

The effects of regulating platform-based work on employment outcomes:

A review of the empirical evidence



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Acronyms

BLS	Bureau of Labor Statistics
CWS	Contingent Worker Supplement
EPRS	European Parliamentary Research Service
EU	European Union
EW	Employing Workers
ILO	International Labour Organization
LOM	Mobility Orientation Law on Transport
MEIC	Ministry of Economy, Industry, and Commerce
MOPT	Ministry of Public Works and Transportation
MOU	Memorandum of Understanding
MTESS	Ministry of Labor, Employment, and Social Security
NUPSAW	National Union of Public Service and Allied Workers
NYC	New York City
OECD	Organization for Economic Co-operation and Development
OHS	Occupational Health and Safety
SCJN	Supreme Court of Justice of the Nation



Acknowledgment

The policy brief “The effects of regulating platform-based work on employment outcomes. A review of the empirical evidence” was prepared by David Algate (Consultant) as part of the World Bank Labor Global Solutions Group’s initiative ‘Better Labor Regulations for the Digital Economy and Beyond’. The project, which started under the leadership of Michael Weber (Senior Economist) in FY21–22 and continued under Matteo Morgandi (Senior Economist) and Eliana Carranza (Senior Economist) in FY23–24, aims to develop context-appropriate regulatory frameworks for platform-based work in developing countries.

This policy brief is part of a comprehensive series under this project, which includes:

- ‘Regulating platform-based work in low- and middle-income countries: towards a context-appropriate approach’ by Matteo Morgandi and David Algate;
- ‘The regulation of platform-based work: recent regulatory initiatives and policy options for developing countries’ by Maho Hatayama and Dagmara Maj-Swistak;
- ‘The effects of regulating platform-based work on employment outcomes. A review of the empirical evidence’ by David Algate;
- ‘The economic rationale to regulate platform-based work’ by Jonathan Stöterau (unpublished manuscript).

The policy brief draws on insights from two-day workshops hosted by the World Bank in May 2023, titled ‘Regulating platform-based work in developing countries: How to balance job opportunities and workers’ protection’. These workshops facilitated extensive consultations with external experts, whose contributions were instrumental in shaping the recommendations presented herein. We extend our gratitude to our peer reviewers, Mark Graham (Professor, Oxford Internet Institute), and Ilsa Medina (Senior Social Protection Specialist, World Bank), for their valuable comments. Additionally, we appreciate the support provided by Sara de Lorenzo (Consultant) in the publication and dissemination process and Agnes Mganga (Program Assistant) for her administrative assistance.

As digital work platforms continue to expand globally, especially in developing economies, it is imperative to balance the potential job opportunities they offer with adequate worker protections. The findings and recommendations of this series aim to inform policymakers and stakeholders in creating effective and sustainable labor regulations that respond to the unique challenges posed by the digital economy. Through this series, we aspire to contribute to the broader discourse on labor regulation and to support the development of policies that ensure inclusive and equitable economic growth in the digital age.



Executive Summary

Despite the need for knowledge on the impacts of regulating digital platform work, empirical evidence remains thin, especially in low- and middle-income country (LMIC) settings. Out of 59 studies in this brief, 18 are experiments, impact evaluations, or theoretical models estimated using data, and 14 of those 18 studies cover LMIC-based workers (see Section I.B).

Effective interventions must be tailored to the realities of digital work. Digital platform markets have characteristics that may differ from other types of markets, such as power and information asymmetries between platforms and workers as well as fluid entry and exit of workers from the market (see Sections II.A and II.B).

The need to tailor interventions to the characteristics of digital work is apparent in the case of minimum earnings interventions, which have had mixed effects in digital platforms. These mixed effects are in part due to the rapid entry and oversupply of new workers into digital platforms after minimum wages are imposed, resulting in limited increases in overall workers' earnings in some cases (see Section II.A).

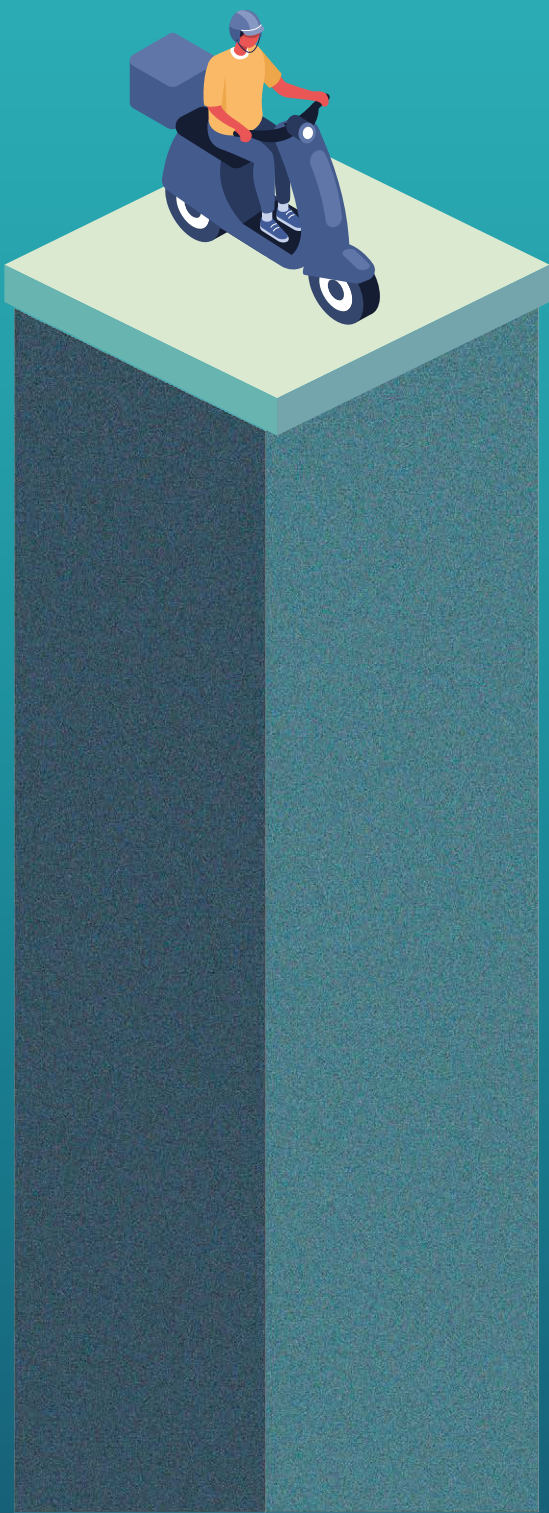
Reputation systems—reviews and information about workers and employers—are highly valued by digital platform workers. However, they are prone to information asymmetries, suggesting that regulation or protective measures could play an important role (see Section II.B).

Policy makers can leverage digital platforms to enroll workers in social insurance and social protection schemes. Social protection and insurance coverage is low among digital platform workers. Policy makers could leverage platforms' data about workers, and their contact with workers, to target efforts to extend social insurance coverage. However, more evidence is needed to determine the best way of doing so (see Section II.D).

Policy makers aiming to protect digital platform workers should consider not only labor market regulations (LMRs) but also interventions related to product market regulation (PMR). The relationship between digital workers and digital platforms is also affected by platforms' competitive environment. However, there is lack of empirical evidence on the effects of tackling competition barriers in digital platforms (see Section II.C).

Platforms and policy makers should obtain more information about what digital platform workers value and tailor regulatory and protective measures accordingly. Digital platform workers have a variety of preferences regarding which social benefits they would prioritize receiving. However, more efforts are needed to collect, expand, and incorporate this information into decision-making, particularly in LMIC settings (see Section III).





I. Introduction

A. Background: The rationale for protecting digital platform workers

Digital platform work is defined as task- or gig-based work that takes place through a digitally mediated marketplace that “connects ‘workers’ (providing goods or services) with ‘customers’ (who can be businesses or individuals)” (Datta et al. 2023; Stoterau 2024). Digital platform work includes location-based work through applications such as Uber and Lyft and web-based work on websites such as Amazon Mechanical Turk (MTurk) and Upwork. These different types of platforms vary widely in terms of their characteristics, but they all involve a digitally mediated relationship between a worker and a client (organization, firm, or individual) in exchange for ‘gig-’ or task-based services (Woodcock and Graham 2020). There is also wide heterogeneity in terms of the tasks that workers can engage in across web- and location-based work as well as in the skills required to complete those tasks (Stoterau 2024). This brief will indicate when certain studies and findings refer to web-based or platform-based work.

Work on digital platforms constitutes “a growing and non-negligible part of the labor market,” with web-based digital platform work alone encompassing 4.4 to 12.5 percent of the global labor force (either as full- or part-time workers) (Datta et al. 2023). The global employment share of digital platform work is likely greater, as this estimate does not include workers active in location-based services such as ride-hailing and delivery platforms.

The growing availability of digital platform work could bring about promising benefits. Digital platforms could benefit workers by giving them more choice, flexibility, and information about available jobs. In developing contexts, where digital work platforms are becoming increasingly popular, they could bring new opportunities for income generation in a way that is more observable by policy makers than non-digital informal labor (Datta et al. 2023). Such opportunities are particularly valuable when it is difficult for individuals to find 'traditional' work in local labor markets, due to either a shortage of jobs or factors such as discrimination (Graham et al. 2017). These platforms could also benefit micro, small, and medium enterprises by widening the talent pool they have access to (Datta et al. 2023).

Yet evidence suggests that digital platform work has several features that place workers at a disadvantage in relation to their platform-enabled employers. For example, Dube et al. (2020), through descriptive work and experimental estimates, find a high degree of employer market power (that is, monopsony) in the web-based work platform MTurk, causing workers to be paid less than they should be paid based on their productivity. Online platform workers might also not have as much flexibility in the organization of their work time and place, as platforms often impose tight deadlines (Yin, Suri, and Gray 2018) or assign tasks in a rigid manner, including by giving tasks during irregular times of the day (for example, nighttime tasks for digital workers serving clients in different time zones) (Wood, Lehdonvirta, and Graham 2018).

Workers might also be exposed to mistreatment or lack of pay by digital firms and clients. Almost nine out of ten workers in an International Labour Organisation (ILO) survey have had work rejected or have had payment refused (Berg et al. 2018). Digital work platforms may not reward workers based in low- and medium-income countries (LMICs) as much as is warranted based on their skills and experience level (Beerepoot and Lambregts 2014). In addition, workers may not always be able to avoid 'bad' online jobs or firms as they often do not have good information about the quality of tasks and the clients who assign them, even though clients are often able to pick and choose workers based on public reviews and ratings (Holtz, Scult, and Suri 2022; Kingsley et al. 2015). Platform workers based in LMICs might be exposed to additional vulnerabilities, as the best

tasks are often not made available to them on web-based platforms (Berg et al. 2018), or at times, they experience outright discrimination and/or lower earnings due to their country of origin (Graham, Hjorth, and Lehdonvirta 2017; Lehdonvirta et al. 2021 in Haidar and Keune 2021).

Social insurance coverage is low among digital platform workers, in part due to the legal form in which these jobs are classified (Datta et al. 2023). ILO surveys found that only "about three out of ten surveyed workers on crowdwork platforms are covered by some form of social insurance" (Berg et al. 2018 in Behrendt, Quynh, and Rani 2019), and "women have less access to social insurance compared to men." Digital platform workers, in turn, may value the benefits of social insurance (Ghorpade, Rahman, and Jasmin 2023; Gruber 2022), but the cost they are willing to pay for social insurance is less clear. While digital platforms could voluntarily bear the costs of providing some form of social protection coverage to workers, this is rarely done on a voluntary basis. Instead, most platforms have so far avoided considering their workers as dependent employees, and their legal status is subject to significant debate and varies according to the nature of tasks performed.

This brief is developed as part of a series and provides an overview of the empirical evidence on the impacts of regulatory and worker protection interventions related to digital work platforms. The theoretical and economic rationales for protecting workers against the market failures that surround digital platform work are discussed in Stoterau (2024). Another brief describes the experiences in various countries in adopting labor regulations or legal classifications from the legal standpoint (Hatayama and Swistak 2024). We bring complementary evidence and guidance to policy makers by reviewing the empirical evidence on the effects of introducing regulations.

It reviews 59 research papers, including 18 experiments, impact evaluations, or theoretical models estimated using data—out of which 14 include workers based in low- or middle-income contexts. This review searched for experimental and quasi-experimental studies related to digital work platforms through keyword searches in Google Scholar and EconLit, by reviewing citations of papers found, and through a review of recently



published (2022–2023) papers in economics journals and conference schedules. The search included keywords for experimental and quasi-experimental methodologies as well as keywords related to the topics and subtopics of this brief. In turn, the topics and overarching framework of the brief were defined in consultation with World Bank staff and expanded and modified based on the availability of the evidence. Nonexperimental (that is, qualitative, descriptive, theoretical, or simulation based) work was also included in sections where the experimental and quasi-experimental work was scarce or to provide rationale and motivation for open questions for future research. The end result aimed to be an exhaustive list of empirical studies about regulations and worker protection interventions—that either have already been enacted or could potentially be enacted—in the digital workspace. A full list and description of the 48 research papers is included in the appendix.

B. Mapping the evidence: A framework for potential regulatory and worker protection interventions

What forms of regulatory and worker protection interventions are possible in the digital workspace? Traditional labor protections tend to be concentrated in the ‘**labor market regulation**’ (LMR) policy space. These policies grant workers with rights—such as a minimum wage or standards on working hours, dismissal procedures, and contracting—to protect against power asymmetries.

However, the relationship between workers and firms, including on digital platforms, is also affected by firms’ viability and their business decisions. Therefore, **PMRs**—including competition policies, openness to trade and foreign investment, mandates, and exemptions based on firm size, price controls, preferential treatment in public procurement, and access to finance—are also interventions that can directly affect firms’ treatment of workers and, as a result, job outcomes (Alzate et al. 2024).

In addition, outside of either the labor market or product market regulatory space, digital workers face a precarious lack of **social insurance and protection**. Interventions in this third ‘social protection and insurance’ space might still benefit digital workers, independent of changes to official or government regulation about labor and product markets.

Most studies considered in this overview are concentrated in the LMR space. However, when considering potential regulatory and worker protection interventions for digital workers, policy makers must not focus solely on LMR, but they should also consider PMR and social protection and insurance.

Indeed, overlap exists among these three spaces. One regulation might address issues that exist in both LMR and PMR spaces, for instance. This overview maps the studies found across **four main issue areas** that cut across LMR, PMR, and social insurance and protection. These four issue areas reflect the key sources of vulnerability and market failures that surround digital workers: **(i) market power asymmetries, (ii) information asymmetries, (iii) competition barriers, and (iv) an under-coverage of social insurance.**

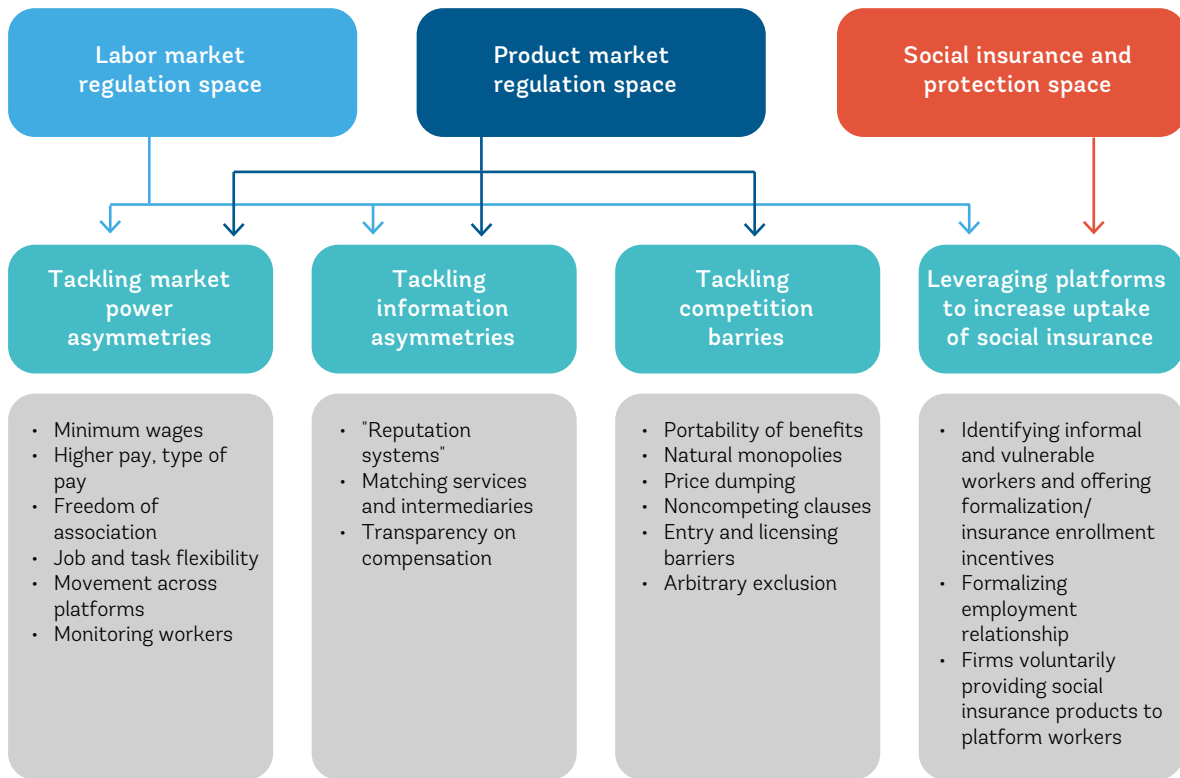
Most of the impact evaluation evidence included in this review deals with interventions concentrated in the first two areas (market power and information asymmetries). The above framework is not necessarily a comprehensive map of all the possible intervention types and vulnerabilities that affect digital platform workers. Yet it serves as a starting point to chart out the available evidence as of the time of writing.

In addition, the ‘right’ regulation or intervention type might also differ based on the type of digital platform work: location based versus web based. These have distinctive features that could translate to different types of worker vulnerabilities: health and safety hazards might differ between an individual working as an Uber driver and an individual completing tasks on MTurk, for example.

The ‘right’ intervention will also depend on the specific features of the local labor market(s) surrounding digital platform work. The final section of this brief includes a discussion of different contextual features specific to low- and middle-income contexts that could affect the generalizability of the findings from the existing evidence base.

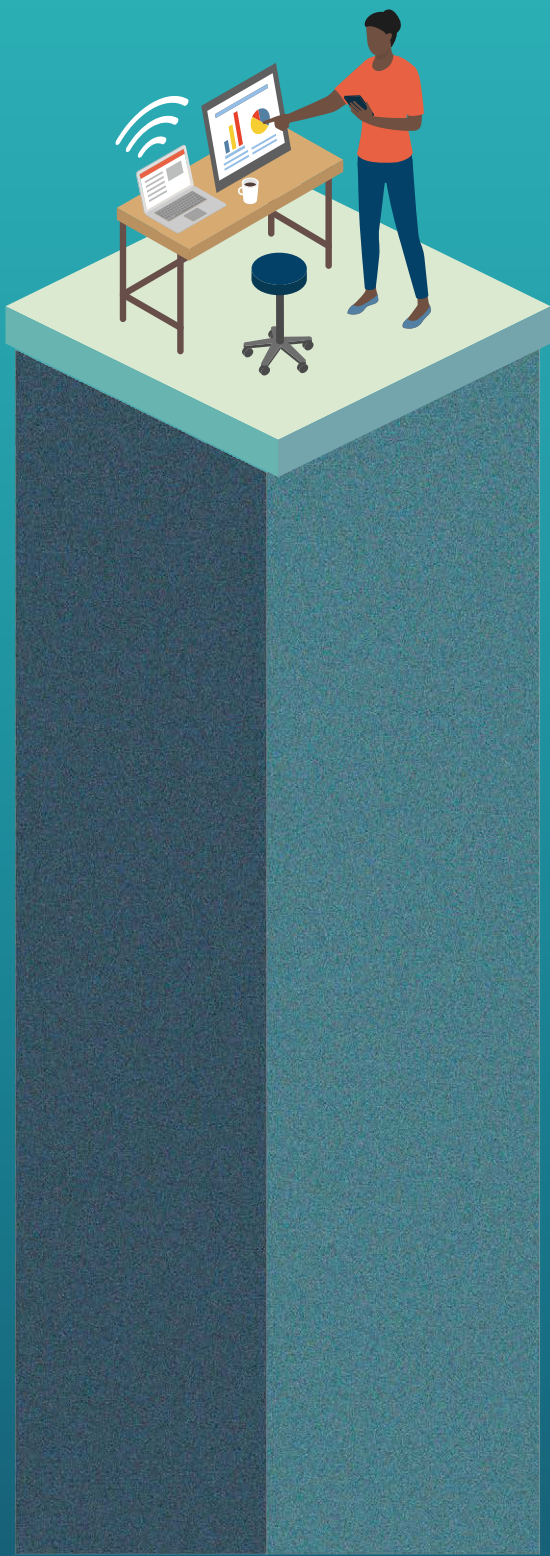


Figure 1: A framework for potential regulatory and worker protection interventions for digital platform workers



Source: World Bank.





II. Interventions and findings: What does the evidence say?

A. Tackling market power asymmetries

The monopsony power of digital work platforms might translate into situations where employers have outsized influence on working conditions. In theory, this can cause workers to be underpaid, restricted in their flexibility, and unduly monitored. Possible regulatory responses can range from the introduction of a minimum wage to interventions that strengthen workers' bargaining power.

Below are findings from 14 studies—7 of which cover workers from LMICs and 8 of which are experimental or impact evaluations—that assess the effectiveness of interventions related to these market power asymmetries.

Introducing a minimum compensation or wage

Findings from two experimental studies, one quasi-experimental study, and two theoretical model studies of minimum wages or earnings schemes in web-based and location-based platforms suggest these can have mixed effects in high-income country (HIC) and LMIC settings. Wages of hired workers may increase, but overall impacts on earnings are limited because the wage floor may lead to an oversupply of workers at the new wage level (Asadpour et al. 2022; Horton 2018; Nakamura and Siregar 2022; Stanton and Thomas 2021; Van Inwegen et al. 2022).

However, there is room for innovation by digital platforms to address the issues of worker oversupply that might emerge from a minimum-wage style of policy. One experimental study finds that Lyft's 'Priority Mode' feature for drivers in the United States solved a driver oversupply issue, leading to increased driver earnings on average as well as benefits for riders (Krishnan et al. 2022).

Study details:

- Van Inwegen et al. (2022) found that randomly assigning workers to receive one of three different minimum wage levels in a web-based platform had heterogenous effects while increasing overall wage equality. Treated workers who historically charged below the minimum wage reduced their probability of employment by 14–32 percent, were around 6 percent more likely to exit the platform, and their total earnings did not increase (with earnings for some of these workers decreasing by 8 percent).
- Horton (2018) found that when a web-based platform experimentally introduced an employer-level minimum wage, the wages of hired workers (who worked from the United States, India, the Philippines, and Bangladesh) rose by between 4 and 9 percent per dollar increase in the minimum wage. However, this came at the expense of a reduction in overall hiring (ranging from 2.5 to 10 percent, depending on workers' previous earnings) and hours worked (with reductions as large as 30 percent). The reduction in hours worked is in part explained by how employers began hiring higher-skilled workers after the wage policy.
- Nakamura and Siregar (2022) employed a differences-in-differences method and synthetic control methodology to evaluate the impacts of a federal policy on minimum fares per ride for drivers on ride-sharing apps in Indonesia. They found that, overall, the policy did not increase driver earnings or wages despite increasing trip prices. This was a result of a large number of lower-earning drivers entering the platform, as reflected by a 24 percent increase in excess 'supply hours' (that is, the sum of all idle hours from all drivers). As a result, mandating a minimum fare did not seem to increase overall earnings when these minimum fares did not account for idle time (or driving distance time) that drivers face.
- Stanton and Thomas (2021) used data from transactions from a web-based platform with global workers (that is 89 percent of transactions in the marketplace crossed international borders) to simulate the impacts of introducing a minimum wage. They estimated that workers and employers might both be left worse off as a result of reduced hiring.
- Asadpour et al. (2022) analyzed the effects of New York City and Seattle's minimum earnings regulations for ride-hailing providers using a theoretical model. The regulations require minimum payments to drivers for each ride based on the distance and time traveled. The researchers estimate that this led to an oversupply of drivers—9 percent more drivers entered and used the platform as they were attracted to higher payments, but riders' demand decreased due to higher costs. The oversupply of drivers resulted in many drivers being idle and not finding work while using the app, thereby limiting the regulation's ability to increase earnings. They estimated the maximum feasible gain in net earnings for drivers in this scenario was 3 percent.
- Krishnan et al. (2022) conducted an experiment on Lyft's 'Priority Mode' feature in the United States, which allows drivers to increase their probability of being paired to riders during specific, prioritized hours. They found that this feature can solve the issue of worker oversupply while safeguarding worker flexibility, increasing gains for drivers, riders, and Lyft in the process. Priority Mode "resulted in a generation of system surplus equivalent to" 10 to 13 percent of total driver earnings. In addition, they found a 60 percent positive satisfaction rating among drivers using the feature.

Higher pay or different type of pay

Even when minimum wages do not exist, platforms might decide to raise (or lower) the earnings of all platform workers. Two experimental studies—one with a location-based platform in the United States (Hall John, and Daniel 2023) and one with a global web-based platform (Doerrenberg, Duncan, and Loffler 2023)—suggest that increases in platform workers' task-based compensation might not lead to large or sustained benefits. This may be particularly true when markets re-equilibrate or if workers do not work more in response to a wage increase.

Digital platforms could also transition digital platform workers away from a task-based, performance-pay model—the standard in digital work platforms—



toward a model of fixed pay resembling standard working arrangements. These platforms could also add new forms of ‘bonus’ payments on top of existing payment schemes. However, the empirical evidence on these alternative types of pay schemes remains thin (one study, Hodor [2022], looks at the effect of bonus payments for gig and permanent workers in an online manufacturing firm).

Study details:

- Hall, John, and Daniel (2023) measured how experimental increases in Uber’s base price in the United States—and payments for drivers—led to earnings increases for workers. However, these increases only lasted eight weeks, as the demand for rides adjusted in response to the higher price (a 10 percent increase in a ride’s base fare led to a 2.5 percent reduction in total transportation hours).
- Doerrenberg, Duncan, and Loffler (2023) evaluated an experimental increase and decrease (both by 20 percent) in task-based wages in Amazon MTurk. Higher wages reduced the probability of workers quitting a labor task by 8.5 percent, while lower wages increased this probability by 18.0 percent. These effects translate into labor supply elasticities that are different when increasing versus decreasing wages (0.44 for the wage increase group; 0.89 for the wage decrease group), suggesting that policies that decrease wages might have larger impacts on labor supply than policies that increase them.
- Hodor (2022) estimated the effect of introducing bonus payment on top of regular earnings for gig workers and permanent workers in an online, global manufacturing firm using a theoretical model. They found that the two different types of workers responded differently to incentives. The bonus payments increased productivity among gig workers by 12 to 17 percent but had no statistically significant impacts for permanent workers.

Strengthening standards around job and task flexibility

One study from the United States finds that Uber drivers benefit from the platform’s flexibility,

highlighting the potential benefits of flexible digital work arrangements. However, one experimental study finds that non-location-based platform work (that is, on MTurk) may not always be as flexible as expected. In qualitative work across multiple African countries, Anwar and Graham (2020) find some gig workers highly value autonomy but note that this increased autonomy does not necessarily translate to improved working conditions or livelihoods. In circumstances where workers value flexibility and do not obtain it, increasing flexibility may increase the quality of workers’ output.

Study details:

- Chen et al. (2017), using data on hourly earnings, estimate that Uber drivers in the United States benefit significantly from real-time flexibility. Their theoretical model calculated Uber’s flexible driving arrangement led to labor surplus equal to 40 percent of total expected earnings for drivers, or US\$150 per week on average. For workers to be indifferent between the flexible arrangement and a more restricted one, their wages would need to increase by more than 50 percent.
- Yin, Suri, and Gray (2018) find that MTurk “affords workers far less flexibility than widely believed,” with a large part of the inflexibility coming from employers’ tight deadlines for tasks. They experimentally varied the amount of task flexibility for workers, finding this flexibility led workers to produce a larger amount of work with similar quality. They also find that “workers would give up significant compensation [at least \$0.86 per hour] to control their time” and gain more flexibility.
- Anwar and Graham (2020) conducted a four-year qualitative study with 65 workers in South Africa, Kenya, Nigeria, Ghana, and Uganda to assess how platform-based remote work affected their perceived freedom, flexibility, precarity, and vulnerability.

Free movement across platforms

Survey data about online platform workers suggest that, while many of them work across multiple platforms, there are some restrictions to workers’ mobility. For example, the lack of portability of reviews and ratings systems tends to lock some



workers into a single platform (the role of reputation systems is further discussed in Section B). Further research is warranted to determine the potential benefits and risks of increasing workers' mobility across platforms.

Study details:

- Berg et al. (2018) studied responses to “an ILO survey of working conditions covering 3,500 workers living in 75 countries around the world and working on five English-speaking microtask platforms.” They find that almost half of respondents reported having worked on more than one platform in the month preceding the survey, in part due to an insufficient availability of tasks. The remaining half, however, worked on only one platform, “explaining that this was due to the high start-up and transaction costs of spreading oneself across platforms.”
- ILO (2021) highlighted how workers tend to be locked into a single digital platform, in part due to the “incompatibility of metrics used by the major platforms” such as worker reviews and their work and financial histories.

Freedom of association: workers' organizations and trade unionization

Digital workers might be able to counteract market power asymmetries through collective action and organization. While this review could not find any experimental or impact evaluation evidence on the impact of unionization among digital work employees, there are some case studies exploring how digital worker mobilization has led to gains for workers in the form of stronger social protection coverage.

Study details:

- Behrendt, Quynh, and Rani (2019) provided an overview of how trade unions contributed to facilitating social protection for platform workers, looking at case studies of effective digital worker lobbying in Denmark and Germany.
- Wood, Lehdonvirta, and Graham (2018) used survey data and interviews to highlight the role of internet-based communities in facilitating collective organization among digital freelancers in Southeast Asia and sub-Saharan Africa.

B. Tackling information asymmetries

The power imbalance between employers and workers in digital work platforms is also often reflected in information asymmetries. Platform employers — including clients who assign tasks to platform workers and platform owners—often have more information about workers than workers do about employers, tasks, and compensation. Further, employers can exert their informational advantage to monitor workers. These asymmetries can hinder workers' ability to find digital work that is desirable and a good match with their profile. In turn, this creates opportunities for third-party firms to provide matching and intermediary services that fill in the informational gap.

Regulation could play a role in correcting these asymmetries. Below are findings from 12 studies, including four experimental studies, related to information transparency, reputation systems, monitoring, and matching services in global web-based platforms that could inform the design of potential future regulations.

Improving transparency on work compensation and quality

Increasing transparency in compensation for tasks might lead to better matches with platform workers, based on one experimental study (Horton, Johari, and Kircher 2021).

Study details:

- Horton, Johari, and Kircher (2021) revealed a signal about employers' willingness to pay for more experienced workers to a randomly assigned set of jobseekers within an online gig platform for tasks that could be completed remotely. In response, jobseekers targeted their applications to employers that matched their experience level and tailored their earnings bids, leading to an overall increase in hours worked of 4.6 percent.

Regulating 'reputation systems'

'Reputation systems' refers to the existence and use of worker and employer reviews and information about platform work experience. Experimental evidence from a web-based platform shows workers



place high importance on receiving positive reviews (Holtz et al 2022). In addition, experimental evidence suggests that reviews can improve workers' likelihood of future employment and wages in web-based platforms (Pallais 2014). The effects of reviews on workers may be transmitted (and compounded) by how a digital platform's algorithm works. As Wood et al. (2019) point out in qualitative work, workers with the best reviews in digital platforms tend to receive more work due to the platform's algorithmic ranking of workers within search results.

Nonexperimental evidence suggests that providing workers with a skill certificate can reduce employer uncertainty and lead to higher earnings for workers (Kassi and Lehdonvitra 2019). Similarly, standardized and verified work history information appears to be particularly beneficial for workers based in lower-income contexts (Argawal, Lacetera, and Lyons 2016; Lehdonvitra et al. 2018). However, worker reviews might also reproduce existing inequalities among jobseekers (Lukac and Grow 2021).

Research also underlines the importance of allowing workers to assess the reputation of employers—an area where little oversight currently exists (Benson, Sojourner, and Umyarov 2018). Future regulation could consider strengthening workers' access to information about employers' reputation.

Study details:

- Holtz, Scult, and Suri (2022) used a survey experiment to measure the value that workers assigned to positive feedback on Upwork (including workers based in HICs and LMICs), estimating that the median freelancer valued a single positive review at around US\$50.
- Pallais (2014) experimentally hired and gave evaluations to workers in oDesk (including HIC as well as LMIC-based workers). They found providing evaluations almost tripled the probability of inexperienced workers finding employment from 12 percent to 30 percent as well as almost tripled their average earnings from US\$10 to US\$27.
- Kassi and Lehdonvitra (2019), through an event study, analyzed the effects of providing workers with a skill certificate in a web-based digital platform, finding that an additional skills certificate led to a 2.1 percent increase in earnings (that is an average gain of US\$1.88). The returns to signaling were up to 1.5 times larger for workers with zero work history compared to the average worker.
- Argawal, Lacetera, and Lyons (2016) analyzed applications by workers in low-, middle-, and high-income countries for jobs posted on oDesk. They found that lower-income applicants were “only about 60 percent as likely to be hired” by contractors from high-income contexts relative to similar applicants from HICs. However, workers who signaled more platform experience (that is, had a higher number of prior jobs on the platform than the median worker) were more likely to be hired and to earn more, and this was especially true for workers from lower-income countries. These findings suggest that standardized and verified information about workers can benefit LMIC-based gig jobseekers and address disparities in online opportunities.
- Lehdonvitra et al. (2018) analyzed data from a large, global web-based platform and found that verifiable information which signals about workers' work experience—that is the number of projects completed by each worker on the platform—led to an increase in task compensation. Per standard deviation unit increase in work experience, workers' compensation per task increased by 6 to 13 percent, with larger gains for LMIC-based workers (for example, Filipino workers saw a 16 percent increase in pay for writing tasks, compared to 7 percent in the United States).
- Lukac and Grow (2021) estimated the effect that worker reputation plays in job outcomes through a simulation, finding that reputation systems “can potentially reproduce inequalities present in offline labor markets and produce unfair outcomes that disproportionately favor already successful applicants.”
- Wood-Doughty (2018), using a theoretical model, compared the effect of information from reviews to other information about workers (such as standardized exam scores and country) in the online labor market oDesk. They found that, somewhat contrary to the above findings, “reviews have a relatively small effect on both



wages and attrition,” with a 1 standard deviation increase in a workers’ combined review score reducing their probability of exit by only 1 percent. However, reviews did appear to reward good workers and punish bad ones.

- Benson, Sojourner, and Umyarov (2018) studied the reputation of employers in MTurk. They found that there is very little oversight for employers—no authority disciplines employers that refuse payments and workers have no contractual recourse or appeal process. In an experiment, they found that posting employer reviews on a third-party website had an impact on workers’ choices. Employers with good reputations “recruited workers about 50 percent more quickly than otherwise-identical employers with no ratings,” and “100 percent more quickly than those with very bad reputations.”

Monitoring workers

Monitoring online platform workers might raise privacy concerns among workers and reduce workers’ willingness to work, according to results from one experimental study on MTurk.

Study details:

- Liang et al. (2022) investigated workers’ responses to monitoring in MTurk along three dimensions: monitoring “intensity (how much information is collected), transparency (whether the monitoring policy is disclosed to workers), and control (whether workers can remove sensitive information).” They estimate that workers are apprehensive about monitoring and, on average, the compensations required for workers to accept monitoring are between US\$1.8 and US\$1.6 per hour (roughly 37.5 to 28.6 percent of average hourly wages).

The role of matching services and intermediaries

Facilitating services that match digital workers with employers—either in the form of algorithmically generated recommendations or intermediary companies—may be a promising way to reduce information asymmetries. Reducing these asymmetries, in turn, might increase employment and wages, based on findings from one experiment (Horton 2016) and one descriptive study (Stanton

and Thomas 2015) in web-based platforms. However, safeguards should be put in place to ensure that these intermediaries do not themselves exploit workers or capture their earnings (Graham, Hjorth, and Lehdonvirta 2017), as part of the original appeal of digital platforms may be that workers do not need to pay for intermediaries to find employment opportunities.

Study details:

- Graham, Hjorth, and Lehdonvirta (2017) find that even though digital work platforms appear to facilitate a more direct connection between workers and employers, intermediaries are still common. They find qualitative evidence to suggest these intermediaries can at times take advantage of workers by engaging in low-pay and strict working conditions.
- Horton (2016) finds that “algorithmically recommending workers to employers for the purpose of recruiting can substantially increase hiring: in an experiment conducted in an online labor market, employers with technical job vacancies that received recruiting recommendations had a 20 percent higher fill rate compared to the control.” In addition, they find “no evidence that the treatment crowded-out hiring of non-recommended candidates.”
- Stanton and Thomas (2015) study the role of intermediaries in the platform oDesk. Despite the idea that online platforms allow workers and employers to directly engage without the need for an intermediary, they found that intermediaries play an important role in these markets. Around 30 percent of non-US oDesk workers are affiliated with an intermediary. In addition, they found “workers affiliated with an agency have substantially higher job-finding probabilities and wages at the beginning of their careers compared to similar workers without an agency affiliation.”

C. Tackling competition barriers

The relationship between digital workers and digital platforms is also affected by platforms’ competitive environment. Platforms with large market power, for example, will likely treat digital workers differently—



imposing their monopsonistic power—than platforms operating under a more competitive environment. The firms that own platforms can also subject workers to certain constraints, such as barring them from working for competitors, to preserve their market power.

As a result, tackling competition barriers—for instance, through PMR—might lead to better outcomes for digital platform workers. However, which exact competition barriers to tackle and how to address them are not straightforward. Overall, there is lack of empirical evidence on whether lowering competition barriers can improve digital platform workers' outcomes.

Below is an overview of some competition barriers that could be potentially subject to regulations and interventions in the digital platform space. The evidence in this section is more descriptive than it is experimental or quasi-experimental: only two quasi-experimental studies, both from the United States, are included. The section emphasizes knowledge gaps and key open questions for future research.

Natural monopolies

Whether to encourage competition in digital platforms through regulatory or other interventions depends on whether these platforms constitute a natural monopoly—such that a “single firm will serve a market more efficiently than competing firms” (Ducci 2020). In the presence of a natural monopoly, the right regulatory approach might focus on preventing the abuse of power while limiting (rather than promoting) competition. However, there is lack of empirical evidence on whether digital platforms constitute natural monopolies, and on whether this differs by platform type and location.

Study details:

- Ducci (2020), in a theoretical overview, describes the ambiguity behind classifying ride-hailing services as natural monopolies. In some cases, they could potentially be seen as natural monopolies due to substantial “demand-side economies of scale through the creation of large networks.” However, in other cases, competition might be desirable and possible based on the “size of demand, density of population, and availability of alternative methods of transportation” within a given geographical market.

Price dumping

Online platforms might be able to engage in ‘price dumping’—the offering of their products and services at prices lower than their cost, sacrificing revenue for the sake of gaining market share. For example, a ride-sharing platform might be able to stifle the competition by offering ‘unnaturally’ low prices for rides. Whether these practices indeed occur among digital work platforms, whether this varies for on-location versus web-based platforms, and whether these practices are subject to existing regulation about fair competition practices are still debated questions (for example, Agrawal 2021; Bamberger and Lobel 2017; Bostoen 2019).

In addition, the potential effects of ‘price dumping’ on digital workers' welfare are also understudied. If digital platforms that engage in price dumping also slash workers' salaries in the future to make up for losses in revenue, for example, workers' earnings might be affected.

There is also evidence of digital platform workers engaging in ‘wage dumping’ of their own: accepting very low wages for the sake of out-competing other workers (Aleksynska, Bastrakova, and Kharchenko 2019). Whether wage dumping is connected to price dumping and whether regulatory interventions can effectively address their negative effects are also questions where further empirical evidence is warranted.

Noncompeting clauses

Digital platforms may restrict competition by requiring workers to agree to noncompeting clauses—barring them from working for competitors' platforms. While this might appear to be at odds with digital platforms' offer of flexibility, there are some cases of platforms imposing these kinds of restraints on workers (McDonald, Williams, and Mayes 2020). Evidence is needed on the impacts of such clauses, and if they are indeed enforceable, as well as on potential mitigating strategies through regulation.

Entry and licensing barriers

Occupational licenses—which impose specific requirements on workers who wish to perform certain kinds of services—aim to guarantee quality standards and protect consumers. Evidence from two quasi-experimental studies of occupational licensing



within on-location, home services digital platforms in the United States suggests that it might reduce labor supply while having muted effects on customer satisfaction.

Study details:

- Farronato et al. (2020) studied the effects of occupational licensing laws within a large online platform for residential home services. They found that more stringent licensing regulations were “associated with less competition and higher prices, but not with any improvement in customer satisfaction as measured by review ratings or the propensity to use the platform again.”
- Blair and Fisher (2022) exploited two natural experiments (state variation in licensing laws and a change in licensing laws within a state) to study the effects of occupational licensing in Angi’s HomeAdvisor—a leading platform within the US home services market. They found that licensing reduced successful matches between customers and workers for tasks by 25 percent. This was driven by a reduction in the labor supply of workers. The researchers found the elasticity of workers accepting a task with respect to licensing was -0.11 .

Arbitrary exclusion of competitors

The concentrated market power held by some digital platforms can, in theory, result not just in discrimination against workers but also in the arbitrary exclusion of competitors. For example, Stylianou (2018) notes examples of large tech firms (such as AT&T and Apple) excluding competitors through several methods. These include vertical integration (that is, harming competitors by blocking access to other markets in the supply chain) and blocking access to a competitor’s service (for example, blocking access to an app on an operating system or making an app incompatible).

More evidence is needed on whether the digital platforms discussed in this brief engage in arbitrary exclusion against competitors, whether this varies by location-based versus web-based platforms, and whether regulation that addresses these practices results in a more competitive environment that improves workers’ outcomes.

Portability of benefits

Digital workers might value portable benefits, that is, social benefits, such as health insurance and pension plans, that they can keep with them as they move from one digital platform to another. However, digital platforms might have an incentive to resist portable benefits. This is because digital platforms might be able to extend exclusive, non-portable benefits to keep workers from ‘moving’ and working for competitor platforms.

Whether digital workers stand to benefit from portable benefits and whether regulation can play a role in safeguarding this portability are questions lacking in empirical evidence.

D. Leveraging platforms to increase uptake of social insurance

There is evidence to suggest that individuals experiencing unemployment or unexpected shocks can turn to online platform work as a ‘buffer’ to protect against income losses (Jackson 2022, Jones and Manrique 2022; Kass 2022; Kecht and Marcolin 2022).

However, online platform work does not substitute the need for social protection and insurance. As described in Section I.A, social protection and insurance coverage is low among digital platform workers. Many of these workers might be able to smooth their consumption owing to digital platforms, but they might still require social benefits and protections against shocks, such as health insurance and retirement plans.

Policy makers might be able to leverage digital platforms to increase uptake of social insurance in several ways. First, through regulation, policy makers can require platforms to extend insurance to workers, that is, by mandating a formal employee relationship, in which the employee gets access to contributory social protection coverage. Platforms might also choose to extend social benefits to workers voluntarily, without the need for regulation. In addition, policy makers can leverage platforms’ ‘data’ about workers to identify vulnerable or informal workers and accordingly target efforts to enroll these workers in social insurance schemes.



This section summarizes findings from six studies—including one experimental study and most of them including workers from LMICs—related to these potential interventions.

Formalizing an employment relationship

Mandating digital work platforms to pay taxes on their employers—a way of formalizing an employment relationship that could include contributory social insurance coverage—might result in lower hiring, according to estimates from one simulation study. Further empirical evidence is needed on the effects of requiring platforms to register their workers as employees (or, at least, to establish a clear legal definition that constitutes some type of employment and guarantees a certain set of benefits) and extend social benefits accordingly.

Study details:

- Stanton and Thomas (2021) used data from transactions from a web-based platform with global workers (that is, 89 percent of transactions in the marketplace crossed international borders) to simulate the impacts of introducing a 10 percent tax paid by buyers when hiring jobseekers, which is meant to reflect the costs of paying an income tax on a worker. Their simulation found that this could lower hiring by around 26 percent, in large part due to a decline in the number of jobs posted on the platform by 34 percent.

Firms voluntarily providing social insurance to platform workers

The firms that own digital work platforms have, in some instances, voluntarily provided social insurance and benefits for online gig workers in high-, middle-, and low-income countries. However, empirical evidence on the impact of these firm-led initiatives remains thin.

Study details:

- ILO (2021) provides an overview of how location-based online gig platforms have provided medical coverage benefits to their workers, including the introduction of a medical insurance plan by the ride-share scheme DiDi Chuxing in China

and Deliveroo, Glovo, Ola, Swiggy, and Uber's provision of in-ride insurance of varying degrees. In Deliveroo's case, for instance, insurance covers riders "against injuries and third-party liability while they are online and for one hour after they have gone offline." Deliveroo extended further benefits to workers in France in the form of paid sick leave in response to a series of protests over pay dispute (Boucherak 2019).

- Rhani and Dhir (2020) provide a descriptive overview of the impact of COVID-19 on online gig platforms, highlighting how several platforms set up emergency COVID-19 funds and "other forms of sick pay to assist workers" during the pandemic.

Using platforms to incentivize workers to enroll in social protection and insurance

Policy makers could potentially leverage digital platforms to make it simpler for workers to enroll in, and contribute to, social insurance products. These products can range from social security to unemployment insurance (UI) and investing in voluntary savings plans. The empirical evidence on these incentives remains thin: this review found only one related experimental study (Guerrero and Silva-Porto 2020) and one quasi-experimental study (Garin et al. 2023).

Study details:

- Behrendt, Quynh, and Rani (2019) gave an overview of how Uber and other ride-sharing platforms have facilitated access to official social protection coverage in Uruguay, Malaysia, Indonesia, Estonia, Lithuania, and Sweden, for example, by permitting Uber drivers to automatically deduct social security contributions and therefore formally contribute to the social security system in Uruguay or by simplifying the tax reporting of income earned from Uber in Sweden. This underlines the potential of online gig platforms to simplify the process for workers to enroll in and pay for social insurance.
- Guerrero and Silva-Porto (2020) sent out invitations to 5,022 Cabify drivers in Peru to join one of two voluntary savings plans: an emergency savings plan "in which drivers could save 2% of



their weekly earnings to cover emergencies” and a more flexible plan “that offered the driver the option to save 3% of their weekly earnings each time they exceed a threshold, which the driver themselves determined.” They found that 18 percent of drivers signed up to one of the two schemes after 8 weeks, with the emergency savings plan having a higher take-up (20 percent versus 16 percent). They also found that “after four months, the average savings generated by drivers on the platform was USD 29.”

- Garin et al. (2023) examined the impact of expanding UI to self-employed workers, including digital platform workers, in the United States as a part of the Pandemic Unemployment Assistance program during COVID-19. Employing a multivariable and instrumental variable regression analysis, they found the expansion of UI potentially led to a decrease in work: for each dollar increase in UI, reported self-employed income receipts fell by US\$0.5–0.6 for platform workers.

E. Applying the evidence to low- and middle-income contexts: Key considerations

While the overall empirical evidence on regulations and worker protection interventions in digital work platforms is scarce, this is particularly true for LMIC contexts. Indeed, the above overview only found 18 studies that included workers based in low- or middle-income contexts.

Below are four main features and considerations about labor markets in LMICs that suggest interventions might work differently than in high-income settings. Of course, not all LMIC contexts are the same, and digital workers’ experiences might vary widely from one LMIC to the next. These four considerations are instead grounded on a few key similarities across most LMIC contexts: the challenges of enforceability, a relative lack of evidence about digital worker and consumer preferences and responses, and a large informal sector:

- **What regulatory instruments are feasible and enforceable in LMIC contexts?** The effectiveness of any regulation will depend on the ability not only to craft and legislate the regulation but also to ensure its de facto implementation. Yet the enforceability of regulations specific to digital work platforms in LMICs is not guaranteed. Indeed, drivers of location-based ride-hailing platforms often circumvent regulatory requirements, such as having a taxi license, in some LMICs.
- **What do LMIC-based workers want?** Digital platform workers in low- and middle-income contexts likely have different levels of social insurance and protection coverage than digital platform workers in high-income contexts, especially if they are not employed elsewhere in the formal sector. Yet there is lack of experimental evidence on the social benefit preferences of LMIC-based digital workers, with only one (survey experiment) study from Malaysia found (Ghorpade, Rahman, and Jasmin 2023).¹ In that context, web-based and location-based digital platform workers expressed a high level of willingness to pay for UI, retirement savings, and accidental and injury insurance. However, the exact type of insurance workers preferred varied depending on whether they already had access to some type of social protection. A one-size-fits all policy is unlikely to work in providing social insurance coverage to digital platform workers in LMICs, given the large amount of heterogeneous preferences these workers have.
- Similarly, there is lack of evidence on the preferences of LMIC-based platform workers regarding earnings regulations such as a digital platform minimum wage. Heeks (2017) summarizes findings from studies that suggest that LMIC-based platform workers can earn “typically 10–20 times the local minimum wage.” It might be the case that LMIC-based workers prefer regulation that focuses on improving other elements of platform work besides minimum earnings schemes, especially if imposing minimum wages results in some workers being

¹ Some evidence on eliciting digital workers’ preferences for social benefit coverage also exists from high-income contexts. Gruber (2022) finds that US Uber drivers value retirement savings, health savings, and sick leave benefits almost as much as equivalent cash payments.



made worse off. However, evidence on these preferences remains thin.

- **How do LMIC-based workers respond?** Similarly, workers in LMICs have different employment options outside of the digital work sector than their HIC counterparts, given the large size of the informal economy. If changes in regulation lead to changes in the costs and benefits of engaging in digital platform work (for example, if digital platform work becomes less flexible or more expensive as a result of regulation), LMIC-based workers might respond differently, given they might be able to find alternative gig work in the informal sector.
- **How do consumers respond to digital work regulations in LMICs?** Customers in LMIC contexts might also respond differently to changes in online platforms, potentially leading to impacts on earnings and opportunities for workers. For example, if the introduction of a minimum wage increases the cost per ride of a ride-sharing app, will consumers in an LMIC context decrease their demand by more or less than their counterparts in an HIC context, and how will this affect driver earnings?

In addition to these four considerations, policy makers, particularly in LMICs as well as in HICs, should keep in mind that the 'right' regulatory response may also vary based on the level of 'maturity' of the digital platform economy in their context. In their initial phase, digital platforms may dedicate large amounts of resources into marketing and subsidizing their own services (for example, Uber or Lyft subsidizing trips, even if doing so generates a loss for the company). In these early stages, the relative attractiveness of digital platforms due to their growing size may tempt policy makers to avoid imposing stringent regulations and instead see them as an alternate solution to high unemployment or informality rates.

As these platforms mature, however, potential issues around profitability and/or worker well-being may begin to emerge. At this point, policy makers might be more tempted to regulate digital platforms. Yet regulating them at an advanced stage may be difficult if they are already powerful actors in the local economy.²

The empirical evidence does not (yet) offer clear guidance on which is the best timing for regulating digital platforms. Policy makers who wish to adopt recommendations from the available evidence should keep in mind when other regulatory reforms took place, the current stage of 'maturity' of the digital platform market in their own economy, and whether these two answers align with one another to determine the generalizability of other findings.



² Thank you to Ilsa Medina for this point.



Appendix: Study tracker: Impact evaluations, experiments, and theoretical models estimated using data

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/ job quality/ formality
Asadpour et al. 2022	United States	Ride-hailing platforms (for example Uber, Lyft)	Theoretical model estimated using data	Introducing a minimum compensation or wage	n.a.	Analyzing the effects of New York City and Seattle's minimum earnings regulations for ride-hailing providers. The regulations require minimum payments to drivers for each ride based on the distance and time traveled	The researchers estimate this led to an oversupply of drivers: more drivers enter and use the platform as they are attracted to higher payments, but riders' demand decreases due to higher costs. The oversupply of drivers results in many drivers being idle and not finding work while using the app, therefore limiting the regulation's ability to increase earnings.	Estimate labor supply "increases by 9% in response to higher earnings."	The oversupply of workers in response to the policy may limit their earnings: estimate "the maximum feasible gain in net earnings is about 3%."	n.a.
Ghorpade, Rahman, and Jasmin 2023	Malaysia	Not specified	Survey experiment	n.a.	1,038 gig workers, including digital freelancers and location-based workers	Vignette-based experiment to ascertain gig workers' willingness to pay for social insurance coverage	"The analysis finds overall a large unmet need for social insurance among gig workers, as well as a high level of willingness to pay for (especially) unemployment insurance, retirement savings, and accidental and injury insurance."	n.a.	n.a.	n.a.

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupational quality/formality
Benson, Sojourner, and Umyarov 2018	Multiple (HIC as well as LMIC)	Amazon MTurk	Randomized Controlled Trial (RCT)	Regulating "reputation systems"	36 employers on MTurk	The effect of providing reviews about digital work platform employers	Posting employer reviews on a third-party website has an impact on workers' choices: employers with good reputations "recruited workers about 50 percent more quickly than our otherwise-identical employers with no ratings," and "100 percent more quickly than those with very bad reputations."	"Employers with good reputations recruit workers about 50 percent more quickly than our otherwise-identical employers with no ratings and 100 percent more quickly than those with very bad reputations."	"Estimate that posted wages would need to be almost 200 percent greater for bad-reputation employers and 100 percent greater for no-reputation employers to attract workers at the same rate as good-reputation employers."	n.a.
Blair and Fisher 2022	United States	Angi's HomeAdvisor: leading platform in home services market	Natural experiment	Entry and licensing barriers	A large online marketplace in the US\$500 billion home services industry where we observe task-level variation in occupational licensing for 21 million transactions.	What is the impact of occupational licensing on the likelihood that a customer engaged in search on a digital platform finds at least one worker who is legally permitted to do the work?	Licensing reduces the success rate of customer search on the platform by 25 percent. The reduction in the success rate of customer search in the presence of licensing is fully explained by a reduction in the labor supply of workers on the platform and not by an increase in customer search.	Elasticity of workers accepting a task with respect to licensing is -0.11 .	n.a.	n.a.

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/job quality/formality
Chen et al. 2017	United States	Uber	Theoretical model estimated using data	Strengthening standards around job and task flexibility	260,605 active Uber drivers	The value of work flexibility provided by Uber	Using data on hourly earnings, estimate that Uber drivers in the United States benefit significantly from real-time flexibility, earning more than twice the surplus they would in less flexible arrangements.	"Estimate large labor supply elasticities exceeding 1.5 for most drivers and on the aggregate level."	"We compute driver labor surplus—accounting for 40% of total expected earnings, or \$150 per week on average—under the existing Uber arrangement."	Estimate that wages would need to increase by more than 50% to "make drivers indifferent between the highly adaptable Uber arrangement and more restricted arrangements."
Doerrenberg, Duncan, and Löffler 2023	Not specified	MTurk	RCT	Higher pay or different type of pay	1,168 MTurk workers with a US IP address	Experimental increase/decrease in task-based wages (We announce a piece rate of \$0.15 per transcribed picture and workers complete a batch of six transcriptions for the announced wage. Workers are randomly assigned to one of three groups: (i) the wage increases by 20%, (ii) the wage decreases by 20%, or (iii) the wage remains constant (control group))	Wage increases have a positive effect on labor supply whereas wage decreases reduce labor supply in our task. Labor supply responses to wage increases and decreases are asymmetric; workers react more strongly to wage decreases than wage increases of equal magnitude (in absolute terms).	Workers in the wage decrease group have a 18%p higher probability to quit the labor task (compared to the control group), while workers in the wage increase group are 8.5%p less likely to quit (relative to the control group). The treatment effects in Panel A translate into labor supply elasticities of 0.44 for the wage increase group, and 0.89 for the wage decrease group.	n.a.	n.a.

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/job quality/formality
Dube et al. 2020	Multiple	MTurk	Descriptive analysis (elasticities) using double machine learning and experimental estimates	n.a.	Mixed (from different studies)	None - descriptive study	Find substantial monopsony power in MTurk, as measured by the elasticity of labor supply facing the requester (employer). They estimate low labor supply elasticities, around 0.1, with little heterogeneity.	Estimate remarkably consistent estimates of the labor supply elasticity facing MTurk requesters.	n.a.	n.a.
Farronato et al. 2020	United States	Large online platform for residential home services	Multivariable regression plus event study	Entry and licensing barriers	Over 1 million requests by consumers in hundreds of distinct service categories throughout the United States for over eight months.	The role of occupational licensing laws on individual choices and market outcomes	The platform-verified licensing status of a professional is unimportant for consumer decisions relative to review ratings and prices. More stringent licensing regulations are associated with less competition and higher prices but not with any improvement in customer satisfaction as measured by review ratings or the propensity to use the platform again.	n.a.	n.a.	More stringent licensing regimes do not improve transaction quality as measured by review ratings or the propensity of consumers to use the platform again. On the cost side, we find that more stringent licensing regimes result in less competition and higher prices.

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/ job quality/ formality
Garin et al. 2023	United States	Platform work observed in tax data (90 percent is transportation-related)	Multivariable regression plus instrumental variables	Using platforms to incentivize workers to enroll in social protection and insurance	IRS filers from Vermont and Massachusetts 2012–2021	Examine the impact of UI expansions to include self-employed workers, in a program known as Pandemic Unemployment Assistance (PUA) during COVID-19.	We present evidence that the availability of new PUA benefits resulted in many individuals who were platform workers in 2019 not reporting any self-employment income in 2020 and 2021. We show that this appears to be a real labor supply response rather than more activity falling below 1099-K reporting gaps.	n.a.	For each dollar increase in UI given by the state, reported receipts fall by between US\$0.5 and US\$0.6, and self-employment profits fall by US\$0.22 for primary platform workers. Total earnings, the sum of profits plus wages, falls only slightly more, around US\$0.24, suggesting that most of the impact comes from reductions in reported profits.	n.a.
Glasner 2023	United States	Uber	Quasi-experimental analysis (differences-in-differences; two-way fixed effects; synthetic control)	Introducing a minimum compensation or wage	"Data from 2000 to 2018 on nonemployer establishments, a category of workers primarily composed of the unincorporated self-employed, which includes independent contractors and participants in the online gig economy"	Local minimum wages outside of the digital work sector	Studied "the effect of minimum wage increases on work that is not covered by minimum wage laws" in the United States, including work as an Uber driver, finding that a "10% increase in the minimum wage resulted in a 2.7% increase in the number of participants in the uncovered labor market."	"When the analysis is restricted exclusively to transportation and warehousing services—the industry that captures the expansion in Uber and Lyft over this period—a 10% increase in the minimum wage results in a 2.7% increase in the number of participants in the uncovered labor market."	"Among transportation and warehousing services, a 10% increase in the minimum wage results in a 3% reduction in average receipts, among counties with low labor market concentration and with Uber active."	"Among transportation and warehousing services, a 10% increase in the minimum wage results in 9% more nonemployer establishments classified as transportation and warehousing services, among counties with low labor market concentration and with Uber active."

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/ job quality/ formality
Gruber 2022	United States	Uber	Survey experiment	n.a.	1,063 Uber drivers (from outside California)	None - descriptive study. Are workers willing to trade off additional income for benefits?	After accounting for the "tax advantage of benefits, workers are roughly indifferent on average between the two [additional income vs. benefits] (...) While there are some trends in valuation, such as higher valuation for pension than for health contributions, the most notable feature of the data is the wide variation across workers in their preferences across benefit types and relative to income. Workers also show a preference for benefits that can help them commit to increase savings in the future."	n.a.	n.a.	n.a.
Guerrero and Silva-Porto 2020	Peru	Cabify	RCT	Using platforms to incentivize workers to enroll in social protection and insurance	5,022 drivers affiliated with the Cabify Peru platform	Invitations to 5,022 Cabify drivers in Peru to join one of two voluntary savings plans: an emergency savings plan "in which drivers could save 2% of their weekly earnings to cover emergencies" and a more flexible plan "that offered the driver the option to save 3% of their weekly earnings each time they exceed a threshold, which the driver themselves determined."	Found that 18 percent of drivers signed up to one of the two schemes after 8 weeks, with the emergency savings plan having a higher take-up (20 percent versus 16 percent). They also found that "after four months, the average savings generated by drivers on the platform was USD 29."	n.a.	n.a.	n.a.

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/ job quality/ formality
Hall, John, and Daniel 2023	United States	Uber	Theoretical model estimated using data	Higher pay or different type of pay	Panel consisting of Uber rides in 36 US cities over 138 weeks, beginning with the week of 2014-06-02 and ending with the week of 2017-01-16	Uber-initiated fare increases	Increases in Uber's base price in the United States—and payments for drivers—led to earnings increases for workers. However, these increases only lasted eight weeks, as the demand for rides adjusted in response to the higher price.	n.a.	"On the driver side, with a higher base fare, the driver's hourly earnings rate rises immediately as drivers make more money per trip. However, the hourly earnings rate begins to decline shortly thereafter. After about 8 weeks, there is no clear difference in the driver's gross average hourly earnings rate compared to before the fare increase."	n.a.
Holtz, Scult, and Suri 2022	Multiple (HIC as well as LMIC)	Upwork	Survey experiment	Regulating "reputation systems"	520 Upwork freelancers	Offering workers the choice "between a 5-star rating with a positive textual review, or a monetary bonus that was randomly chosen from a set of values ranging from \$25 USD to \$175 USD."	The median freelancer valued a single positive review at around US\$50.	n.a.	n.a.	n.a.

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/job quality/ formality
Horton, Johari, and Kircher 2021	Not specified	Not specified	RCT	Improving transparency on work compensation and quality	50,877 employers were allocated to the experiment. These employers collectively posted 220,510 job openings.	Employers allocated to one of two treatment arms: 'explicit' arm, where jobseekers see employers' pay scale and skill preferences, or an 'ambiguous' arm, where jobseekers still see this information but employers do not know whether the signal will be revealed	In terms of match outcomes, the revelation of employer preferences increased total transaction volume on the platform by about 3%. This increase came from an increase in the quality of matches (but not the quantity), leading to larger within-relationship expenditure and hours worked.	Increase in hours worked. This increase in hours worked even occurred among employers selecting 'high' vertical preferences who hired workers at higher wages. As employers decide on hours worked, this is strong evidence of match quality improvements. Pooled across tiers, revelation increased hours worked by 4.6%, with increases of 2.9% in the high tier and 5% in the low tier.	Revelation increased the wage bill by 2.7%.	n.a.
Horton 2018	Multiple (HIC as well as LMIC)	Not specified	RCT	Introducing a minimum compensation or wage:	Around 160,000 job openings	"Minimum hourly wages were randomly imposed on firms posting job openings in an online labor market."	Wages of hired workers (who worked from the United States, India, the Philippines, and Bangladesh) rose at the expense of a reduction in hiring and hours worked. The reduction in hours worked is in part explained by how employers began hiring higher-skilled workers after the wage policy.	A decrease in hiring ranging from 2.5 percent to 10 percent, depending on workers' previous earnings. In addition, "hours-worked fell sharply, with reductions as large as 30% in some sub-populations of job openings expected to pay low wages."	Each US\$1 increase in the minimum wage was associated with an increase in wages ranging from 4% to 9%.	n.a.

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/ job quality/ formality
Horton 2016	Not specified	oDesk	RCT	The role of matching services and intermediaries	6,209 job openings	Algorithmically recommending workers to employers for the purpose of recruiting	Employers with technical job vacancies that received recruiting recommendations had a 20 percent higher fill rate compared to the control." In addition, they find "no evidence that the treatment crowded-out hiring of non-recommended candidates."	Increases in hiring: "employers with technical job vacancies that received recruiting recommendations had a 20% higher fill rate compared to the control."	n.a.	n.a.
Jackson 2022	United States	Various	Quasi-experimental analysis (triple differences-in-differences)	n.a.	"The universe of individual income tax returns filed in the United States from 2005-2017"	Uses "US administrative tax records to measure take-up of gig employment following unemployment spells and to evaluate the effect of working in the gig economy on workers' overall labor supply and earnings trajectory"	Finds "an increase in gig work following an unemployment spell" and that individuals are "correspondingly better able to smooth the resulting drop in income." However, individuals who entered gig work following an unemployment spell were more likely to "stay in these positions and are less likely to return to traditional wage jobs."	"High-gig-propensity" individuals (that is, those who had already been previously employed in gig work) become 10.16 percentage points more likely to enter gig work in the year of UI receipt," although there are decreasing impacts on earnings over the long run	"The 10.16 percentage points increase in gig work corresponds to a roughly US\$588 increase in gig earnings in the year of UI receipt," although there are decreasing impacts on earnings over the long run	Overall record a shift toward gig employment as a result of unemployment

Study reference	Country	Digital platform	Study type	Intervention type	Study sample	What is the regulation or intervention studied?	Main findings	Impact on labor supply (probability of working or hours worked)	Impact on earnings	Impact on occupation/ job quality/ formality
Jones and Manhique 2019	Mozambique	Biscate, a digital platform in Mozambique for contracting manual freelancers such as plumbers, carpenters, and hairdressers	Event study	n.a.	A panel constructed at the province level, yielding 198 distinct units observed over a maximum of 150 weeks	Effect of COVID-19 as an income shock on workers' decisions to engage in digital platform work. "Based on the universe of records from a matching platform for informal sector manual freelancers in Mozambique, we analyze how task supply and demand altered with the onset of COVID-19."	The COVID-19 pandemic "was associated with a net increase in tasks demanded per worker, but no clear change in supply growth (new registrations). These trends are evident across multiple market segments, including female-dominated professions, suggesting digital labour markets can help workers adjust to economic shocks in low-income contexts."	Our most simple specification shows the task agreement rate increased by between approximately 20 and 40 percent in the first year of the pandemic (for example, from around 1.6 tasks per week per 100 workers to around 2.3 tasks).	n.a.	n.a.
Kass 2022	United States	None	Theoretical model estimated using data	n.a.	Respondents of National Longitudinal Survey of Youth 1979 (NLSY79), which is a national panel survey of the cohort of individuals born in the years 1957–1964	Estimating whether the availability of 'contingent' jobs, such as online gig work, provides an alternative to unemployment	Finds "the recent development of apps (such as Upwork) that make contingent work easy to find lowered the optimal UI replacement rate for traditional employees from 48 percent to 41 percent, which shows that contingent work provides valuable insurance to all workers in the economy."	The availability of 'contingent work' lowers unemployment (that is, lowers the optimal UI replacement rate for traditional employees from 48 percent to 41 percent).	n.a.	n.a.

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Kassi and Lehdonvirta 2019	Multiple	"One of the largest online labour platforms"	Event study	Regulating "reputation systems"	422,199 freelancer projects	Giving workers in a web-based digital platform a skill certificate	We show that obtaining skill certificates increases freelancers' earnings. This effect is not driven by increased freelancer productivity but by decreased employer uncertainty. The increase in freelancer earnings is mostly realized through an increase in the value of the projects won rather than an increase in the number of projects won.	Impact on productivity not statistically significant	An additional skills certificate leads to a 2.1% increase in earnings (average gain of US\$1.88). Returns to signaling were smaller for more experienced freelancers: returns to completing skill certificates are up to 1.5 times larger for workers with zero work history compared to average.	n.a.
Kecht and Marcolin 2022	Germany	Various (Deliveroo, Foodora and Lieferando)	Quasi-experimental analysis (differences-in-differences)	n.a.	101,248 individuals from a nationally representative sample, with 113,493 job separation events	Expansion of gig delivery platforms	Find "recently unemployed workers are more likely to take up gig work and less likely to receive unemployment benefits (UB) when a gig delivery platform is available to them."	"We demonstrate that, following a job separation, individuals are 1.6% more likely to be employed in mini-jobs when gig platforms are available. Moreover, recently unemployed workers with access to these platforms are 8.19% less likely to receive traditional unemployment insurance and, overall, receive 3.44% lower benefits."	n.a.	n.a.

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Krishnan et al. 2022	United States	Lyft	RCT	Introducing a minimum compensation or wage:	Lyft drivers in "major, oversupplied urban markets" in North America	Two experiments to understand the impact of Lyft's Priority Mode feature on worker oversupply: (1) a partial rollout of Priority Mode to a random subset of drivers, and (2) a randomized rollout of modifications of Priority Mode that varied how and when drivers could activate the mode	Found this feature can solve the issue of worker oversupply while safeguarding worker flexibility, increasing gains for drivers, riders, and Lyft in the process.	Results from the first experiment "show a 5% increase in driving hours from this subset treatment group, indicating strong driver preference for Priority Mode."	Find the introduction of priority mode "resulted in a generation of system surplus equivalent to" between 10 to 13 percent of total driver earnings.	Find a 60% positive satisfaction rating among drivers using Priority Mode (that is, saying it positively affected overall experience as a driver).
Liang et al. 2022	United States	MTurk; Prolific	RCT	Monitoring workers	Workers who have finished more than 1,000 tasks on MTurk and have an approval rate higher than 98% and are from the United States	Randomly assigning gig workers participating in tasks on MTurk and Prolific to four groups with different monitoring policies. Monitoring was varied along three dimensions: "monitoring intensity (how much information is collected), transparency (whether the monitoring policy is disclosed to workers), and control (whether workers can remove sensitive information)."	Workers are apprehensive about monitoring and that, on average, the compensations required for workers to accept monitoring are between US\$1.8 and US\$1.6 an hour (roughly 37.5 to 28.6 percent of average hourly wages).	n.a.	n.a.	n.a.

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Lukac and Grow 2021	Not specified	Not specified	Theoretical model estimated using data	Regulating "reputation systems"	Scraped data on two datasets, containing 3,434 and 1,454 work bids each	Investigated the "extent to which reputation systems can create segmented hiring patterns that are biased toward freelancers with good reputation."	Reputation systems "can potentially reproduce inequalities present in offline labor markets and produce unfair outcomes that disproportionately favor already successful applicants."	n.a.	n.a.	n.a.
Nakamura and Siregar 2022	Indonesia	Not specified	Differences-in-differences and synthetic control methods	Introducing a minimum compensation or wage	Drivers from a "collaborating platform" We restrict our sample to all completed motorcycle trips that had non-zero payments to associated drivers. Our data set contains trips from 64 Indonesian cities, 55 of which are in the data for our analysis. The data cover the period of January 1 to August 8, 2019.	We study the market-wide implications of a federal policy on minimum fares for drivers on ride-sharing apps.	We find that, on average, the policy increases the trip price but does not significantly affect the overall transaction volume nor increase driver earnings or wages. These effects are driven by a higher excess labor supply, reducing the number of transactions per driver. The excess labor supply comes from lower-earning drivers but does not lead to their increased earnings.	Minimum wage leads to a higher excess labor supply: statistically significant 24.3% increase in excess supply hours, that is, the sum of all idle hours on the app from all drivers. Mainly driven by drivers that made less before the policy change (the policy increases the total labor supply of workers in the bottom 3 to 4 deciles of pre-policy earnings by 20 to 40%.) Also lowers productivity, driven by two margins: an increased share of less productive drivers in the workforce and reduced individual productivity due to crowding on the supply side. There is an 8 to 10% reduction in average driver productivity due to the policy, statistically significant at the 10% level.	Minimum wage does not lead to increased earnings: statistically insignificant 1.7% reduction in daily earnings from driver fare and a statistically insignificant 6.7% reduction in wage, that is, daily earnings divided by supply hour.	n.a.

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Pallais 2014	Multiple (HIC as well as LMIC)	oDesk	RCT	Regulating "reputation systems"	952 randomly selected workers on oDesk	Evaluated the effects of hiring workers and "revealing more information about their abilities" by giving them "either detailed or coarse public evaluations."	"Both hiring workers and providing more detailed evaluations substantially improved workers' subsequent employment outcomes."	Providing coarse evaluations "almost tripled the fraction of [inexperienced] workers with any employment from 12 percent to 30 percent." The coarse evaluation treatment did not significantly improve employment outcomes for experienced workers. Providing detailed evaluations increased "the fraction of workers with any subsequent employment from 53 percent to 69 percent," but did not improve average employment outcomes of inexperienced workers relative to the coarse evaluation treatment.	Providing coarse evaluations "almost tripled the average earnings of [inexperienced] workers from \$10 to \$27" and also increased the wage these workers posted on their profiles by approximately 10 percent. Providing detailed evaluations increased experienced workers' average earnings from US\$101 to US\$187 and average posted wages by 15 percent.	n.a.
Stanton and Thomas 2015	Multiple (HIC as well as LMIC)	oDesk	Theoretical model estimated using data	The role of matching services and intermediaries	16 months of data from oDesk, including 1,126 separate agencies with at least one new non-US affiliate active	Studies the role of intermediaries, and workers' affiliations with intermediary agencies, on their job-finding probabilities and wages	"Workers affiliated with an agency have substantially higher job-finding probabilities and wages at the beginning of their careers compared to similar workers without an agency affiliation. This advantage declines after high-quality non-affiliated workers receive good public feedback scores"	"Compared to non-affiliates, agency switchers are estimated to find jobs with" between 22 and 35 percent fewer job applications.	Estimate that "agency affiliation is associated with an 8.6-percent increase in the wage at which an inexperienced worker offers to work."	n.a.

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Stanton and Thomas 2021	Multiple (HIC as well as LMIC)	Not specified	Theoretical model estimated using data	Introducing a minimum compensation or wage	Data on 169,578 jobs posted by 67,292 potential buyers between January 2008 and June 2010	Simulating impact of policies that resemble traditional employment regulation: introducing a 10 percent tax paid by buyers when hiring jobseekers and introducing a minimum wage	Find introducing a minimum wage might lower overall hiring, leaving employers and workers both worse off. Find introducing a 10 percent tax might also lower hiring by about 26 percent due to a decrease in the jobs posted on the platform of 34 percent.	Find introducing a minimum wage might lower overall hiring, leaving employers and workers both worse off. Find introducing a 10 percent tax might also lower hiring by about 26 percent due to a decrease in the jobs posted on the platform of 34 percent.	n.a.	n.a.
Stylianou 2018	United States	n.a.	Theoretical frameworks and case studies	Arbitrary exclusion of competitors	n.a.	Notes examples of large tech firms (such as AT&T and Apple) excluding competitors through several methods	Methods of exclusion include vertical integration (that is, harming competitors by blocking access to other markets in the supply chain) and blocking access to a competitor's service (for example, blocking access to an app on an operating system, or making an app incompatible).	n.a.	n.a.	n.a.

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Van Inwegen et al 2022	Not specified	Not specified	RCT	Introducing a minimum compensation or wage	124,945 digital platform workers	Digital platform workers were randomly assigned to a control group or one of three treatments involving a minimum wage (one minimum wage of US\$2, one of US\$3, and one of US\$4).	Treated workers who historically charged below the minimum wage reduced their probability of employment and increased their probability of exiting the platform; yet the treated workers who stayed on the platform and found a job increased their earnings.	The number of hourly jobs won by low-wage workers (that is, those with average hourly wages or wage bids of less than US\$5 an hour) saw their hourly wages increase (by US\$22 in the US\$4 minimum wage treatment group). However, "workers total earnings did not follow suit." Workers who received a US\$4 minimum wage "experienced an 8% decrease in their total earnings."	Workers who previously had average hourly wages or wage bids of less than US\$5 an hour saw their hourly wages increase (by US\$22 in the US\$4 minimum wage treatment group). However, "workers total earnings did not follow suit." Workers who received a US\$4 minimum wage "experienced an 8% decrease in their total earnings."	Treated workers "did not move to the uncovered sector - jobs with a fixed price rather than an hourly wage - nor did they direct their search to better fitting jobs. They were also more likely to exit the platform." Specifically, low-wage workers who received the US\$4 minimum wage treatment were 6% more likely to exit the platform than workers in the control group.
Wood-Doughty 2018	Multiple (HIC as well as LMIC)	oDesk	Theoretical model estimated using data	Regulating "reputation systems"	19,598 digital platform workers	Estimates the effect of online reviews as well as "other sources of information about worker ability, including the review comments, standardized exam scores, and the worker's country" on worker wages and attrition.	"Reviews have a relatively small effect on both wages and attrition, however, I am able to separate out the dual role of reviews: rewarding good workers and punishing bad ones."	n.a.	"The wage effect of reviews increases over time, from only a 3% increase for a one standard deviation increase in the first job, to a 9% bonus in the 20th."	"A one standard deviation increase in a worker's combined review score reduces their probability of exit by 1%."

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Yin, Suri, and Gray 2018	Not specified	MTurk	RCT	Strengthening standards around job and task flexibility	399 MTurk workers	Study how granting workers with more in-task flexibility influences worker behavior as well as work quantity and quality	Find "workers would give up significant compensation to control their time, indicating workers attach substantial value to in-task flexibility"	Find "granting higher "in-task flexibility" dramatically affected the temporal dynamics of worker behavior and produced a larger amount of work with similar quality."	"We estimate the compensating differential to be at least \$0.86/hour, which means that on average, workers equate the ability to control scheduling their work with a financial compensation of at least \$0.86/hour"	n.a.

References

- Agrawal, A. 2021. "Predatory Pricing and Platform Competition in India." *World Competition* 44 (1): 109-120.
- Aleksynska, M., Bastrakova, and N. Kharchenko. 2019. "Working Conditions on Digital Labour Platforms: Evidence from a Leading Labour Supply Economy." IZA Discussion Paper No. 12245.
- Algate, D., E. Carranza, J. Duran-Franch, T. Packard, and C. Proffen. 2024. "How Regulations Matter for Labor Market Outcomes: A Joint Review of Product and Labor Market Regulations." Working Paper.
- Anwar, A. M. and M. Graham. (2020). "Between a rock and a hard place: Freedom, flexibility, precarity and vulnerability in the gig economy in Africa". *Competition & Change* 25(2).
- Argawal, A., N. Lacetera, and E. Lyons. 2016. "Does Standardized Information in Online Markets Disproportionately Benefit Job Applicants from Less Developed Countries?" *Journal of International Economics* (103): 1-12.
- Asadpour, A., I. Lobel, and G. van Rygin. 2022. "Minimum Earnings Regulation and the Stability of Marketplaces." Working Paper.
- Bamberger, A. K., and O. Lobel. 2017. "Platform Market Power." *Berkeley Technology Law Journal* 1051.
- Beerepoot, N., and B. Lambregts. 2014. "Competition in Online Job Marketplaces: Towards a Global Labour Market for Outsourcing Services?" *Global Networks* 15 (2): 236-255.
- Behrendt, C., A. N. Quynh, and U. Rani. 2019. "Social Protection Systems and the Future of Work: Ensuring Social Security for Digital Platform Workers." *International Social Security Review* 72.
- Benson, A., A. Sojourner, and A. Umyarov. 2018. "Can Reputation Discipline the Gig Economy? Experimental Evidence from an Online Labor Market." Opportunity and Inclusive Growth Institute Working Papers 16, Federal Reserve Bank of Minneapolis.
- Berg, J., M. Furrer, E. Harmon, U. Rani, and M. Six Silberman. 2018. *Digital Labour Platforms and the Future of Work: Towards Decent Work in the Online World*. Geneva, International Labour Office.
- Blair, P. Q., and M. Fischer. 2022. "Does Occupational Licensing Reduce the Effectiveness of Customer Search on Digital Platforms?" Working Paper.
- Bostoen, F. 2019. "Online Platforms and Pricing: Adapting Abuse of Dominance Assessments to the Economic Reality of Free Products." *Computer Law and Security Review* (35) 3: 262-280.
- Boucherak, Farah. 2019. "Deliveroo Promises Sick Pay for Drivers." *France24*, October 18, 2019. <https://www.france24.com/en/business/20191018-deliveroo-promises-sick-pay-for-riders-1>.
- Chen, K. M., J. Chevalier, P. Rossi, and E. Oehlsen. 2017. "The Value of Flexible Work: Evidence from Uber Drivers." Working Paper.
- Datta, N., C. Rong, S. Singh, C. Stinshoff, N. Iacob, N. S. Nigatu, M. Nxumalo, and L. Klimaviciute. 2023. *Working without Borders: The Promise and Peril of Online Gig Work*. World Bank, Washington, DC.
- Doerrenberg, P., D. Duncan, and M. Löffler. 2023. "Asymmetric Labor-Supply Responses to Wage Changes: Experimental Evidence from an Online Labor Market." *Labor Economics* 81.
- Dube, A., J. Jacobs, S. Naidu, and S. Suri. 2020. "Monopsony in Online Labor Markets." *AER: Insights* 2 (1): 33-46.
- Ducci, F. 2020. *Natural Monopolies in Digital Platform Markets*. Cambridge University Press, UK.
- Farronato, C., A. Fradkin, B. Larsen, and E. Brynjolfsson. 2020. "Consumer Protection in an Online World: An Analysis of Occupational Licensing." Working Paper.

- Garin, A., E. Jackson, D. Koustas, and A. Miller et al. 2023. "The Evolution of Platform Gig Work, 2012–2021." Working Paper.
- Ghorpade, Y., and A. A. Rahman, and A. Jasmin. 2023. "Social Insurance for Gig Workers: Insights from a Discrete Choice Experiment in Malaysia." World Bank Policy Research Working Paper 10629.
- Glasner, B. 2023. "The Minimum Wage, Self-Employment, and the Online Gig Economy." *Journal of Labor Economics* (41) 1: 1–289.
- Graham, M., I. Hjorth, and V. Lehdonvirta. 2017. "Digital Labour and Development: Impacts of Global Digital Labour Platforms and the Gig Economy on Worker Livelihoods." *Transfer: European Review of Labour and Research* 23 (2): 135–162.
- Gruber, J. 2022. "Designing Benefits for Platform Workers." NBER Working Paper No. 29736.
- Guerrero and Silva-Porto 2020. *Digital Savings for On-Demand Platform Workers*. Retirement Savings Laboratory, Inter-American Development Bank.
- Hall, J. V., J. H. John, and T. K. Daniel. 2023. "Ride-Sharing Markets Re-Equilibrate." Working Paper.
- Hatayama, M., and D. Swiżtak. 2024. "Regulating Platform-Based Work in Low- and Middle-Income Countries: Insights from Recent Regulatory Approaches." World Bank Policy Brief.
- Heeks, R. 2017. "Decent Work and the Digital Gig Economy: A Developing Country Perspective on Employment Impacts and Standards in Online Outsourcing, Crowdwork, Etc." Development Informatics Working Paper no. 71, 2017.
- Hodor, M. 2022. "Gig Workers and Performance Pay: A Dynamic Equilibrium Analysis of an On-Demand Industry." Working Paper.
- Holtz, D., L. Scult, and S. Suri. 2022. "How Much Do Platform Workers Value Reviews? An Experimental Method." CHI Conference on Human Factors in Computing Systems (CHI '22). <https://doi.org/10.1145/3491102.3501900>.
- Horton, J. J., R. Johari, and P. Kircher. 2021. "Cheap Talk Messages for Market Design: Theory and Evidence from a Labor Market with Directed Search." Working Paper.
- Horton, J. J. 2016. "The Effects of Algorithmic Labor Market Recommendations: Evidence from a Field Experiment." Working Paper.
- Horton, J. J. 2018. "Price Floors and Employer Preferences: Evidence from a Minimum Wage Experiment." Working Paper.
- ILO (International Labour Organization). 2021. *World Employment and Social Outlook 2021* (1).
- Jackson, E. 2022. "Availability of the Gig Economy and Long Run Labor Supply Effects for the Unemployed." Working Paper.
- Jones, S., and I. Manhique. 2022. "Digital Labour Platforms as Shock Absorbers: Evidence from COVID-19." WIDER Working Paper Series wp-2022-108.
- Kass, T. 2022. "The Value of Contingent Work." Working Paper.
- Kassi, O., and V. Lehdonvirta. 2019. "Do Digital Skill Certificates Help New Workers Enter the Market? Evidence from an Online Labour Platform." CESifo Working Paper No 7810.
- Kecht, V., and G. Marcolin. 2022. "Gig Work as Income Insurance during Unemployment: Evidence from Germany." Working Paper.
- Kingsley, S. C., M. L. Gray, and S. Suri. 2015. "Accounting for Market Frictions and Power Asymmetries in Online Labor Markets." *Policy and Internet* 7 (4).
- Krishnan, V., R. Iglesias, S. Martin, V. Pattabhiraman, S. Wang, and G. van Ryżin . 2022. "Solving the Ride-Sharing Productivity Paradox: Priority Dispatch and Optimal Priority Sets." Working Paper.

- Lehdonvirta, V., O. Kassi, I. Hjorth, H. Barnard, and M. Graham. 2018. "The Global Platform Economy: A New Offshoring Institution Enabling Emerging-Economy Microproviders." *Journal of Management* 45 (2): 567–599.
- Lehdonvirta, V., I. Hjorth, H. Barnard, and M. Graham. 2021. "Global Earnings Disparities in Remote Platform Work: Liabilities of Origin?" In *Work and Labour Relations in Global Platform Capitalism*. Edward Elgar, Cheltenham, edited by J. Haidar, and M. Keune, 111–133.
- Liang, C., J. Peng, Y. Hong, and B. Gu . 2022. "The Hidden Costs and Benefits of Monitoring in the Gig Economy." *Information Systems Research* 34 (1).
- Lukac, M., and A. Grow. 2021. "Reputation Systems and Recruitment in Online Labor Markets: Insights from an Agent-Based Model." *J Comput Soc Sc* 4: 207–229. <https://doi.org/10.1007/s42001-020-00072-x>.
- McDonald, P., P. Williams, and R. Mayes. 2020. "Means of Control in the Organization of Digitally Intermediated Care Work." *Work, Employment and Society* 35 (5): 872–890. <https://doi.org/10.1177/0950017020969107>
- Nakamura, S., and R. Siregar. 2022. "Distributional and Productivity Implications of Regulating Casual Labor: Evidence from Ridesharing in Indonesia." Working Paper.
- Pallais, A. 2014. "Inefficient Hiring in Entry-Level Labor Markets." *American Economic Review* 104 (11): 3565–3599.
- Rhani, U., and R. K. Dhir. 2020. "Platform Work and the COVID-19 Pandemic." *Indian J Labour Econ* 63 (1): 163–171.
- Stanton, C. T., and C. Thomas. 2015. "Landing the First Job: The Value of Intermediaries in Online Hiring." Working Paper.
- Stanton, C. T., and C. Thomas. 2021. "Who Benefits from Online Gig Economy Platforms?" Working Paper.
- Stoterau, D. 2024. "The Economic Rationale to Regulate Platform-Based Work." World Bank Policy Brief..
- Stylianou, K. 2018. "Exclusion in Digital Markets." *Michigan Telecommunications and Law Review* 24 (2).
- Van Inwegen, E., A. Filippas, and J. J. Horton. 2022. "The Experimental Imposition of a Worker Level Minimum Wage: Evidence from an Online Platform." Working Paper.
- Wood, A. J., V. Lehdonvirta, and M. Graham. 2018. "Workers of the Internet Unite? Online Freelancer Organisation among Remote Gig Economy Workers in Six Asian and African Countries." *New Technology, Work and Employment* 33 (2): 95–112.
- Woodcock, J., and M. Graham. 2020. *The Gig Economy: A Critical Introduction*. Cambridge: Polity Press.
- Wood-Doughty, A. 2018. "The Role of Reputation Systems in an Online Labor Market." Working Paper.
- Yin, M., S. Suri, and M. L. Gray. 2018. *Running Out of Time: The Impact and Value of Flexibility in On-Demand Crowdwork*. Microsoft Research.

