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

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People may choose OAW because they have urgent consumption needs and can't afford to wait for a good job sometime in the future.

Step 1 **Incorporate OAW in a very simple job search framework:**

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

- OAW is more frequent where present value of looking for a job is lower.
- Low-pay OAW can be optimal if jobs are scarce and consumption is urgent.

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- For how long would I need to search? How long would such job last?

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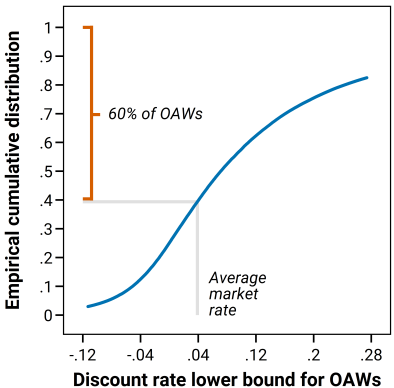
Step 3 **Infer the subjective time discount from the observed choice:**

- By revealed preference, infer for all Brazilian own-account workers the lowest discount rate (ρ) that makes such occupational decision optimal.

Main result: 60% of Brazilian OAWs are constrained

CDF of discount rate lower bound
(Brazil, urban areas, 2016-2019)
Source: Own estimations.



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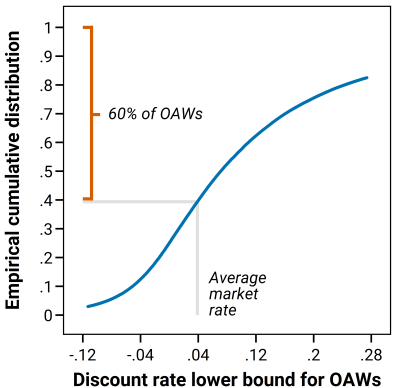

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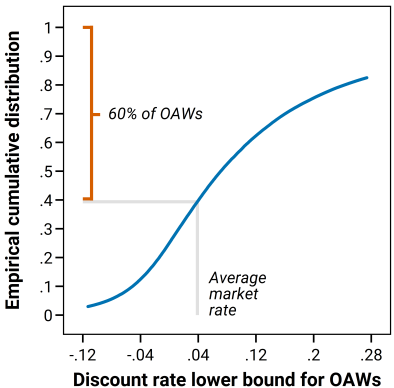

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Implication:

- A large number of rational workers can be stuck in low-pay OAW given frictional job search, imperfect finance and urgent consumption.

Appendix:

Valuation equations in the extended job search model

Wage employment

$$\rho \cdot W(w) = w + \delta \cdot \Big(U - W(w) \Big)$$

Unemployment

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

Reservation wage

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

Own-account work

$$\rho \cdot OAW = y$$

Appendix:

The occupational decision from the perspective of the discount rate

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

What is this?

- The (right-hand side) minimum discount rate that justifies the choice for OAW, given the individual productivity and the labor market conditions.

How is this useful?

- Formalization of the idea that a sufficiently high urgency for consumption (i.e. the "necessity") can rationalize the choice for OAW for any value of y.

Appendix:

The building blocks of the structural model

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

$$\downarrow$$

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

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 wages.
7. $\mathbb{E}(\delta \mid X_i)$ is fit with a job duration model.

Appendix:

The PNAD survey and the population of interest

- **Data size:** 8.9 million observations (2.7 million individuals).
- **Population of interest:** Adults living in urban areas.
- *Exclude individuals below 14 years old (~19% of population).*
- *Exclude individuals from rural areas (~14% of adults).*
- **Sample size:** 5.3 million observations (1.6 million individuals).
- **Time coverage:** 16 quarters (2016 Q1 to 2019 Q4).
- **Monetary correction:** Inflation-adjusted values (~4.2 p.p. yearly).
- **Complex survey:** interview weights account for probability of observation.