Riders on the Storm

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Introduction: the issue at hand

- Controversy surrounds platform companies for subcontracting workers as independent contractors.
  - Opponents: lack of social protection such as *fixed work schedules* and *collective bargaining*.
  - Supporters: *flexibility* and *easy employability*.
- **This paper** studies the labor market impact of mandating employee hires in the delivery sector.

What we do

- **Approach**
  - Model: Search and Matching model featuring heterogeneous workers and jobs (*Casual* vs *Regular*)
  - Calibration: match data from own online survey and administrative data from MCVL
  - Policy experiment: economic sanctions on casual jobs consistent with the Spanish **Rider's Law**
- **Findings**
  - Casual sector: employment falls by **13 pp.**, and wages by **7 percent**
  - Regular sector: employment rises by **6 pp.**, but slight decline in wages due to worse outside option
  - Complement reform with a reduction of payroll taxes from 29 to **21 percent** preserves welfare
  - Further reducing this tax to **8 percent** preserves employment and rises welfare

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Related literature

- Growing literature on measuring platform work arrangements (Mas and Pallais, 2017; Collins et al., 2019; Katz and Krueger, 2019; Boeri et al., 2020; Abraham et al., 2021).

  Our paper uses a mix of own-elaborated survey and administrative data.

- Literature on the importance of work flexibility using structural models (Chen et al., 2019; Scarfe, 2019; Dolado et al., 2023; Stanton and Thomas, 2025).

  We highlight that C jobs tackle search frictions and create spillovers into R jobs.

- Literature on regulating the informal labor market (Zenou, 2008; Albrecht et al., 2009; Satchi and Temple, 2009).

  We propose a different sorting mechanism across sectors based on taste for flexibility.

Institutional background: Spain as a forerunner

- The **Rider's Law (RL)** (DL 9/2021) sets the *presumption* of dependent employment for riders.
  - Social security core contributions shifted from worker to firm.
  - Labor laws (wage bargaining, overtime regulations, dismissal protection, paid holidays, etc).
- Complier: trade unions agreed with *Just Eat* for an annual pay of 15,200€ ($\approx$ 1.13 of MW).
- Defiers: *Glovo* and *Uber Eats* kept hiring riders as independent contractors.
  - Argue that they do not exercise the power of organization (e.g., do not fix working hours)
  - *Glovo* lost several cases in front of labor courts leading to more than 500€ m. in fines.
  - Their market share has fallen by **11 pp.** since the reform, from an initial share of 70 percent

More

Empirical findings

- We mostly rely on an **online survey** from Sep-Oct 2023:
  - Distributed through personal contacts of Riders with 162 replies out of 350
  - Similar results to those reported in other surveys (Adigital, 2020, Ranstad Research, 2022)
- Three **main facts** emerge from the data:
  - Wage premium of 18 log points for regular riders $\Rightarrow$ trade unions successfully extract rents
  - Long hours only common for casual riders $\Rightarrow$ casual jobs offer upward flexibility
  - Despite hourly wage premium, short hours common for both $\Rightarrow$ search frictions

Example Descriptive Wages Hours

Model: overview

Casual (*C*) jobs:

- Frictionless access to jobs as workers can always sign up instantly to a platform.
- Free to choose number of hours worked.
- Worker pays payroll taxes.
- Workers are paid by delivery, so productive labor might differ from desired labor supply

Regular (*R*) jobs:

- Created through costly vacancy posting with search and matching frictions.
- Hours are fixed.
- Employer pays payroll taxes.
- Workers are paid by the hour and wages are Nash-bargained.

Technology and preferences

Technology

$$o_C = \underbrace{E_C}_{\substack{\text{number}\\ \text{C riders}}} \cdot \underbrace{\int a(h_i)\tilde{h}_i dG^C(\epsilon)}_{\text{average productivity}} \quad \text{and} \quad o_R = \underbrace{E_R}_{\substack{\text{number}\\ \text{R riders}}} \cdot \underbrace{a(\bar{h})\bar{h}}_{\substack{\text{average}\\ \text{productivity}}}, \quad \text{where} \quad \underbrace{a = Ah^{\gamma}}_{\text{orders per hour}}, \quad \gamma > 0.$$

The model allows effective hours worked ($\tilde{h}$) to differ from desired labor supply (h) in C-jobs.

Preferences

$$u(c,h) = \ln(c) + \epsilon \ln(1-h), \quad \text{where} \quad h \in [0,1] \quad \text{and} \quad \epsilon \sim \mathcal{T}(\mu_\epsilon, \sigma_\epsilon^2; 0, \infty).$$

Moreover, consumption is given by $c = \begin{cases} b \cdot w_R \bar{h}\, a(\bar{h}) & \text{if searcher,} \\ w_R \bar{h}\, a(\bar{h}) & \text{if employed in } R, \\ w_C\, \tilde{h}\, a(h)\,(1-\tau_c) & \text{if employed in } C. \end{cases}$

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C-platforms

Profit maximization

$$\max_{o_C} \pi_C = \underbrace{o_C}_{\text{revenue}} - \underbrace{o_C w_C(1+\Gamma)}_{\text{labor costs}} - \underbrace{o_C^{\phi}}_{\substack{\text{convex} \\ \text{costs}}} \quad \Rightarrow \quad o_C^* = \left(\frac{1 - w_C(1+\Gamma)}{\phi} \right)^{\frac{1}{\phi - 1}},$$

where Γ is a potential fine due to RL and $\phi > 1$ allows for convex costs.

Market clears

We assume effective hours worked are a fraction of desired labor supply: $\tilde{h} = \varphi h$ such that $0 \leq \varphi \leq 1$.

$$\underbrace{o_C}_{\substack{\text{Demand for} \\ \text{orders by firms}}} = \underbrace{\varphi E_C \int a(h) h \, dG^C(\epsilon)}_{\text{Supply of orders by workers}},$$

The endogenous factor φ adjusts to clear the market (e.g., idle waiting time for deliveries when few orders).

R-platforms

Frictional labor market

R jobs are subject to search frictions according to a Cobb-Douglas matching function:

$$p(\theta) = \chi\,\theta^{1-\alpha} \quad \text{and} \quad q(\theta) = \chi\,\theta^{-\alpha}, \quad \text{where} \quad \theta = v/s.$$

Vale of the R-platform

$$J_R(E_R, \bar{\epsilon}_R) = \max_{v_r, E'_R} \Big\{ o_R - o_R w_R (1 + \tau_f) - \kappa v_R - o_R^{\phi} + \beta J_R(E'_R, \bar{\epsilon}'_R) \Big\},$$

subject to:

$$\underbrace{o_R = \bar{h} a(\bar{h}) E_R}_{\text{Technology}}, \quad \underbrace{E'_R = (1 - \delta_R) E_R + v_R q(\theta)}_{\text{Employment dynamics}}, \quad \text{and} \quad \underbrace{\bar{\epsilon}'_R = \frac{(1 - \delta_R) E_R \bar{\epsilon}_R + v_R q(\theta) \bar{\epsilon}_S}{(1 - \delta_R) E_R + v_R q(\theta)}}_{\text{Weighted-average worker's preference}}.$$

Value unemployment | Value C job | Value R job | Rule for vacancy creation

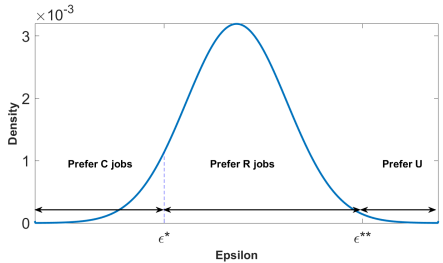
Wages

Nash bargaining in R with a union representing the mean worker type:

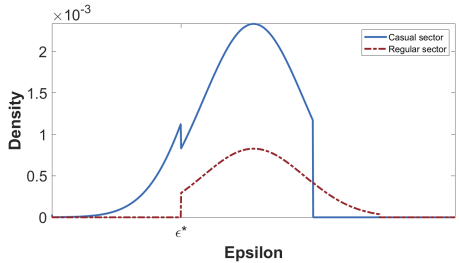
$$\max_{w_R} \left\{ \left(W_R(\bar{\epsilon}_R) - U(\bar{\epsilon}_R) \right)^{\eta} \left(\frac{\partial J_R(E'_R, \bar{\epsilon}'_R)}{\partial E'_R} \right)^{1-\eta} \right\},$$

Exogenous wage share w_C in C sector.

Working of the model



Distribution of riders' preferences about jobs



Distribution of riders across jobs

- Preferences: low-ϵ prefer *C* due to flexibility. High-ϵ prefer *R* due to wage premium.
- Jobs: frictions imply many riders ($\epsilon > \epsilon^*$) have *C* but prefer *R* jobs (i.e., potential benefit from policy)

Calibration

Hours

- Distribution of preferences (ϵ) to match hours in C:
  - Mean (μ_ϵ) to match daily mean hours worked $= 5.4$ and std. dev. (σ_ϵ) to match 95^{th} pct $= 7.0$.
- Set $\bar{h}$ to daily mean hours worked in R: 3.7.

Wages

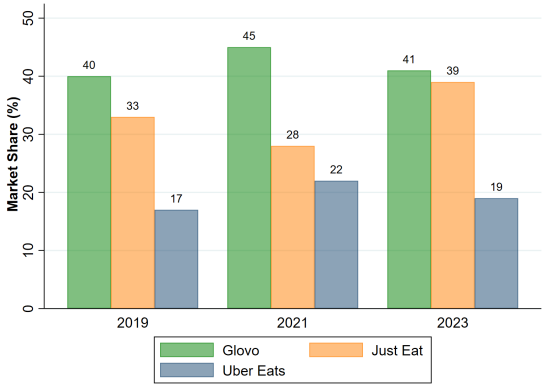
- Net share in C-sector w_C to match flow profits: 5%.
- Matching efficiency χ to match wage premium: 18 log points.

Payroll taxes

- Workers' social security taxes in C: 0.16.
- Firms' social security taxes in R: 0.29.

More

Policy experiment



- Before RL, $\Gamma = 0$.
- After RL, set $\Gamma > 0$ to match the 11 pp. drop in *C*-sector's market share.

Wages

Table: Simulation Results

	Baseline	**After reform**
Adjustment factor (φ)	0.80	0.75
Mean hourly wages C	5.8	5.4
Mean hourly wages R	6.8	6.7
Mean hourly wages	6.1	5.9

- Lower demand for orders increases waiting time and lowers wages in C jobs.
- Lower wages in C weakens bargaining position of R workers, so R wages also fall.

Employment

Table: Simulation Results

	Baseline	**After reform**
Employment *C*	0.66	0.53
Employment *R*	0.24	0.30
Unemployment	0.10	0.17
Labor market tightness	2.0	3.3

- Lower labor demand in *C* reduces employment in *C* by **13 pp.**
- *R* create more vacancies in response to more job search and lower wages.
- Employment in *R* increases by **6 pp.**, only partially absorbing job losses in *C*.

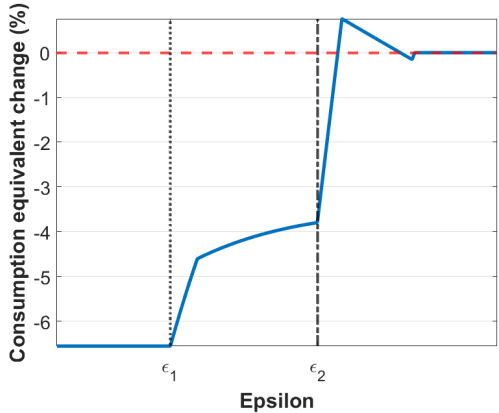
Hours

Table: Simulation Results

	Baseline	**After reform**
Mean effective hours C	4.3	4.1
Mean effective hours	4.1	4.0

- As demand falls (i.e. longer unpaid waiting times), workers supply fewer hours in C
- Moreover, work is reallocated from C to R platforms
- Thus, aggregate effective hours fall

Welfare



- Widespread welfare losses due to lower employment and wages in both sectors.
- Average welfare loss of **3.4 percent**.

Complementing the reform with tax bonuses

- Detrimental effects from RL stem from insufficient expansion of the *R* firm.
- **Experiment:** social security tax bonus for *R* firm that offset negative effects from RL.
- Reducing *R* payroll taxes from 29 to **21 percent** preserves welfare.
- Further reducing *R* payroll taxes to **8 percent** preserves employment and increases welfare.
  - Average welfare gain of 7 percent.

Conclusion

- Policies mandating *R* employment in the food delivery sector pass through to workers in the form of lower wages and employment.
  - Aligns with complaints against the reform from Rider's associations
- Such policies need to be paired with tax bonuses that boost demand for *R* employment.
- Potential extensions:
  - Account for firm amenities (e.g., paid holidays) and health protection.
  - Optimal regulation of hours worked in platform work.

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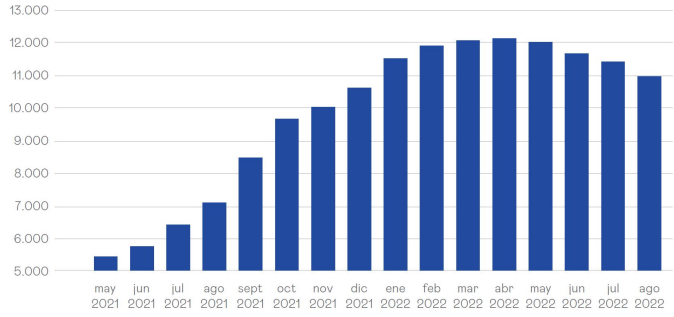
Recent facts about Spanish food delivery sector

Market shares

Number of employees among Riders



- Compliers are about 30 percent of the market initially.
- By 2024, compliers' market share raised by 11 pp., and employees doubled.

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Survey description

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EL TRABAJO DE RIDER

Desde la pandemia del Covid-19, el sector de los riders de entrega de comida rápida se ha convertido en una opción cada vez más popular para algunos trabajadores debido a los avances tecnológicos y a la flexibilidad de horarios. Ahora bien, dada la falta de información sobre estas prácticas laborales y las consecuencias que ha podido tener la aprobación de la Ley Rider 12/2021, el objetivo de este estudio es averiguar cuál sería dicho impacto a través de esta encuesta.

MUCHAS GRACIAS POR CONTESTARLA

**Le informamos que sus datos en la encuesta están protegidos por el Reglamento General de Protección de Datos (RGPD) de la Unión Europea, que garantiza la confidencialidad y privacidad de la información recopilada. La encuesta es anónima y cumple con las regulaciones del RGPD para la protección de datos personales.*

A. DATOS PERSONALES

1. **Edad**

2. **Género**

Marcar solamente un círculo

- o Mujer
- o Hombre
- o Trans

3. **Nacionalidad**

4. ¿**Qué estudios tienes?**

Marcar solamente un círculo.

- o Educación secundaria
- o Bachillerato
- o Formación Profesional
- o Carrera universitaria

Descriptive statistics of riders' survey

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Worker	Mean	s.e.
Age	27.3	7.4
Gender (Male)	0.86	
Education (Upper)	0.46	
Nationality (Foreign)	0.77	
Work Permit (Yes)	0.82	
Glovo	0.48	
Uber Eats	0.20	
Just Eat	0.24	
Others	0.08	
No. of platforms (2023)	1.3	0.3
Tenure (years)	1.5	1.2
Net hourly wage (Euros)	5.6	2.3
Daily hours	4.6	1.4
Employee	0.4	
Quit/Dismissed (Yes)	0.4	
Unemployed (previous status)	0.2	

Casual jobs offer lower hourly wages

We estimate

$$\ln w_i = \beta_0 + \beta_1 Employee_i + \beta_2 \ln h_i + \beta X_i + \varepsilon_i,$$

where X_i controls for sociodemographics (age, sex, nationality, tenure, education, work permit).

We find that the average wage for casual riders is **18 log points** lower than for regular riders.

Dep. Var	**ln(wage)**
Glovo/Uber Eats	-0.176***
	(0.033)
ln(hours)	0.052***
	(0.020)
R-sq.	0.71
No. Obs.	162

Relationship wages-hours Back

but more (upward) flexibility in hours

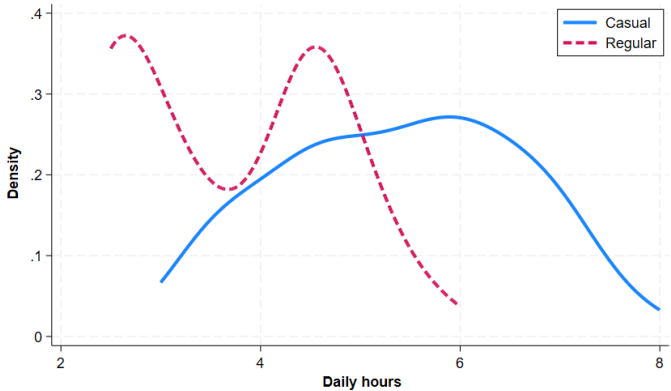

Figure: Distribution of hours

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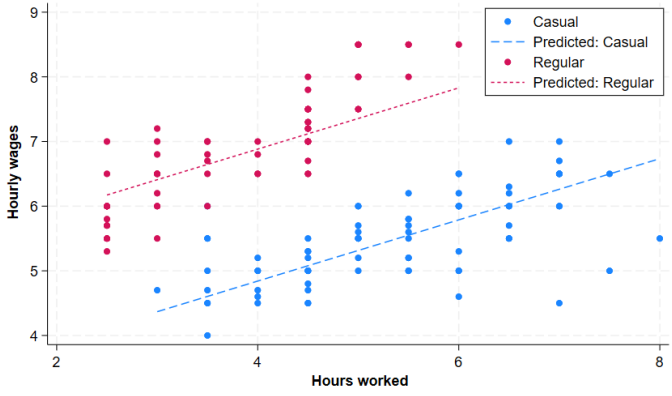
Higher wages for riders working longer hours

Figure: Hourly wages and hours worked



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Value of unemployment

When unemployed, the worker receives benefits b and decides which jobs to accept

$$U(\epsilon) = u_U + \beta \Omega^U(\epsilon)$$

$$\Omega^U(\epsilon) = \mathbb{I}^{RC,u}_{=0} \underbrace{W_C(\epsilon)}_{\substack{\text{Value} \\ \text{C job}}} + \mathbb{I}^{RC,u}_{=1} \Big[\underbrace{(1 - p(\theta)) U(\epsilon) + p(\theta) \Omega^R(\epsilon)}_{\text{Expected value of } R \text{ job}} \Big]$$

$$\Omega^R(\epsilon) = \mathbb{I}^{R}_{=1} \underbrace{W_R(\epsilon)}_{\substack{\text{Value} \\ \text{R job}}} + \mathbb{I}^{R}_{=0} \underbrace{U(\epsilon)}_{\substack{\text{Value} \\ \text{unemp.}}}$$

- $\Omega^U(\epsilon)$ value from deciding whether to work in C or search in R.
- $p(\theta)$ probability to receive R job offer. $\mathbb{I}$ policy functions about searching or accepting jobs.
- $\Omega^R(\epsilon)$ decision whether to accept R job.

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Value of C job

Hours distribution overlap at bottom in the data. Suggests some workers take C jobs to escape U *search on-the-job* for R jobs:

$$W_C(\epsilon) = u_C(\epsilon) + \beta \Lambda^C(\epsilon)$$

$$\Lambda^C(\epsilon) = \underbrace{(1 - p(\theta))\Lambda^{CC}(\epsilon)}_{\text{Does not find } R \text{ job}} + \underbrace{p(\theta)\left[\mathbb{I}^{CR}_{=1}\left(\mathbb{I}^{R}_{=1} W_R(\epsilon) + \mathbb{I}^{R}_{=0} U(\epsilon)\right) + \mathbb{I}^{CR}_{=0}\Lambda^{CC}(\epsilon)\right]}_{\text{Finds } R \text{ job}}$$

$$\Lambda^{CC}(\epsilon) = \mathbb{I}^{C}_{=1} W_C(\epsilon) + \mathbb{I}^{C}_{=0} U(\epsilon),$$

- $\Lambda^{CC}(\epsilon)$ continuation value of having a C job.

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Value of R job

Fixed hours worked $\bar{h}$ and exogenous job destruction probability δ

$$W_R(\epsilon) = u_R(\epsilon) + \beta \Lambda^R(\epsilon)$$

$$\Lambda^R(\epsilon) = \mathbb{I}^R_{=1} \Big[(1-\delta) W_R(\epsilon) + \delta U(\epsilon) \Big] + \mathbb{I}^R_{=0} U(\epsilon),$$

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Rule for vacancy creation

The first-order condition for vacancy creation yields:

$$\kappa = \beta q(\theta) \frac{\partial J_R(E'_R, \bar{\epsilon}'_R)}{\partial E'_R},$$

i.e., the marginal cost equal the discounted marginal benefit of posting an extra vacancy.

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Calibration I: Preferences and hours

- Monthly frequency with 4% annualized discount rate.
- Distribution of ϵ to match hours in C:
  - Mean (μ_ϵ) to match daily mean hours worked $= 5.4$.
  - Std. dev. (σ_ϵ) to match 95^{th} percentile $= 7.0$.
- Set $\bar{h}$ to daily mean hours worked in R: 3.7.

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Calibration II: Wages and output

- Total factor productivity (A) to match mean wages in R jobs: 6.8.
- Returns to scale γ to match elasticity of wages to hours: 0.05.
- Matching efficiency χ to match wage premium: 18 log points.
- Convex costs ϕ to match employment share of C sector: 76% before RL.
- Net share in C-sector w_C to match flow profits: 5%.

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Calibration III: Labor market flows, taxes, and transfers

- Destruction rate δ: 4% EU flows.
- Matching elasticity and bargaining weight: 0.50 (Petrongolo and Pissarides, 2001).
- Vacancy costs: 3.7% of wages and 4.5% of output (Hagedorn and Manovskii, 2008).
- Replacement rate b: 37% of mean R wages (Bentolila et al., 2012).
- Workers' social security taxes in C: 0.16.
- Firms' social security taxes in R: 0.29.

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