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FLEXIBLE WORK OR TRANSFERRED RISK? A REVIEW OF RISK ALLOCATION, WORKER AUTONOMY, AND ALGORITHMIC CONTROL IN THE GIG ECONOMY

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A b s t r a c t

App-based work is commonly defended on the grounds that it offers workers flexibility, yet the freedom to choose when to work does not necessarily confer control over the conditions under which work is performed. This paper examines the distribution of risk in India's platform economy through Frank Knight's distinction between measurable risk and uncertainty. The paper is a theory-driven review of twelve published sources and collects no new data. It argues that platforms retain the advantages of scale and managerial control while transferring much of the cost of fluctuating demand to individual workers. Evidence from research on driver behaviour and platform pricing suggests that free entry dissipates the gains from higher fares through reduced utilization which leaves workers to absorb the cost of idle time. Flexible work also provides value and helps households respond to income shocks. However, this does not establish that workers prefer the existing allocation of risk. Platforms can diversify fluctuations across transactions, while individual workers bear volatile earnings without comparable protection.

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1. INTRODUCTION

When an Indian driver for an app-based taxi service was asked about his income, his response was "Income is like a roll of dice". i This bleak comparison still flatters the worker's situation. A century ago, Frank Knight sought to articulate risk by using the ideal die as a model: a gamble whose odds are known before the throw. ii The worker has no such knowledge. In the same study, deductions from cab drivers' earnings averaged over 31% and unexplained deductions through app algorithms were the most cited way companies reduced pay at 29.8%. iii A gambler, at least, knows the game he is playing. India's platform workforce stood at 7.7 million in 2020-21 and is projected to reach 23.5 million by 2029-30 iv. One worker in the cab survey says that whatever its costs, the work at least lets him control his schedule. v This essay argues that platforms keep the uncertainty they can pool and pass on the uncertainty they cannot, while retaining the control that Knight (1921) tied to bearing it.

Knight had argued the same in the 20th century, far before apps even existed. He argued that responsibility and control are in fact inseparable. Whoever directs work must carry its uncertainty, and no one would accept direction without a guarantee in return.vi Platforms have prised the two apart. In Uber's case, the UK Supreme Court found that the company sets fares and exercises tight algorithmic control over drivers once they are logged in vii, while a slow night or a broken vehicle still falls on the driver alone. However, what the worker received in exchange was flexibility.

2. METHODS

2.1 RESEARCH DESIGN

This paper is a theory-driven review of published evidence. It asks whether flexible platform work is good for workers or whether it moves risk from firms to individuals. No new data were collected. The analysis reads existing studies and documents through two ideas from economic theory which is Knight's separation of measurable risk from uncertainty, and Coase's definition of the firm by direction.

2.2 DATA AND SOURCES

The review draws on twelve published sources**.**

- Three are works of economic theory: Knight (1921), Coase (1937), and Langlois and Cosgel (1993).
- Three are empirical studies of United States platform labour markets: Chen et al. (2017), Koustas (2019) and Hall, Horton and Knoepfle (2023).
- Two give Indian evidence: PAIGAM and University of Pennsylvania survey report (2024) and a NITI Aayog policy brief (2022)
- Four are legal, policy and historical documents: Adams-Prassl's commentary on Uber BV v Aslam (2022), the Karnataka Platform Based Gig Workers (Social Security and Welfare) Act 2025, a news report on the fee notified under it, and Kautilya's Arthashastra.

2.3 SOURCE SELECTION

Sources were chosen on two criteria. Each had to address how risk and control are shared between platforms and workers, or how platform earnings respond to flexibility. Each also had to offer evidence that could be cited to a specific page. The search was targeted, so the review does not claim to cover the whole literature.

2.4 ANALYTIC APPROACH

The analysis had four steps:

- Each source was read for who directs the work, who bears variation in earnings, and who can reduce that variation by pooling.
- Hall, Horton and Knoepfle's model, in which hourly earnings equal the fare net of cost multiplied by utilization, was used to trace how free entry shifts the cost of idle time onto workers (Figure 1).
- An illustrative calculation applied the law of large numbers to compare the order volumes of a platform and a single rider (Figure 2).
- The results were set against Indian survey evidence and policy proposals to ask where risk should rest.

2.5 LIMITATIONS

The sources do not share a setting. Chen et al., Koustas and Hall et al. study United States drivers, while PAIGAM surveys workers in India, so the link between them is the author's inference. Authors of two of the United States studies are affiliated with Uber. The PAIGAM survey was carried out with a drivers' union federation and may reflect the views of organised workers. The quotations from workers are individual voices from focus groups. Figures 1 and 2 illustrate a mechanism and a calculation and are not data. Figure 2 assumes that orders are independent.

3. DISCUSSION

3.1 THE CASE FOR FLEXIBILITY

The strongest case for flexible work rests on the preferences of workers themselves. Using data on Uber drivers in America, Chen and his coauthors estimate that the freedom to choose one's hours generates a surplus equal to roughly 40% of earnings, or about $150 a week. [viii] Under a fixed schedule comparable to a traditional taxi arrangement, this surplus falls to around one-eighth of its value. The estimate implies that drivers would require a substantial wage premium before accepting rigid hours. This makes flexibility a compensating differential, a good for which workers will accept lower or less certain pay. Flexibility also appears to offer protection against economic shocks.

Drawing on household financial data, Koustas finds that individuals typically begin gig work shortly after their other income and liquid savings decline. In the quarter after entry, platform earnings of roughly $1,550, once fuel costs are deducted, exceed the $900 decline in outside income. [ix] Gig work therefore functions as a form of self-insurance, allowing a household to respond to a negative income shock by taking up paid work. The benefit is greatest for liquidity-constrained households, which cannot borrow against future earnings to smooth consumption. [x] Chen and his colleagues concede that uncertain and possibly low pay follows from the flexibility itself because drivers can work whenever they choose and pay in any hour is set by the willingness to work of the marginal driver. [xi] Thus Chen's estimate rests on an assumption that does not survive scrutiny. It values flexibility at the wages drivers currently earn. Each alternative Chen tests removes flexibility and none pairs it with a pay floor. The surplus shows that workers value flexibility and it also says little about whether they would choose the present division of risk. [xii]

3.2 FREE ENTRY AND IDLE HOURS

Hall, Horton, and Knoepfle, two of whom were employed by Uber, studied a series of fare increases across American cities. xiii Higher fares briefly raised drivers' hourly earnings, but they also drew additional hours of driving into the market, so each driver completed fewer trips. Within about two months, hourly earnings had returned to their original level. A driver's hourly earnings (w) equal the fare net of operating costs (p - c) multiplied by utilization (x), the share of logged-in time spent carrying passengers, and utilization in turn equals total demand (D) divided by the hours drivers supply (H). xiv

$$w = (p - c) \cdot x, \quad \text{where } x = \frac{D}{H}$$

Because entry into the market is free, drivers keep joining until hourly earnings fall to the value of their outside option. xv Any gain from a higher fare is absorbed through lower utilisation, a process economists describe as rent dissipation. The platform's position in the same equilibrium is very different. Its commission is earned on completed trips, so an additional driver imposes no direct cost upon it, while the idle capacity that driver creates shortens waiting times for passengers. Hall and his coauthors stress that this unused time has real value to the market, since a fleet operating at full utilisation would leave customers waiting and the service would collapse. xvi The quality the platform sells is therefore produced in part by hours for which no one is paid. Survey evidence from India suggests these hours are considerable. Among app-based delivery workers, 42.8 per cent report waiting about an hour a day between orders, and a further 34.1 per cent about two hours. xvii More than three in four such workers supply the platform with an hour or more of unpaid availability each day. Under conventional employment, a firm pays for spare capacity through the wage bill. Under platform work, the worker pays for it instead. Idle hours are the price of meeting uncertain daily demand. This is the first sense in which flexibility transfers risk from firm to individual.

3.3 POOLING RISK, HOLDING CONTROL

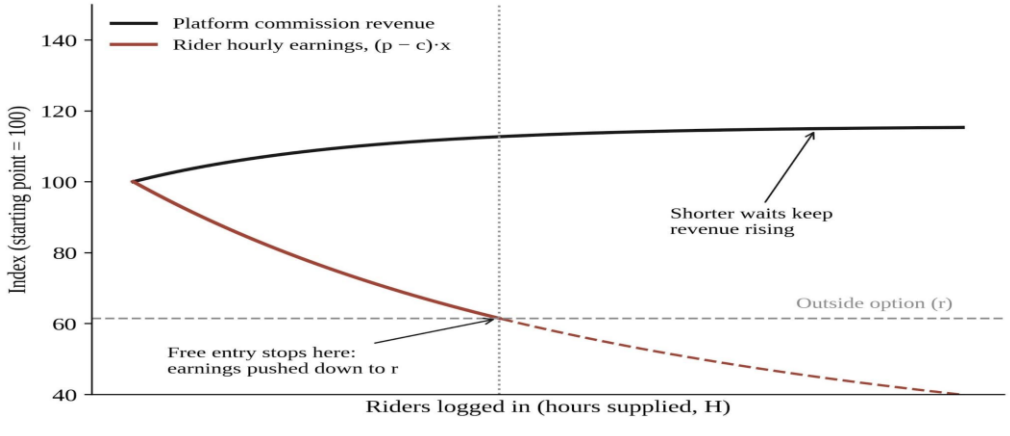


Fig. 1: Rider earnings and platform revenue as more riders enter. Free entry pushes earnings down to the outside option (r) while shorter waits keep revenue rising. Illustrative model after Hall, Horton and Knoepfle (2023).

The second sense in which flexibility transfers risk upon workers concerns the uncertainty that comes with flexible work. Knight observed that any uncertainty reducible to a measurable probability can be converted into near certainty by grouping cases, and that business organisations had evolved largely to perform this consolidation. xviii Suppose a platform processes a million orders a day while a single rider completes fifteen. Fluctuations specific to individual orders cancel out across its volume. The rider has no comparable law of large numbers to rely upon. The relative volatility of an average falls with the square root of the number of observations, so the rider faces idiosyncratic volatility roughly 258 times greater, the square root of a million divided by fifteen (Figure 2). xix Aggregate shocks such as heavy rain affect both parties, yet only the platform can diversify away the remainder. The platform also holds the data; hence it can estimate odds the rider can only guess, xxwhich turns what Knight called uncertainty into measurable risk for one party alone. The platform thus retains the risk that can be pooled and passes on the remainder.

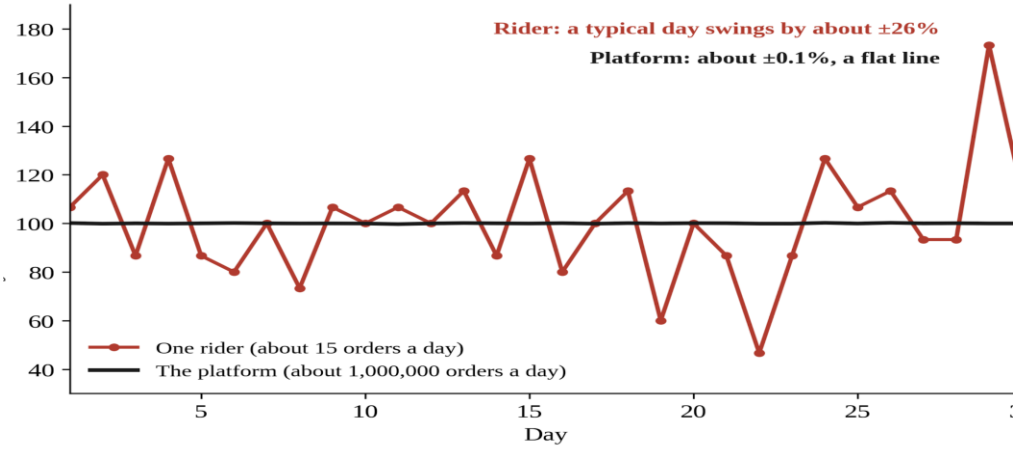


Fig. 2: Daily orders as a percentage of normal, simulated for one rider and for the platform. Heavy rain and other city-wide shocks affect both and are not shown.

This division would be less serious if control had passed to the worker with the uncertainty. Coase defined the firm by the fact of direction, observing that within a firm a worker moves between tasks because he is instructed to, while in a market he responds to prices. xxiBy this test, the platform is a firm, since it sets fares and can remove workers through its ratings system. xxii Knight, however, held that direction and a guaranteed income form a double contract, and that no one would accept the first without the second. xxiiiThe platform satisfies Coase's definition of a firm while declining Knight's obligation. It keeps the residual control and leaves the worker to bear the residual uncertainty, offering only half of a double contract.

3.4 DIVIDING THE RISK

Free entry limits what we can infer from the finding that platforms pay no worse than the alternatives. xxiv Drivers join until earnings match the marginal entrant's outside option. xxvEquilibrium therefore predicts this result, and it says little about fairness. Policy should therefore place risk with the party best able to pool it, which is the platform. Paying for logged-in waiting time, as drivers surveyed by PAIGAM request, xxvi would make platforms bear the spare capacity they now obtain free. The trade-off is that platforms could ration log-ins, eroding the flexibility that makes the work valuable.

The Arthashastra fines an employer who takes no work from his labourer by the same 12 panas it imposes on a labourer who fails to work. xxvii Kautilya's teacher held that a ready labourer's idle time counts as work done. Kautilya replied that wages are for work done, yet he held that when an employer starts a task and leaves the rest undone, the unfinished part counts as finished. xxviii A reduced rate for waiting time sits between two positions and weakens the incentive to ration log-ins.

3.5 ETHICAL CONSIDERATIONS

No participants were recruited and no personal data were collected. All sources are published and no personal data was collected. All sources are published, and quotations from workers come from the published PAIGAM report, which does not identify them. The Uber affiliations of some authors are noted where their studies are cited.

4. CONCLUSION

Future research could test the pooling argument with platform data on order volumes and earnings variance, and could compare rider outcomes where waiting time is paid. Karnataka's welfare fee, set under its 2025 Act at 1 per cent of each payout and capped at fifty paise for two-wheeler delivery, xxix is a modest start, and who ultimately bears it depends on how responsive labour supply is. The NITI Aayog brief leaves income support to platforms' discretion, which asks the party that benefits from the split to end it voluntarily. xxx Flexible work is good for workers to the degree that the party holding control also carries uncertainty. Platforms have granted the freedom to

log on while keeping the direction of work and the ability to pool risk, so the cost of flexibility has fallen on those least able to bear it. The case for flexible work is a case for freedom. The case against the present arrangement is a case for responsibility that follows control.

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[i] PAIGAM and University of Pennsylvania, *Prisoners on Wheels? Report on Working and Living Conditions of App-Based Workers in India* (2024), 98.

[ii] Frank H. Knight, *Risk, Uncertainty and Profit* (Boston: Houghton Mifflin, 1921), 215.

[iii] PAIGAM, *Prisoners on Wheels?*, 97 (average deductions), 51 (ways companies deduct).

[iv] NITI Aayog, *India's Booming Gig and Platform Economy: Perspectives and Recommendations on the Future of Work*, Policy Brief (New Delhi: NITI Aayog, June 2022), 3.

[v] PAIGAM, *Prisoners on Wheels?*, 98.

[vi] Knight, *Risk, Uncertainty and Profit*, 270–71. On the reading that Knight's core claim is the unity of responsibility and control, see Richard N. Langlois and Metin M. Cosgel, "Frank Knight on Risk, Uncertainty, and the Firm: A New Interpretation," *Economic Inquiry* 31, no. 3 (1993): 456–65, at 463–64.

[vii] Jeremias Adams-Prassl, "*Uber BV v Aslam*: '[W]ork Relations … Cannot Safely Be Left to Contractual Regulation,'" *Industrial Law Journal* 51, no. 4 (2022): 955–66, at 961, summarising *Uber BV v Aslam* [2021] UKSC 5, [94]–[101].

[viii] M. Keith Chen et al., "The Value of Flexible Work: Evidence from Uber Drivers," NBER Working Paper No. 23296 (March 2017, rev. June 2017), 45 (the one-eighth figure is on the same page). One author, Emily Oehlsen, lists an Uber address.

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[x] On credit constraints before and after entry, see Koustas, "Big Data," 369.

[xi] Chen et al., "Value of Flexible Work," 2.

[xii] Chen et al., "Value of Flexible Work," 31–33, 36.

[xiii] Jonathan V. Hall, John J. Horton, and Daniel T. Knoepfle, "Ride-Sharing Markets Re-Equilibrate," NBER Working Paper No. 30883 (2023), 1–3. Hall and Knoepfle were Uber employees.

[xiv] Hall, Horton, and Knoepfle, "Ride-Sharing Markets," 14–15.

[xv] Hall, Horton, and Knoepfle, "Ride-Sharing Markets," 4 n. 1, 14–15. The paper compares this equilibrium to John R. Harris and Michael P. Todaro, "Migration, Unemployment and Development: A Two-Sector Analysis," *American Economic Review* 60, no. 1 (1970): 126–42.

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[xvii] PAIGAM, *Prisoners on Wheels?*, 80.
[xviii] Knight, *Risk, Uncertainty and Profit*, 231–32.
[xix] Author's calculation. For independent orders, the relative standard deviation of a daily order count scales as $1/\sqrt{n}$, so the ratio is $\sqrt{(1{,}000{,}000 \div 15)} \approx 258$. Figure 2 simulates the same assumption.
[xx] Adams-Prassl, "Uber BV v Aslam," 961 (the information asymmetries the app creates). On Knight's distinction between risk and uncertainty, see Knight, *Risk, Uncertainty and Profit*, 231–32.
[xxi] R. H. Coase, "The Nature of the Firm," *Economica* 4, no. 16 (1937): 386–405, at 387, 404.
[xxii] Adams-Prassl, "*Uber BV v Aslam*," 961.
[xxiii] Knight, *Risk, Uncertainty and Profit*, 270.
[xxiv] See Koustas, "Big Data," 369, and PAIGAM, *Prisoners on Wheels?*, 98 (a driver who earned less in his previous work).
[xxv] Hall, Horton, and Knoepfle, "Ride-Sharing Markets," 4 n. 1.
[xxvi] PAIGAM, *Prisoners on Wheels?*, 62 (cab drivers), 95 (delivery workers).
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[xxviii] Kautilya, *Arthasastra*, bk. 3, ch. 14, 212.
[xxix] Karnataka Platform Based Gig Workers (Social Security and Welfare) Act, 2025, s. 20; "Karnataka Directs Gig Platforms to Pay Mandatory Welfare Fee as per Gig Workers Act," *The News Minute*, February 16, 2026 (food and grocery delivery: 1 per cent of payout, capped at ₹0.50 for two-wheelers).
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