Remote by design: Organizational structure, Technology, and Productivity

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Outline

Motivation

- Remote work is here to stay
- More prevalent in some high-productivity (tech) jobs
- Expandable world-wide with decreasing digital costs

But are remote companies different?

- How do they hire?
- How do they organize labo(u)r?
- Do they face different constraints?

The Firm

- Software solutions company
- Based in Americas
- Established 2010's, rapid growth 2019 & pandemic
- Backers & Managers coordinating the firm
- Fronters work remotely in clients' projects
- Hires on top 3%, wages locally top 10%

The Data

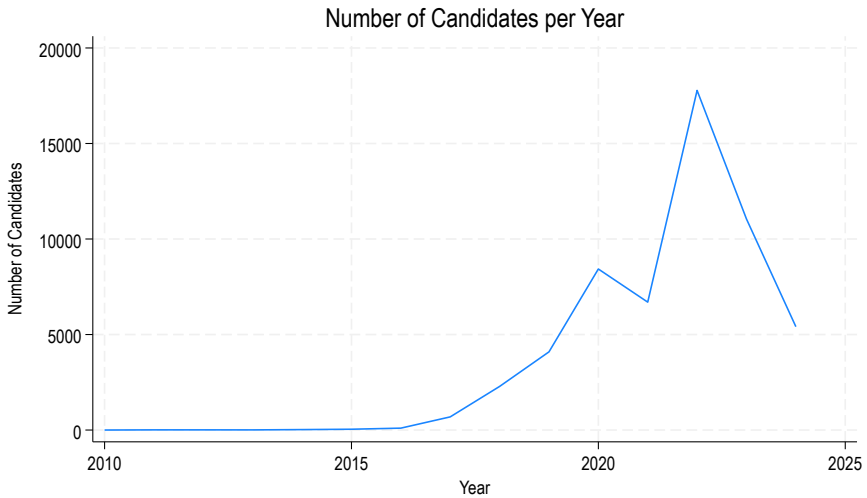
- Data span (not balanced): 2010 - 2025
- 72k (considered) candidates, 7k hires
- 8 skills (on average, measured after applying)
- 6k fronters in 1k projects
- Fronter performance 2017-2024 + all workers quarterly 2023-4
- 3.5m detailed task observations, 2022-2024
- 1.8k trainings completed (mostly managerial)

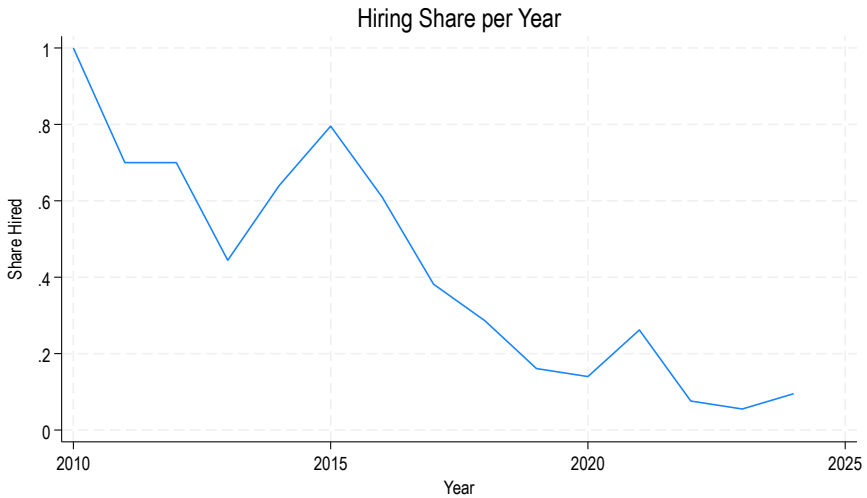
Research Questions

- RQ1: What are the determinants of remote hiring?
- RQ2: How does project homophily affect workers productivity?
- RQ3: How does the firm allocate its workers?

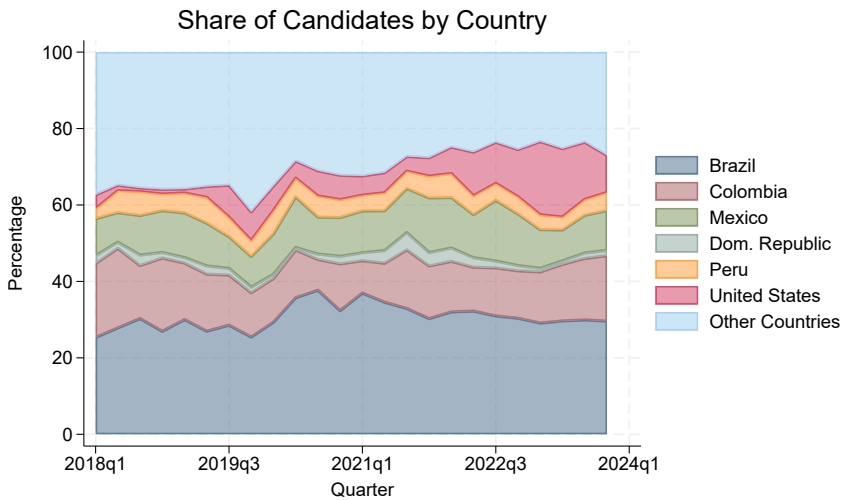
Outline

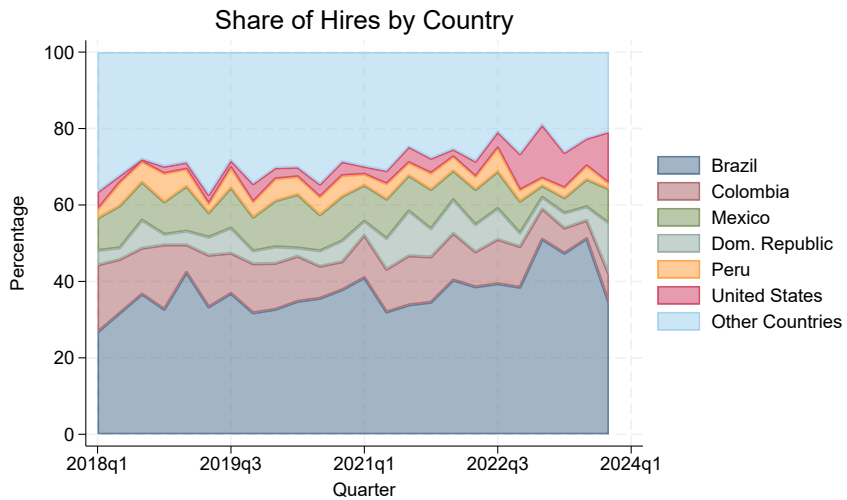
Hiring accelerates after 2019 and becomes more selective





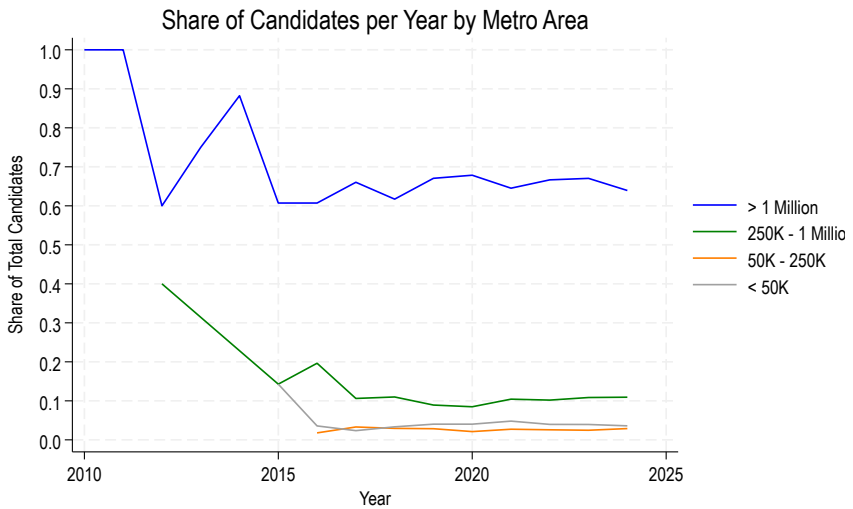
Firm searches deeper in initial markets

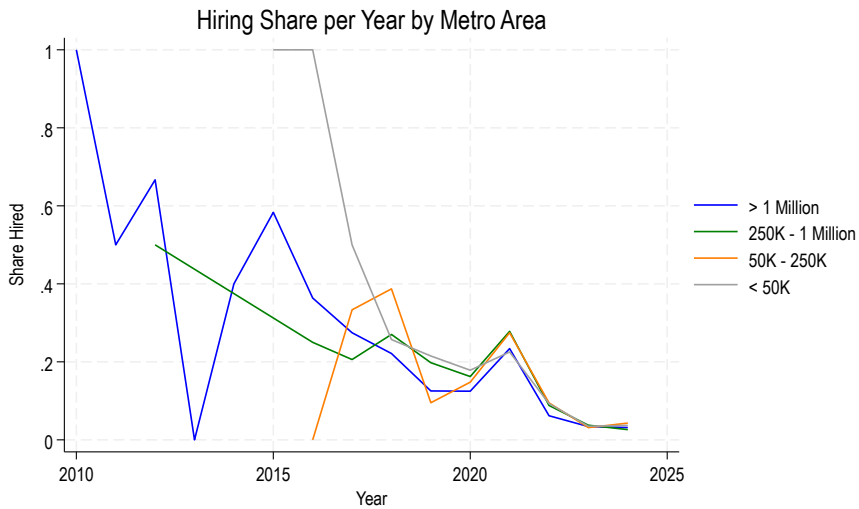




$\rightarrow$ cost of expanding search, no supply elsewhere, or cost to favoring worker homophily?

Non-metro hiring probabilities higher





- city coordinates (simplemaps.com) & urban polygon coordinates (European Commission) identify metropolitan areas (1M+)

$\rightarrow$ One explanation: can get same talent for lower price

Non-metro premium disappears when hiring slows down

	(1) Metro only	(2) Skills only	(3) Metro + Skills	(4) -2019	(5) 2020–22	(6) 2023–24
was_hired						
metro_1mil	0.744***		0.714***	0.704*	0.684***	0.968
	(-5.25)		(-5.87)	(-2.25)	(-5.71)	(-0.19)
metro_250k	1.046		1.001	0.830	1.024	1.099
	(0.39)		(0.01)	(-0.61)	(0.17)	(0.25)
metro_50k	0.909		0.937	0.867	0.962	0.821
	(-0.73)		(-0.49)	(-0.42)	(-0.25)	(-0.46)
English		1.003*	1.003*	0.999	1.004*	1.005
		(2.23)	(2.32)	(-0.36)	(2.27)	(1.20)
Analytical_Reasoning		1.022***	1.023***	1.030***	1.023***	1.014***
		(15.23)	(15.75)	(7.52)	(13.32)	(3.69)
Resourcefulness		1.018***	1.018***	1.026***	1.016***	1.019***
		(10.61)	(10.47)	(5.91)	(7.96)	(3.73)
Situational_Judgement		1.000	1.001	0.999	1.000	1.004
		(0.39)	(0.51)	(-0.22)	(0.29)	(1.26)
_cons	0.0113***	0.000400***	0.000523***	0.00265***	0.00215***	0.00129***
	(-23.34)	(-31.92)	(-29.45)	(-12.30)	(-20.60)	(-9.37)
N	33160	33160	33160	2891	21096	9054

Exponentiated coefficients; t statistics in parentheses

Year and country fixed effects included, Odds Ratios reported.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Logit of hiring on metro population and 4 general skills.

Outline

Strategy

- Three levels of heterogeneity:
  - Country
  - Region (South America, Central America, North America, Rest)
  - Language (Spanish, Portugese, Other)
- Four measures of worker performance
- Regressors:
  - Is worker from same region as the manager?
  - Is worker from same region as the modal worker region?
  - Modal region worker share

New workers do worse in higher country homophily projects

	(1) mean_project_performance	(2) mean_project_performance	(3) mean_project_performance	(4) mean_project_performance	(5) mean_project_performance	(6) mean_project_performance	(7) mean_project_performance	(8) mean_project_performance	(9) mean_project_performance
modal_share_residence_country	-0.403***	-0.461***	-0.485**						
	(0.101)	(0.111)	(0.147)						
modal_share_region				-0.123	-0.192	-0.192			
				(0.0791)	(0.119)	(0.126)			
modal_share_language							-0.175*	-0.342**	-0.143
							(0.0752)	(0.113)	(0.118)
_cons	4.014***	4.037***	4.064***	3.897***	3.945***	3.932***	3.913***	4.011***	3.895***
	(0.0512)	(0.0563)	(0.0810)	(0.0498)	(0.0783)	(0.0831)	(0.0424)	(0.0655)	(0.0728)
N	457	413	274	457	417	274	457	417	274
FE	None	residence_country	Year	None	Region	Year	None	Language	Year

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Performance independent of whether you are part of the major group

	(1) mean_performance	(2) mean_performance	(3) mean_performance	(4) mean_performance	(5) mean_performance	(6) mean_performance	(7) mean_performance	(8) mean_performance	(9) mean_performance
modal_residence_country_match	0.0681			0.0681			0.0639		
	(0.0410)			(0.0412)			(0.0406)		
modal_region_match		0.0461			0.0461			0.0422	
		(0.0421)			(0.0422)			(0.0427)	
modal_language_match			0.0694			0.0694			0.0644
			(0.0411)			(0.0412)			(0.0408)
_cons	3.876***	3.875***	3.873***	3.876***	3.875***	3.873***	3.877***	3.877***	3.875***
	(0.0171)	(0.0269)	(0.0188)	(0.0172)	(0.0269)	(0.0188)	(0.0170)	(0.0272)	(0.0187)
N	1740	1740	1740	1740	1740	1740	1740	1740	1740
FE	Project	Project	Project	Project-residence_country	Project-Region	Project-Language	Project-Year	Project-Year	Project-Year

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Same for whether you match the manager's country

	(1) mean_performance	(2) mean_performance	(3) mean_performance	(4) mean_performance	(5) mean_performance	(6) mean_performance	(7) mean_performance	(8) mean_performance	(9) mean_performance
manager_residence_country_match	0.00497			0.00936			-0.00447		
	(0.0561)			(0.0631)			(0.0565)		
manager_region_match		0.0336			0.0506			0.0202	
		(0.0467)			(0.0525)			(0.0472)	
manager_language_match			-0.0208			-0.0130			-0.0235
			(0.0394)			(0.0410)			(0.0398)
_cons	3.909***	3.882***	3.905***	3.901***	3.872***	3.899***	3.911***	3.888***	3.906***
	(0.0110)	(0.0210)	(0.0151)	(0.0133)	(0.0236)	(0.0157)	(0.0111)	(0.0212)	(0.0152)
N	1809	1943	1943	1426	1866	1870	1809	1943	1943
FE	Project	Project	Project	Project-residence_country	Project-Region	Project-Language	Project-Year	Project-Year	Project-Year

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Outline

Better new workers stay longer in projects

Table: Effects of First Project Performance on First Project Duration

	(1) Days	(2) Weeks
First Project Performance	63.833***	9.119***
	(9.273)	(1.325)
Constant	84.864**	12.123**
	(31.484)	(4.498)
Observations	1417	1417

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

And then are given a second project

Table: Effects on Probability of Having Second Project

	(1) Second Project
Has Second Project	
First Project Performance Score	0.815***
	(0.019)
Constant	9.215***
	(0.798)
Observations	1445

Logit with year fixed effects. Standard errors clustered by year.

Odds ratios reported. Only employees whose first project has officially ended.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Outline

Conclusions

- Firm searches for worker deep into initial markets
- Prefers (cheaper) rural workers
- Possibly building too homogeneous teams
- Keeps and promotes better workers

What to look at next?

- Do they also go deep in cities?
- Does hiring strategy change when hiring slows down?
- How is new search regions related to old?
- Effect of heterogeneous worker on homogeneous group
- Are the teams too homogeneous?
- Is allocation efficient or are there idle workers?
- What kind of teams do better workers move into and what tasks do they do?