

Uber vs. Taxi: A Driver's Eye View

Josh Angrist^a Sydnee Caldwell^b Jonathan Hall^c

^aMIT and NBER

^bMIT

^cUber Technologies, Inc.

Fall 2017

Uber Trip Earnings and Fees

Weekly Earnings

▼ Trip Earnings	\$19.34
Fare	\$24.12
Uber Fee	- \$6.03
Toll	+ \$1.25
Estimated Payout	\$19.34

It's All About that Lease

- Drivers drive h hours/week, generating wh in farebox (revenue) and earnings y
- **Uber drivers** pay a proportional fee; **Taxi drivers** pay a fixed lease
 - Uber contract:

$$y_0 = (1 - t)wh_0$$

where $t \in [.2, .25]$ is the fee

- Taxi contract:

$$y_1 = wh_1 - L$$

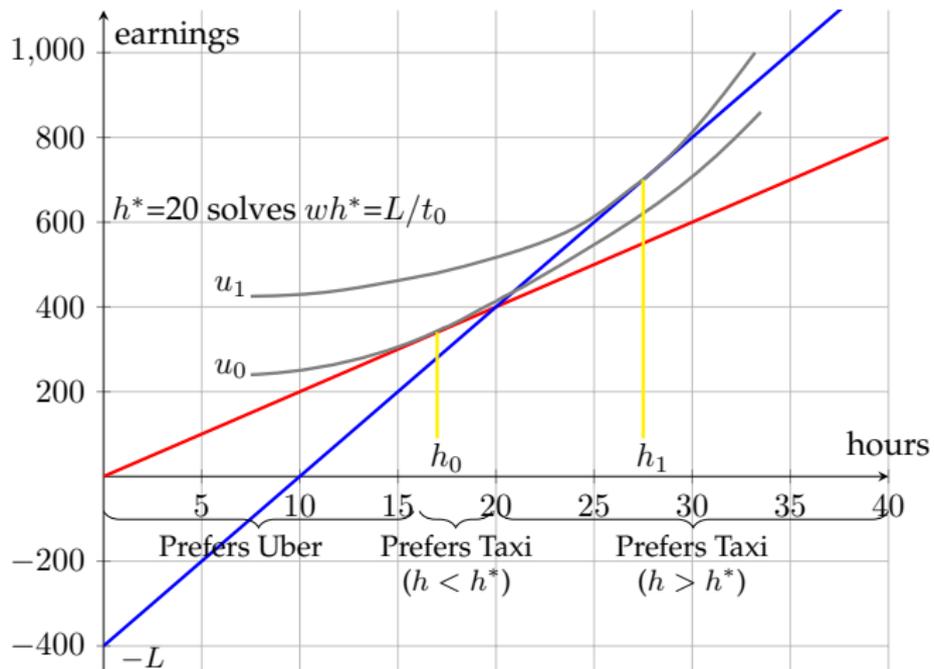
where L is the weekly lease rate

- These lines cross at the Taxi *breakeven*

$$\frac{L}{t} = B$$

- When $wh_0 > B$, Taxi drivers earn more; some elastic drivers with $wh_0 < B$ may prefer Taxi too

Who Takes Taxi?



Uber Driver

- With a friend who runs Uber's public policy division (Jonathan Hall, Harvard Econ BA&PhD), we're using randomized trials to estimate the economic value of Uber work to its drivers
- Our *Uber Driver* story plays in three acts:
 - Randomization of t establishes that driver effort responds sharply to pay; this favors Taxi
 - Our "Taxi experiment" offering different packages of $[L, t]$ show that drivers are "lease averse"; this favors Uber
 - Uber wins! We use findings from the first two acts to compute Uber vs Taxi Compensating variation showing Uber's many part-time drivers benefit from Uber work opportunities

Compensating Taxi

- Excess expenditure is:

$$s(w, \bar{u}) \equiv e(p, w, \bar{u}) \quad wT = px^c \quad wh^c$$

Cash to hit \bar{u} when driving under a scheme with L and t :

$$f(w, \bar{u}; t, L) = (px^c + L) \quad w(1 - t)h^c = s(w[1 - t], \bar{u}) + L.$$

Uber drivers opt for Taxi when

$$\underbrace{f(w, u_0; 0, L)}_{\text{Taxi}} < \underbrace{f(w, u_0; t, 0)}_{\text{Uber}}$$

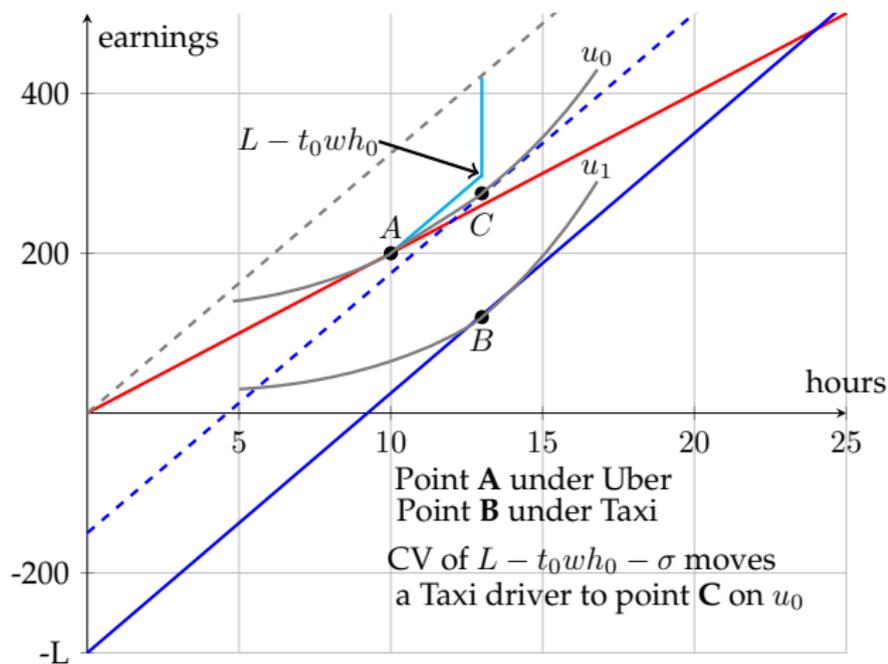
Equivalently, when

$$s(w, u_0) + L < s(w[1 - t], u_0), \quad (1)$$

- Expand $s(w, u_0)$ around $s(w[1 - t], u_0)$ to derive an opt-in rule:

$$\underbrace{wh_0}_{\text{Uber farebox}} > \frac{L}{t} \left(1 + \frac{\delta}{2} \frac{t_0}{1 - t_0}\right)^{-1}. \quad (2)$$

Every Picture Tells a Story



- Drivers w/negative CV take Taxi

The Earnings Accelerator

Fee-free on every trip!

To celebrate summer rides, we are launching a special driver-partner promotion: the Earnings Accelerator!

OPT IN BELOW AND YOU'LL KEEP THE UBER FEE ON EVERY RIDE BETWEEN AUGUST 29 AND SEPTEMBER 5.

You must opt in before Saturday August 27 at 11:59pm to receive this promotion (no exceptions).

Click submit below to opt in

You are eligible for this promotion only if you received an invitation to opt in directly from Uber. Payments from this promotion will be included in your pay for the week of August 29.

The data generated by driver-partners participating in the Earnings Accelerator may be used by Uber and its academic partners for statistical analyses and academic research. Driver-partners who opt in to this promotion may be eligible for additional opportunities offered in collaboration with our academic partners through December 31. No personally identifiable information will be shared with Uber's academic partners.

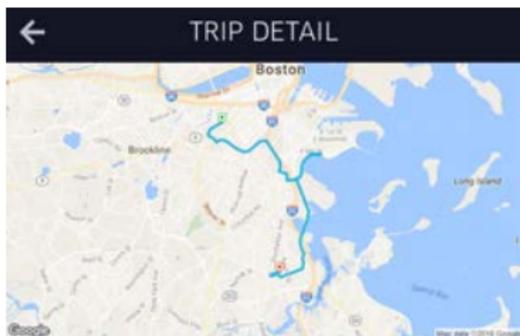
SUBMIT

© Uber. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>

Opt-In Week Driver Experience

© Uber. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>

- Trip receipts and earnings sta



5:34 PM

\$20.30

Fare **\$20.30**

Estimated Payout **\$20.30**

34 min
DURATION

9.21 mi
DISTANCE

-

Payment Summary Mon, Aug 29 - Mon, Sep 05

\$51.64
Total Payout

★ 4.5 | 1.63 | 6
Current Rating | Hours Online | Trips

Day	Trips	Fares ¹	Surge	Uber Fees	Payments
Aug 29	0	\$0.00	\$0.00	\$0.00	\$0.00
Aug 30	0	\$0.00	\$0.00	\$0.00	\$0.00
Aug 31	0	\$0.00	\$0.00	\$0.00	\$0.00
Sep 01	0	\$0.00	\$0.00	\$0.00	\$0.00
Sep 02	0	\$0.00	\$0.00	\$0.00	\$0.00
Sep 03	1	\$20.30	\$0.00	\$0.00	\$20.30
Sep 04	5	\$27.09	\$4.25	\$0.00	\$31.34
Total Payout					\$51.64

Fees that don't impact your payments are not shown here. Refer to your detailed payment statement to see more details.

The Taxi Treatment Hails Drivers

The Uber logo, consisting of the word "UBER" in white, uppercase letters on a black rectangular background.

Accelerate your earnings!

Buy a payout increase of 40% through the Earnings Accelerator for only \$165. Opt in below: \$165 will be deducted from your pay on Thursday September 22, and you'll make 40% more on **every trip** between September 19 and September 26. As long as your weekly total fares+surge exceed \$508, you'll come out ahead!

This week's promotion ID is BOS042. Make sure to look for this unique ID in the relevant pay statement or reference it in any support inquiries.

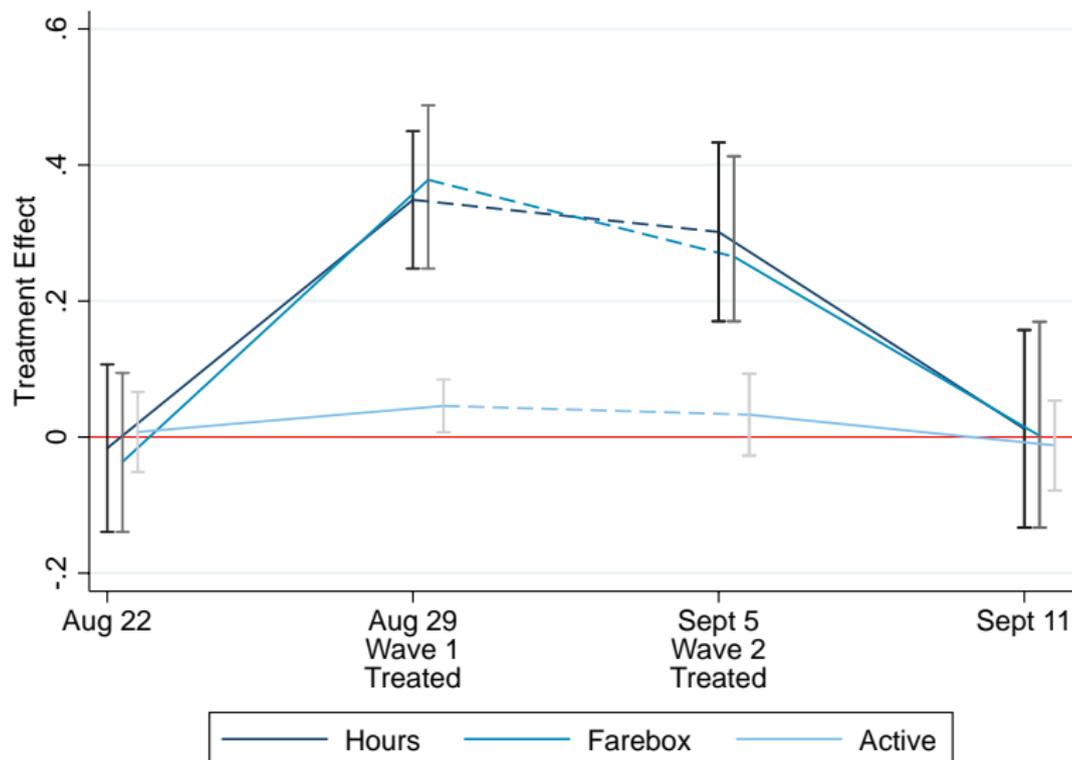
CLAIM YOUR OFFER →

© Uber. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>

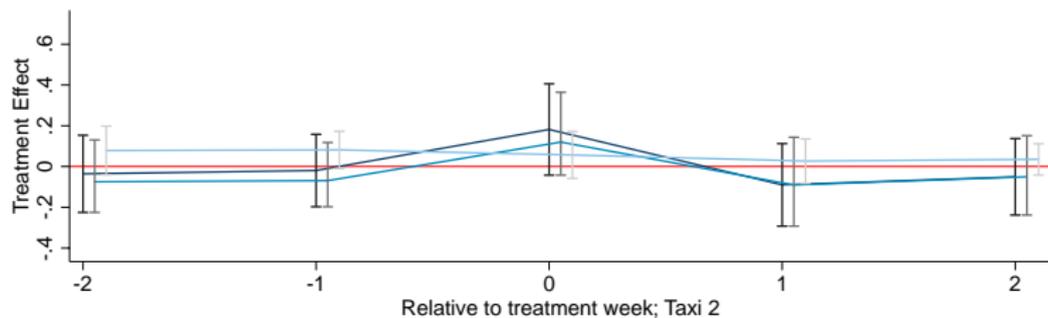
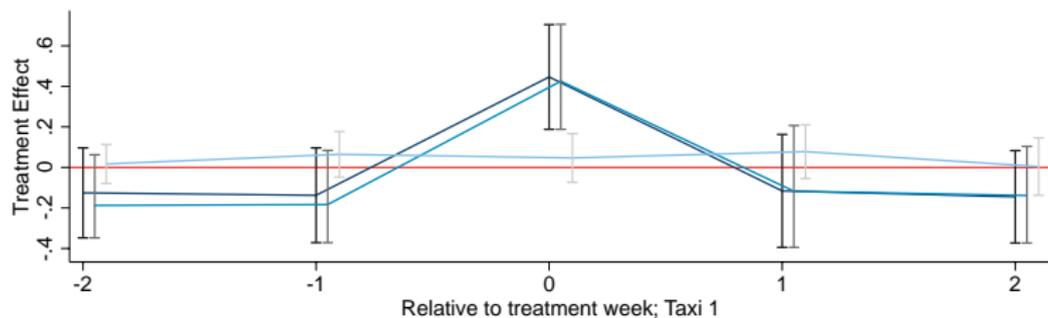
Taxi Participation: Quick Summary

- Roughly 45% of drivers offered a virtual Taxi lease took it
- 85% of those who bought a lease came out ahead
 - Average earnings gain for those who chose taxi was \$84
- Taxi was under-subscribed: many with farebox above breakeven chose to sit out
- We use gaps between the control group proportion above breakeven and treatment group opt-in rates to identify a “behavioral lease rate” that rationalizes Taxi take-up
 - This has important consequences for Uber-vs-Taxi CV
- Speaking of behavior ...

Fee Free Driving: Effects on Participants



Totally Taking Taxi



Totally Taking Taxi

	Opt-In Week			Taxi		
	Pooled (1)	High Hours (2)	Low Hours (3)	Pooled (4)	High Hours (5)	Low Hours (6)
A. 2SLS Estimates						
First Stage	0.21*** (0.01)	0.19*** (0.01)	0.23*** (0.02)	0.12*** (0.02)	0.10*** (0.02)	0.13*** (0.02)
2SLS	1.16*** (0.12)	1.22*** (0.16)	1.09*** (0.17)	1.83*** (0.42)	2.22*** (0.73)	1.45*** (0.49)
Over-identified Model	1.19*** (0.12)	1.25*** (0.16)	1.13*** (0.17)	1.41*** (0.27)	1.57*** (0.40)	1.26*** (0.37)
B. OLS Estimates						
OLS	0.26*** (0.06)	0.27*** (0.08)	0.26*** (0.08)	0.14* (0.08)	0.07 (0.09)	0.23* (0.13)
Drivers	1344	721	623	864	462	402
Observations	2485	1367	1118	1544	836	708

Note: This table reports 2SLS estimates of the ISE. The endogenous variable is log wages, instrumented with treatment offer. Models control for the strata used for random assignment,

MIT OpenCourseWare
<https://ocw.mit.edu>

14.661 Labor Economics I
Fall 2017

For information about citing these materials or our Terms of Use, visit: <https://ocw.mit.edu/terms>.