Riders on the Storm: the Effects of Regulating Platform Work

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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** develops a novel labor market model to quantify the effects of mandating employee hires

What we do and find

- **Quantitative labor market model**
  - Two-sided heterogeneity $\big($*Casual* (C) vs *Regular* (R) jobs$\big)$; endogenous consumer demand
  - Policy: economic sanctions on C jobs in Spanish food delivery sector due to **Rider's Law** (RL)

- **Findings**
  - Increase in R employment only absorb **1/10** of job losses in C employment
  - As the sector shrinks, consumers' welfare from food delivery falls by **14.8** percent
  - On average, welfare loss of **1.8** percent for riders due to overall $\downarrow$ wages and $\downarrow$ employment

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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., 2025; 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
  - Some firms defy the law, accumulating large economic sanctions (800€ mill.)

- **Main facts** from our convenience survey (n=162), consistent with larger sample (n=1,852):
  - Wage premium of 18 log points for employees ⇒ trade unions successfully extract rents
  - Long hours only common for independent contractors ⇒ casual jobs offer upward flexibility
  - Despite hourly wage premium, short hours common for both ⇒ search frictions

More Example Descriptive Wages Hours

Quantitative model: technology

Production technology

$$o_j = A n_j h_j, \quad \text{with } j = C, R. \qquad \text{(Production of food delivery orders)}$$

Firms produce orders o_j using labor, with h_j hours per rider n_j. Hourly productivity is A

Frictional labor market for R jobs

$$m(s, v) = sv/(s^\iota + v^\iota)^{1/\iota}. \qquad \text{(CRS matching technology)}$$

Searchers (s) and vacancies (v) meet with matching efficiency ι and exogenously separate at rate δ

Non-frictional labor market for C jobs

$$o_C = \varphi \cdot A n_C \cdot (\text{total supply of hours by } C \text{ riders}) \qquad \text{(Labor market of } C \text{ riders clears)}$$

Only a fraction φ of hours supplied by C riders is productive, i.e., riders spend idle time waiting for orders

Riders

Preferences

$$u(y, h) = \ln(y) + \epsilon \ln(1 - h). \quad h \in [0, 1]. \qquad \text{(Flow utility)}$$

Riders are ex-ante heterogeneous in their taste for leisure, $\epsilon \sim N(\mu_\epsilon, \sigma_\epsilon^2) \in [0, \infty]$

Search decisions

Riders choose where to search for jobs $j \in \{R, C, U\}$, and have the option to search on-the-job for R jobs

Income

- Outside option exogenously provides $\bar{h}_U$ hours work and b_U of home production
- R riders work $\bar{h}_R$ hours and earn a Nash-bargained wage $w_R(\bar{\epsilon}_R)$ *per hour* worked
- C riders choose to work $h_C^*(\epsilon)$ and earn w_C units *per order* produced

Value unemployment | Value C job | Value R job

Food delivery market: demand & supply

Demand

$$p_C o_C + p_R o_R = m, \qquad \text{(Market clears)}$$

$$\frac{p_C}{p_R} = \left(\frac{s_C}{s_R}\right)^{\frac{\mu-1}{\mu}} \left(\frac{o_R}{o_C}\right)^{\frac{1}{\mu}}. \qquad \text{(Relative demand: CES preferences)}$$

where m stands for exogenous expenditures, and s_j is an utility shifter

Supply

$$p_C = \frac{\mu}{\mu - 1} \cdot mc_C, \qquad \text{(Supply } C \text{ orders)}$$

$$p_R = \frac{\mu}{\mu - 1} \cdot mc_R. \qquad \text{(Supply } R \text{ orders)}$$

Markup over marginal cost (mc_j) depends on the elasticity of substitution of orders (μ).

Food delivery market: determinants of marginal costs

C platforms

$$mc_C = w_C(1 + \Gamma), \qquad \text{(Marginal cost)}$$

We choose the wage per order of C riders to be the numeraire ($w_C = 1$). Γ is a potential government fine

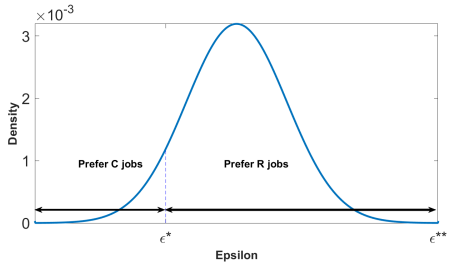
R platforms

$$mc_R = \frac{c^{HR}}{A}, \qquad \text{(Marginal cost)}$$

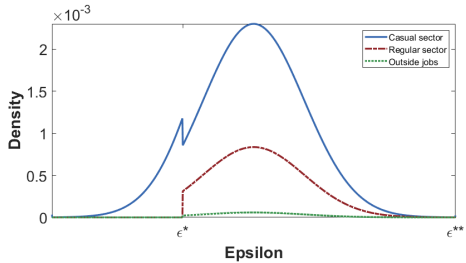
$$c^{HR} = \underbrace{(1 + \tau_f)}_{\text{Payroll taxes}} \cdot \underbrace{w_R(\bar{\epsilon}_R)}_{\text{Hourly wage}} + \underbrace{\big(1 - \beta(1 - \delta)\big)\frac{\kappa}{\beta q(\theta)\bar{h}_R}}_{\text{Vacancy posting costs}}, \qquad \text{(Hourly labor cost)}$$

Free entry pins down labor market tightness, $\theta = v/s$ Value firm Nash bargaining

There is a role for policy, as most riders prefer *R* jobs



Distribution of preferences about jobs



Distribution of across jobs

- Riders who value upward-flexibility choose *C* jobs. Remaining ones prefer *R* jobs due to wage premium
- Yet, frictions imply many riders ($\epsilon > \epsilon^*$) have *C* but prefer *R* jobs (i.e., potential benefit from policy)

Quantification of model parameters: characteristics of riders' jobs

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 $\bar{h}_R$ to daily mean hours worked in R: 3.7.

Wages

- Hourly productivity (A) to match mean houly R-wage: 7.8€
- Matching parameter (ι) to match R-wage premium: 17 log points

Payroll taxes

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

Quantification: market structure and outside option

Market structure

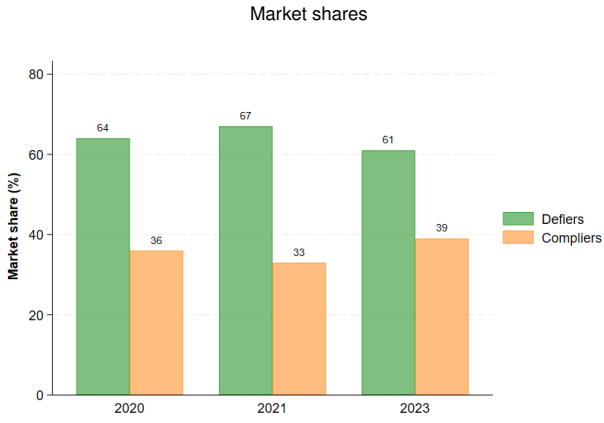
- Elasticity of substitution (μ) to match markup of 20 percent (Montero and Urtasun, 2014)
- Utility shifter (s_R/s_C) to match pre-reform compliers' employment share of 24 percent

Outside option

- Hours outside option ($\bar{h}_U$) to match predicted hours worked for similar workers: $\approx$ hours in R ($\bar{h}_R$)
- Home production (b_U) to make marginal C rider indifferent about quitting: 97%$\times$ flow value R job

More

Counterfactual



- Before RL, we set no government sanctions ($\Gamma = 0$)
- After RL, we set $\Gamma > 0$ to match the 11 pp. increase in *R*-sector's market share Number of employees

Prices and orders of food delivery

Table: Effects of the RL law

	Baseline	**After reform**	**Percent change**
Relative prices p_C/p_R	0.52	0.56	8.9
Market share R	0.26^*	0.37^*	42.0

Note: The asterisk ($*$) refers to the targeted moment.

- Higher marginal cost drives the relative price of C-orders up
- As a result, demand shifts from C to R platforms, which raises the market share of R firms

Wages decline

Table: Effects of the RL law

	Baseline	**After reform**
Adjustment factor (φ)	0.66	0.64
Mean log hourly wages *C*	1.94	1.90
Mean log hourly wages *R*	2.10	2.11
Mean log hourly wages	1.98	1.98

- Lower demand for *C* employment lowers their wages as waiting time increases
- Lower wages in *C* weakens bargaining position of *R* riders
- Yet, higher demand for *R* orders increases riders' marginal revenue productivity
- All in all, both effects almost offset each other and wages in *R* hardly change

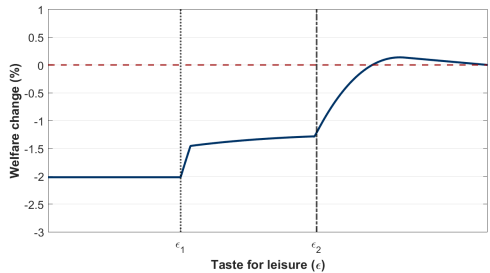
Employment falls

Table: Effects of the RL law

	Baseline	**After reform**
Labor market tightness	0.34	0.40
Employment C	0.74	0.48
Employment R	0.24	0.27
Outside jobs	0.02	0.25

- Shifting demand incentivizes R platform to create more vacancies
- However, increase in R employment only absorbs about **1**/**10** of C employment losses
- As the sector shrinks, consumers' welfare from food delivery falls by **14.9** percent

Riders' welfare



- Average welfare loss of **1.8** percent due to lower wages and employment
- Moreover, *C* riders with preferences for long-hours lose **3.4** percent
- Negative effects of the RL rationalizes some complaints about the reform from *C* riders

Conclusion

- Mandating *R* jobs in food delivery reduces riders' wages and employment opportunities
- Main losers are riders with high taste for upward flexibility
  - Aligns with complaints against the reform from Riders' associations
- Such policies need to be paired with policies that boost demand for *R* employment

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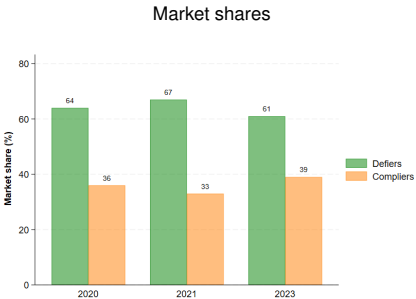
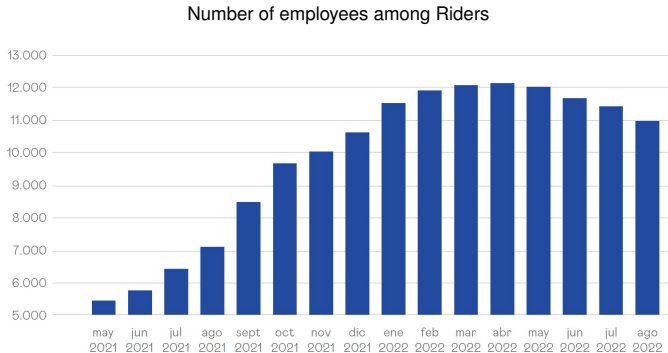
Recent facts about Spanish food delivery sector





- 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
○ Mujer

○ Hombre

○ Trans

3. **Nacionalidad**

4. ¿**Qué estudios tienes?**
Marcar solamente un círculo.
○ Educación secundaria

○ Bachillerato

○ Formación Profesional

○ Carrera universitaria

Descriptive statistics of riders' survey

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	Convenience survey (2023)	Adigital (2020)
Worker	**Mean**	**Mean**
Age	27.3	29.3
Gender (Male)	0.86	0.89
Education (Upper)	0.46	0.37
Nationality (Foreign)	0.77	0.72
Work Permit (Yes)	0.82	0.75
Undocumented (Glovo)	0.37	
Glovo	0.48	0.52
Uber Eats	0.20	0.16
Just Eat	0.24	0.22
Others	0.08	0.10
No. of platforms (2023)	1.3	
Tenure (years)	1.5	
Net hourly wage (Euros)	5.6	8.16 (gross)
Daily hours	4.6	
Employee	0.4	0.23
Self-employed	0.6	0.77
Quit/Dismissed (Yes)	0.4	
Unemployed (previous status)	0.2	0.25

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

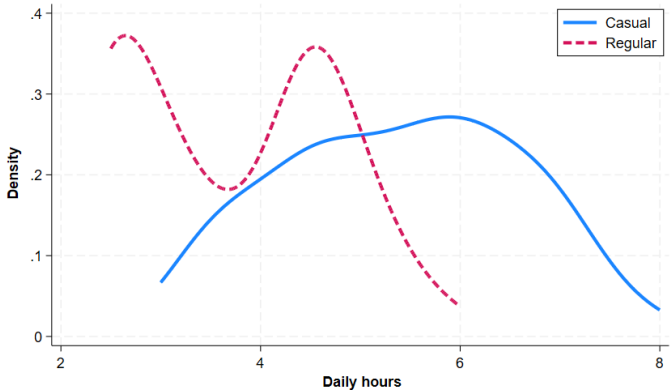

Figure: Distribution of hours

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Value of unemployment

In the outside option, the worker earns b_U, works $\bar{h}_U$ hours, and decides which jobs to accept

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

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

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

- $\Omega^U(\epsilon)$ 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 $\bar{h}_R$ 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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Values of job creation

The value of a filled job for the HR department of R platform is:

$$J_R(\bar{\epsilon}_R) = \underbrace{\underbrace{c^{HR}\bar{h}_R}_{\text{available funds for hiring a rider}} - \underbrace{(1+\tau_f)w_R(\bar{\epsilon}_R)\bar{h}_R}_{\text{rider's gross wage}}}_{\text{period-by-period accounting profits}} + \beta(1-\delta)J_R(\bar{\epsilon}_R),$$

Free entry condition ensures expected profits compensate vacancy costs:

$$\kappa = \beta q(\theta) J_R(\bar{\epsilon}_R)$$

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Nash bargaining

Wages are determined by collective bargaining between HR department and trade union representing average rider ($\bar{\epsilon}$)

$$w_R(\bar{\epsilon}_R) \;=\; \arg\max \left\{ \left[W_R(\bar{\epsilon}_R) - U(\bar{\epsilon}_R) \right]^{\eta} \left[J_R(\bar{\epsilon}_R) \right]^{1-\eta} \right\},$$

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Calibration: Preferences and labor market flows

- Monthly frequency with 4% annualized discount rate.
- Vacancy costs (κ): 58% of labor productivity per worker (Hagedorn and Manovskii, 2008)
- Workers' bargaining power (η) equal to 0.50 (Petrongolo and Pissarides, 2001)
- Destruction rate (δ): 7% EU flows

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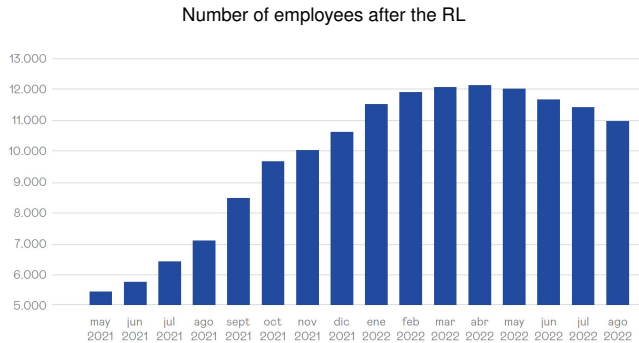
Counterfactual



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