Would be straightforward for the system to manage this level of elevated inflows

Would UI benefits address AI displacement? Depends on who is laid off

UI is designed for **temporary** job loss. Lasts 6 months outside a recession (and job losses from AI might coincide with a boom). Key question for AI-displaced workers: what would they do next?

Scenario 1: Trucking and warehousing

- 6 months of benefits seems like potentially enough time to retrain
- Similar to the amount of training that the worker had in their prior job

Scenario 2: White-collar

- The initial training took longer (e.g. college degree)
- If the worker wanted to do a similar amount of training again, benefits wouldn't last nearly long enough

Bottom line: Because of how unemployment benefit formulas and rules are set, whether UI would cushion the blow depends on where the job losses happen.

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   - Joint work with Milena Almagro (Chicago), Juan Camilo Castillo (Penn), Peter Ganong (Chicago), and Tobias Salz (MIT)

Motivation

Aggregate opportunity cost of time spent in the car in the U.S. is $87 billion

Individual adoption of self-driving cars promises to reduce these costs drastically

- People can now work (or sleep) in their car

But **equilibrium** increases in congestion may blunt individual gains

- Vickrey's (1969) bottleneck model predicts **no welfare gains**—lower time costs are fully offset by longer queues:

$$\alpha \cdot \text{VOT} \rightarrow \frac{1}{\alpha} \cdot \text{Queue}$$

- Bottleneck model lacks realistic features: extensive margin, rider heterogeneity, free-flow travel, ...

This project

What are the equilibrium and distributional effects of self-driving cars?

Approach for today:

- Build on the quantitative urban transportation model of Almagro et al. (2025).
- Simulate wide availability of self-driving cars based on aggressive, but we think plausible, assumptions

In the works: Measure demand for self-driving cars experimentally

Warning: Work in progress, results highly preliminary

Introduce self-driving cars into Almagro et al. (2025) model

Start with equilibrium model of urban transportation (application to Chicago)

- **Demand**: nested logit mode choice (car, bus, train, ride-hail, outside option); price sensitivity varies by income
- **Transportation technology**: travel times depend on edge-level road congestion
- **Equilibrium**: mode shares and travel times determined jointly—more travelers $\Rightarrow$ more congestion $\Rightarrow$ longer travel times
- **Estimated** on comprehensive Chicago trip data (CTA, ride-hailing, cellphone GPS)

Introduce self-driving car counterfactuals: two modifications to owner-occupied car parameters

- Disutility of time in car is halved *(this is a guess, working to experimentally measure)*
- Everyone has access to self-driving car (like an Uber, but at car prices because not paying for driver)

Findings: Vickrey's self-defeating congestion effect does not hold

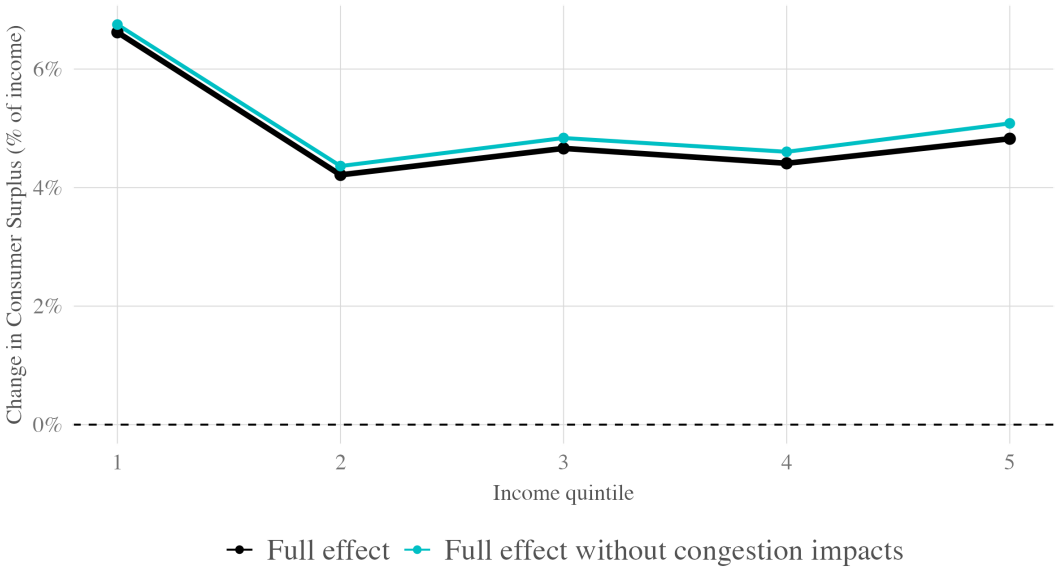
Consumer surplus ↑ by $3k per person per year. Big increase in mobility (total trips ↑ 20%)

- Half of this welfare gain comes from *access* to low-cost travel, half from lower *disutility* of travel time
- Only 4% of the potential welfare gain is lost due to congestion
- Why does welfare rise, despite Vickrey's congestion conjecture?
  - Bottleneck model: travel time should double when disutility of travel is halved.
  - Our equilibrium model: travel time increases only 6%.
  - Why? People can adjust demand. Some trips are taken during free-flow time.
- Basic lesson: congestion does rise a bit, but people value time in cars much more and mobility rises significantly, so welfare rises

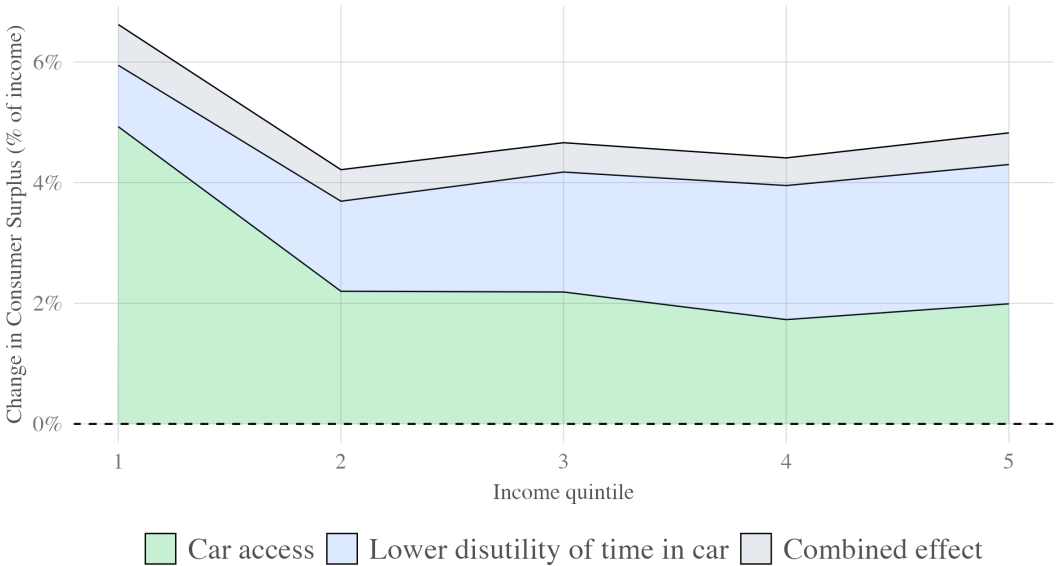
Remaining question:

- Are the costs and benefits of this technological improvement equally distributed?

Gains From Self-Driving Cars Broadly Shared Across Income Distribution



Access Drives Gains at Bottom; Value of Time Drives Gains at Top



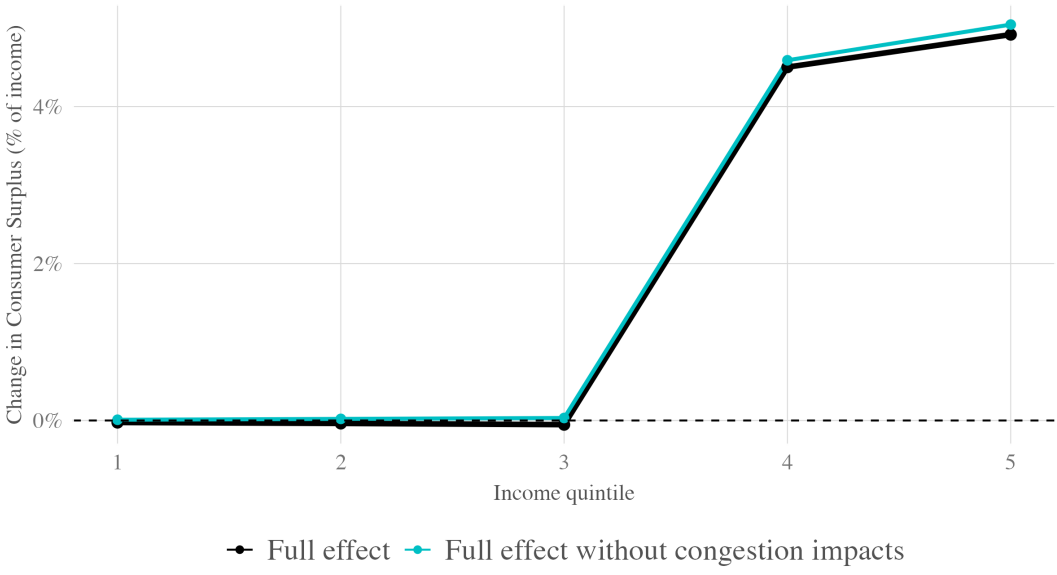
This Distributional Neutrality Result Could Fail

- Baseline scenario assumes *everyone* has access to self-driving cars (can hail a cheap Waymo)
- But what if only higher income households have access to self-driving cars? Maybe autonomous ride-hailing services maintain market power and prices stay high.

New scenario:

- Only top two quintiles have access (because they can purchase their own self-driving car)
- But everyone faces equilibrium effects of higher congestion
- Captures dystopian concern: **"Benefits for the rich, equilibrium effects for the poor"**

Unequal Access Leads to Rising Inequality, But Not K-shaped



Conclusion

Looking now

1. Unclear evidence of K-shaped behavior in household finance data

Looking forward

2. Unemployment insurance system not well prepared for AI-induced white-collar layoffs
3. Autonomous vehicle technology may reduce inequality, especially if access broadly shared