

Lock-In Effects in Online Labor Markets

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Motivation

Workers may face **high switching costs** which lock them inside a platform.

- Online labor markets often use **platform-specific reputation mechanisms**.
- These **prevent** workers to **transfer** their **ratings** to other platforms...
- ...and may in turn **relax platform competition**.

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- ...and may in turn **relax platform competition**.

Lock-in effects

- can **decrease** (ex-post) **competition** among platforms (Klemperer, 1987; Shapiro et al., 1998)
- may **make workers more vulnerable** to platform capitalization (e.g. fees) (Berg et al., 2018; Kingsley et al., 2018)

How to Mitigate Lock-In Effects in Online Labor Markets?

- Regulators around the globe have introduced **data privacy laws** allowing for **data portability**.
- Prominent examples:
 - Digital Markets Act (2022)
 - General Data Protection Regulation, Article 20 (2018)
 - California Consumer Privacy Act (2018)
- Objective: Enhance data ownership, **reduce switching costs** to increase platform competition

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 - California Consumer Privacy Act (2018)
- Objective: Enhance data ownership, **reduce switching costs** to increase platform competition
- Under the current interpretation of the GDPR, **reputation data does not fall under the scope of Article 20**, because ratings and reviews are provided by reviewers and not by the workers themselves.

This Paper

We theoretically and experimentally analyze the **effect of platform pricing on workers' switching behavior** in online labor markets.

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- We investigate switching behavior in **two policy regimes**:
 - Policy regime **without** reputation portability (status quo)
 - Policy regime with **mandatory** reputation portability

This Paper

We theoretically and experimentally analyze the **effect of platform pricing on workers' switching behavior** in online labor markets.

- We investigate switching behavior in **two policy regimes**:
 - Policy regime **without** reputation portability (status quo)
 - Policy regime with **mandatory** reputation portability
- We distinguish between switching behavior based on **monetary motives** and **fairness preferences**.

Theoretical Framework

- Our model is based on a variation of **Holmström (1999)**
- Online labor market with **two platforms**: % and #
→ Multi-homing is not allowed
- **Workers care** about their **future reputation**
- The platform chosen by the worker introduces a **fee $\phi > 0$ at some time k**
- **Switching decision** of the worker at time k , given ϕ

Policy Regime Without Reputation Portability

Workers do **not switch** if:

$$\underbrace{\sum_{t=1}^{\infty} \overbrace{\beta^{t-1}}^{\text{Discount factor}} [(1-\phi) \overbrace{c_{k+t-1}}^{\text{Revenues}} - \overbrace{g(a_{k+t-1})}^{\text{Convex effort cost}}]}_{U_{\%}} \geq \underbrace{\sum_{t=1}^{\infty} \beta^{t-1} [c_t - g(a_t)]}_{U_{\#}}.$$

Proposition 1: *A policy regime without reputation portability enables the creation of switching costs, implying that workers are willing to pay a positive fee to stay on the platform they have built their reputation on.*

Policy Regime Without Reputation Portability

Workers do **not switch** if:

$$\underbrace{\sum_{t=1}^{\infty} \overbrace{\beta^{t-1}}^{\text{Discount factor}} [(1-\phi) \overbrace{c_{k+t-1}}^{\text{Revenues}} - \overbrace{g(a_{k+t-1})}^{\text{Convex effort cost}}] - \overbrace{\delta(\phi)}^{\text{Additional disutility } \in [0, \infty)}}_{U_{\%}} \geq \underbrace{\sum_{t=1}^{\infty} \beta^{t-1} [c_t - g(a_t)]}_{U_{\#}}.$$

- $\delta = 0 \Rightarrow$ Worker has *pure monetary motives*
- $\delta > 0 \Rightarrow$ Worker has both *monetary motives* and *fairness preference*
- $\delta \rightarrow \infty \Rightarrow$ Worker has *pure fairness preferences*

Proposition 2: *Workers with fairness preferences are ceteris paribus willing to pay a lower fee to stay on the platform they have built their reputation on.*

Policy Regime with Mandatory Reputation Portability

Assumptions:

- **Platforms** are **symmetric**
- The **transfer** of reputation data is **mandatory**

Then:

- Given platform symmetry, **Bertrand competition follows**
- $\phi \rightarrow 0$
- Workers will switch more often since **switching costs are 0**

Proposition 3: *In a policy regime with reputation portability, workers that have built a reputation do not accept any fee because there are no switching costs.*

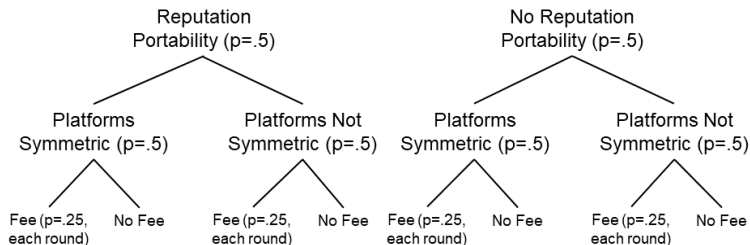
Experimental Design

- Data generated through an **online lab-in-the-field** decision experiment (between 12.02. & 23.02.2021).
- **1,622 American online workers** from Amazon Mechanical Turk.

Experimental Design

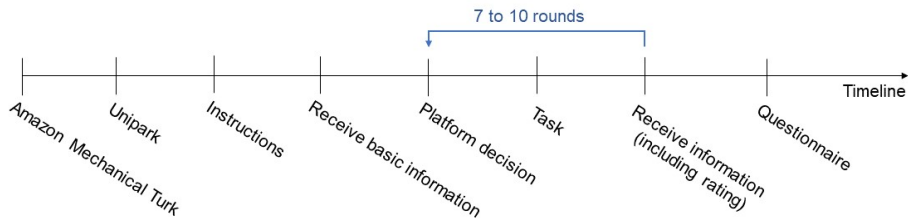
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The experiment relies on a **2x2x2 between- and within-subject design**.



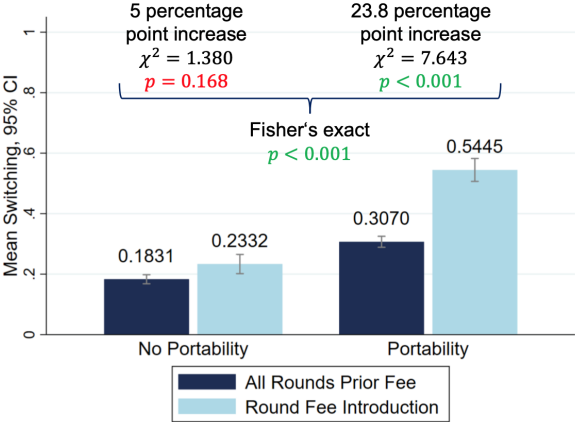
Sample

Procedural Details

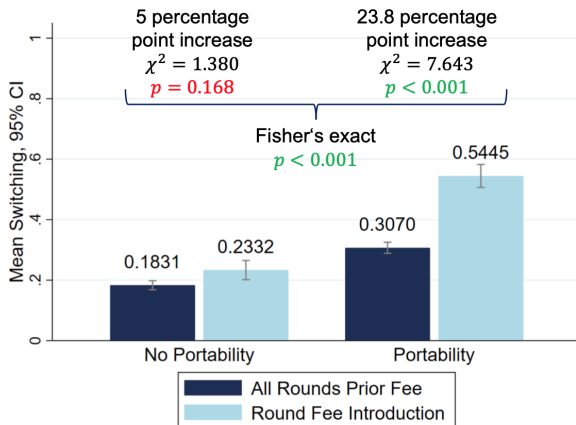


- Online labor market with **two platforms** (different fee if applicable).
- Workers chose a platform in round 1, but could **switch after each round**. ▶
- Each round consisted of **one task** (counting zeros).
- Workers received a **rating for task completion**.
- The **better** the **average rating** in round t , the **higher** the **wage**. ▶
- Random mechanism introduced **fee starting with round 4**.
→ Induce possibility of being locked-in first

Portability Regime



Portability Regime

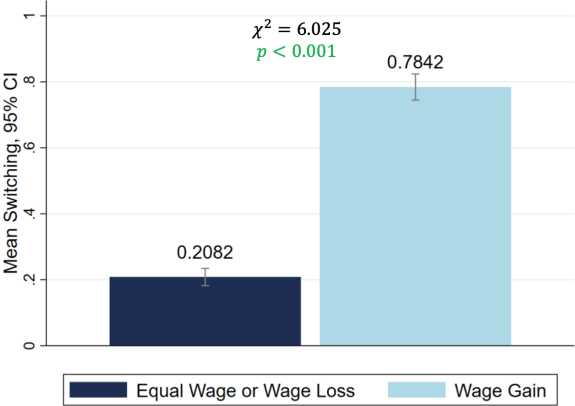


Result 1. *Platforms can capitalize lock-in effects more effectively in a policy regime without reputation portability, whereas a policy regime with mandatory reputation portability significantly increases switching behavior and reduces the chances that workers incur platform fees.*

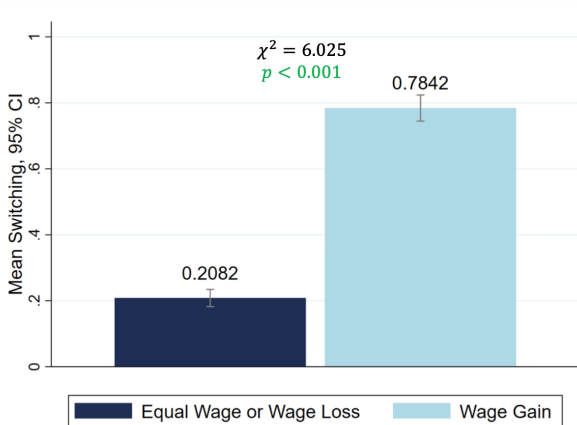
Randomization Check

Fees Trigger Switching

Motives to Switch Platforms



Motives to Switch Platforms



Result 2. *If a platform introduces a fee, about 57.6% of the workers switch based on monetary motives, and 20.8% switch due to fairness preferences.*

Motives to Switch Platforms: Survey Responses

During this study, what was your main reason to switch platforms?

Please rank the reasons that apply to you in order of importance, from the #1 most important reason through the least important reason.

I was curious.

I did not switch platforms.

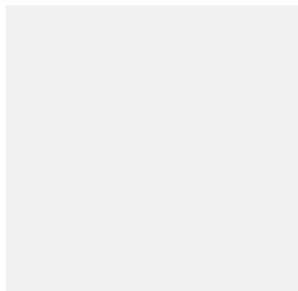
I could earn more money on the other platform.

I had a low rating.

Other reason.

I perceived the fee increase as unfair.

I was bored.



Motives to Switch Platforms: Survey Responses

	(1)	(2)
	Switching	Switching with Fairness Preferences
<i>Most important self-reported switching motives as a response to fee introduction</i>		
Earn Higher Wages	0.278*** (0.021)	-0.004 (0.018)
Fee Perceived as Unfair	0.182*** (0.024)	0.052** (0.018)
Curiosity	0.152*** (0.023)	0.113*** (0.018)
Boredom	0.081* (0.032)	0.091*** (0.022)
Poor Rating	-0.011 (0.031)	0.033 (0.022)
Other Reason	0.083* (0.040)	0.098*** (0.026)
No Switching	<i>Baseline</i>	<i>Baseline</i>
<i>Controls</i>		
Average Rating in Round k	-0.077*** (0.009)	-0.068*** (0.005)
Round k	-0.004 (0.007)	-0.003 (0.005)
Negative Reciprocity	-0.006 (0.008)	0.016** (0.006)
Risk Aversion	-0.021 (0.031)	0.037+ (0.021)
Risk Ambiguity	0.019 (0.023)	-0.030+ (0.017)
Completed Tasks AMT	-0.065 (0.100)	-0.033 (0.075)
Approval Rate AMT	-0.046 (0.089)	-0.060 (0.060)
Number of Workers	1,349	1,349
Pseudo R ²	0.244	0.245
P=1	38.6%	14.4%

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Result 3. *The desire to earn higher wages and perceiving a fee as unfair significantly increase workers' switching behaviors.*

Additional Findings

- A policy regime with reputation **portability increases high-quality workers' wages** and significantly decreases wages of workers with a poor rating. ▶
- A policy regime with reputation **portability may improve market quality.** ▶
- In **both** policy **regimes**, **workers** are **less likely to switch** in a situation with **rising subsequent fees.** ▶
- With the exception of workers with expressed monetary motives, **workers perform more poorly after** they endure a **fee.** ▶

Conclusion

- Online labor markets can **capitalize lock-in effects** in the **absence** of reputation **portability**.
- Workers switch due to **monetary motives** *and* **fairness preferences**.
- A policy regime with **mandatory reputation portability** is a **valuable tool** for workers to **evade capitalization by platforms** and **improve online working conditions**.
- This is particularly important in online labor markets where workers **rely heavily on their ratings** and face **precarious working conditions**.

Supplementary Material

Experiment:

Sample

Randomization Check

Real-Effort Task

Remuneration

Full Information at the End of Each Round

Fees Trigger Switching

Performance After Fee Introduction

Portability Regime and Wages

Portability Regime and Ratings

Additional Findings:

Second-Order Effects

Experimental Conditions

Conditions	Portability Regime	Platforms	Fee	N
1	No Portability	Equal	No	64
2	No Portability	Equal	Yes	334
3	No Portability	Asymmetric	No	72
4	No Portability	Asymmetric	Yes	352
5	Portability	Equal	No	65
6	Portability	Equal	Yes	340
7	Portability	Asymmetric	No	72
8	Portability	Asymmetric	Yes	323
				1,622

Randomization Check

	Conditions								R^2	F-test
	1	2	3	4	5	6	7	8		
Socio-Economic Background										
Age (yrs)	37.469	0.771	2.559	0.673	-2.423	-0.466	0.253	-0.661	0.006	0.221
Female and Diverse (y/n)	0.547	-0.136	-0.075	-0.098	-0.131	-0.106	-0.099	-0.157	0.005	0.363
Education (yrs)	15.75	-0.178	-0.083	-0.071	-0.119	-0.062	0.347	-0.199	0.004	0.458
Weekly Working Hours	34.845	1.830	1.517	2.776	3.433	2.086	-0.760	1.627	0.002	0.752
Annual Inc. (\$)	34,297	3,622	3,411	4,680	972	5,696	3,342	2,932	0.002	0.799
Work Experience										
Hours Online Labor	19.266	-0.355	-1.224	-1.428	0.365	-0.133	-2.738	-0.086	0.003	0.755
Weekly Inc. Online Labor (\$)	76.875	2.667	-7.833	4.483	21.679	3.269	26.569	1.633	0.004	0.786
Platform Registrations	1.953	0.724	-0.120	-0.050	0.847	0.088	0.186	-0.139	0.006	0.489
Completed Tasks AMT	10,428	14,388	30,288	16,677	19,913	17,387	-1,415	15,009	0.003	0.000
Approval Rate AMT (%)	97	0.042	1	-0.152	0.692	-0.956	-3.139	-0.947	0.005	0.061
Preferences										
Risk Aversion (0-1)	0.125	0.016	0.014	0.057	-0.033	0.054	0.000	0.005	0.005	0.245
Risk Ambiguity (0-1)	0.672	-0.172	-0.130	-0.180	-0.118	-0.187	-0.067	-0.146	0.008	0.056

Presentation

Appendix

Remuneration

The (average) **rating ranged from 1 to 5** on each platform.

- First round: \$0.10
- Rating < 3.50 : \$0.10
- $3.50 \geq$ Rating < 4.50 : \$0.15
- Rating ≥ 4.50 : \$0.20

Presentation

Appendix

Real-Effort Task

You are now in round 1. You are working on Platform%.

0	1	1	0	1	0	0	0	0	1	1	1	0	1	1
1	0	0	0	1	1	1	1	0	1	0	1	1	1	1
0	0	1	0	0	1	0	1	1	0	1	1	1	0	1
0	1	1	0	1	0	1	1	0	1	0	0	1	0	0
1	1	0	0	0	0	0	0	0	0	0	1	1	0	0
1	1	1	1	0	1	0	0	0	1	0	0	0	1	1
1	1	1	1	1	1	1	1	1	1	0	0	0	1	1
0	1	0	0	0	0	0	1	1	0	1	0	0	1	0
1	0	0	1	0	1	0	1	1	0	1	0	1	1	1
0	1	1	0	0	0	1	1	1	0	0	1	1	0	0

How many zeros are in the table?

Answer:

Full Information at the End of Each Round, no Fee

Round 1 on Platform% is over.

For Platform% and Platform#, the following box summarizes your current rating, your wage in the next round, the fee (if any) applied in the next round by the platforms, and your net earnings for completing the next task:

	Platform%	Platform#
Your current rating	5.00	0.00
Your wage next round	USD 0.20	USD 0.10
Platform fee next round	USD 0.00	USD 0.00
Your net earnings next round	USD 0.20	USD 0.10

Your total earnings over all rounds are USD 0.10.

You are currently on Platform%, on which you will earn USD 0.20. Do you want to switch to Platform#, on which you will earn USD 0.10?

Yes

No

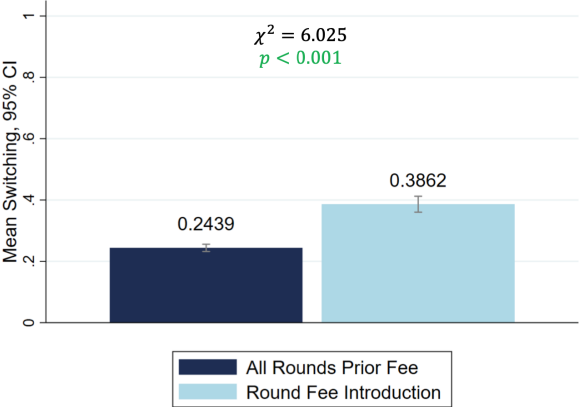
Full Information at the End of Each Round, with Fee

Round 4 on Platform% is over.

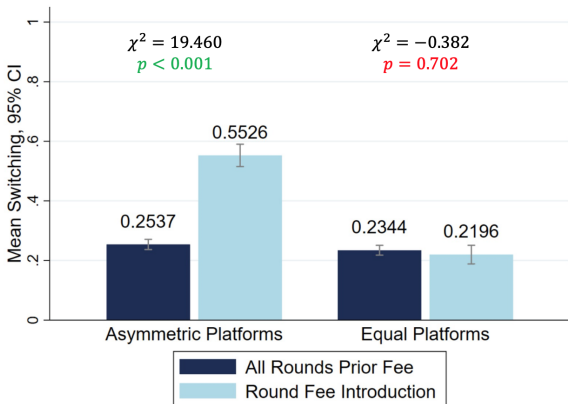
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	Platform%	Platform#
Your current rating	5.00	
Your wage next round	USD 0.20	USD 0.10
Platform fee next round	USD -0.05	USD 0.00
Your net earnings next round	USD 0.15	USD 0.10

Fees Trigger Switching Behavior



Fee Introduction and Platform Symmetry

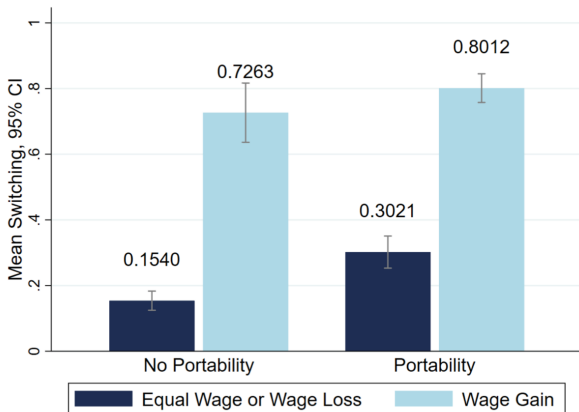


Result. *Introducing a platform fee increases switching behavior, if platforms are asymmetric.*

Presentation

Appendix

Motives and Portability Regime



Increase from 72.6% to 80.1%, $\chi^2 = 1.346$, $p = 0.178$

Increase from 15.4% to 30.2%, $\chi^2 = 2.437$, $p = 0.015$

Result. *The costs of “punishing” the platform by switching are lower for workers in a policy regime with reputation portability, as switching based on pure fairness preferences increases from 15.4% to 30.2%.*

Performance After Fee Introduction

	Rating in Round t				
	(1) Full Sample	(2) Wage Gain	(3) Equal Wage or Wage Loss	(4) Wage Gain Situation	(5) Equal Wage or Wage Loss Situation
Period after Fee	-0.129*** (0.022)	-0.073+ (0.043)	-0.191*** (0.073)	-0.241** (0.108)	-0.123*** (0.027)
Controls	X	X	X	X	X
Observations	12,365	2,999	1,769	831	6,766
Number of Workers	1,349	327	194	90	738
Adjusted R^2	0.017	0.007	0.040	0.018	0.014

Notes: The control variables included are *Risk Ambiguity*, *Completed Tasks AMT*, and *Approval Rate AMT*. Robust standard errors are reported in parentheses. + $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Result. *With the exception of workers with expressed monetary motives, workers perform more poorly after they endure a fee.*

Portability Regime and Wages

	Total Wage			
	(1)	(2)	(3)	(4)
	All Ratings	Ratings < 3.50	Ratings \geq 3.50 & < 4.50	Ratings \geq 4.50
Portability	0.030+ (0.016)	-0.126*** (0.044)	-0.026 (0.034)	0.068*** (0.015)
Controls	X	X	X	X
Number of workers	1,349	122	239	988
Adjusted R^2	0.016	0.055	0.001	0.017

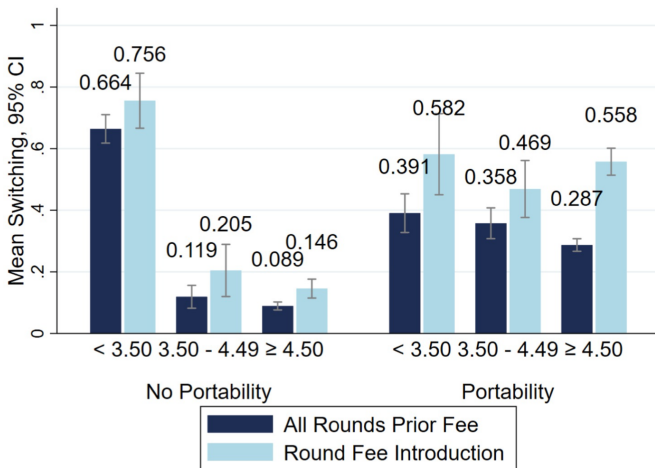
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Result. A policy regime with reputation portability increases high-quality workers' wages and significantly decreases wages of workers with a poor rating.

Presentation

Appendix

Portability Regime and Ratings

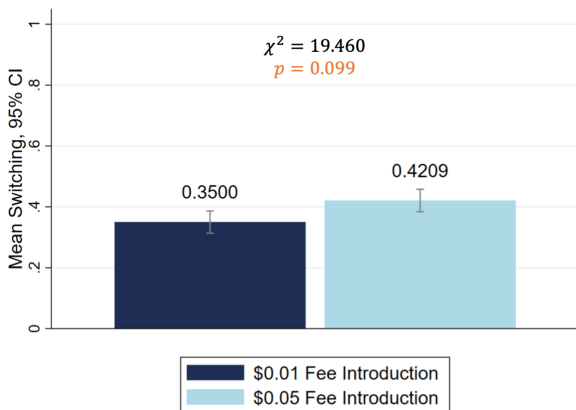


Result. Lock-in effects affect high-quality workers more than poorly rated workers.

Second-Order Effects

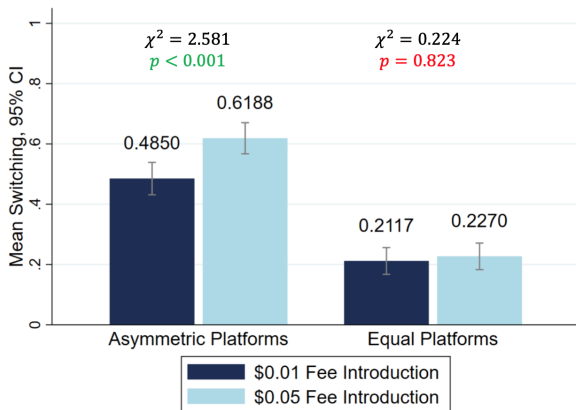
- During the experiment, the **platform fees** have **varying levels** (\$0.00, \$0.01, \$0.05).
- This allows us to compare whether switching behavior differs between an **initial low fee of \$0.01**—i.e., low capitalization of lock-in—and an **initial high fee of \$0.05**—i.e., high capitalization of lock-in.
- Moreover, if a platform **introduced a low fee**, in each **subsequent round** and with a probability of 25% the platform could charge a **high fee** to its workers.
- We compare switching in the case of an **immediate high fee introduction** to an **high fee increase** that occurs **after a low fee** introduction.

Strength of Lock-In Capitalization



Appendix

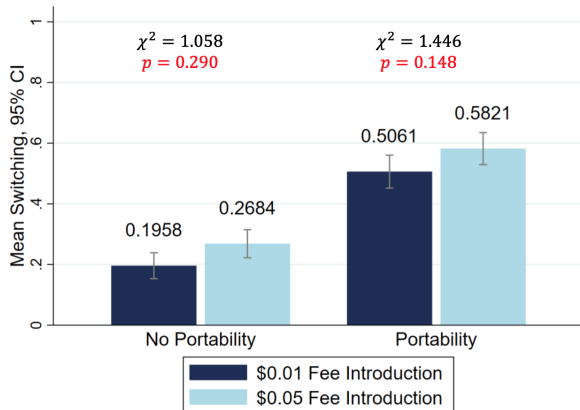
Strength of Lock-In Capitalization



Result. *If platforms are asymmetric, workers are more likely to switch when the platform they work on immediately introduces a high fee rather than a low fee.*

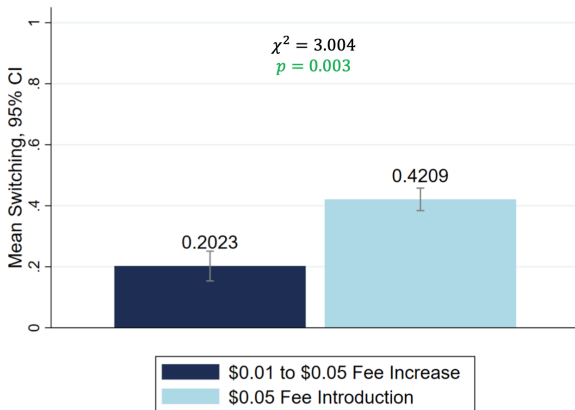
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Strength of Lock-In Capitalization



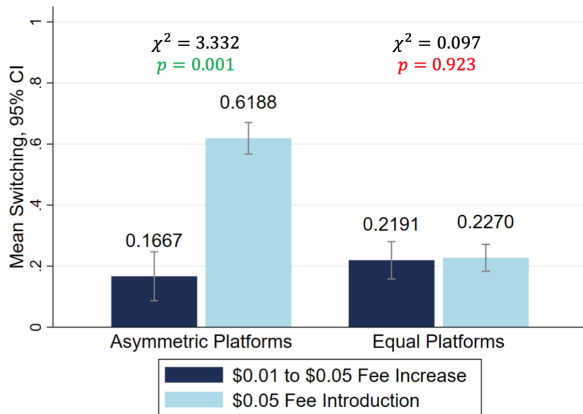
Appendix

Frequency of Lock-In Capitalization



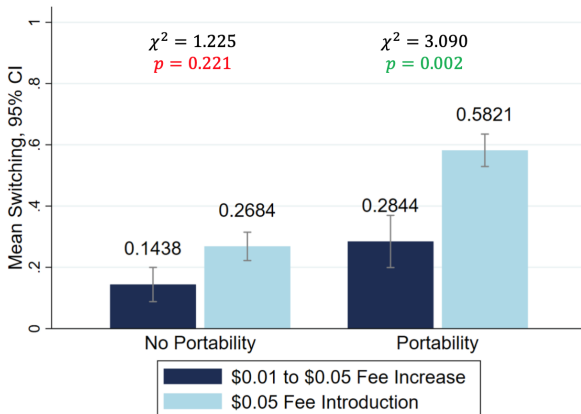
Appendix

Frequency of Lock-In Capitalization



Result. *If only the platform on which workers currently work charges a fee, workers are less likely to switch platforms if they experience rising subsequent fees. If the platforms are identical, switching behavior does not depend on the frequency of fees.*

Frequency of Lock-In Capitalization



Result. *In a policy regime with reputation portability, workers are also less likely to switch in a situation with rising subsequent fees, whereas in a policy regime without reputation portability, the frequency of fees does not affect switching behavior.*

References

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