

# The International Price of Remote Work

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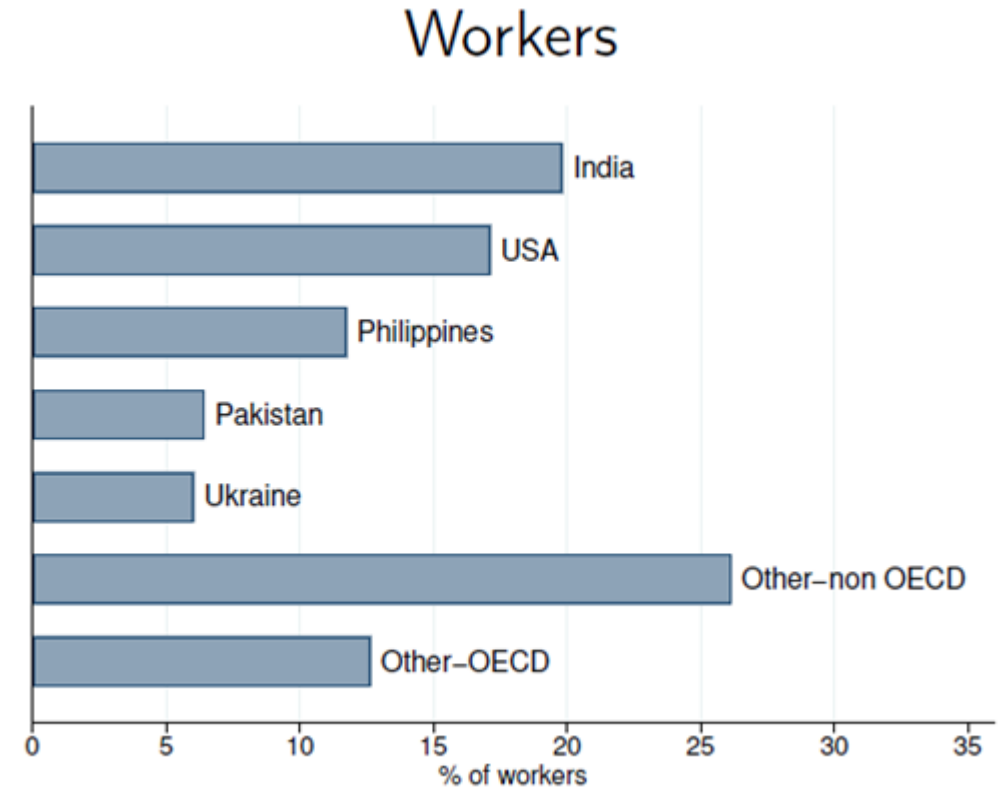
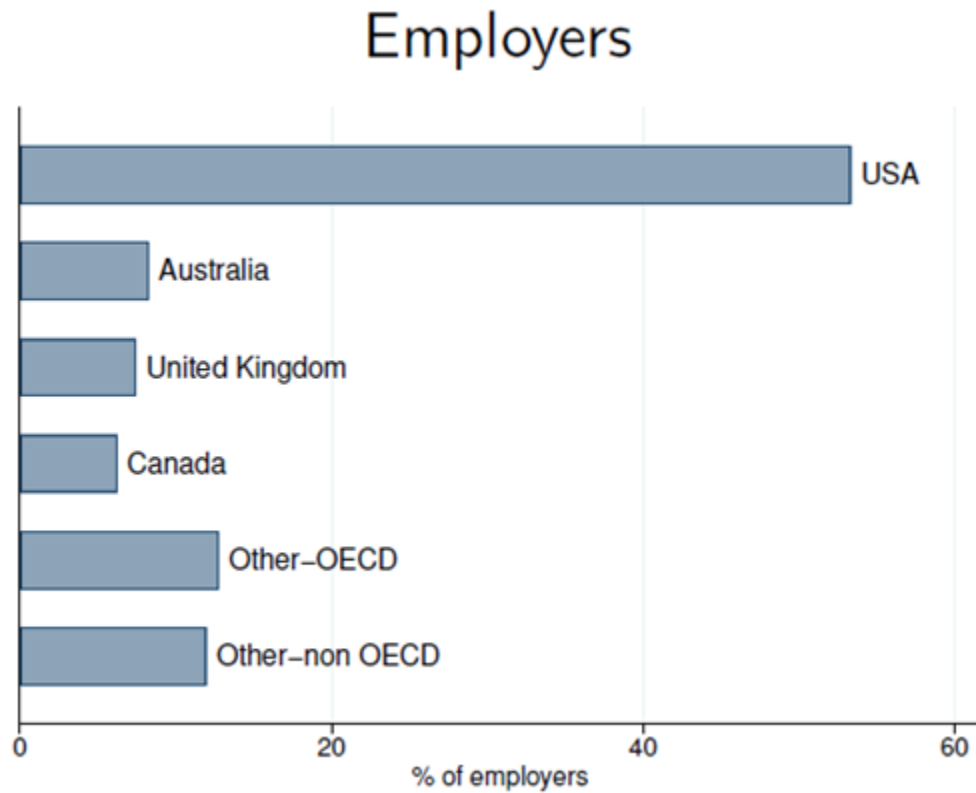
# Remote work has the potential to integrate global labor markets

- A large fraction of jobs can now be done remotely across international borders
  - IT-enabled service trade quadrupled since 2000, now 70% of all trade in services in the US
  - After Covid, many companies adopted hybrid work models, allowing remote work (Barrero, Bloom & Davis 21)
  - Online platforms provide access to *global* remote workers (e.g. Upwork, Fiverr, Freelancer, ...)
- How are international remote wages set?
  - Are they determined by local wage conditions?
  - Do they converge across regions and countries?
  - Are they sensitive to international competition and shocks?

# What we do:

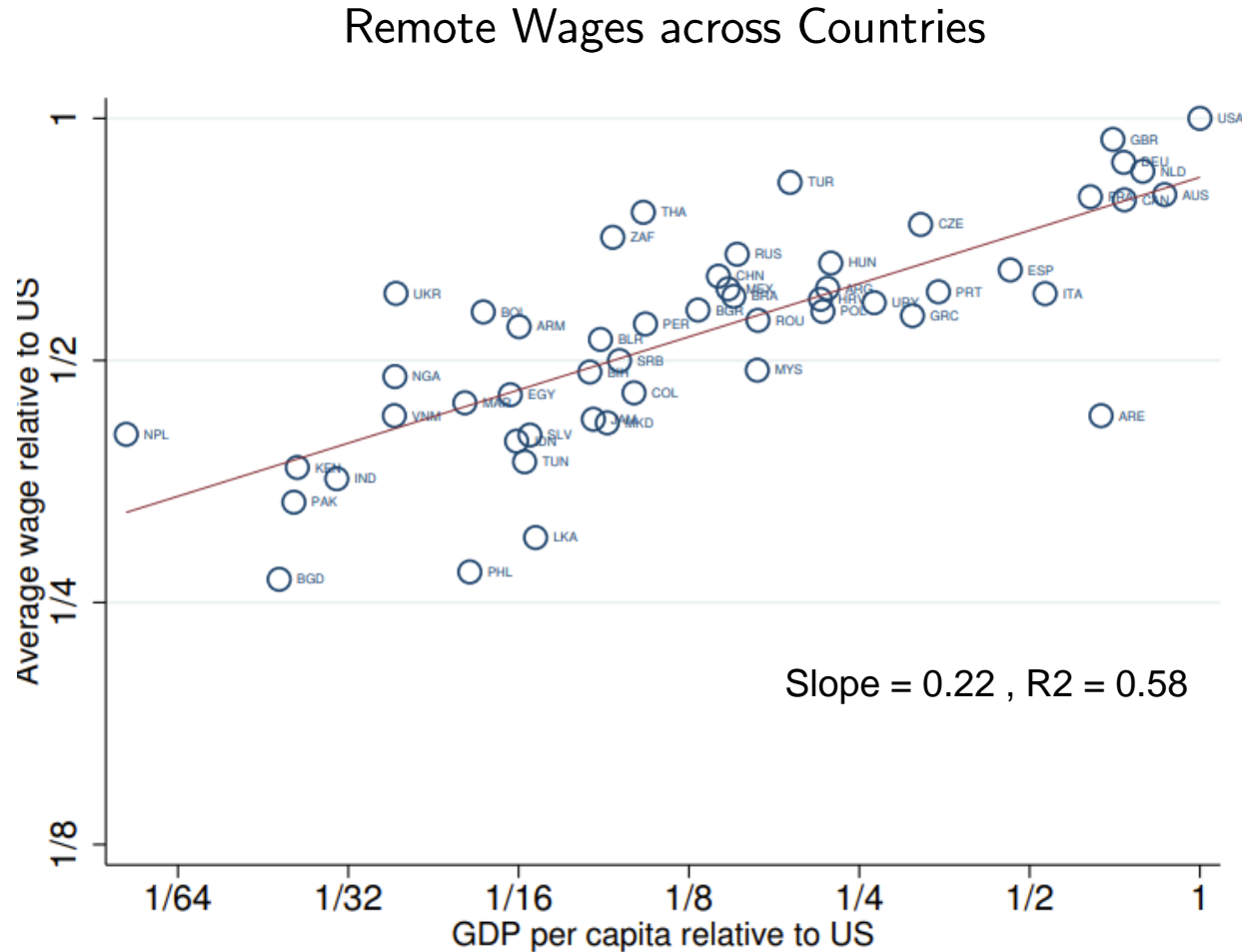
- Data from a large web-based platform that matches workers with employers from around the world
  - Work delivered online → window into a globalized market for remote work
  - Small but rapidly-growing and dynamic sector
  - Our data was collected in 2019, 2021 and 2024
- Main Findings
  - **Large wage gaps across locations**
    - After controlling for all observable job, worker and employer characteristics
    - Little evidence of convergence over time (similar results in 2019 and 2024)
  - **Wages vary with GDP per capita in worker's locations (not employer's)**
    - Across countries and US states
    - Remote wages are higher than non-remote wages for the same occupations (outside the US)
  - **Remote wages protect workers from exchange-rate shocks but are highly sensitive to foreign competition**

# Employers mostly in developed countries & workers in developing countries



- US centrality → 50% of employers and 17% of workers

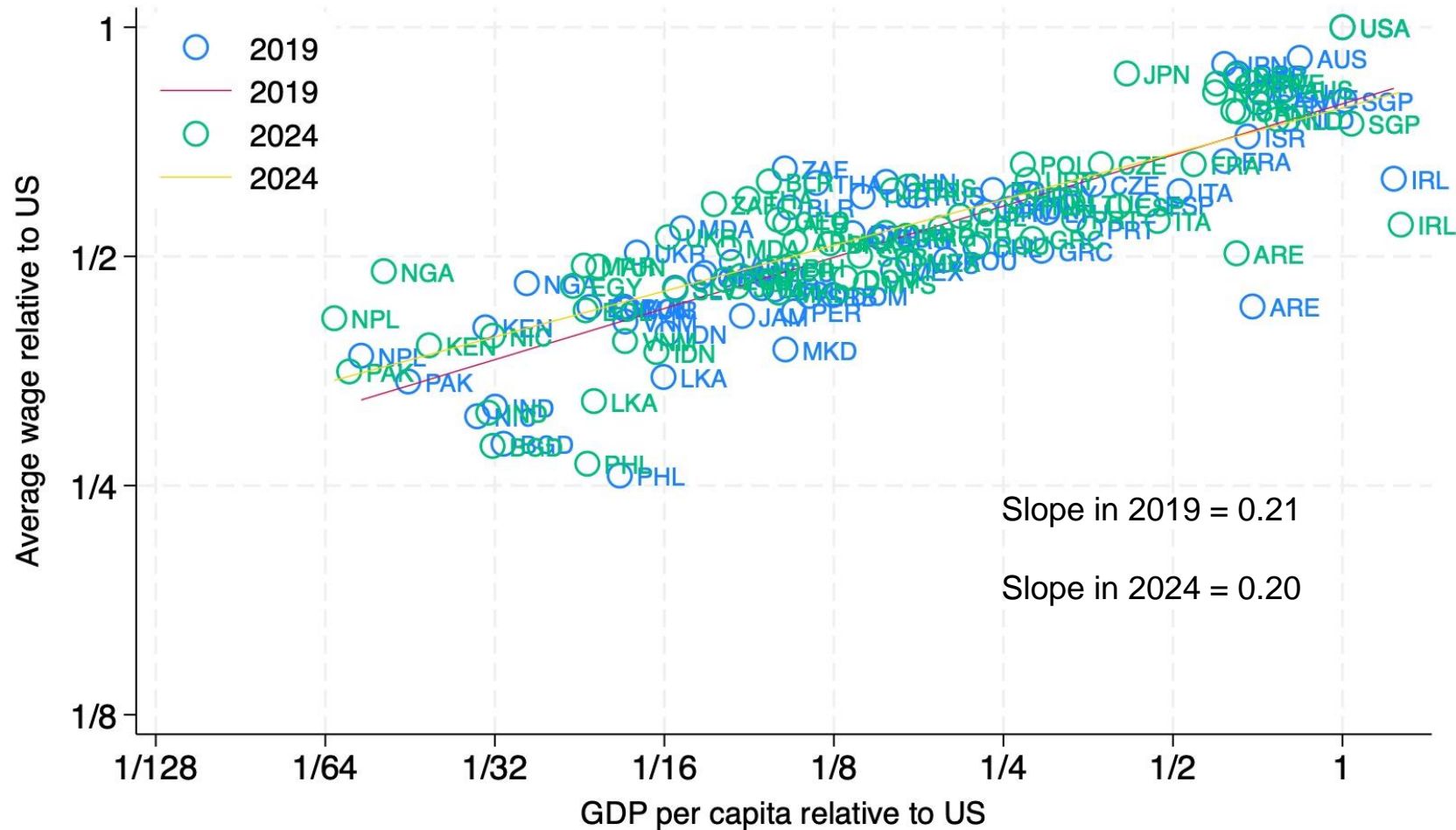
# Remote wage gaps are large and strongly correlated with GDP per capita



- E.g. Indian worker receives 1/3<sup>rd</sup> of US wage, even after controlling for all observable characteristics about the job, worker and employers

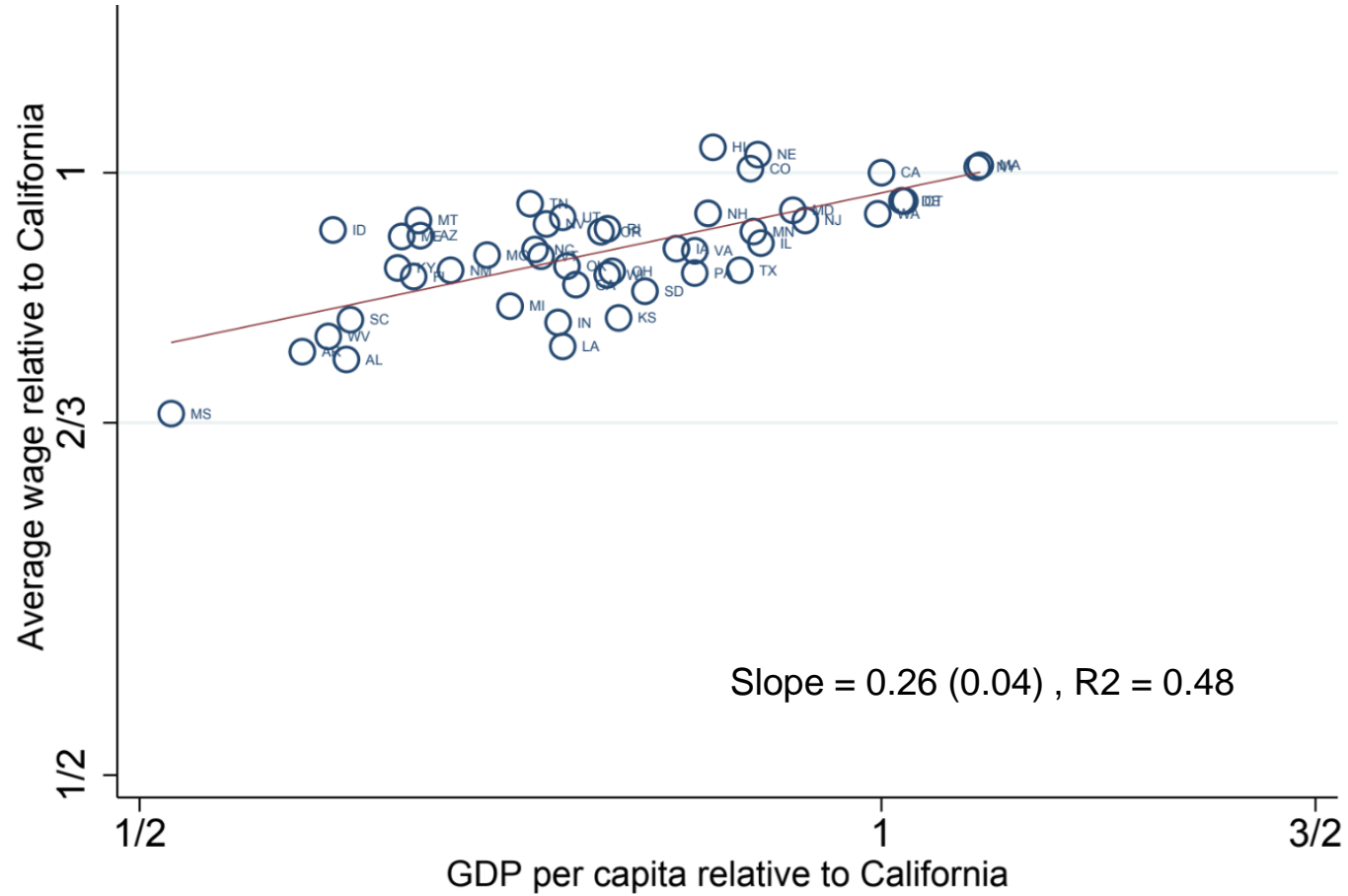
# Little evidence of convergence between 2019 and 2024

- Results with workers that are there in both periods



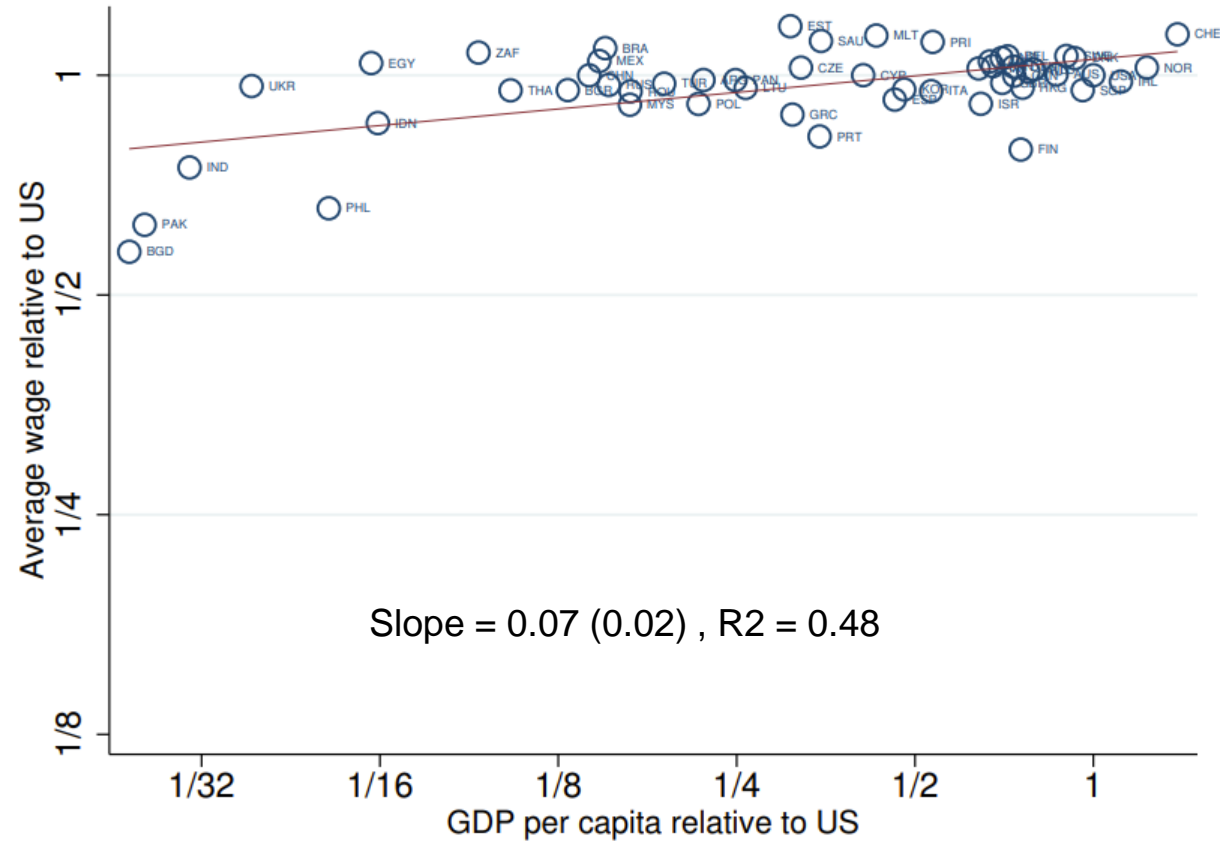
## Remote wages also vary with GDP per capita across US states

# Remote Wages across US States



Slope = 0.26 (0.04) , R2 = 0.48

# Remote wages vary much less with employers' country



- No evidence of workers charging different wages to employers in different countries



# Remote wages are highly sensitive to foreign shocks

Dollar wages

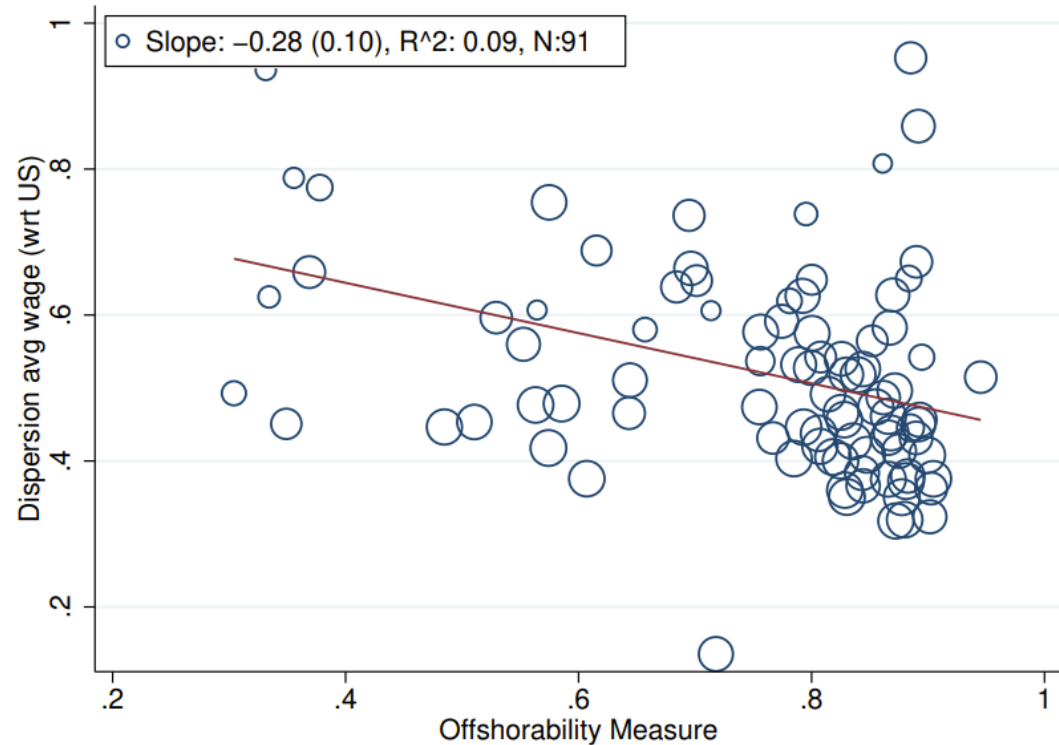
Table 3: Wage changes and international shocks

	(1)	(2)	(3)
	$\Delta_s w_{ijt}$	$\Delta_s w_{ijt}$	$\Delta_s w_{ijt}$
Exchange Rate (USD per Ic)	$\Delta_s e_{ct}$		
	0.203*** (0.058)	0.212*** (0.052)	0.213*** (0.053)
Inflation	$\pi_{c,t_s}$		
	0.227* (0.120)	0.197* (0.103)	0.196* (0.103)
Competitor Wage index	$\Delta_s w_{jt}$		
		0.781*** (0.073)	0.741*** (0.252)
Observations	88399	88399	88399
R-squared	0.00033	0.0036	0.0036
Test $\beta_1 = \beta_2$	0.84	0.87	0.85
Specification	OLS	OLS	2SLS
F stat 1st stage			39.8

- Rupee falls 10% → Dollar wage falls 2.1%, Rupee wage rises 7.9%
- Competitor wage index falls 10% → Dollar wage falls 7.4%

# Which jobs are more offshorable? (based on actual cross-border contracts)

Most offshorable	Share offshored
Interior Designers	0.90
Mobile Developers	0.90
Medical Translators	0.90
Motion Graphics	0.89
■ ■ ■	
Grant Writers	0.30
Contract Law	0.33
Resumes & CL Writers	0.35
Paralegal	0.36



- Being remote  $\neq$  easily offshored
  - Paper provides measure for 91 occupations. Also matched to the BLS SOC categories
- Less wage dispersion in occupations that are more offshorable

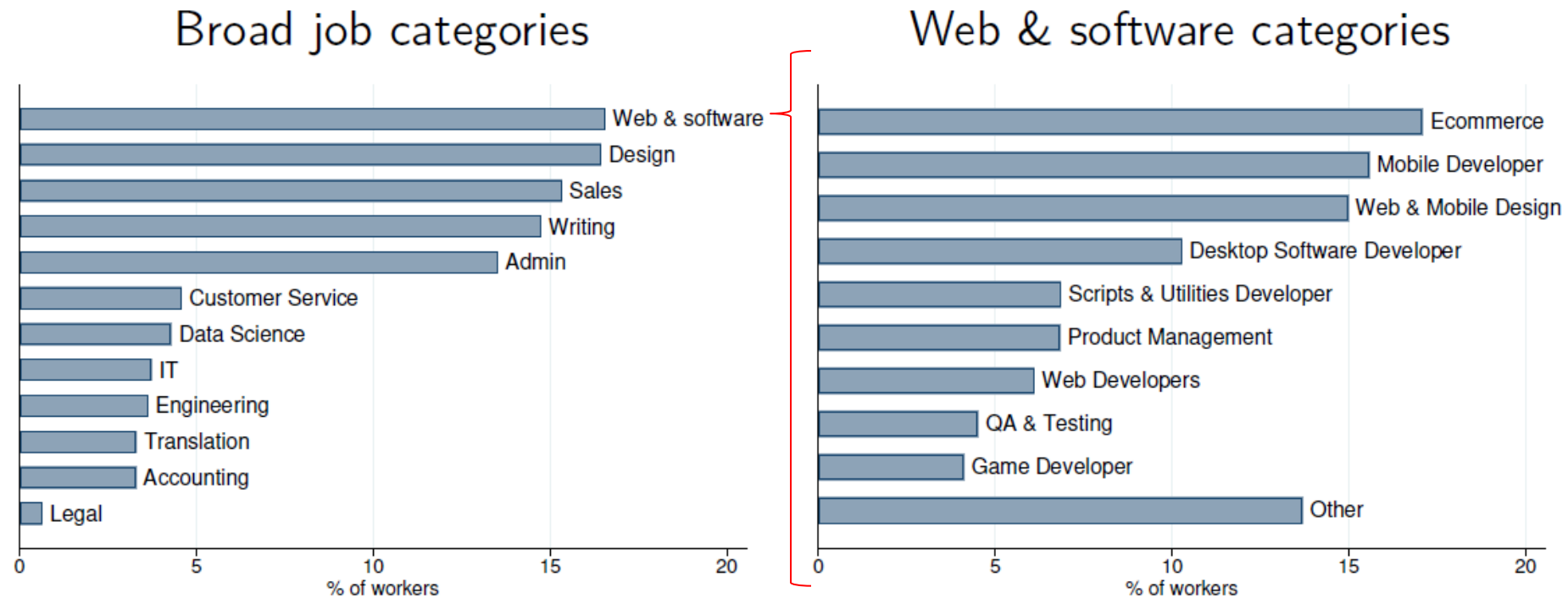
# Reflections

- For now, small market, but it is likely to continue growing.
- Our results indicate that these platforms are particularly appealing to companies in developed countries and workers in developing countries.
  - Large wage gap makes it attractive for firms in developed countries
  - Remote wages higher than local wages + shielded from devaluation makes it attractive to workers in developing countries
- The wage gap across countries is remarkably stable, suggesting hidden trade costs.
  - Their nature is unclear. Is it localized knowledge? Legal requirements or other regulations?
  - New tech like AI could help with localized knowledge, but not the other...
- In many ways, this looks exactly like trade in goods → export prices are set in USD with big differences across countries
  - Will the evolution and impact of remote service trade be similar?
  - What will happen with *non-remote* wages in sectors where remote work is large enough?

# Additional Slides

# Data from online platform provides a window into a globalized labor market

- Data collected in 2019, 2021 & 2024
- Largest online platform: 3 million jobs worth \$1 billion are posted annually
  - Specialized on remote jobs, from accountants to web developers
  - Millions of registered users, we focus on 100K workers that are active



12 broad and 91 narrow sectors

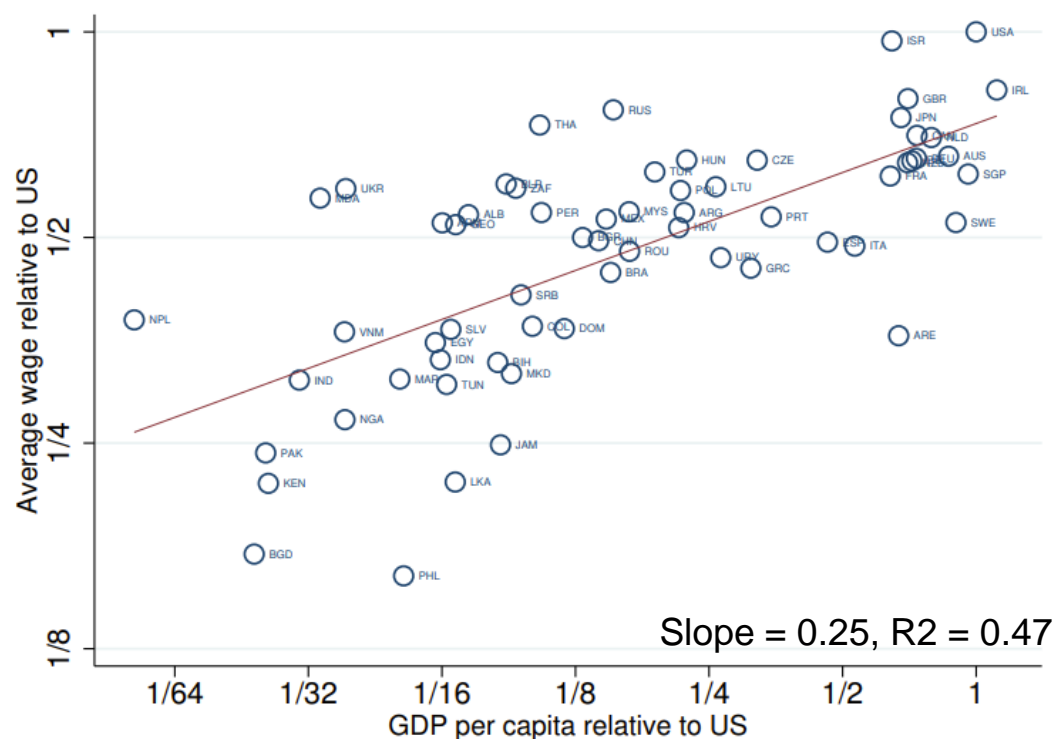
# Wages and workers characteristics

	Coef.	Std. Err.		Coef.	Std. Err.
<b>Experience</b>			<b>Quality ratings</b>		
Earnings (in logs)	0.057***	(0.001)	Top rated	0.312***	(0.005)
<=5 jobs	0.016***	(0.004)			
[6,15) jobs	0.069***	(0.006)	<b>Part time/full time</b>		
[15,50) jobs	0.077***	(0.009)	As needed	0.041***	(0.009)
>=50 jobs	0.086***	(0.021)	<= 30 hrs/week	0.038***	(0.010)
			> 30 hrs/week	-0.021**	(0.009)
<b>Skills</b>			<b>Agency</b>		
# test	0.0015*	(0.0009)	Single worker	-0.034***	(0.014)
Av. score	0.037***	(0.005)	Multi worker	-0.057***	(0.014)
<b>Observations</b>	100,023	<b>R<sup>2</sup></b>	0.586		

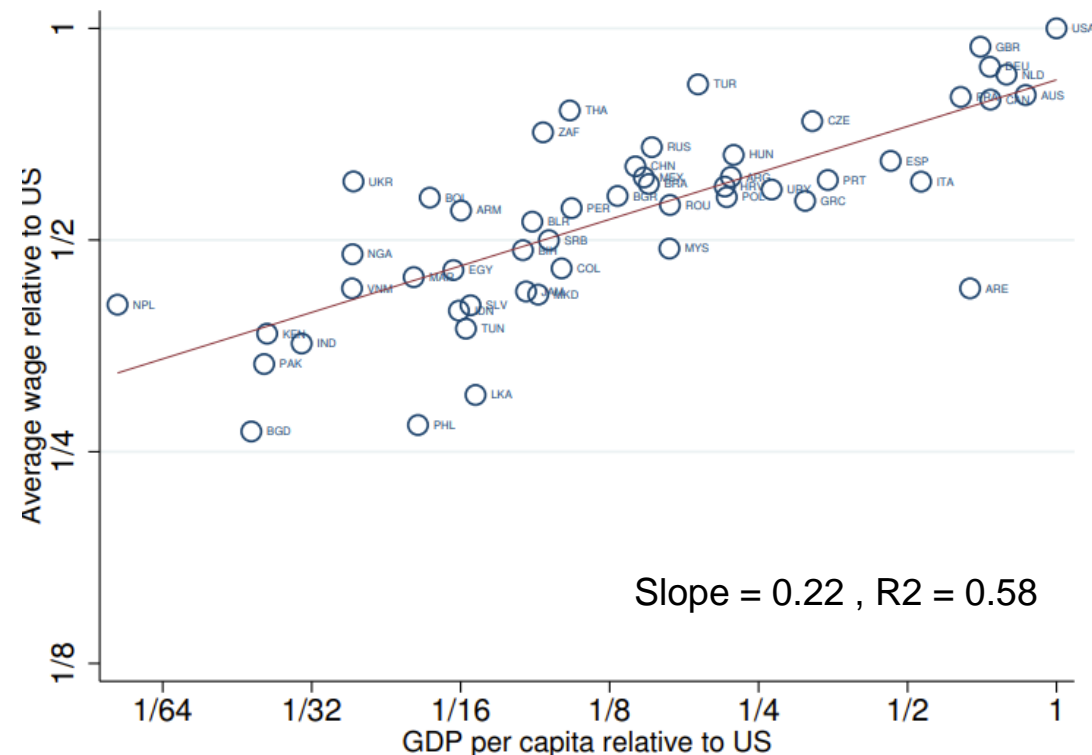
- Country of worker accounts for 1/3 of the variance in wages

# Wages vary across workers in different countries

(a) Raw data



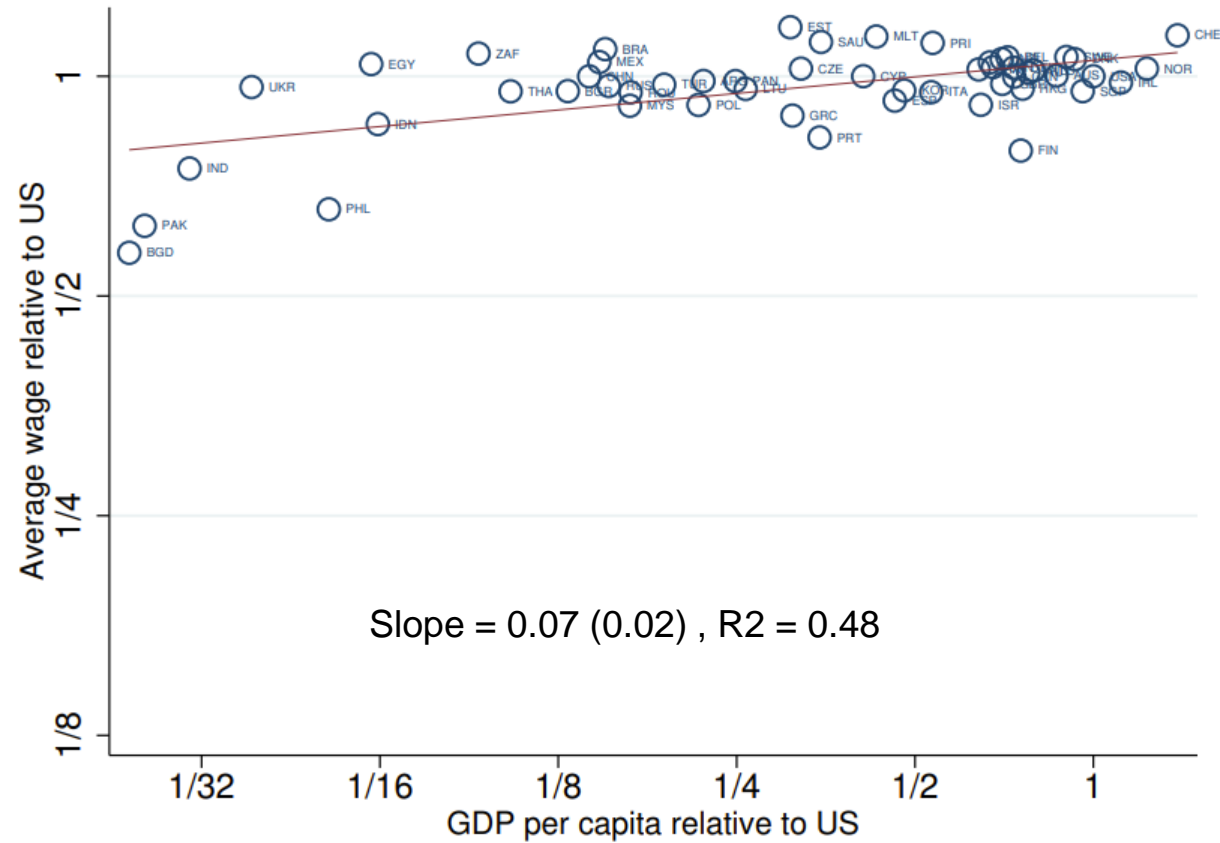
(b) Residual wages



- After controls, large differences remain → e.g. Indian worker receives 1/3<sup>rd</sup> of US wage
- Smaller than differences in GDP per capita
- Strongly correlated with GDP per capita

non-remote wages

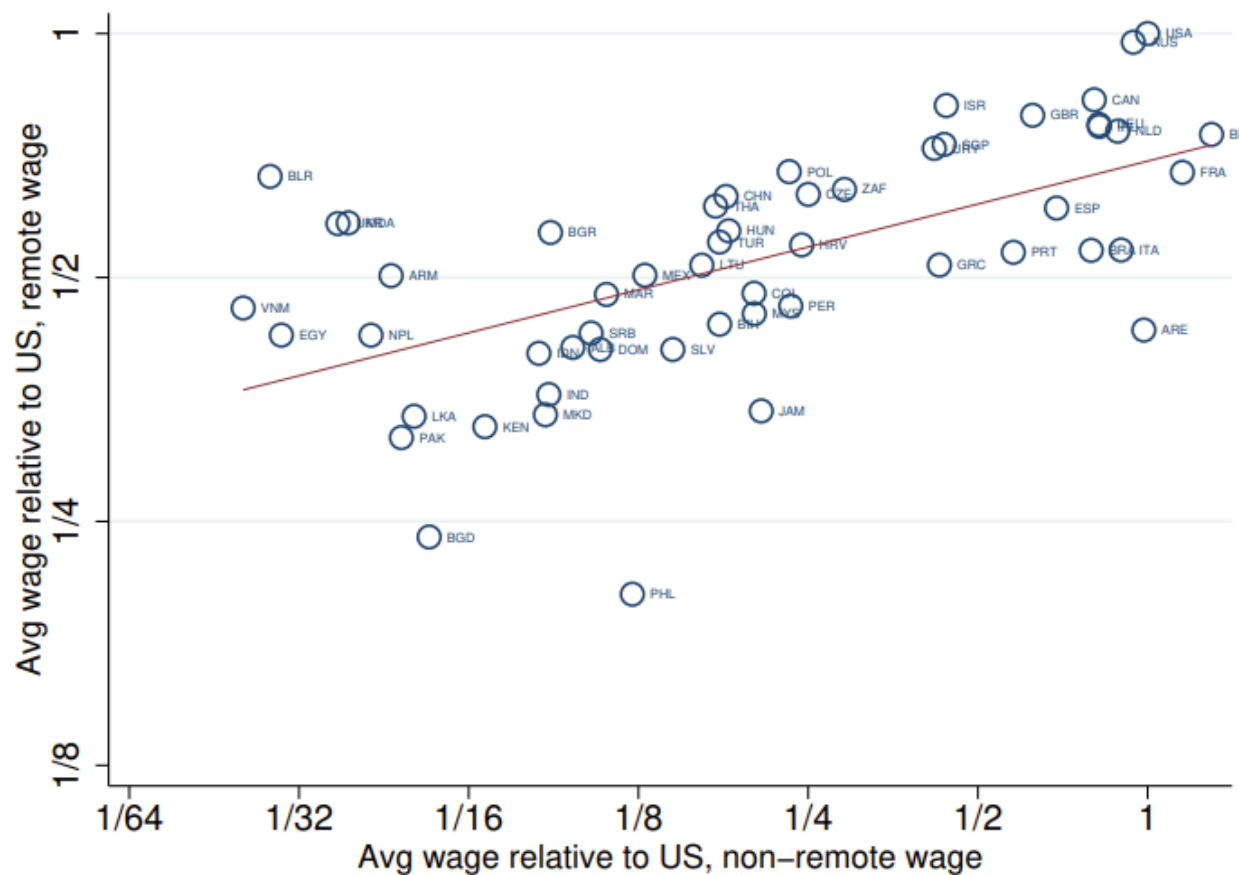
# Wages vary much less with employers country



- No evidence of workers charging different wages to employers in different countries



# Remote vs non-remote wages (using ICP 2011 estimates)



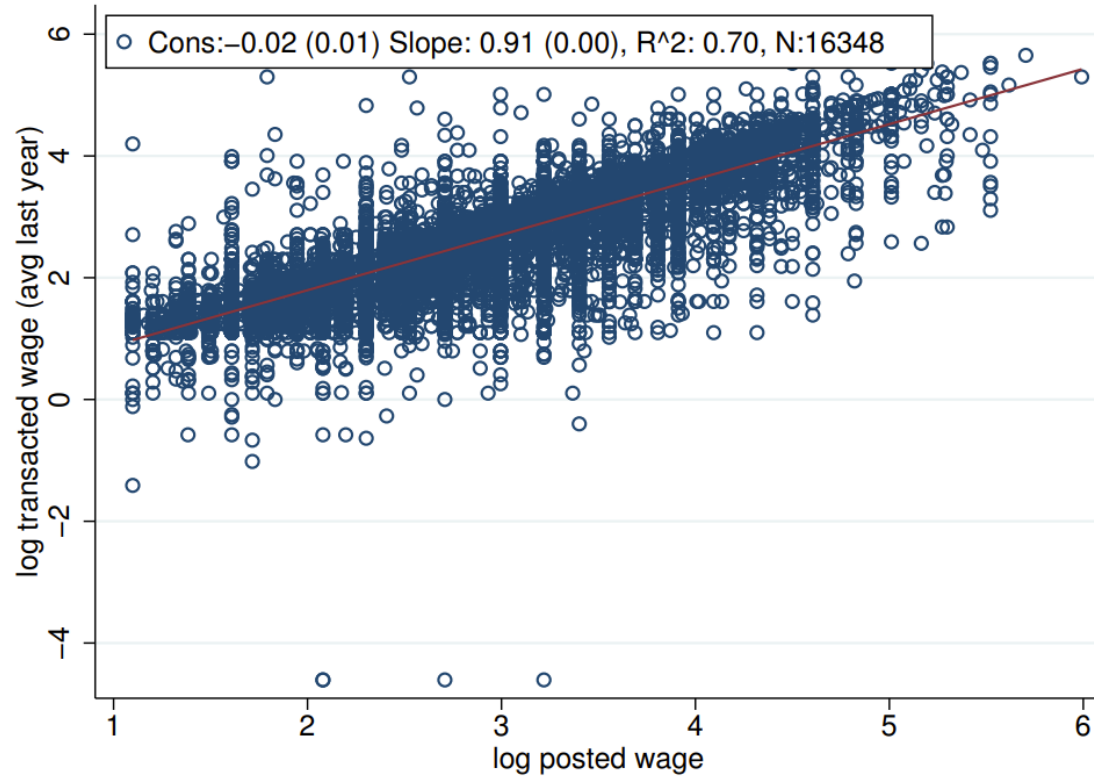
- Correlated with non-remote wages
- Relative to the US, remote wages are higher on average

## Which jobs are more offshorable?

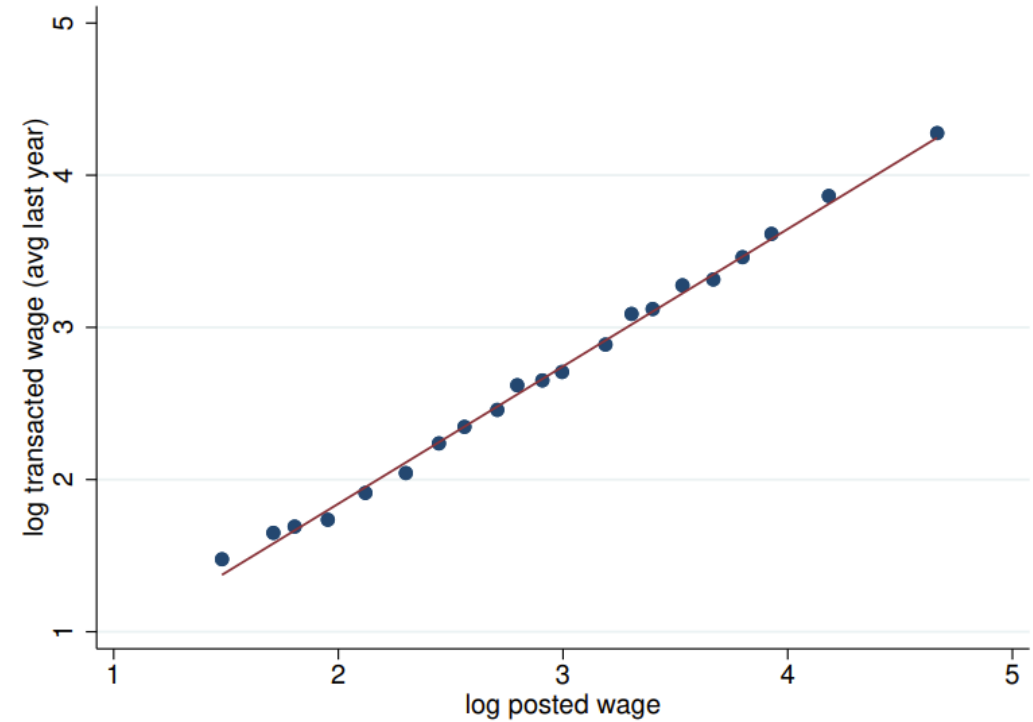
Most offshorable	Share offshored	Least offshorable	Share offshored
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Medical Translators	0.90	Resumes & CL Writers	0.35
Motion Graphics	0.89	Paralegal	0.36

- Remote  $\neq$  easily offshored
- Substantial heterogeneity among remote occupations
- Paper provides measure for 91 occupations. Also matched to the BLS SOC categories

# Ask (Posted) vs Transacted Wages



Binned scatterplot



- Average transacted wages are 2% lower than ask wage