

DIGITAL PLATFORMS, DATA, AND DEVELOPMENT: IMPLICATIONS FOR WORKERS IN DEVELOPING ECONOMIES

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I. INTRODUCTION

Digital platforms are radically transforming the way businesses are conceived, how they interact with one another, and how they create value for the society. Platforms are increasingly transforming the production landscapes and the way organizations conceive of business, and in the process allowing firms to easily externalize their activities by obtaining services through a broader array of actors. Rather than only subcontracting through established firms, enterprises can now outsource to a crowd that is geographically dispersed around the world to perform a diverse range of activities. Digital platforms have become very attractive to policy makers and governments as a strategy for economic development as they have the potential to create income and employment opportunities.¹ They have also attracted workers as they provide them with the flexibility and freedom regarding working location and working time.²

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1. See Mark Graham, Isis Hjorth, and Vili Lehdonvirta, *Digital Labour and Development: Impacts of Global Digital Labour Platforms and the Gig Economy on Worker Livelihoods*, 23 TRANSFER: EUR. REV. OF LAB. & RES. 135-162 (2017); Kuek et al., *The Global Opportunity in Online Outsourcing*, WORLD BANK OTHER OPERATIONAL STUDIES (The World Bank, June 2015); Jeffrey V. Nickerson, *Crowd Work and Collective Learning*, SSRN Scholarly Paper (Social Science Research Network, March 20, 2013); Panos Ipeirotis and John Horton, *The Need for Standardization in Crowdsourcing*, 2011.

2. See Janine Berg, Marianne Furrer, Ellie Harmon, Uma Rani, and Michael S. Silberman, *Digital labour platforms and the future of work: Towards decent work in the online world*. (Geneva: ILO, 2018); Valerio De Stefano, *The Rise of the 'Just-in-Time Workforce': On-Demand Work, Crowdwork and Labour Protection in the 'Gig-Economy'*, Condition of Work and Employment Series No. 71, January 14, 2016, http://www.ilo.org/travail/whatwedo/publications/WCMS_443267/lang--en/index.htm.

Some researchers have also argued that digital labor platforms are a “silver bullet” for addressing poverty and inequality in developing countries,³ as they provide workers with access to global labour markets, and provides opportunities to all, including women, disabled and non-specialists. Empirical evidence from Kenya has shown that workers connected through digital platforms were able to improve their potential future earnings by investing in small businesses and education.⁴ Similarly, studies in India have demonstrated that digital platforms can provide an avenue for workers to complement their earnings from seasonal jobs characterized by risk and uncertainty.⁵ A global survey of workers across seventy-six countries on microtask digital platforms also revealed that about 25% of workers in developing countries worked on platforms to complement their earnings and generate an additional income to their households.⁶

In light of the potential benefits platforms can provide, many governments in developing countries are investing in building the necessary digital infrastructure and reducing the digital divide to foster development and provide income and employment opportunities. Digitalization is also leading to an exponential increase in e-commerce platforms, allowing individuals and small businesses to sell their goods and services and reach markets beyond their local area, which is argued to support economic inclusion as it broadens access and breaks down barriers to information.⁷

However, little is known about the implications of digital technologies on workers and the development process in developing economies. This paper explores three areas where labor relationships relate to digital economy. First, the paper presents the reasons behind the rising interest in digital platforms among governments in developing countries. Then it explores the nature of jobs that are created, how workers fare on these platforms in terms of earnings, social protection and working time, and issues related to transparency on platforms. Second, this paper makes a contribution on the relationship between data and labor, a central feature of the digital economy, and explores the challenges governing data ownership and use, and the rights of the workers. Third, the paper explores the emerging debates

3. See Andrew Schriner and Daniel Oerther, *No Really, (Crowd) Work Is the Silver Bullet*, *Procedia Engineering*, 78 PROCEA ENGINEERING 224-228 (2014).

4. *Id.*

5. See Aditi Surie and Lakshmee V. Sharma, *Climate change, Agrarian distress, and the role of digital labour markets: Evidence from Bengaluru, Karnataka*, 46 DECISION 127-138, (2019); Singh, Parminder Jeet, *Digital Industrialisation in Developing Countries*, THE COMMONWEALTH SECRETARIAT (2018), available at <https://itforchange.net/sites/default/files/add/Digital-industrialisation-May-2018.pdf>

6. See Berg, et al., *supra* note 2.

7. See Rep. of the UN Secretary-General's High-level Panel on Digital Cooperation, *The Age of Digital Interdependence: Report of the United Nations Secretary-General's High-Level Panel on Digital Cooperation* (June 2019); UNCTAD, *Information Economy Report 2017: Digitalization, Trade and Development*, (2017); OECD, *OECD Unlocking the Potential of e-commerce*, (March, 2019).

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about the regulation of e-commerce and the push towards free digital marketplace, and what implications, *inter alia*, this may have on the tax revenues in developing countries. It also discusses how developing countries must negotiate for space to adequately govern digital industrialization⁸ by employing principles of data localization or sovereignty and ensuring that there are policies on cross-border data flows.

This paper argues that developing countries can reap the benefits of investment in digital infrastructure and digital access only if it is accompanied with regulatory systems and governance mechanisms that are complementary with their overall economic interests. The paper is organized in the following way. Section II provides an overview of the nature of jobs that are created in developing countries based on a large ILO survey of workers on five major platforms in developing countries. It delves into the working conditions of the workers by focusing on low pay, earnings and working time, and the risks workers face due to lack of transparency. Section III looks at the economics of data, how data is conceived, and the relationship between data and labor, and explores some of the challenges governing data and its implications on workers' rights in developing countries. Section IV discusses issues relating to data sovereignty, including cross-border free flow of data and e-commerce rules, and its implications on the tax revenues in these countries. The final section concludes.

II. CHALLENGES FOR THE WORKERS ENGAGED IN MICRO TASKING ON DIGITAL PLATFORMS IN DEVELOPING COUNTRIES

Despite some of the potential benefits that digital platforms could bring to developing countries' labour markets, the lack of a proper regulatory framework is a major obstacle. In this section, we highlight some of the challenges faced by workers on digital labour platforms based on the existing literature and on a survey of 675 workers undertaken on five major microtask platforms in 2017 (Amazon Mechanical Turk (AMT), Clickworker, Microworkers, CrowdFlower (now called Figure 8) and Prolific. The challenges include skills mismatch and the nature of jobs created on the platforms, low pay, lack of social protection, absence of work-life balance and lack of transparency.

8. See Christopher Foster & Shamel Azmeh, *The Digital Trade Agenda and Africa*, 7 BRIDGES AFRICA (Mar. 14, 2018), <https://www.ictsd.org/bridges-news/bridges-africa/news/the-digital-trade-agenda-and-africa>.

A. Digital Platforms and Job Creation

An important characteristic of labor markets in developing countries is the high proportion of workers in the informal economy and youth unemployment,⁹ which can be partly attributed to the lack of employment opportunities in the formal sector and lack of regulations, proper enforcement, and institutional mechanisms. Since the global economic crisis, a number of developing countries have observed an increase in unemployment and governments have been under increased pressure to create employment opportunities. Digital labor platforms that expanded over the past decade have been regarded as a lucrative avenue to create employment opportunities, and governments in many developing economies are investing more in building digital infrastructure.¹⁰ Governments have also been supporting training programs developed by the private sector to equip workforces with digital skills to work on microtask and macrotask platforms such as Clickworker, Upwork, etc.¹¹ While the focus on digital infrastructure and developing digital skills is important, efforts have not been made to integrate it into broader development strategy, and as a result digital and regulatory policies have not been sufficiently developed.

Developing countries have encouraged digital labor platforms on the promise that they can provide gainful employment to those who are low-skilled, unemployed, under-employed or in the informal sector. This might be the case for workers who have found opportunities through local app-based platforms such as taxi drivers and delivery workers, though there are questions raised with regard to work and income security for these jobs. However, the majority of workers engaged in microtask digital platforms in developing countries are neither uneducated nor unemployed. To be able to access these digital platforms, workers are required to have some basic computer skills, and also sufficient capital to purchase digital devices such as smart phones, laptops, computers, and Internet connectivity. The ILO survey found that a large proportion of workers who were engaged on digital labor platforms were highly educated with 67% having a bachelor's or post-graduate degree. There were regional variations with workers from Asia having comparatively higher education compared to Africa and Latin America. Further disaggregation based on the different disciplines of high-level education showed that about 57% of the workers were specialized in

9. See ILO, *Men and Women in the Informal Economy: A Statistical Picture*, (2018).

10. See Graham, et al., *supra* note 1; Richard Heeks, *Decent work and the digital economy: A developing country perspective on employment impacts and standards in Online Outsourcing, Crowdwork, etc.*, Working Paper No. 71, Centre for Development Informatics, University of Manchester, 2017; Siou Chew Kuek et al., *The Global Opportunity in Online Outsourcing*, WORLD BANK OTHER OPERATIONAL STUDIES (The World Bank, June 2015); Schriener & Oerther, *supra* note 3.

11. See Heeks, *supra* note 10.

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STEM (science, technology, engineering and mathematics) education; 26% in economics, finance and accounting and the remaining 17% in arts and other social sciences.¹²

The nature of tasks performed on many of the microtask platforms are very short in time, repetitive and well-defined, and distributed globally across a large pool of workers. The content of tasks performed by workers from developing countries on these platforms are clerical, low-end and can be categorized into tasks for AI and machine learning (data collection, categorization, content moderation, verification and validation, etc.); and tasks for promoting products and services (content access, market research and reviews, surveys and experiments, etc.). Firms not only have the double advantage of reducing costs and building data archives outsourcing this work through digital platforms, but they can also utilize the data for machine learning and training algorithms for future automation. Tasks that are geared towards promotion of products and services, have been termed as “malicious”¹³ or “web service abuse”¹⁴ by computer scientists, and are also ethically questionable.¹⁵ Despite the efforts to remove such tasks from platforms, they continue to be outsourced and about 50% of the sample respondents in developing countries performed these tasks. For instance, it includes clicking through pictures or watching a YouTube video or staying on a particular website for a defined time. Such meaningless tasks help companies improve their profits and services at low labor costs.¹⁶

Workers in developing countries are also engaged in tasks consisting of cleaning the web.¹⁷ These tasks are usually termed as content screening or content moderation; wherein objectionable material is removed from the web. It is often perceived that much of this material is screened out by algorithms, but in reality, it is done by the “invisible workers,” human labor either on digital microtask platforms or in call centers in India, the Philippines or other developing countries.¹⁸ The requirements of these tasks

12. See Berg, et al., *supra* note 2.

13. See Choi, H.; Lee, K.; Webb, S. Detecting malicious campaigns in crowdsourcing platforms. Paper presented at the *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, San Francisco, 18–21 Aug. 2016.

14. See Marti Motoyama et al., *Dirty Jobs: The Role of Freelance Labor in Web Service Abuse*, SEC'11 Proceedings of the 20th USENIX conference on Security 14–14 (2011), who found such tasks to represent 45% of the market size.

15. See Berg, et al., *supra* note 2, for more details.

16. See HAMID R EKIBIA & BONNIE NARDI, *HETEROMATION AND OTHER STORIES OF COMPUTING AND CAPITALISM* (2017); MARY L GRAY & SIDDHARTH SURI, *GHOST WORK: HOW TO STOP SILICON VALLEY FROM BUILDING A NEW GLOBAL UNDERCLASS* (2019).

17. See Sarah Roberts, *Digital Refuse: Canadian Garbage, Commercial Content Moderation and the Global Circulation of Social Media's Waste*. Media Studies Publications, Paper 14 (2016), available at <https://ir.lib.uwo.ca/commpub/14/>.

18. See Adrian Chen, *The Laborers Who Keep Dick Pics and Beheadings Out of Your Facebook Feed*, WIRED, (Oct. 23 2014), <https://www.wired.com/2014/10/content-moderation/>.

are not only mind numbing but have significant psychological impacts on the workers.¹⁹

The nature of employment opportunities that the digital microtask platforms are generating in developing countries do not coincide with the high levels of education that many of the platform workers possess. While performing these tasks can provide some immediate financial support, it does not necessarily provide an opportunity for learning or skill acquisition, nor does it improve their future employability. Rather microtask work has the potential to deskill workers as jobs tend to be broken down or fragmented into smaller tasks.²⁰ It also increases insecurity and fear among workers about how this work is perceived by others as it might not be valued as work.²¹ These trends are worrying as in developing countries attaining higher education is quite expensive. In the pursuit of promoting higher education, the State either subsidizes education or provides scholarships, and households often borrow or make huge financial sacrifice to invest resources into education.

In such a context, instead of using the skills of the highly educated workforce for a beneficial development outcome of the local economy, they are being used inefficiently to write reviews of products, places, companies, and promote websites to generate profits for companies. While, governments in developing countries are promoting such digital labor, the question is whether this is the desirable path for the present and future generation.²² Training workers to perform high-end tasks on macro or software development platforms (coding and programming) might be beneficial for them, provided that they have labor and social protection, but training workers in microtasks is probably not the best way to create employment opportunities for the well-educated workforce and to utilize their skills.

Investments in education, which are made with the purpose of bringing about a productive transformation of the economy that advance societies, are neither leading to high-quality employment with income and labor protection, nor improving the content of work. From a development perspective, it is important to identify sectors that have growth potential and to bring about productive transformation of the economy utilizing the highly educated and skilled workforce. A number of developing countries have in the past benefited from such a strategy wherein they identified sectors that have growth potential and invested their scarce resources in developing those

19. See Sarah Roberts, *Behind the Screen: the hidden digital labor of commercial content moderation*. Dissertation, University of Illinois at Urbana-Champaign (2014).

20. See Aniket Kittur et al., *The Future of Crowd Work*, in CSCW 2013 - Proceedings of the 2013 ACM Conference on Computer Supported Cooperative Work, <https://doi.org/10.1145/2441776.2441923>.

21. See Berg, et al., *supra note 2*.

22. *Id.*

skills and knowledge.²³ In the current context, this would require not only identifying sectors, but also innovative strategies to utilize these highly-qualified workers to bring about a transformation in a sustainable way that contributes towards the well-being of society. Such a strategy is best placed within a larger digital industrialization framework, involving development of the entire digital economy in a manner that serves the interests of all domestic actors.

B. Low Pay and Social Security Benefits

Though digital labor platforms provide employment opportunities to workers, a major challenge has been to ensure decent working conditions. The current regulatory systems are not adapted to govern and regulate the digital economy. As a result, digital labor platforms rarely follow any labor regulations; instead they are largely self-regulated, in general by a one-sided participation agreement, which lays out the responsibilities of the platform and its users (both clients and workers). Platform operators exploit this void of regulation and face limited pressure from governments to comply since they create jobs in these economies which the workers can access. These patterns have shown to undermine regular employment relations in developed countries, contributing to a rise in informal employment. Within developing countries, these concerns are not being raised among government officials and stakeholders due to persistently high rates of informal employment and rising unemployment. These further worsen the conditions for labor, and present concerns with regard to effective realization of labor rights, as it erodes any possibilities of unionization or collective bargaining.

A number of studies over the past few years, irrespective of the region—advanced or developing economies—have shown workers’ remuneration to be low across a number of platforms.²⁴ According to the findings from the ILO survey, the average earnings of the workers on digital microtask platforms in developing countries was much lower than the advanced

23. See Cimoli, M.; Dosi, G.; Stiglitz, J.E. (eds). *INDUSTRIAL POLICY AND DEVELOPMENT: THE POLITICAL ECONOMY OF CAPABILITIES ACCUMULATION* (2009); Salazar-Xirinachs, J.M., Nübler, I., Kozul-Wright, R. *Transforming economies: Making industrial policies for growth, jobs and development*, ILO (2014).

24. See, e.g., Janine Berg, *Income security in the on-demand economy: findings and policy lessons from a survey of crowdworkers*. Conditions of Work and Employment Series No. 74, 2016; Bergvall-Kareborn, B., D. Howcroft, *Amazon Mechanical Turk and the commodification of labour*, 29 *NEW TECHNOLOGY, WORK AND EMPLOYMENT* 213–223 (2014); A. Felstiner, *Working the crowd: Employment and labour law in the crowdsourcing industry*, 32 *Berkeley J. Emp. & Lab. L.* 143–204 (2011); Kotaro Hara et al., *A Data-Driven Analysis of Workers’ Earnings on Amazon Mechanical Turk*, *ArXiv:1712.05796 [Cs]*, CORNELL UNIVERSITY COMPUTER SCIENCE (Dec. 14, 2017), <http://arxiv.org/abs/1712.05796>; Ipeirotis & John Horton, *supra* note 1; European Parliament, *The social protection of workers in the platform economy*. Brussels, European Union, 2017; Annarosa Pesole, A., M C Urzi Brancati, Enrique Fernández-Macias, F. Biagi, I. González Vázquez, *Platform workers in Europe: Evidence from the COLLEEM Survey*. Joint Research Centre, European Commission, Brussels, 2018.

countries, and hourly earnings ranged between \$2.98 in Asia, \$1.66 in Africa, and about \$2.15 in Latin America. The proportion of workers earning below the average wage was quite high (70%) and across regions it was comparatively high in Africa (86%) and Latin America (76%) than Asia (66%). The remuneration for the tasks was quite low, especially if the high education levels of these platform workers were to be considered.²⁵ The argument that earnings would increase with experience, better ratings and improved skills over a period of time does not seem to hold for microtask workers. Evidence shows that the rise in earnings on these platforms is quite flat after three years and there was hardly any improvement in pay even after the workers had spent a substantial number of years on these platforms performing varied types of tasks.²⁶

The lack of a clear employment relationship also excludes platform workers from accessing the benefits associated with traditional employment, such as social protection. The findings from the ILO survey shows that only a very small proportion of workers performing tasks in digital labor platforms had access to social protection - Africa (45%) and Latin America and Asia (38% each).²⁷ Workers who possessed social security benefits or health insurance were either dependent on their other occupations or their spouse or other family members, and not from their engagement on platforms.

Due to low pay and lack of social protection, workers had to constantly look for work, and had no control over their time or work schedule. According to the ILO survey, a very high proportion of workers (65%) reported working at least six days per week, and 44% working for seven days per week. The need to adapt to the temporal distribution of jobs, depending on their geographical location also meant that many workers had to adapt to work in the evening or night. The ILO survey findings showed that the proportion of workers working during night (10 p.m. to 5 a.m.) was 56% and during the evening (6 p.m. to 10 p.m.) was 68% due to the availability of tasks.²⁸ The high intensity of work faced by platform workers makes flexibility and work-life balance quite illusory.

C. Lack of transparency

Another major challenge in digital labor platforms—both online web-based and local app-based platforms is the lack of transparency regarding the management, allocation, monitoring and supervision of work. The lack of

25. See Uma Rani, and Marianne Furrer, *Digital platforms and new forms of flexible work in developing economies*, COMPETITION & CHANGE (forthcoming).

26. See Uma Rani, and Marianne Furrer, *On-demand digital economy: Can experience ensure work and income security for microtask workers?*, JOURNAL OF ECONOMICS AND STATISTICS, (2019).

27. See Rani and Furrer, *supra* note 25.

28. *Id.*

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transparency leads to information asymmetry empowering platform owners and disempowering workers, as algorithms manage the different operations on the platform. The lack of transparency is not only related to algorithms, but also in a number of areas such as, the way tasks are partitioned or fragmented, communication between the platform operators and the clients, the outsourcing of the help and support functions on the platform to third parties, the interface design that restricts access to information, and the application of the terms of use, among others.

Platform companies can alter the algorithm based on the behavior of workers, allowing the platform company to exert greater control over the worker, often removing the free agency.²⁹ The algorithm is coded by human programmers, who develop a set of instructions on the process of posting tasks, evaluating results and rewarding workers, which is then automated through this system. There is no transparency in the source code of the algorithm, and it is a “black box” not accessible to workers. As a result, workers often do not know on what basis they receive certain tasks, who are their clients and how ratings influence the allocation of tasks. Additionally, algorithms often include elements of machine learning; if bias is fed into the system, this can result in discriminatory practices that target particular workers.³⁰ On online web-based platforms, the algorithm helps to allocate tasks to the crowd, monitor work and award payments. While, on local app-based platforms the algorithm matches or assigns the workers with the clients to perform the tasks.

The algorithms and different functionalities of platforms are developed based on the vast amount of data gathered from the usage and different interactions of users with the platform, including the workers themselves, to identify patterns, which are then used by the platform for governance, management purpose³¹ and platform improvement. However, it is important to note that the algorithms are only as good as the data that is fed based on the inferences generated on that basis, and if there are gaps or errors in data then the algorithms automate the existing patterns of discrimination.³² While, the data on workers is collected by the firms, this data is not visible or accessible to workers, allowing labor platforms to have greater power over workers.³³ The questions related to ownership and use of workers’ data are discussed in a subsequent section.

29. See Sangeet Paul Choudary, *ILO Research Paper Series: The Architecture of Digital Labour Platforms: Policy Recommendations on Platform Design for Worker Well-Being* (2018), https://www.ilo.org/global/topics/future-of-work/publications/research-papers/WCMS_630603/lang-en/index.htm?shared_from=shr-tls.

30. See Berg, et al., *supra* note 2.

31. *Id.*

32. See UN, *supra* note 7.

33. See Berg, et al., *supra* note 2.

The “black box” nature of the functioning of the platform also leads to non-responsiveness on the part of the requesters or clients towards the workers on why the task was rejected.³⁴ This unfair treatment largely stems from two factors: first, many times there is complete lack of transparency on the platforms about the clients who outsource these tasks, as both workers and clients are made anonymous on certain platforms;³⁵ and second, the cost of responding to the worker is higher than what was paid to them for the task.³⁶ For these reasons requesters in personal communication with researchers have argued that “this has to function on an autopilot as algorithm integrated into the business process.”³⁷ This leads to frustration among workers, as they do not have the proper feedback to improve their performance, and it negatively affects their reputation and ratings, and accessing subsequent future work. Thus, there is a need for more transparency in platforms about the processes and terms of service agreements so that the workers can make informed decisions.³⁸

For instance, on microtask platforms when five workers perform a particular task, and the result of one of the workers is different from the other four, algorithms can be programmed to select the most common response, irrespective of accuracy. Such a majority voting algorithm is quite biased, as when workers reach a certain threshold of rejections, they might not be eligible or denied for better paid tasks or can automatically be deactivated from the platform. For example, on AMT, workers with an approval rate of at least 95% are able to access a higher volume of work, and frequently better-paid tasks. On Microworkers, workers whose approval rate (“temporary success rate”) falls below 75% are prevented from performing jobs for the next thirty days. In the ILO survey, we found that on average, 83% of the workers reported their work being rejected: 43% of the workers have at least 5% of their work rejected, 32% have at least 10% of their work rejected; and 8% have more than 10% of their work rejected.³⁹

The design features in the platform also has the potential to restrict workers from certain countries and with certain characteristics to perform particular tasks, disrupting the notion of equal access. This is also described

34. See F. Pasquale, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* (2015).

35. See Miriam A. Cherry, *Virtual Work and Invisible Labor*, in *INVISIBLE LABOR: HIDDEN WORK IN THE CONTEMPORARY WORLD* 71–86 (Carin M. Oister WR and Cherry MA eds., 2016).

36. See L. C. Irani and M. S. Silberman, *Turkopticon: Interrupting Worker Invisibility in Amazon Mechanical Turk*, UC SAN DIEGO (October 31, 2015), <https://escholarship.org/uc/item/10c125z3>.

37. See L. C. Irani, *Difference and dependence among digital workers: The case of Amazon Mechanical Turk*, *SOUTH ATLANTIC QUARTERLY*, 114 (1), 225-234 (2015).

38. See Florian Schmidt, *Digital Labour Markets in the Platform Economy: Mapping the Political Challenges of Crowd Work and Gig Work* (2017).

39. See Rani and Furrer, *supra* note 25.

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as a form of hiring penalty.⁴⁰ This disruption could discriminate workers based on gender and region (nationality) both in terms of access and also remuneration. Empirical evidence in both microtask and macrotask platforms, show that workers from developing countries earn lower absolute wages compared to their counterparts in advanced economies, and when adjusted for purchasing power parity, these differences are much smaller.⁴¹ This also leads to a ‘dual-banded pay-rate marketplace’,⁴² reinforcing earning differentials between gender and regions as some of the well-paid tasks do not reach workers in developing countries.⁴³

III. DATA USE, OWNERSHIP AND WORKERS’ RIGHTS

Digital economy not only risks informalizing work relationships, but it is also engendering new economic relationships which are worth examining. The digital economy is driven by data, and data collection, ownership and its management have significant impact on capital-labor relationships. As data is central to the digital economy, who owns and controls the data or can use the data intelligently gains significant advantages. This raises fundamental questions of how data in its various forms, personal, business, community, and public—is structured, and the relationship of labor with data policies.

A. Data Generation and its Use

All spheres of the economy are characterized by the increased datafication of economic activity, through collaborative ecosystems rather than a simple linear supply chain.⁴⁴ With the growth of technology, data has become an increasingly important source of power for different actors. Digital data⁴⁵ provides vital, and often exclusive, information of a granular and real-time kind about different actors and economic activity. Digitalization facilitates the collection, processing, storage, use and transfer

40. See Vili Lehdonvirta, H Barnard, Mark Graham and I Hjorth, (2014) ‘Online labour markets – leveling the playing field for international service markets?’ In: Internet, Politics, and Policy Conference, Oxford, UK, 25-26 September 2014; Hernan Galperin and C Greppi, *Geographical discrimination in the gig economy*. Unpublished.

41. See Berg et al., supra note 2; Niels Beerepoot and Bart Lambregts, *Competition in Online Job Marketplaces: Towards a Global Labour Market for Outsourcing Services?*, 15 GLOBAL NETWORKS (2015), <https://doi.org/10.1111/glob.12051>; Galperin and Greppi, supra note 40.

42. See D. Martin, B.V. Hanrahan, J. O’Neill, and N. Gupta, *Being a Turker*. Proceedings of the CSCW ‘14 Conference, Baltimore, MD, 224–235 (2014).

43. See Rani & Furrer, supra note 25; Janine Berg and Abigail Adams, *When Home Affects Pay: An Analysis of the Gender Pay Gap Among Crowdworkers*, 2017 show that on Amazon Mechanical Turk female workers earned 82% of what the male workers earned.

44. See S. Frederick, P. Bamber and J. Cho, *The Digital Economy, Global Value Chains and Asia*, Duke University Global Value Chains Center (Duke GVCC), December 2018.

45. Digital data refers to all forms of data that can be interpreted, sorted, and transferred by machine learning.

of data. Data's primary value or economic benefit can only be derived from converting data into 'digital intelligence' which is the ability to transform digital data into something actionable, that can be used for market or economic transactions. This kind of a systemic intelligence of entire economic sectors and its actors, embedded in digital platforms, can also determine and reorganize production and consumption. Such an "intelligent process" may even supplant open markets and prices as the central mechanism of economic organization.⁴⁶

For instance, in e-commerce platforms, digital data about consumer preferences, their consumption patterns, tastes, etc. are turned into "intelligence," which are then used for making seamless "economic decisions" about product listing, designs, prices, inventory, logistics, and so on. Similarly, on digital labor platforms, vast amounts of data are gathered from the users, potential users and the ecosystem actors, which are then used to identify patterns, business market opportunities and knowledge gaps to develop and implement algorithms which can be used by platforms for governance and management purposes.⁴⁷ Whoever possesses such "data" or information, comes to exercise significant power and within a market context, this power can be harnessed for profit accumulation, and can also create a power imbalance between capital and labor.

The industrial age was characterized by mass production, and then flexible production process, while the digital economy is marked by "intelligent production" system, wherein data or systemic intelligence that is being generated through the web is prominently embedded into the production process. This allows ". . . production systems . . . to communicate and interact with machines and humans in a distributed environment . . ." and provide different types of products and services,⁴⁸ which is of a very different and unique nature. The interaction of different actors on the online web creates massive amounts of data which enables automated insights and intelligence at multiple levels in real time.⁴⁹ This is much beyond what was humanly or organizationally possible earlier. The data that is generated through this process is not just like a Management Information System (MIS) of an organization's workplace, which enable human or organizational decision making and wherein the employer may legitimately own it.

In the age of digital and artificial intelligence (AI) based economics,⁵⁰ the digital data generated about an individual could far exceed the knowledge

46. See Singh, *supra* note 5.

47. See Choudary *supra* note 29.

48. See Eckart Uhlmann, Eckhard Hohwieler and Claudio Geisert, *Intelligent production systems in the era of Industrie 4.0 – Changing mindsets and business models*, 17 J. MACH. ENG'G (2017).

49. See Parminder Jeet Singh, *Negotiating the Digital Economy*, IT FOR CHANGE (forthcoming).

50. Traditional, industrial economy is based on informational analysis, which includes prices and other market factors.

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individuals might possess about themselves. Such information is not just about individuals separately but comprises of an entire gamut of social and economic relationships that form a part of the economy at any given time. Both individual information separately and collectively helps to capture value, and can be used for economic decision-making, design opportunities and to policy making. Digital intelligence⁵¹ can also be mediated through human agents into actual decisions⁵²; for instance, a doctor may first confirm an AI based diagnosis through other kinds of skills and then act upon it.

In digitally enabled workplaces, such as transportation or retail services, workers produce large amounts of data, which are used for improving the algorithms and the next generation of products and services. For instance, if the navigation technologies have to generate data about the road conditions in a sub-optimal route, then using its algorithm it guides “most of the traffic along the best performing route, while routing a small fraction via the sub-optimal route,” thus gathering data in the process.⁵³ This might eventually benefit all users as it helps to improve the algorithm. However, the power imbalance allows the platform to deploy such an algorithm to re-route traffic without the awareness of the users. This raises important ethical and political economy questions, about the use and ownership of such data.

Data has both use value and exchange value, and can be utilized by multiple stakeholders, that is workers, business, community, and governments. Data collected at workplace can be utilized by companies for planning, surveillance, and monitoring of workers’ performance, which can potentially be used to improve organizational goals. However, such personal information or data could also negatively impact employees.⁵⁴ Some of the workers’ data might also include sensitive information such as their health conditions, which can be advertently used and can impact workers’ future career prospects.⁵⁵ Similarly, surveillance on platforms, may give the platform company an information advantage over a worker who has only limited access to such data.⁵⁶ This asymmetry of information could lead to a power imbalance between company that accesses, collects and owns the data, and the employees or companies who produces and provides the data.

51. See Singh *supra* note 5, on why the term “digital intelligence” is being preferred here to the relatively technical, although more commonly employed, artificial intelligence. Also see UNCTAD for use of the “digital intelligence” term:

https://unctad.org/meetings/en/SessionalDocuments/tdb_edc3d3_en.pdf.

52. PwC’s distinction between augmented and autonomous intelligence. See *AI everywhere & nowhere part 3 – AI is AAI (Assisted-Augmented-Autonomous Intelligence)*, PwC (May 20, 2016), <https://usblogs.pwc.com/emerging-technology/ai-everywhere-nowhere-part-3-ai-is-aaai-assisted-augmented-autonomous-intelligence/>.

53. See Choudary *supra* note 29.

54. Kirstie Ball, *Workplace surveillance: an overview*, 51 LAB. HISTORY 87-106 (2010).

55. Ben Dattner, *How to Use Psychometric Testing in Hiring*, HARV. BUS. REV. (Sept. 12, 2013), <http://blogs.hbr.org/2013/09/how-to-use-psychometric-testin/>.

56. See Choudary *supra* note 29.

While, at times individual data might be sensitive, aggregated data from individual cases can be effectively used to map disease outbreaks or improve treatment of certain diseases, or to personalize health services.⁵⁷ Similarly, ride-sharing platforms such as Didi, Ola, Uber, etc. generate real time traffic information through their apps. In developing countries where traffic congestion is a huge problem, this real-time data can be beneficially used for improving the traffic congestion or re-routing the traffic where infrastructure exists. The aggregation of data in areas such as health, agriculture, environment, etc. could also be beneficial for researchers and policy makers to use data and AI to have a better understanding of issues and to find new ways of making progress towards UN Sustainable Development Goals (SDGs).⁵⁸ Such data are not only beneficial for the community but also helps local and national governments in decision and policy-making. Data access and use at the individual or collective level, would also empower workers and bring about greater transparency allowing workers to effectively engage in bargaining with firms and platform companies to improve their working conditions.

Whoever has access to such digital data, and thus digital intelligence about these economic relationships can (i) help organize them with much greater efficiency than before, and (ii) considerably influence or control the behavior and actions of all or most actors in the concerned economic or ecosystem. Thus, while data can be used to serve individual, economic and societal interests, it is equally important to address the concerns about the privacy, security, ownership, and use of data, as this data is controlled by companies who have a huge concentration of market power.⁵⁹

B. Ownership of Data

Platforms play a cardinal role in a digital economy, as continual miners of digital data, transforming it into digital intelligence, and employing such intelligence for coordinating economic activity and actors to a much higher level of efficiency than otherwise possible. Both due to networking effect and data lock-in and data aggregation effects (more data leads to geometric increase in its value), there is a tendency for platforms to become monopolies (or duo- or trio-polies).

The power of the platforms depends upon the control they have on digital data on users' needs. Digital platforms claim data's entire value ostensibly on the logic that it is they who invest in collecting the data and

57. See UN, *supra* note 7, as was observed in the case of Ebola Outbreak.

58. *Id.*

59. See UNCTAD, *Growing trade in electronic transmission: Implications for the South* (Research Paper No. 29, 2019); S. Frederick, P. Bamber and J. Cho, *The Digital Economy, Global Value Chains and Asia*, Duke University Global Value Chains Center (Duke GVCC), December 2018.

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transforming it into intelligence. They do not take into consideration the rights of those who generate the data, whether it be workers, producers or consumer, and without whom the data might not have existed. There are also questions about who owns such data, and the value arising from it. As generators of data, what economic rights do the individuals have? Interestingly enough, despite all the emphasis on data being the new form of capital that can be leveraged, commodified and monetized to create new revenue,⁶⁰ the question of data's value, and legitimate economic rights to it has not received much attention. However, some scholars have thought of 'data as labor',⁶¹ and have suggested that workers should collectively organize into a 'data labor union' and bargain for fees for the data.⁶² The other emerging idea to make data transactions explicit and share the value extracted from personal data, is to have a new legal structure such as the third party "data fiduciary,"⁶³ which is being explored in India⁶⁴ and the United Kingdom.

The questions is, does workers' data and intelligence contribution get remunerated by their wages alone? Or, does data and digital intelligence contribution follow a different remuneration/ownership logic than contribution of physical (or even intellectual) labor to the production process? Most often a worker's work contract is about some physical or intellectual activities and labor that they contribute. Data arising from it, meanwhile may simply be appropriated at no cost.⁶⁵ For instance, in the case of Uber, as a digital company its central asset is 'digital intelligence' developed from various kinds of users' data. An important question that arises is as both Uber drivers and clients are the key contributors of this data, should they not, by that virtue, own stake in this key "intelligence asset" of Uber? For instance, Uber provides a set of services to drivers for which it takes around 25% cut from the fare. But there seems to be no compensation

60. See Jathan Sadowski, *Companies are making money from our personal data – but at what cost?*, THE GUARDIAN (Aug. 31, 2016), www.theguardian.com/technology/2016/aug/31/personal-data-corporate-use-google-amazon; World Economic Forum, *Personal Data: The Emergence of a New Asset Class* (2011), http://www3.weforum.org/docs/WEF_ITTC_PersonalDataNewAsset_Report_2011.pdf.

61. See Imanol A. Ibarra, et al., *Should we treat data as Labor? Moving beyond 'Free'*, American Economic Association Papers and Proceedings, 1:1, 2017; Eric Posner, *On Cultural Monopsonies and Data-as-Labor* (Jan. 31, 2018), <http://ericposner.com/on-cultural-monopsonies-and-data-as-labor>

62. See Ibarra, et al., *supra* note 59.

63. See UN, *supra* note 7.

64. See India Stack, *About data empowerment and protection architecture*, available at <https://indiastack.org/depa/>.

65. This can be seen in equivalence with how users obtain free digital services in exchange for the value of their data. A case is made that this does not exhaust users' data rights, and they retain basic ownership rights on their data and how is it further used. Similarly, small businesses, traders, or workers serving digital business- or workplaces may get some services or explicit remuneration in exchange for data they contribute, but this process does not exhaust their rights over the contributed data, and the digital intelligence built from it.

for the data contributed by drivers on a continual basis which helps Uber to build up its asset base, that is digital intelligence.⁶⁶

This further weakens the rights of the workers to have access and ownership to the data that they generate and shifts power towards employers. The way data ownership is structured today limits any free agency to workers, as firm's or platform company's data is not accessible or visible to them.⁶⁷ For instance, the rider allocation algorithm of Uber and the driver app interface withholds key information till the driver accepts the ride, thus limiting the free agency of the driver.⁶⁸ Similarly, Uber drivers—whose status whether they are independent contractors or workers of ride hailing platforms remains contested—have been demanding access to data and algorithms that Uber employs to determine their working conditions,⁶⁹ but without much success.

Data is neither like physical good nor like knowledge or intellectual products (that are actively created by an agent).⁷⁰ Data that is generated by the community, and is useful for economic decision making and societal development should primarily be a common or public asset and have community ownership. An even stronger claim to a community's ownership over its data arises from the fact that it is data *about* the community, which provides intelligence *about* it. The latter's greatest value lies in being employed in relation to the concerned community. This is akin to rights over natural resources that arise from the lands owned by a community,⁷¹ even when the latter may add no more value and may not even have been aware of the usefulness of the natural resource. The Nagoya Protocol on "Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization" to the Convention on Biological Diversity establishes conditions for access to genetic resources and sharing benefit with the community from where these resources arise.⁷² It could of course be licensed in various ways for obtaining its best value in practical terms.

66. If Uber is indeed basically a technical platform or application that drivers and commuters use—as Uber claims to be—then all data contributed by the drivers and Uber beyond its use for the particular service transaction for which is it contributed should remain as owned by drivers and commuters, individually and/or collectively.

67. See Choudary *supra* note 29.

68. Alex Rosenblat & Luke Stark, *Algorithmic labor and information asymmetries: A case study of Uber's drivers*, 10 INT'L J. COMM'N, 3758–3784 (2016), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2686227.

69. See *Uber Drivers Demand Their Data*, THE ECONOMIST (Mar. 20, 2019), <https://www.economist.com/britain/2019/03/20/uber-drivers-demand-their-data>.

70. This reverses the first principle of market or capitalist economy of physical property.

71. See World Trade Organisation, "Work Programme on Electronic Commerce: Report of Panel Discussion on Digital Industrial Policy and Development," World Trade Organisation, Communication from the African Group. *General Council*, 21 July 2017.

72. See *About the Nagoya Protocol*, CONVENTION ON BIOLOGICAL DIVERSITY, available at <https://www.cbd.int/abs/about/default.shtml>.

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Community data ownership enables communities and nations to exercise legal and regulatory power over platforms for appropriate fairness and justness vis-a-vis all other economic actors, including workers. This is ensured by employing such data ownership to (i) strengthen national digital industries, which are more regulatable and have relatively moderate digital power to overwhelm the rights of other, and (ii) license community data to digital platforms imposing strong public interest conditions as a part of such licensing. Community data ownership can also lead to developing appropriate public data infrastructures and other public enterprises and institutions, which can further contribute to empowering workers and improving their lives, and to meet the UN SDGs. Such group or community intelligence will also increasingly determine its economic, social, political and cultural affairs, and the question is whether such critical intelligence can be left under someone else's ownership and control.

Such questions will need to be placed in the overall moral-philosophical thinking about, and political economy of, data and digital intelligence.⁷³ This subject requires a separate detailed analysis that is beyond the scope of this paper. Workers therefore need to be conscious of, and engaged with, all elements of data value chains, from personal and community data, and data about independent producers, businesses and traders, to data produced in work processes. This would also require different economic rights around various kinds of data, including its ownership to be examined. Furthermore, the profits that are generated in the digital age are a result of 'network effects' and "data effects" rather than "innovation" that was observed in the industrial production. In absence of any countervailing power, of regulation or otherwise some kind of power redistribution, platform owners come to possess near limitless avenues of profit and rent seeking, as they strongly control the economic organization and actions of all other actors.

IV. DATA GOVERNANCE AND SILICON VALLEY MODEL

Ownership apart, there are significant gaps in accessing data and the capacity to transform data into digital intelligence between countries due to digital divide. From a developing country context, the other issues that requires attention relate to the extent to which countries are able to negotiate

⁷³ The "data as labor" perspective considers user-contributed data on platforms to be their labor and that should be remunerated. For instance, see F. van Schalkwyk, A. Andrason & G. Magalhaes, *A New Harvest: A Review of the Literature on Data Ownership Focusing on the Agricultural Sector* (2018). On the other hand, the "community data" perspective considers provision of collective ownership rights to data producers, which can be variously employed. For instance, can workers engaged in various kinds of production processes too, wholly or partly, own the data they so contribute, other than just being remunerated in the form of wages for their overall contribution to production.

data localization including restrictions imposed on cross-border free flow of data, entrenchment of rules in global trade deals, taxation, privacy, etc.

As digital economy increasingly moves towards a “targeted” advertisement model or digital/artificial intelligence driven economic activity, “data-based intelligence” that looks into multiple relationships among different sets and kinds of data becomes extremely valuable. Such personally anonymized data, and the relationships among them, pertain not to any particular individual but a group or community of them. However, data that may be personally anonymized, or data about a concerned group or community of people, currently, has no legal protection, or economic/ownership rights.

Rather, the emerging default model, which can be called as the Silicon Valley model of digital economy, is that whoever collects data can, more or less, entirely appropriate its value and usage. The global free flow of data doctrine, prohibiting data localization, is basically a legal assertion of the default rule. The complications arise further when data is located in another country, and the national community thereupon does not have any special rights over it.⁷⁴ In such cases neither can ownership rights of other communities and groups, and perhaps also individuals can be claimed over data,⁷⁵ as there is no international arrangements for any cross-border recognition of such rights.

There is considerable debate about individual’s rights over data, though this discussion to a large extent is restricted to advanced economies and is slowly now emerging in developing countries. However, within the European Union (EU) the General Data Protection Regulation provides individuals ownership like rights over their data,⁷⁶ although it does not get into the discussion on individual’s economic agency and its contribution to that is questionable.⁷⁷ Questions are beginning to be raised in policy circles about ownership of data at various levels, including those in the digital value chains. The European Union’s competition authority is examining who has the rights on sellers’ data on Amazon’s e-commerce platform, and whether the latter is using such data to disadvantage sellers, for instance, by

74. See United Nations, *supra note 7*.

75. Proposed global trade agreements may incorporate some weak language about personal data protection, with the EU being especially keen on it.

76. See Aysem Diker Vanberg and Mehmet Bilal Ünver, *The Right to Data Portability in the GDPR and EU Competition Law: Odd Couple or Dynamic Duo?*, 8 EUR. J. L. & TECH. (Mar. 4, 2017), <http://ejlt.org/article/view/546>.

77. See Paul De Hert et al., *The Right to Data Portability in the GDPR: Towards User-Centric Interoperability of Digital Services*, 34 COMPUTER L. & SEC. REV. (Apr. 1, 2018), <https://doi.org/10.1016/j.clsr.2017.10.003>.

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developing competing products.⁷⁸ An EU policy document has raised questions about who owns Internet of Things (IoT) data, the owner of a machine or perhaps the factory premises, or the provider of digital application that collects and processes data.⁷⁹ The debate is slowly picking up in developing economies and India's draft e-commerce policy posits the notion of "community data" for data coming from a community, also advocating national ownership over its data.⁸⁰

The idea of national rights over a country's data, and some forms of data localization, can also be argued to develop national digital industries. The latter can be beneficial to workers in at least two ways: (i) it reduces overall concentration of digital power, and therefore makes various kinds of work-related negotiations less onerous, and (ii) national digital industry is easier to regulate than global corporations, including for labor related laws and regulations. The national rights over data would also help in designing integrated systems of taxation and social protection systems, which would be beneficial for the economy, individual and the society.

While the debate on data sovereignty and free flow of data gets intensified, there exists patchwork of rules today with regard to the governance of personal and public data as different countries develop their own strategies. Some follow national data plans (two countries), others have data protection (107 countries), or open data (sixty-two countries), or AI plans (seventeen countries).⁸¹ Even if there were to be a clear policy at the country level, there is no guarantee that the rules at the national level would be effective. This is because the proposed rules mentioned under the WTO e-commerce pluri-lateral initiative, can mandate that data cannot be stored locally including tax, wages, and other records. These rules, if implemented will then over-rule country initiatives.

Further, the global trade deals entrench the Silicon valley model.⁸² The United States and its allies are keen on global trade agreements that will bind countries to the basic tenets of this model, with the fear that governments in

78. *Is Amazon unfairly copying products? EU quizzes merchants*, LIVEMINT, (Sep. 28, 2018), available at <https://www.livemint.com/Home-Page/SvRCJ39kM1f7XHcQHdcBDM/Is-Amazon-unfairly-copying-products-EU-quizzes-merchants.html>.

79. See European Commission, *Building a European data economy*, EUROPEAN COMMISSION (2018), available at, <https://ec.europa.eu/digital-single-market/en/policies/building-european-data-economy>.

80. See Government of India, *Draft National E-commerce Policy* (Feb. 23, 2019), https://dipp.gov.in/sites/default/files/DraftNational_e-commerce_Policy_23February2019.pdf.

81. See Susan A. Aaronson, *Data is different: Why the world needs a new approach to governing cross-border data flow*, CIGI Papers, No.197, Nov. 2018.

82. Outside its borders, China mimics the Silicon Valley model, of a few giant digital corporations employing their data competencies across sectors, swallowing local start-ups, and quickly scaling vertically and expanding horizontally to sweep data from all across, creating unbeatable levels of digital or artificial intelligence. Monopolistic profits and rent are employed to technology innovations and development that is almost impossible to compete with.

other countries may soon realize the extent of economic and other kinds of dominations they may be setting themselves up for. This was first included by the United States in the Trans-Pacific Partnership (TPP), which later got signed as Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Since then it has been included in most trade treaty proposals that the US and its allies have got involved into. The latest of these is a plurilateral initiative at the World Trade Organisation (WTO), with many developing countries lured into it.

The template global digital trade rules are contained in the United States' policy document, namely the Digital 2 Dozen.⁸³ The rules can generally be put into three categories: free global flow of data, a single global digital economy space governed by private law, and curtailing of national digital policy and regulatory space. Further, the provisions go beyond creating a single global data space to globalizing other elements of the digital economy, like physical networks and legal structures. The former is sought to be achieved through seeking uninhibited and non-discriminatory access provided by telecos to foreign companies and the latter, for instance, by rendering e-authentication and e-security as issues primarily between the transacting parties and not so much the remits of the concerned public law. A new transnational digital currency, Libra, developed by Facebook in association with many other global corporations, is a significant instance of digital transgressions over what were hitherto core public sector competencies.

The deregulation logic for a globalized digital economy is further extended by provisions that explicitly create barriers to regulation, like disallowing source code examination (which is key to digital regulation), non-requirement of local presence (without which it is difficult to see how a digital company can be regulated), etc. The lack of transparency in algorithms leads not only to discrimination due to data gaps, as mentioned before but can also have profound implications on some of the welfare provisions, such as public health care that the individuals receive or providing loans to loan seekers.⁸⁴ A fully globalized digital economy with immensely powerful global digital corporations spanning across sectors with their digital and data power, and little or no national level regulatory possibilities, would be detrimental to workers' rights and movements.

Another important element of the proposed digital trade rules is to ban custom duties and tariffs on electronic transactions. The pitch towards removing tariffs on imports of goods and services is also being made on the grounds of building digital infrastructure and reducing the digital divide.

83. See Office of the United States Trade Representative, *The Digital 2 Dozen* (2016), available at <https://ustr.gov/about-us/policy-offices/press-office/reports-and-publications/2016/digital-2-dozen>.

84. See UN, *supra* note 7.

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Efforts at the WTO rules of moving towards a permanent moratorium for electronic transfer will have a huge impact on the tax revenues. Conversely, if the Moratorium is removed then the tariffs on electronic transmissions as a source of revenue would grow in the coming years as more products are digitized. Some countries that will face very significant tariff revenue loss as a result of the Moratorium are Mexico, Thailand, Nigeria, India, China, and Pakistan, and the potential revenue loss is estimated to be close to US \$8 billion for these countries, and if one adds custom duties (\$2.7 billion) then it is more than \$10 billion.⁸⁵ At the same time, electronic transactions are being defined more and more widely to include all kinds of digital services and products.

Digital flows are in any case becoming the key value flows across borders, not just by the intensity of growth of digital services, but also with digital data becoming the most valuable element in the production and value chains. Not being able to tax cross-border electronic transmissions means abandoning of a major source of revenue for developing countries, which can have implications in the provision of their public goods and welfare services. The decline in tax revenues in developing countries would have a huge impact on social expenditure allocations, and the governments would be forced to reduce these expenditures, impacting the provision of labor welfare and social protection to workers. Further, it has been estimated that 95% of the world's tariff revenue loss due to Moratorium would be borne by developing countries, though they have the potential to "generate 40 times more revenue from imposing custom duties on electronic transfers compared to developed countries."⁸⁶

V. CONCLUSION

The structural changes in the economy brought about by digital technology impact jobs, their quality, and the right of the workers. While work on digital labor platforms offers considerable opportunities for workers in developing countries, many questions remain on the quality of jobs and market regulation. Global dis-intermediation of work provides much efficiency and cost reduction to businesses, a part of those gains may get shared with the labor force in developing countries. But, at the same time dis-intermediation and global-ness causes new issues of unfair labor practices and difficulties in regulating them.

Weakening of labor's position, and other marginalized economic actors such as small traders and SMEs in a globally integrated digital context is accentuated by the default Silicon Valley model whereby data collecting

85. See UNCTAD, *supra* note 59.

86. *Id.* at 20-21.

corporations get to own and utilize its entire value. More fair and just data governance regimes can go a long way in empowering workers, so that they can defend and promote their rights. In this regard, workers' interests in strong global and national regimes of data governance and ownership are crucial.

A globally integrated digital economy that is difficult if not impossible to regulate is a model that is sought to be legally entrenched through global e-commerce rules, like the e-commerce pluri-lateral initiative at the WTO. They seek global free flows of data, which means no national data governance or ownership regimes. These proposed rules would outlaw essential levers of digital regulation like source code examination and local presence requirements. The plan is to minimize or altogether eliminate the role of public law and make digital economy entirely subject to private contracts, backed by the private law of digital superpowers. This would have adverse impact on workers and small traders, especially from the developing countries.

A major impact of the proposed e-commerce rules is on avenues of taxing the digital economy, as tariffs and custom duties are removed on sale of goods and services, and if permanent moratorium is introduced for electronic transfer. This would lead to a decline in tax revenues that would impinge on the resources that are required to build the social protection nets for the increasingly informal and precarious labor force in developing countries.

The lack of proper institutional mechanisms in developing countries provides digital labor platform companies with additional incentives to operate in these countries outside the legal framework. This is even more evident if we take into consideration taxation as majority of the workers on digital microtask platforms do not pay any taxes. Technocrats in the Silicon Valley have been promulgating for a universal basic income for workers, and if global e-commerce rules proposals are implemented then the tax revenues and social expenditure allocations would reduce, and one wonders where the resources would be raised to implement such a universal basic income and at what level.

However, there are some efforts towards taxing platform companies, workers or users. For instance, in Belgium the government has developed a tax system for platform workers and is planning to provide social protection.⁸⁷ Similarly, in India the authorities have decided that Uber is

87. Anita Gurumurthy, *Policies for the Platform Economy: Current Trends and Future Directions*, IT FOR CHANGE, (2018), https://www.academia.edu/37818289/Policies_for_the_platform_economy_Current_trends_and_future_directions.

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liable for service taxes,⁸⁸ though these taxes are cut by the Uber app company from the driver's earnings, shifting the cost to the labor. Efforts are also being made to provide insurance coverage to workers, for instance, in Indonesia and other parts of Southeast Asia, Grab a ride-hailing service has partnered with a local insurance company to offer voluntary insurance package for drivers.⁸⁹ Such systems, however, need to be formalized and universalized under a proper legal framework.

Data rights for smaller actors in the digital value chains—small producers, businesses and traders—also decentralize digital power and can help improve workers' negotiating position and thus their rights and entitlements. The new European Union rules regarding businesses and traders using platforms seeks greater transparency on how their products and services are ranked, and what data platforms collect, and how they use it—and in particular how such data is shared with other business partners.⁹⁰

Finally, the very nature of the relationship between workers' data and digital capital—which is increasingly controlled by leading tech companies—may need to be re-conceptualized with a greater stake for workers in a transparent way. This would require governments, corporations and workers to engage in the basic nature, challenges, and potential of the emerging digital economy structures, which could help workers negotiate a new digital social contract. This requires political willingness at many levels, including, for a start, resisting the emerging default Silicon Valley model.

88. See Deepshikha Sikarwar, "ITAT Gives Partial Reprieve to Uber in Tax Demand Case," *Economic Times*, October, 2018, <https://economictimes.indiatimes.com/news/economy/policy/it-at-gives-partial-reprieve-to-uber-in-tax-demand-case/articleshow/66155341.cms>.

89. See Gregory Randolph and Hernan Galperin, *New Opportunities in the Platform Economy: On-ramps to Formalization in the Global South*, The future of Work and Education for the Digital Age, G20 Paper, 2019

90. See Press Release, European Commission, Digital Single Market: EU negotiators agree to set up new European rules to improve fairness of online platforms' trading practices, (Feb. 14, 2019), available at, http://europa.eu/rapid/press-release_IP-19-1168_en.htm.