Occupational Choices and Liquidity Constraints in Developing Countries

Thése pour l'obtention du grade de Docteur en Sciences Économiques présentée et soutenue publiquement le 19 septembre 2024 par

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labor $\rightarrow$ liquidity

liquidity → labor → liquidity

Chapter 1:

How do material living conditions correlate with occupations?

Method

Summarize the workers' relative wealth from their observable living conditions in 1,313 regions of 46 developing countries.

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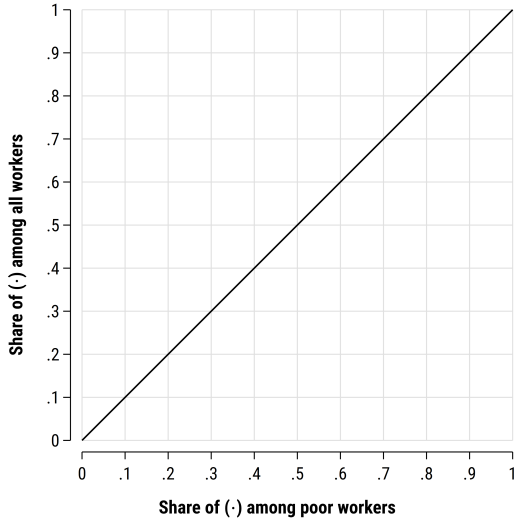

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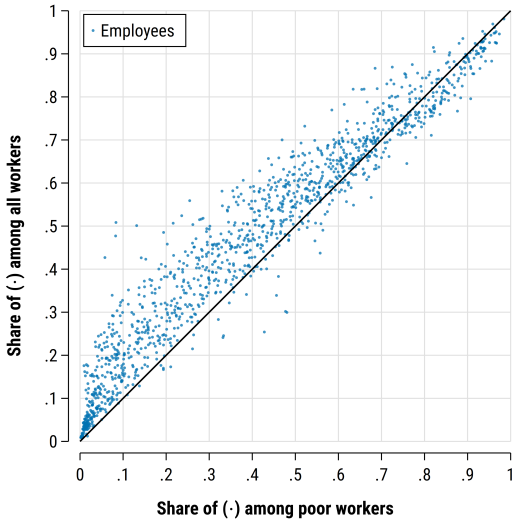

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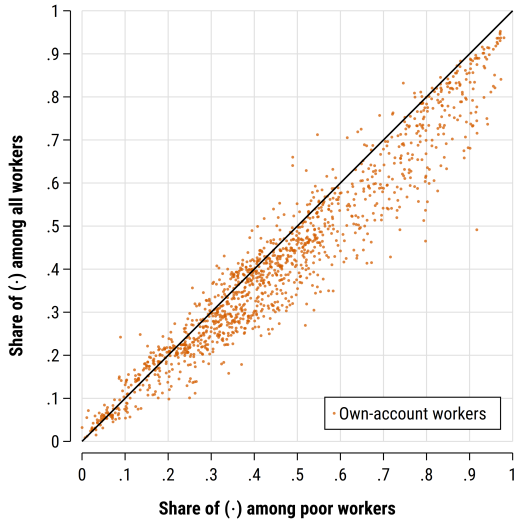

Chapter 2:

What do occupational choices suggest about the own-account workers' liquidity?

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1. Define an occupational choice rule

2. Estimate labor market parameters for Brazil

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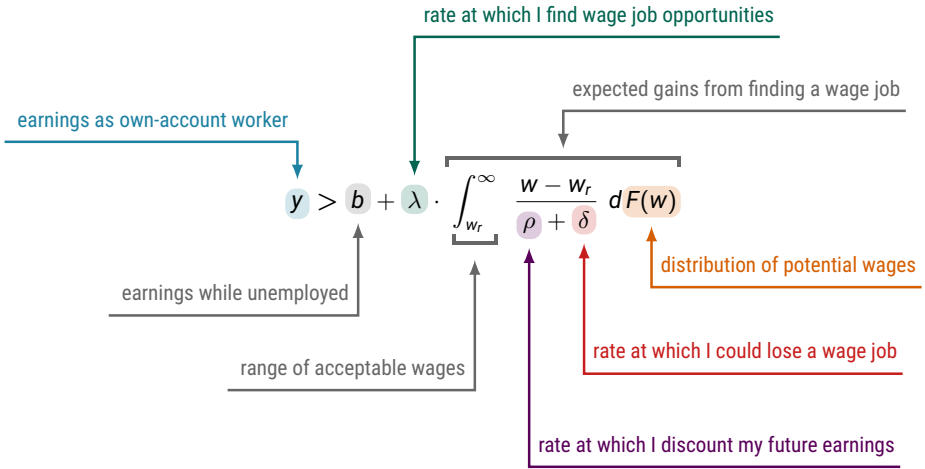
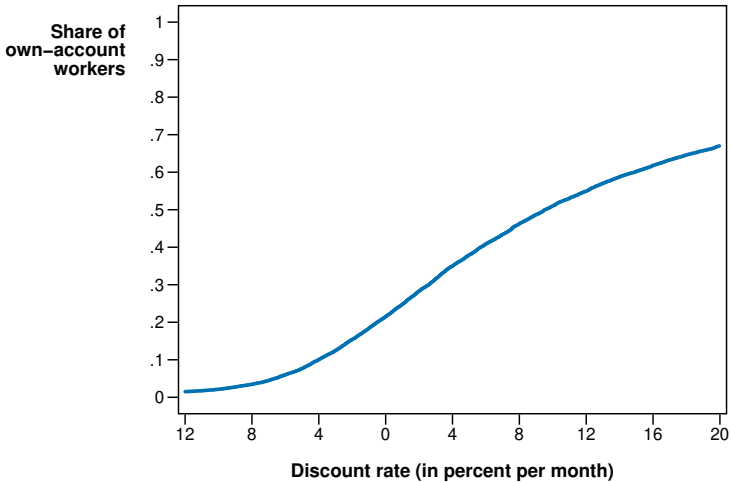
What do occupational choices suggest about the own-account workers' liquidity?

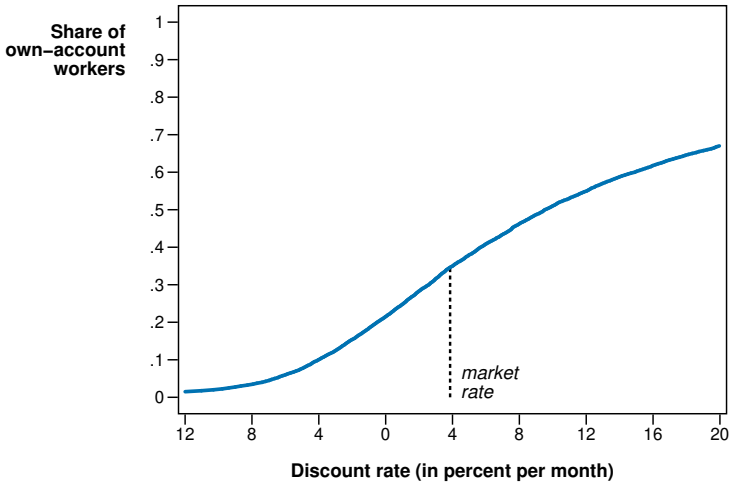
Method

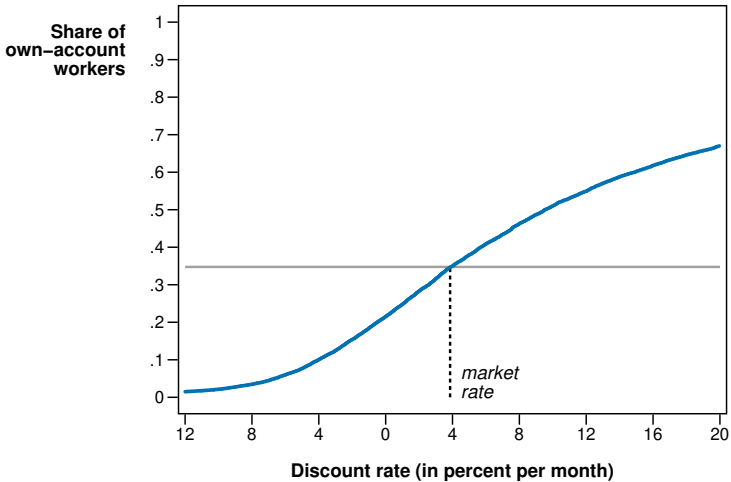
Infer the intertemporal priorities of own-account workers by comparing their occupational choice against their potential wage job opportunities.

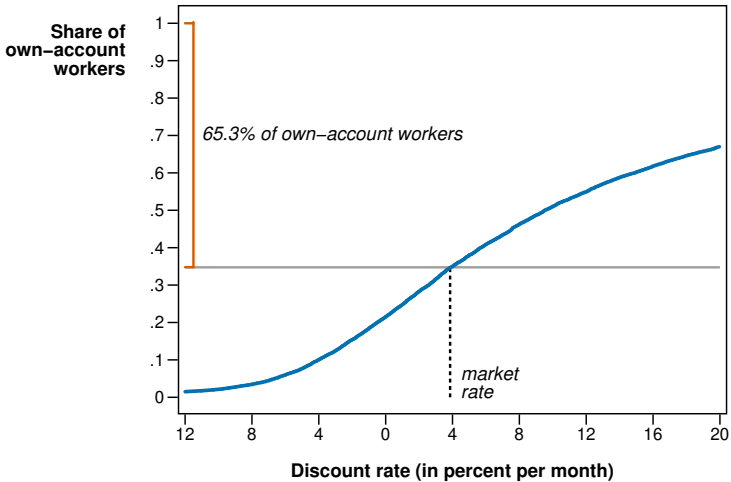
1. **Define an occupational choice rule**
2. **Estimate labor market parameters for Brazil**
3. **Infer intertemporal priorities that are consistent with the observed behavior**

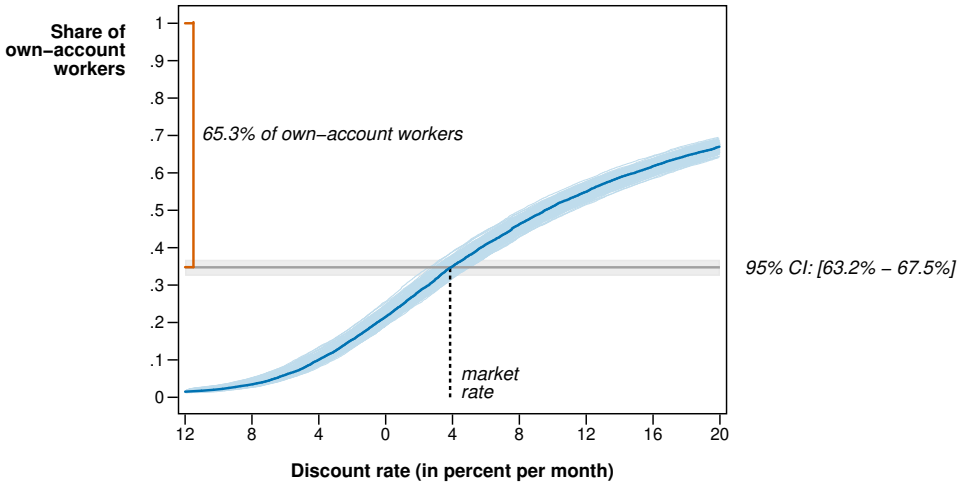

rate at which I find wage job opportunities
expected gains from finding a wage job
earnings as own-account worker
$y > b + \lambda \cdot \int_{w_r}^{\infty} \frac{w - w_r}{\rho + \delta} \, dF(w)$
distribution of potential wages
earnings while unemployed
rate at which I could lose a wage job
range of acceptable wages
rate at which I discount my future earnings

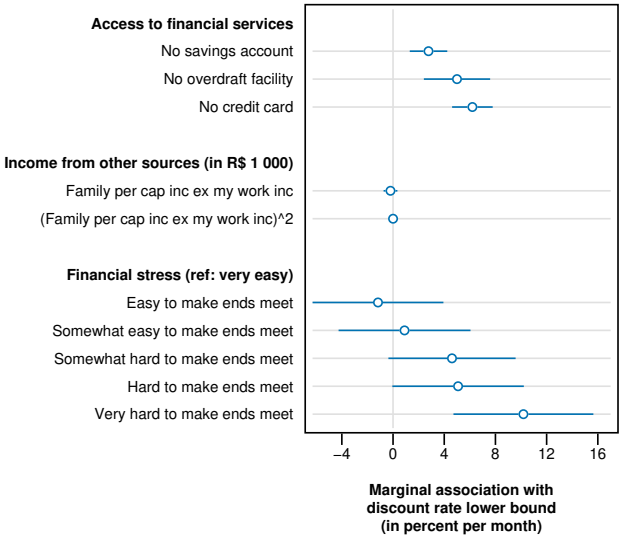

Share of own–account workers
1
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
12
8
4
0
4
8
12
16
20
Discount rate (in percent per month)

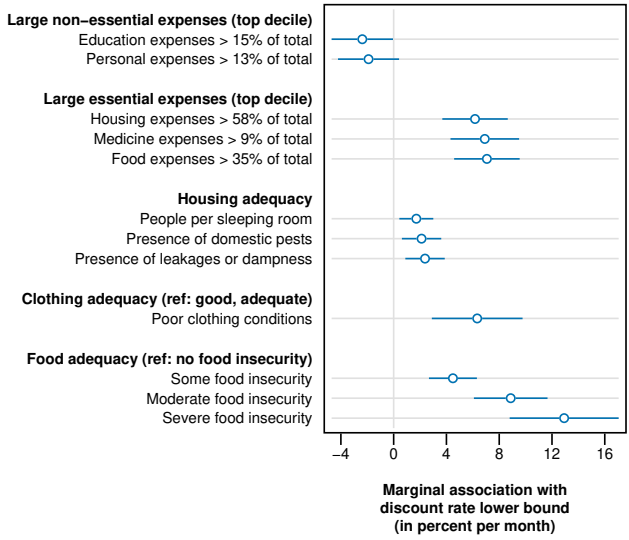

Share of own–account workers
1
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
12
8
4
0
4
8
12
16
20
market rate
Discount rate (in percent per month)


Share of own–account workers
1
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
12
8
4
0
4
8
12
16
20
market rate
Discount rate (in percent per month)


Share of own–account workers
1
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
65.3% of own–account workers
market rate
12
8
4
0
4
8
12
16
20
Discount rate (in percent per month)


Share of own–account workers
1
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
65.3% of own–account workers
95% CI: [63.2% – 67.5%]
market rate
12
8
4
0
4
8
12
16
20
Discount rate (in percent per month)


Access to financial services
No savings account
No overdraft facility
No credit card
Income from other sources (in R$ 1 000)
Family per cap inc ex my work inc
(Family per cap inc ex my work inc)^2
Financial stress (ref: very easy)
Easy to make ends meet
Somewhat easy to make ends meet
Somewhat hard to make ends meet
Hard to make ends meet
Very hard to make ends meet
−4
0
4
8
12
16
Marginal association with discount rate lower bound (in percent per month)

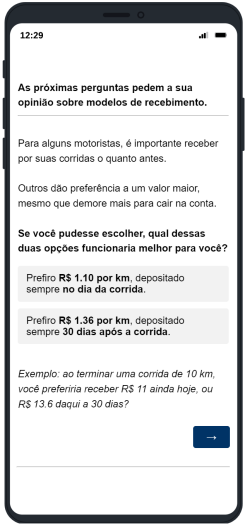

Large non–essential expenses (top decile)
Education expenses > 15% of total
Personal expenses > 13% of total
Large essential expenses (top decile)
Housing expenses > 58% of total
Medicine expenses > 9% of total
Food expenses > 35% of total
Housing adequacy
People per sleeping room
Presence of domestic pests
Presence of leakages or dampness
Clothing adequacy (ref: good, adequate)
Poor clothing conditions
Food adequacy (ref: no food insecurity)
Some food insecurity
Moderate food insecurity
Severe food insecurity
–4
0
4
8
12
16
Marginal association with discount rate lower bound (in percent per month)

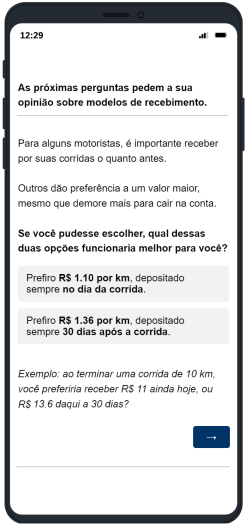
Chapter 3:

In practice, how much do workers value the liquidity of a given work arrangement?

Method

Elicit payment preferences using a survey experiment with over 14,000 ridesharing drivers in Brazil.

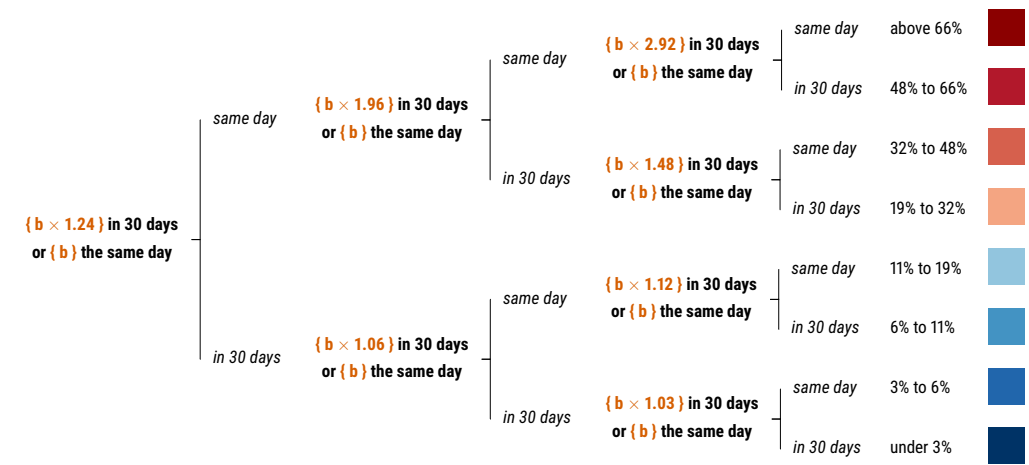

12:29
As próximas perguntas pedem a sua opinião sobre modelos de recebimento.
Para alguns motoristas, é importante receber por suas corridas o quanto antes.
Outros dão preferência a um valor maior, mesmo que demore mais para cair na conta.
Se você pudesse escolher, qual dessas duas opções funcionaria melhor para você?
Prefiro R$ 1,10 por km, depositado sempre no dia da corrida.
Prefiro R$ 1,36 por km, depositado sempre 30 dias após a corrida.
Exemplo: ao terminar uma corrida de 10 km, você preferiria receber R$ 11 ainda hoje, ou R$ 13.6 daqui a 30 dias?
→

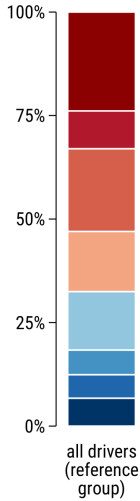


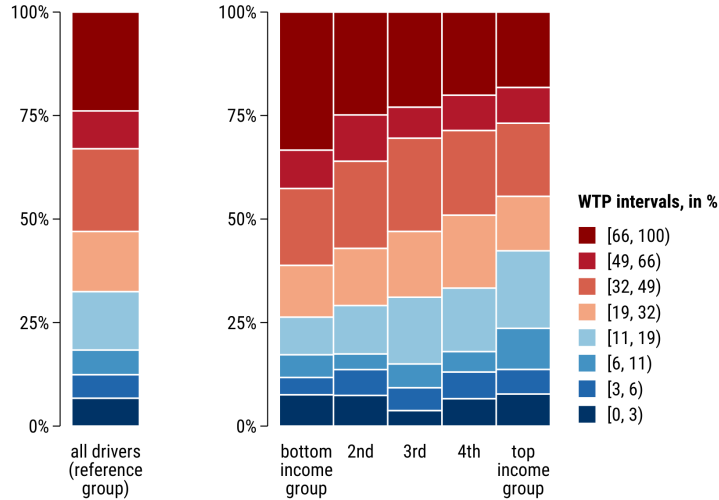
If you could choose, which of these two options would work best for you?

I prefer **R$ 1.00 per km** paid **on the day of the ride**.

I prefer **R$ 1.48 per km** paid **30 days after the ride**.


1st question
choice
2nd question
choice
3rd question
choice
willingness to pay
{ b × 1.24 } in 30 days or { b } the same day
same day
{ b × 1.96 } in 30 days or { b } the same day
same day
{ b × 2.92 } in 30 days or { b } the same day
same day
above 66%
in 30 days
48% to 66%
in 30 days
{ b × 1.48 } in 30 days or { b } the same day
same day
32% to 48%
in 30 days
19% to 32%
in 30 days
{ b × 1.06 } in 30 days or { b } the same day
same day
{ b × 1.12 } in 30 days or { b } the same day
same day
11% to 19%
in 30 days
6% to 11%
in 30 days
{ b × 1.03 } in 30 days or { b } the same day
same day
3% to 6%
in 30 days
under 3%


100%
75%
50%
25%
0%
all drivers
(reference
group)


100%
75%
50%
25%
0%
all drivers (reference group)
bottom income group
2nd
3rd
4th
top income group
WTP intervals, in %
[66, 100)
[49, 66)
[32, 49)
[19, 32)
[11, 19)
[6, 11)
[3, 6)
[0, 3)

Treatment A:
Discuss potential liquidity sources

Imagine you received news of a **domestic emergency** (an urgent home repair, or a health treatment that cannot wait).

Because of this **you will have to disburse** R$ 1,400 more than expected this week.

What is the first word that comes to your mind?

In practice, how would you cover this unexpected expense of R$ 1,400 right now?

Treatment A:
Discuss potential liquidity sources

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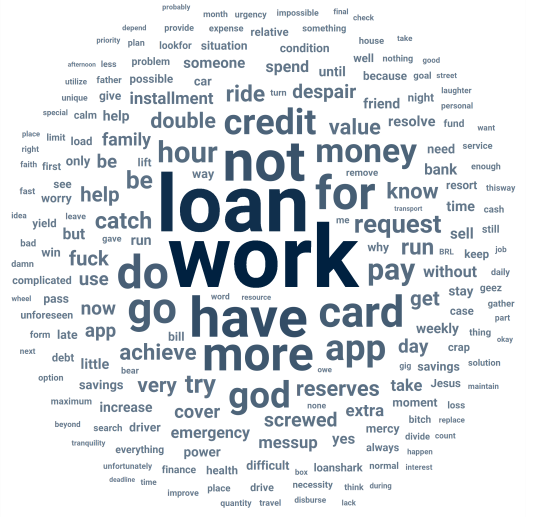

Treatment B:
Discuss the use of extra income

Imagine you received news of a **surprise payment** (the result of a lottery or an unexpected refund, for example).

Because of this **you will receive an extra deposit** of R$ 1,400 this week.

What is the first word that comes to your mind?

In practice, what would you do with this unexpected income of R$ 1,400 right now?

Treatment B:
Discuss the use of extra income

Imagine you received news of a **surprise payment** (the result of a lottery or an unexpected refund, for example).

Because of this **you will receive an extra deposit** of R$ 1,400 this week.

What is the first word that comes to your mind?

In practice, what would you do with this unexpected income of R$ 1,400 right now?

Treatment effect on the willingness to pay for same-day remuneration

	outcome: WTP midpoint		*outcome: WTP interval*
	Difference in Means	**Doubly Robust: Covariate Adj. via Regression and IPW**	**Doubly Robust: Covariate Adj. via Interval Reg. and IPW**
	(1)	(2)	(3)
Treatment A:			
Unexpected expense discussion	-1.3	-1.5	-1.5
	(0.7)	(0.7)	(0.7)
Reference level:			
Control group mean	39.9	40.2	38.9
	(0.7)	(0.6)	(0.6)
Number of observations	8,142	8,142	8,142

Treatment effect on the willingness to pay for same-day remuneration

	outcome: WTP midpoint		*outcome: WTP interval*
	Difference in Means	**Doubly Robust: Covariate Adj. via Regression and IPW**	**Doubly Robust: Covariate Adj. via Interval Reg. and IPW**
	(1)	(2)	(3)
Treatment A:			
Unexpected expense discussion	-1.3	-1.5	-1.5
	(0.7)	(0.7)	(0.7)
Treatment B:			
Unexpected income discussion	-0.7	-1.5	-1.4
	(0.7)	(0.7)	(0.6)
Reference level:			
Control group mean	39.9	40.2	38.9
	(0.7)	(0.6)	(0.6)
Number of observations	8,142	8,142	8,142

Discussion

Intertemporal arbitrage should not matter in the labor market

Yet, work arrangements seem to take the role of financial instruments.

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Workers are willing to pay exorbitant prices for liquid jobs
Negative feedback may lead to a poverty trap, labor supply misallocation.

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Intertemporal arbitrage should not matter in the labor market
Yet, work arrangements seem to take the role of financial instruments.

Workers are willing to pay exorbitant prices for liquid jobs
Negative feedback may lead to a poverty trap, labor supply misallocation.

Appendix:

When You Can't Afford to Wait for a Job: The Role of Time Discounting for Own-Account Workers in Developing Countries

Value of a wage job $\rho \cdot W(w) = w + \delta \cdot \Big(U - W(w)\Big)$

Value of unemployment $\rho \cdot U = b + \lambda \cdot \int_{w_r}^{\infty} \Big(W(w) - U\Big)\, dF(w)$

Reservation wage $w_r = b + \dfrac{\lambda}{\delta + \rho} \cdot \int_{w_r}^{\infty} \Big(w - w_r\Big)\, dF(w)$

Value of own-account work $\rho \cdot OAW = y$

OAW is chosen if $y > b + \dfrac{\lambda}{\delta + \rho} \cdot \int_{w_r}^{\infty} \Big(w - w_r\Big)\, dF(w)$

The occupational choice rule

$$y > b + \frac{\lambda}{\delta + \rho} \cdot \int_{w_r}^{\infty} \left(w - w_r\right) dF(w)$$

OAW preferable if jobs are scarce (λ small), unstable (δ big), or if present consumption is urgent (ρ big).

The occupational choice rule as a function of the discount rate

$$\rho > \frac{\lambda}{y - b} \cdot \int_{w_r}^{\infty} \left(w - w_r\right) dF(w) - \delta$$

A sufficiently high urgency for consumption (ρ) can rationalize OAW for any level of earnings (y).

Estimating the labor market parameters using survey data for Brazil

$$\rho > \frac{\lambda}{y - b} \cdot \int_{w_r}^{\infty} (w - w_r)\, dF(w) - \delta$$

$$\downarrow$$

$$\hat{\rho}_i > \frac{\mathbb{E}(\lambda \mid X_i)}{y_i - \mathbb{E}(b \mid X_i)} \cdot \Big[\mathbb{E}(w \mid w > w_r, X_i) - \mathbb{E}(w_r \mid X_i) \cdot \mathbb{P}(w \geq w_r)\Big] - \mathbb{E}(\delta \mid X_i)$$

1. y_i is directly observable for own-account workers.
2. $\mathbb{E}(\lambda \mid X_i)$ is fit with an unemp. duration model and with $\mathbb{P}(w \geq w_r)$.
3. $\mathbb{E}(b \mid X_i)$ is assumed to be zero, the most frequent value.
4. $\mathbb{E}(w \mid w > w_r, X_i)$ is fit with a Heckman selection model.
5. $\mathbb{E}(w_r \mid X_i)$ is fit with a quantile regression at the 10th centile.
6. $\mathbb{P}(w \geq w_r)$ is calculated for a normal distribution of log wages.
7. $\mathbb{E}(\delta \mid X_i)$ is fit with a job duration model.

Appendix:

Workers' Preferences over Payment Schedules: Evidence from Ridesharing Drivers

Ridesharing drivers reflect the diversity of the Brazilian workforce...

- **Mixed-race or black** (62.8% among drivers *vs.* 54.4% among the adult urban workforce)
- **18 to 37 years old** (52.4% *vs.* 49.7%)
- **High school or less** (63.1% *vs.* 66.2%)
- **Adults in the houshold** (2.4 *vs.* 2.5)
- **Kids in the houshold** (1.0 *vs.* 0.8)

... except that drivers are predominantly male.

- **Men** (93.2% *vs.* 54.8%)

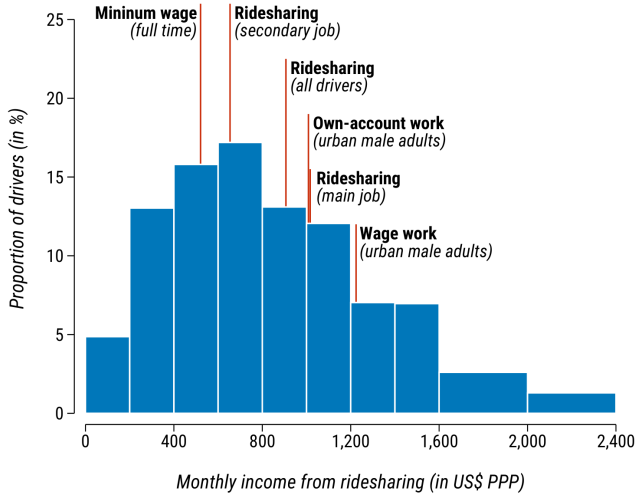
Monthly income from ridesharing

Net monthly earnings: US$ 900 PPP

If main job: US$ 1,000 (for 240 h/month)

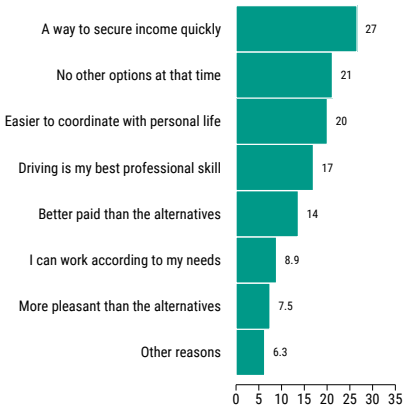
If secondary job: US$ 640 (for 132 h/month)

Note: US$ 1.00 = R$ 2.50 adjusting for PPP.

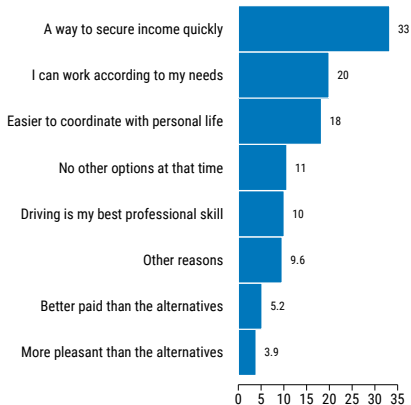


Main reasons for working with ridesharing

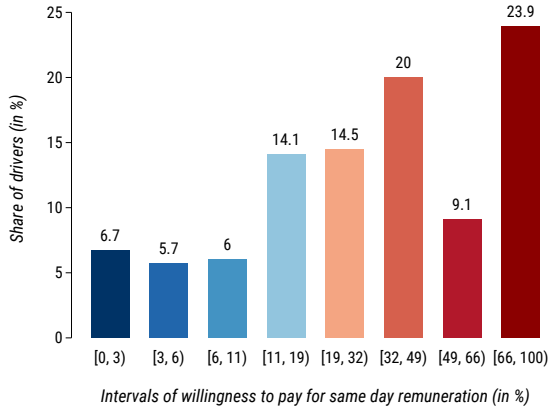
(a) Main job drivers



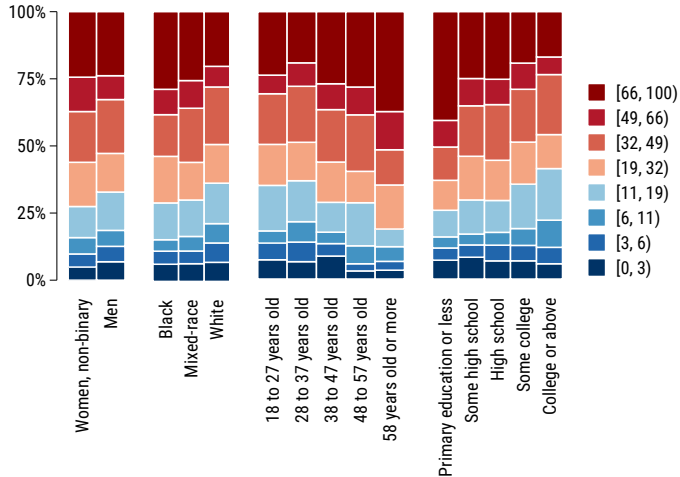
(b) Secondary job drivers

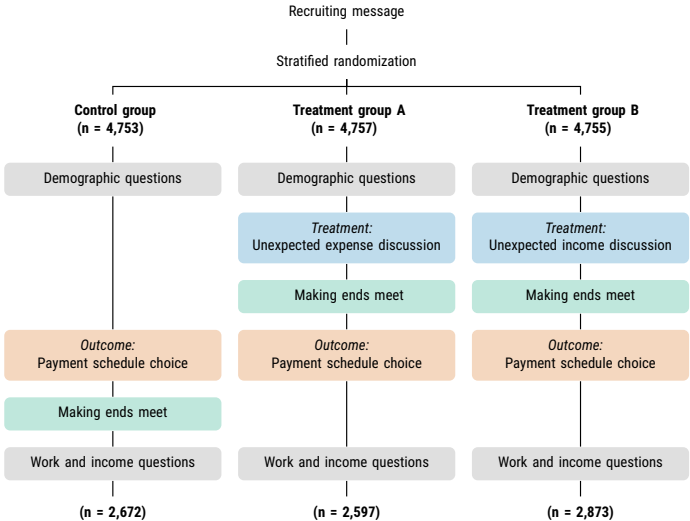


Distribution of drivers over the indifference ranges



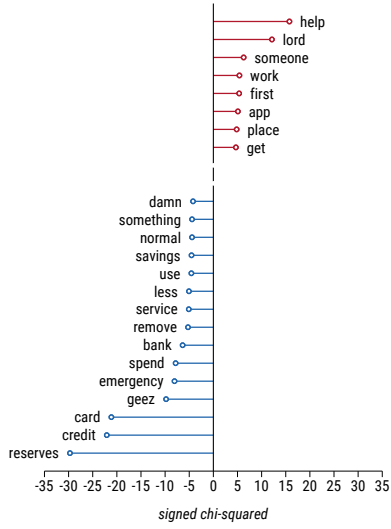
Payment preferences by demographics




Recruiting message
Stratified randomization
Control group
(n = 4,753)
Treatment group A
(n = 4,757)
Treatment group B
(n = 4,755)
Demographic questions
Demographic questions
Demographic questions
Treatment:
Unexpected expense discussion
Treatment:
Unexpected income discussion
Making ends meet
Making ends meet
Outcome:
Payment schedule choice
Outcome:
Payment schedule choice
Outcome:
Payment schedule choice
Making ends meet
Work and income questions
Work and income questions
Work and income questions
(n = 2,672)
(n = 2,597)
(n = 2,873)

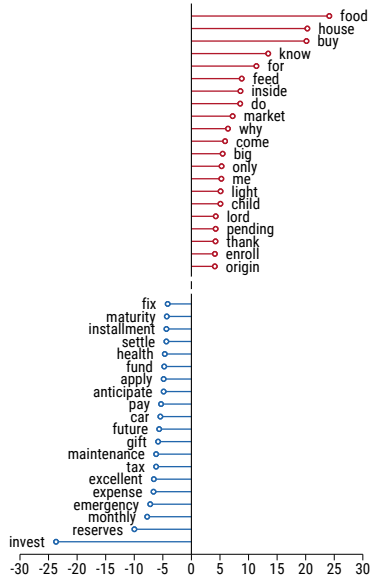
Keywords associated with a strong preference for quick pay

how would you cover this unexpected expense?



Keywords associated with a strong preference for quick pay

what would you do with this unexpected income?



Effects on the time spent to choose a contract

	outcome: Seconds on Q1	*outcome: Seconds on Q2*	*outcome: Seconds on Q3*	*outcome: Total seconds*
	OLS	**OLS**	**OLS**	**OLS**
	(1)	(2)	(3)	(4)
Treatment A:				
Unexpected expense discussion	2.5	1.1	1.1	5.0
	(0.9)	(0.4)	(0.3)	(1.5)
Treatment B:				
Unexpected income discussion	0.9	0.8	1.3	3.0
	(1.1)	(0.5)	(0.3)	(1.8)
Reference level:				
Control group mean	49.9	22.5	15.8	90.1
	(1.0)	(0.4)	(0.2)	(1.5)
Number of observations	8,142	8,142	8,142	8,142

Attrition by treatment group

People are **more likely** to drop out after question on **unexp. expenses**, but this arm remains balanced on observables.

People are **less likely** to drop out after question on **unexp. income**; this arm is unbalanced on income (lower), other jobs (excess of only drivers), previous status (excess previously unemployed).