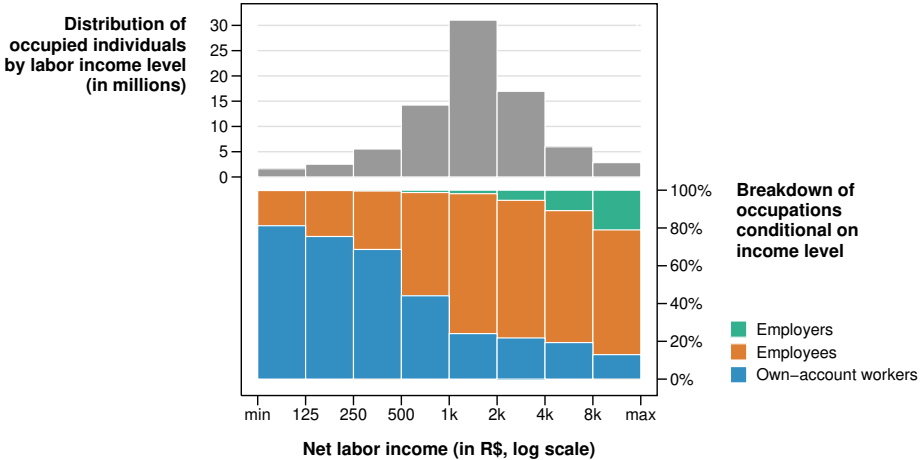
When You Can't Afford to Wait for a Job: The Role of Time Discounting for Own-Account Workers in Developing Countries

Thiago Scarelli
Paris School of Economics

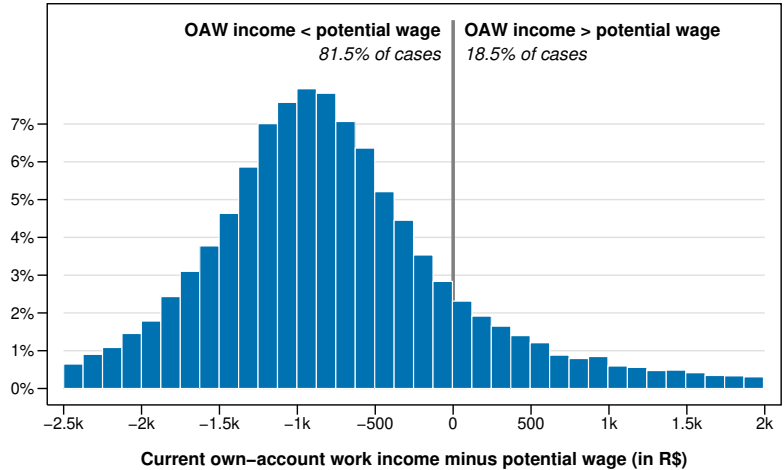
David N. Margolis
Paris School of Economics

October 2021

Occupations and labor income level
(Brazil, urban areas, 2017-2018)



Estimated labor income penalty for own-account workers (Brazil, urban areas, 2017-2018)



Motivation

- In non-rich countries, 40% of all working individuals are own-account workers.
- On average, those individuals earn less than observably similar wage worker.
- Complex category: some are true entrepreneurs, some are constrained.

Motivation

- In non-rich countries, 40% of all working individuals are own-account workers.
- On average, those individuals earn less than observably similar wage worker.
- Complex category: some are true entrepreneurs, some are constrained.

Open questions

1. Why would people choose OAW if the expected income is below employees'?
2. Under which conditions is this occupational choice a constrained one?

Motivation

- In non-rich countries, 40% of all working individuals are own-account workers.
- On average, those individuals earn less than observably similar wage worker.
- Complex category: some are true entrepreneurs, some are constrained.

Open questions

1. Why would people choose OAW if the expected income is below employees'?
2. Under which conditions is this occupational choice a constrained one?

Our proposition

- Explore the time trade-off between OAW now vs. better paid job later.

People may choose OAW because they have urgent consumption needs and cannot afford to wait for a better job somwhere in the future.

Roadmap

Step 1 Define an occupational choice rule

Step 2 Estimate the labor market parameters using survey data for Brazil

Step 3 Infer the subjective time discount from the observed choice

Step 1 Define an occupational choice rule

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

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

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

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

Step 1 Define an occupational choice rule

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

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

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

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

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

Step 1 Define an occupational choice rule

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

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

Step 1 Define an occupational choice rule

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

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

The occupational choice rule as function of the discount rate

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

- Lowest discount rate justifying OAW, given worker productivity and market conditions.
- Formalization of the idea that a sufficiently high urgency for consumption (in other words, the "necessity" parameter) can rationalize the choice for OAW for any value of y.

Step 2 Estimate the labor market parameters using survey data for Brazil

- If I were to look for a job, how much could I expect to earn?
- For how long would I need to search? How long would such job last?

Step 2 Estimate the labor market parameters using survey data for Brazil

Data source A: Household Budget Survey (POF)

- Detailed income information + rich set personal finance and material living conditions.

Data source B: National Household Survey (PNAD)

- Short panel with information on labor market participation.

Step 2 Estimate the labor market parameters using survey data for Brazil

Data source A: Household Budget Survey (POF)

- Detailed income information + rich set personal finance and material living conditions.

Data source B: National Household Survey (PNAD)

- Short panel with information on labor market participation.

Common to both sources

- Run by same statistical office.
- Nationally representative, common statistical stratification.
- Basic set of socioeconomic attributes (age, gender, race, education).

Population of interest

- 125 million urban, working-age individuals in the period 2017-18.

Step 2 Estimate the labor market parameters using survey data for Brazil

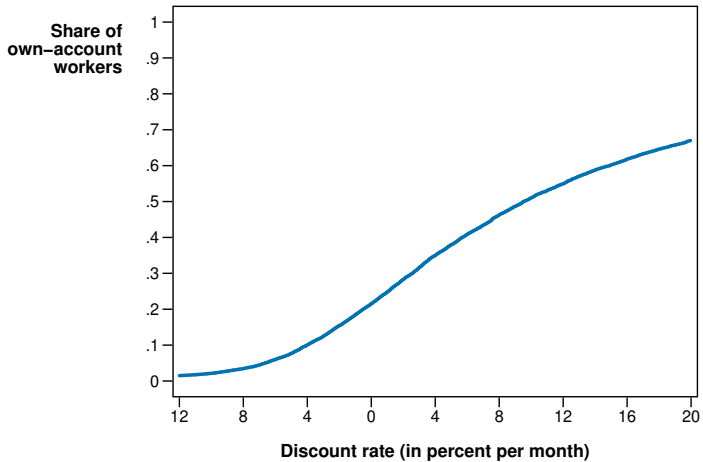
$$\rho > \frac{\lambda}{y - b} \cdot \int_{w_r}^{\infty} (w - w_r)\, dF(w) - \delta$$

$$\downarrow$$

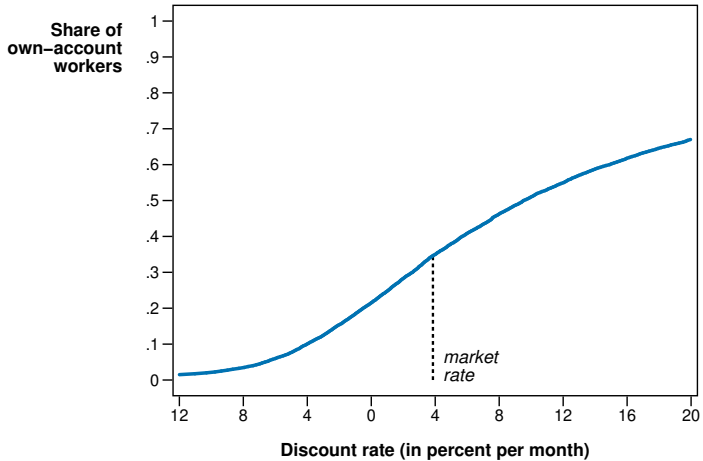
$$\hat{\rho}_i > \frac{\mathbb{E}(\lambda \mid X_i)}{y_i - \mathbb{E}(b \mid X_i)} \cdot \Big[\mathbb{E}(w \mid w > w_r, X_i) - \mathbb{E}(w_r \mid X_i) \cdot \mathbb{P}(w \geq w_r)\Big] - \mathbb{E}(\delta \mid X_i)$$

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

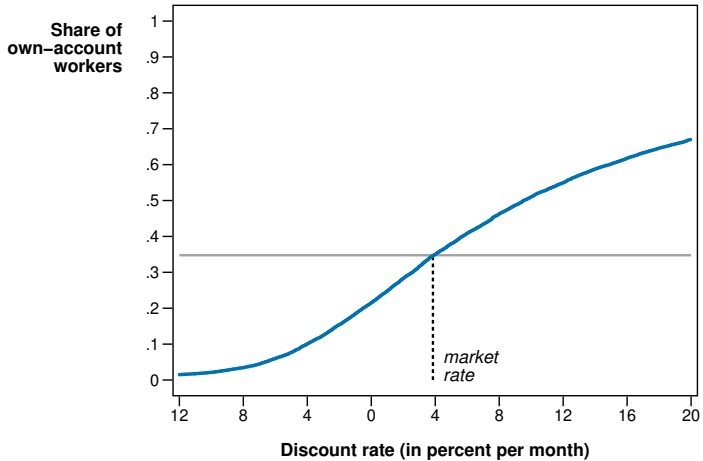
Step 3 Infer the subjective time discount from the observed choice



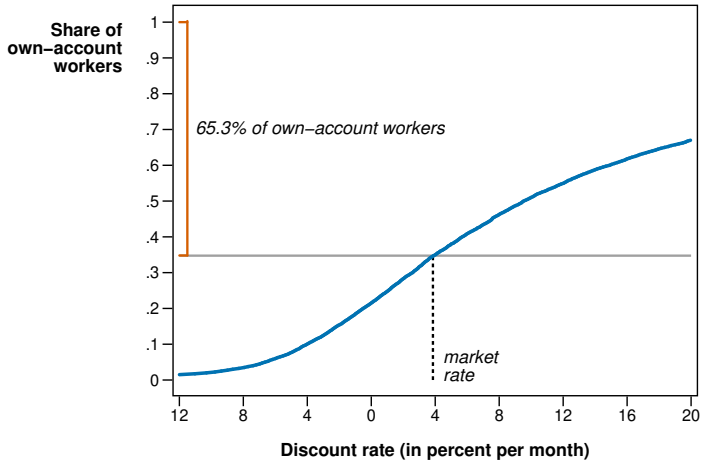
Step 3 Infer the subjective time discount from the observed choice



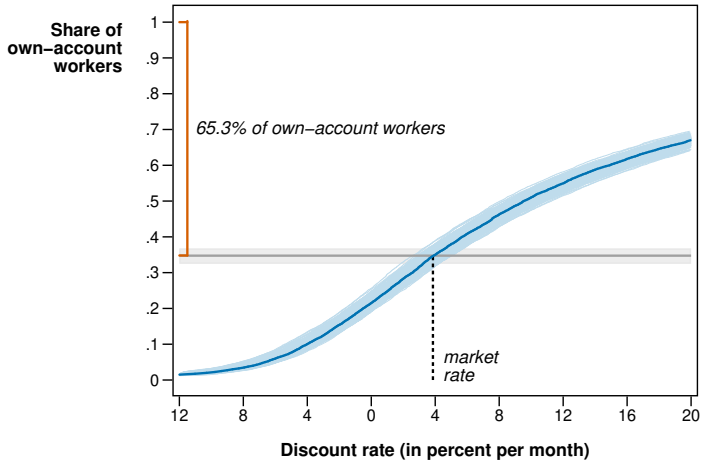
Step 3 Infer the subjective time discount from the observed choice

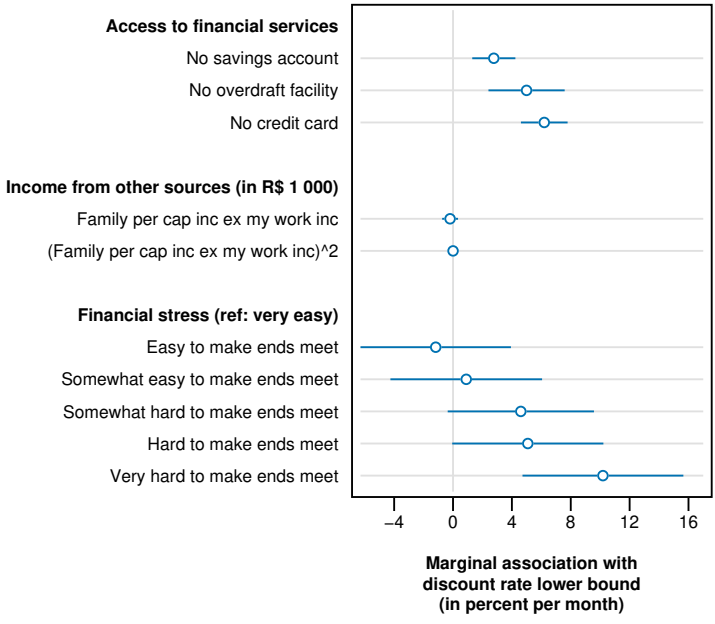


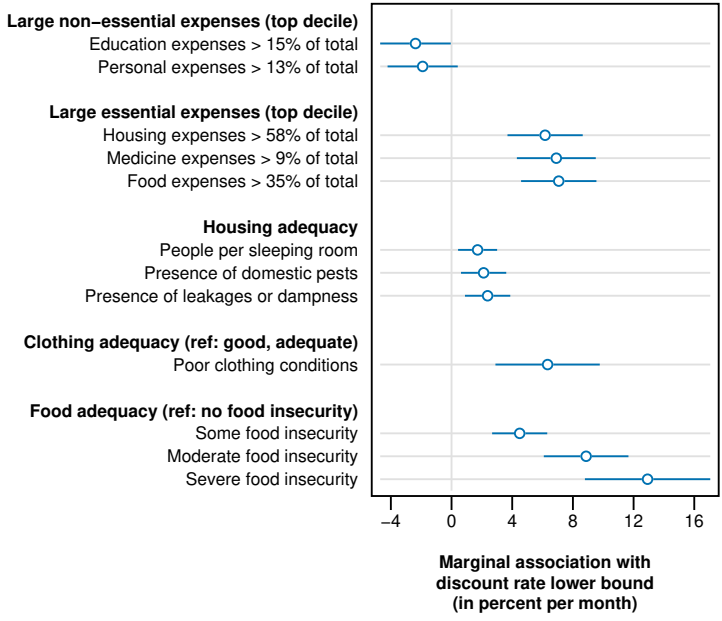
Step 3 Infer the subjective time discount from the observed choice



Step 3 Infer the subjective time discount from the observed choice




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)

When is the OAW occupational choice a constrained one?

- If the lowest discount rate compatible with this choice is above the market's.

Why?

- Combination of pressing needs (high importance of consuming today)
- and restricted borrowing (not using the market's rate).

Main result

- Under this criterion, 2/3 of OAWs in Brazil are constrained.

Policy implications

- Many rational workers can be stuck in low-pay OAW in the presence of frictional labor markets, urgent consumption needs, and restricted financing options.