Original Article

Uma Rani* and Marianne Furrer

On-Demand Digital Economy: Can Experience Ensure Work and Income Security for Microtask Workers?

Abstract: Digital labour platforms have been increasingly gaining popularity over the past decade. In particular, there has been much debate about workers' motivations and working conditions on microtask platforms. There exists little evidence on whether dependence on digital microtask platforms provides workers with work and income security in the long term and whether it provides opportunities for skill development. This paper explores the extent to which the seemingly flexible platform work ensures work and income security and provides opportunities for skill development for workers with different levels of experience, based on novel survey data collected on five globally operating microtask platforms and in-depth interviews with workers. The findings show that despite high financial dependence on this work, returns to experience on the platform are meagre in terms of earnings, and highly experienced workers face the same risks as new entrants with regard to discrimination, high work intensity, lack of autonomy and control over work, and social protection. There is also a skills gap between the nature of tasks available on these microtask platforms and the workers' education levels. Finally, experience does not ensure that workers have the opportunities to undertake complex and challenging tasks, and the possibilities to develop their skills and improve career prospects are limited.

Keywords: crowdwork, digital labour, online platforms, working conditions, skills, education, learning
JEL Classification: J24, J31, J32, J81

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1 Introduction

Digital transformations and widespread access to information and communication technologies (ICT) have facilitated changes affecting the way work is organized. They have enabled firms to outsource tasks and services through digitally mediated value chains, giving rise to new forms of employment such as crowdwork – "web-based" or "digital" labour platforms providing work to generally a large group of people who are geographically dispersed across different time zones and who complete projects or tasks through an open call (see Howe 2006), and offering businesses the possibility of completing projects at any time of the day. Three categories of crowdwork can be distinguished based on duration and complexity of tasks, remuneration and level of automation: microtasks (categorization, tagging, writing product reviews); macrotasks (developing a database, web development, product design); and complex tasks (software architecture, application development, algorithm and data structures). This paper focuses on workers on microtask platforms, where they complete generally short, simple tasks, often binary and multiple choice, where quality is frequently determined through a majority voting based algorithm and remuneration is based on the task or piece completed.

This paper argues that as firms externalize work through platforms, the existing business model is challenged and this has implications not only for workers' earnings and social security benefits (De Stefano 2016), but also for their training and skill development. We further argue that though crowdwork provides flexibility and freedom in terms of hours and place of work, and choice to undertake the task, ensuring work and income security remains a concern even for workers who have had a relatively long experience on these platforms.

Though a number of studies have investigated working conditions and workers' motivation on these platforms, little is known about whether online platforms provide stable and long-term work and income security, or opportunities to develop skills. This paper contributes to filling this research gap based on a recent novel large survey of crowdworkers on five globally operating microtask platforms, and in-depth interviews with workers. The paper focuses on workers with different levels of experience on these platforms and discusses whether income security, working conditions, and opportunities to develop their skills are better for workers with longer tenure compared with new entrants. In other words, can experience ensure work and income security on microtask platforms, and improve workers' skills?

The paper is organized as follows. The next section reviews the literature on crowdwork with a particular focus on working conditions, skills mismatch and

opportunities for skill development on microtask platforms. Section III presents the data and some basic characteristics of the crowdworkers. Section IV looks at what motivates these workers to perform microtasks and to what extent they are dependent on platforms for their incomes. Section V discusses working conditions on platforms in terms of payment, flexibility of work, autonomy and control in their work, and access to social protection. Section VI discusses tasks performed by the workers, the issue of skills mismatch, and whether crowdwork provides opportunities to workers to develop their skills. The final section concludes.

2 Platform economy: working conditions, skills mismatch and learning prospects

Innovations in technology have made access to the crowd through online platforms an alternative solution for a firm to coordinate projects instead of turning to a subcontractor or using its internal resources to solve problems (Bourdreau/Lakhani 2013). Though crowdwork has been gaining popularity, it is difficult to estimate the size of the workforce. Recent efforts to map the size of the online gig economy (Kässi/Lehdonvirta 2016) show that the online labour market grew by 25.5% between July 2016 and June 2017 (Lehdonvirta 2017).[1] Another estimate shows that "between 1% and 5% of the adult population in the European Union (EU) has participated at some time in paid work in the platform economy" (European Parliament 2017: 38). Huws et al. (2017) found that in the seven countries they analysed, the proportion of population engaged in crowdwork varied between 9% (Netherlands) and 22% (Italy). Pesole et al. (2018) found that in 14 EU Member States about 10% of the adult population on average have used online platforms for providing labour service. In the United States, it was estimated that 0.5% of the labour force was engaged in the online labour market (Katz/Krueger 2016). Although the size of the platform economy might be small, it is important to analyse and understand this form of work, as it is increasingly used by businesses and transforming the way work is organised. It thereby contributes to a larger trend towards non-standard forms of employment that has been observed over the past decade (ILO 2016).

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1 The authors primarily focus on platforms that focus on remotely delivered labour as opposed to localized services such as transport. The online labour index is based on traffic measurements from the five largest English-language online platforms.

Platforms serve as spot labour markets matching demand and supply, providing wide-ranging tasks or projects that workers can perform, and they also mediate between the client and the worker (Agrawal et al. 2015). For the firms, they reduce transaction and start-up costs while at the same time providing them access to a scalable workforce at their demand (Bourdreau and Lakhani 2013; Bergvall-Kareborn/Howcroft 2014; Huws et al. 2017). Empirical studies have shown that the crowd can complete complex tasks faster and cheaper than traditional skilled labour (Howe 2006; Zaidan/Callison-Burch 2011; Roy et al. 2013). For example, insurance claim forms can be digitized for US$0.15 per form instead of $1 in traditional companies (Roy et al. 2013); and writing programs for support tasks using workers on Amazon Mechanical Turk (AMT), instead of a small firm, cost the company only $5 instead of $2000 (Howe 2006).

Digital platforms are also appealing to workers, as they provide them with the freedom to undertake work from any place and at any time and they can choose the task they want to perform. However, studies show that workers spend long hours working on these platforms, and a sizable proportion also work for 6 or 7 days a week (European Parliament 2017; Berg et al. 2018; Pesole et al. 2018). Further, a number of platforms try to attract workers by advertising that they can earn competitive salaries, like the German-based platform Clickworker that promotes an average revenue of about US$9 per hour.[2] However, survey findings show that on Clickworker the average wage is about US$3.2 per hour (barely one-third of the advertised earnings) and only 7% of the survey respondents earned the advertised amount or more (Berg et al. 2018).

A number of recent empirical studies show workers' remuneration to be low across a number of platforms. Survey findings on AMT showed that American workers earned on average US$5.6 per hour and Indian workers earned about US$3.2 in 2015 (Berg 2016). Hara et al. (2018) tracked data with a plugin on AMT for over two years, and found that the median hourly wage was around US$2, the mean was about US$3.13, and only 4% of workers earned above the US federal minimum wage (US$7.25). A large survey of crowdworkers across five major platforms (AMT, CrowdFlower, Clickworker, Microworkers, Prolific) showed that in 2017 average hourly earnings ranged between US$2 (CrowdFlower and Microworkers) and US$6.5 (AMT), and that about 64% of the American workers on AMT earned less than the US federal minimum wage (Berg et al. 2018). Similar trends were observed in a survey of workers in five

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2 "Depending on qualifications, speed, practice and concentration you can earn well over $10.00 per hour. On average, we expect that a Clickworker earns $9.00 per hour" (https://www.clickworker.com/clickworker-job/ [January 18, 2018]).

European countries and the United States across four platforms (AMT, Clickworker, CrowdFlower and Microworkers), wherein the median earnings in France and the United Kingdom was around 50% lower than the national hourly minimum wage, while in Germany and Spain the median earnings was 29 and 9% less than the minimum wage (European Parliament 2017). The low earnings among these workers is also due to their inability to get tasks on a continuous basis, unjustified rejection of their work, and lack of responsiveness of the platform to workers' concerns (Felstiner 2011; Bergvall-Kareborn/Howcroft 2014; Berg 2016; Huws et al. 2017; Berg et al. 2018).

In addition, the status of the worker as "independent contractor" excludes these workers from any worker benefits and accessing social protection. This is confirmed from survey findings in European countries (European Parliament 2017; Pesole et al. 2018) and also globally (Berg et al. 2018), which show that social protection coverage is low among crowdworkers, and that for most of the workers who have coverage this arises from other jobs they perform.

The organization of work in this way not only detaches workers' affiliation from the firm (Schriner/Oerther 2014) but also leads to erosion of corporate boundaries (Durward/Blohm 2017). The relationship between the worker and the client lasts just the duration of time to accomplish tasks – a few seconds to a few minutes – a duration much shorter than in day labour (Nickerson 2014), and there is no obligation on the part of the employer towards the virtual workforce (Bergvall-Kareborn/Howcroft 2014). This not only leads to erosion of employment status and stability, but more importantly there is less time to train and to gain skills on the job than in traditional work (Nickerson 2014; Margaryan 2016).

The outsourcing of tasks through digital labour platforms also has the potential to displace or replace some forms of skilled labour with unskilled labour (Kittur et al. 2013). This takes place when tasks are disaggregated or decomposed into smaller, simpler tasks that can be standardized (Cheng et al. 2015). For example, high quality speech transcription or copyediting can be achieved through non-professional crowd labour (Zaidan/Callison-Burch 2011). Breaking down tasks in such a manner reduces the value of skills that were earlier important in the market and "the unskilled, piecemeal work of microtasking is reminiscent of labour on a conveyor belt" (Schmidt 2017: 17). In addition, deskilling of tasks, along with lack of any training opportunities, pushes the entire cost of training or learning onto the workers (Barnes et al. 2015).

Different types of digital labour platforms require different types and levels of skills (Leimeister et al. 2016; Margaryan 2017; Schmidt 2017). Whereas macrotasks can be highly complex and require a specific skill set, microtasks are often repetitive and require human cognitive skills (Nickerson 2014) but "no specialized skills and minimal training" (Schriner/Oerther 2014: 226). When workers were

probed in a survey to describe the level of the task performed, the most prevalent characteristics for microtasks were "routine" (57%), or "systematically repeatable" (44%) and "require a variety of skills" (48%). In comparison, only a small proportion of workers (17%) mentioned that the tasks "require complex/high-level skills". In contrast, for online freelancers, the most prevalent task characteristics were "require variety of skills" (87%), "dealing with novel problems" and "require unique ideas/solutions" (60% each), and "require complex/high level skills" (40%) (Margaryan 2017). Empirical studies have also found skills mismatch on microtask platforms (e.g. Bertschek et al. 2016; European Parliament 2017; Berg et al. 2018; Rani/Furrer forthcoming). Most of the highly educated workers performed tasks that were low-skilled and "did not correspond with their existing skill sets, professional experience and expertise" (Graham et al. 2017: 152). Cantarella and Strozzi (2018) in their experiment in the US and EU show high levels of under-utilization of crowdworkers' human capital or skills, and of not being adequately compensated for their work.

The opinions with regard to skill development, learning and future prospects of these workers on platforms are quite mixed in the empirical literature. A survey of 1,200 workers on four microtask platforms (AMT, Clickworker, CrowdFlower and Microworkers) found that only about 20% of the respondents were satisfied with their career prospects, whereas around 40% were dissatisfied (European Parliament 2017). Besides, about half the workers agreed that they could learn new skills and had the opportunity to use their knowledge and skills.

Workers' perceptions of crowdwork in a survey in Germany with regard to the possibility of learning on different types of platforms was rated quite low (1.9 out of 5), while the possibility to improve knowledge and skills achieved a medium score (3.2 out of 5). The microtask platforms received the lowest scores compared with other platforms (design, marketplace and testing) (Leimeister et al. 2016).[3] Furthermore, with regard to workers' future prospects on the platforms, the survey showed a mediocre score (3.2 out of 5),[4] and this was quite similar to other types of platforms.

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3 The survey assessed the skill development and learning process of 434 workers on these platforms, where individuals were asked to evaluate on a scale from 1 to 5 whether the following statements applied: "the platform operator offers me possibilities to earn qualifications, such as training courses, workshops, and further training" and "the work on the platform allows me to develop my knowledge and skills".

4 Workers were asked to assess, using the same scale, the following statements: "I am satisfied with the future perspective for myself on this platform", and "sometimes I worry about my professional future" (inverted scale). The survey was conducted in German, the wording presented here is an approximate translation.

Despite limited learning possibilities, there is a perception that both micro-tasks and online freelancing are learning-intensive as crowdworkers regularly learn something new and perform novel tasks (Margaryan 2016). Online forums and communities also provide an avenue for workers to help each other, learn new skills, and navigate the system. Online workers reported that they relied on friends and peers to help them learn new skills (for example, IT literacy, communication skills) (Kuek et al. 2015).

Notwithstanding some of these limitations, crowdwork is heralded for creating employment opportunities in developing countries (Narula et al. 2011; Roy et al. 2013), among disadvantaged communities (Dillahunt/Malone 2015; Zyskowski et al. 2015; Hug 2017), and for fostering development and reducing poverty (Thies et al. 2011; Schriner/Oerther 2014). This notion is also prevalent in developed countries, where based on interviews with 18 users of two UK-based macrotask platforms – tasks included marketing, web development, design, and writing – it was found that despite some challenges, engagement in crowdwork "creates opportunities for employment, improvement of employment prospects, skills development and enhancement of employability" (Barnes et al. 2015: 29). However, there is also some scepticism, as crowdwork is not considered to be a model suitable in the long term (Borchert et al. 2018), but rather is seen as only relevant for a certain phase of life (54% of crowdworkers on German microtask platform), for example during studies or retirement rather than a permanent mode of work (Bertschek et al. 2016).

The increasing number of studies based on surveys provides interesting insights, mostly focusing on worker demographics and motivations, working conditions, and how to improve quality, efficiency and productivity. However, not much attention has been paid to whether workers who have spent longer time on these platforms have better work and income security, or opportunities for skill development, than new entrants. This paper contributes to the literature by providing a comparative perspective across platforms that distinguishes new entrants and experienced workers and assesses the working conditions and opportunities for skill development based on a large survey.

3 Data and basic characteristics of workers

The data for this paper draws on a large survey of 2,350 workers conducted between February and May 2017 on five major crowdwork platforms operating across the globe: AMT, CrowdFlower (now rebranded as Figure Eight), Clickworker, Microworkers, and Prolific (formerly Prolific Academic). Survey respondents were

asked a range of questions related to socio-demographic information, employment patterns (crowdwork and non-crowdwork), type of tasks, skills and training, income, and financial and social security. The survey was a follow-up to and extension of a survey undertaken on AMT and CrowdFlower in 2015 (see Berg 2016). It was listed as a paid task on those platforms, with no restrictions as to who could participate except in the case of AMT, where workers from the United States and India were targeted.[5] As there is no database on crowdworkers that allows a random and representative sample to be drawn from those platforms, we relied on posting small batches of the survey on the platforms at different times of the day and the workers self-selected to participate in the survey. This is common practice among empirical studies of crowdwork (e.g. Ross et al. 2009, 2010; Berg 2016; Bertschek et al. 2016; European Parliament 2017) and is considered to be the best way of reaching out to a wide range of workers engaged on the platforms. In addition to the survey, we conducted semi-structured interviews by Skype with 21 workers in August 2017 in order to have a better understanding of their motivations, the tasks they performed, their (dis)satisfaction with crowdwork and how it affected their personal and professional life.[6]

The survey captured workers from 75 countries (see Figure 1), with the regional and country coverage varying by platform. The AMT sample consists
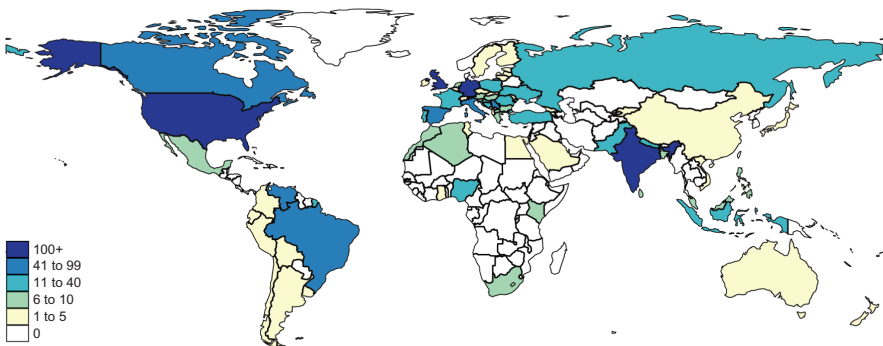

Figure 1: Distribution of workers across countries, crowdwork survey 2017.
Source: ILO survey of crowdworkers, 2017.

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[5] In our survey, we deliberately oversampled Indian workers on AMT. At the time of the survey, according to AMT statistics, the share of US workers was around 75% and that of Indian workers around 18%, while other countries comprised only 7%. For details see: http://demographics.mturk-tracker.com/, Ipeirotis (2010).

[6] The in-depth interviews were opened to most of the survey respondents and those interested in sharing their experiences were invited to participate. For more details on the survey and interviews, see Berg et al. (2018).

mostly of Indian and US workers (52 and 47%, respectively); CrowdFlower respondents originate mainly from Latin America (33%), Europe (30%), Central and Eastern Europe (CEE) and North America (13% each); Germany-based Clickworker is most represented in Europe (71%) and North America (17%); the majority of the respondents of the UK-based Prolific reside in Europe (53%) or North America (41%); and Microworkers is most popular among respondents in North America (32%), Asia and Pacific (30%), and Europe (23%).

For the analysis, we classified workers into four categories based on their tenure on crowdwork platforms. About 44% had only recently started crowdwork (less than one year; new entrants); 27% had been active for one to two years (intermediate workers); 19% had been active for three to four years (experienced workers); and 10% had been active for over five years (highly experienced workers). Across regions, tenure was highest in Asia where 20% of the workers were highly experienced.[7] In Latin America and Africa crowdwork is a more recent phenomena. Across the platforms, tenure was highest on AMT and lowest on Clickworker and Microworkers (see Table 1).

The gender distribution is quite skewed, with only one out of three workers being female. The average age of the workers was around 33 years, with the youngest workers being 18 years and the oldest 71 years old. The crowdworkers were generally well educated, with 57% possessing a university degree. Education levels were highest in Asia (80% with a university degree), and lowest in Africa (47% with a university degree). Workers with longer experience on the platform tended to be older and more highly educated. The average age of highly experienced workers was 38 years, with 69% holding a university degree, compared with new entrants whose average age was 31 years, with 51% holding a university degree. A sizable proportion of crowdworkers were young and pursuing a university or other degree at the time of the survey (21%), ranging between 12% among highly experienced workers and 27% among new entrants (see Table 1).

4 Worker motivation and dependence on crowdwork

As mentioned earlier, the existing empirical literature on crowdwork makes little distinction between workers with different level of experience on microtask

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7 This is largely due to Indian workers on AMT having longer tenure. In 2012, Amazon decided to restrict new accounts to non-US workers. As a result, the Indian workers had less competition and could continue on this platform for a longer time (Berg 2016).

Table 1: Summary statistics of survey respondents, by experience.

	New entrants (<1 year)	Intermediate workers (1–2 years)	Experienced workers (3–4 years)	Highly experienced workers (5+ years)	Total
Number of respondents					
Total	1,042	635	435	238	2,350
AMT	128	114	146	101	489
CrowdFlower	137	127	69	22	355
Clickworker	283	96	52	24	455
Prolific	157	193	93	52	495
Microworkers	337	105	75	39	556
Average age (years)	31.4	32.6	35.9	37.7	33.2
Share of workers… (%)					
Female	36.5	36.7	35.6	41.2	36.9
Holding university degree	51.4	57.0	62.0	69.3	56.6
Currently in education	27.1	20.8	13.3	12.2	21.3
In developing countries	33.9	32.8	40.0	46.2	36.0
With health problems[*]	19.3 (53.3)	18.2 (53.5)	18.7 (48.1)	21.8 (67.3)	19.2 (54.0)
Having other job	49.2	55.6	53.1	52.1	51.9

Note: [*]"With health problems" indicates the share of individuals with a current physical or mental health condition or illness lasting or expected to last 12 months or more, and in parentheses, the share of those individuals who said this health problem affected the kind of paid work they might do.
Source: ILO survey of crowdworkers, 2017.

platforms. This section analyses to what extent new entrants differ from those with higher experience in terms of financial dependence and motivation to perform crowdwork.

Although crowdwork is sometimes denigrated as a form of leisure or pastime, we found that it constituted the main source of income for one-third of the workers (32%). The share of workers for whom crowdwork was the main income source was higher among women than men (35 compared with 30%), as well as

among individuals in developing countries (41%) than among those in developed ones (27%). In addition, the longer individuals had worked on a platform, the more likely they were to financially depend on it: 28% of the new entrants saw crowdwork as their main income source, and the proportions increased steadily with longer experience, up to 42% for highly experienced workers (Figure 2).
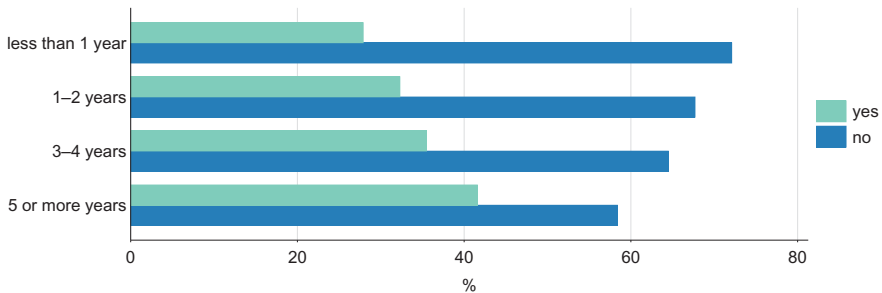

Figure 2: Is crowdwork your main income source? By experience.
Source: ILO survey of crowdworkers, 2017.

About half (52%) of the crowdworkers were also engaged in jobs other than crowdwork. There were only small differences between workers with different levels of experience on platforms. For workers who considered crowdwork to be their primary source of income, the income from crowdwork comprised between 55 (highly experienced) and 63% (intermediate) of their household income, followed by income from their spouse (14 to 22%) and income from their secondary job (6 to 20%). For those who did not consider crowdwork as their primary income source, income from crowdwork nevertheless constituted a substantial share of their household income, and it increased with experience: it comprised 35% of the household income for new entrants, compared with 39% for highly experienced workers.

The motivation to undertake crowdwork differed across workers in different locations and with different levels of experience (Figure 3). For workers in developed countries, irrespective of experience, the main motivation to undertake crowdwork was to complement pay from other jobs (34 to 40%), whereas this reason was comparatively less important in developing countries (18 to 29%). A large proportion of highly experienced workers preferred to work from home (27% in developed and 30% in developing countries) or could only work
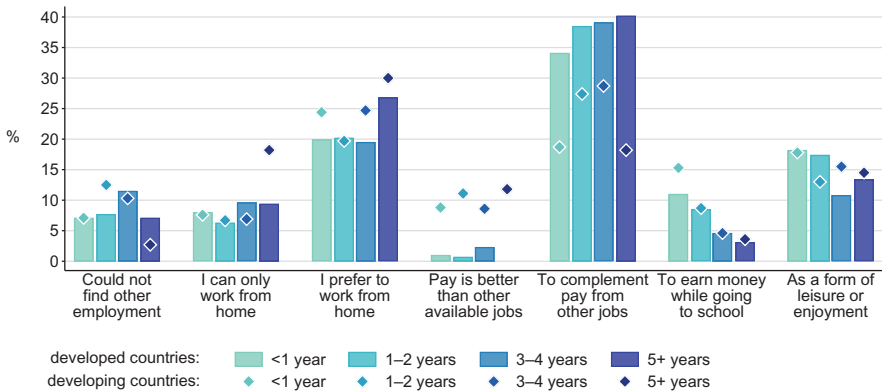
Figure 3: Worker motivation to perform crowdwork in developed and developing economies, by experience.
Source: ILO survey of crowdworkers, 2017.

from home (9% in developed and 18% in developing countries). This preference or need to work from home was largely due to care and household responsibilities, health problems or social anxiety. For these workers crowdwork is seen as a "promising alternative to traditional employment in today's digital era" (Kuek et al. 2015: 7).

Women comprise a comparatively high proportion of highly experienced workers (41%, see Table 1). About 21% of the women had young children, with little variation across different levels of experience. A substantial proportion of women (35%) reported that they could only work from home or preferred to work from home due to care responsibilities (children, disabled, or elderly relatives). This reason was substantially higher among women with children (42%) than among those without children (32%). For these women crowdwork provided a medium- to long-term solution to combine work with care and household responsibilities. For women in developed countries, often it was the high cost of child care that prevented them from taking up a job outside home, whereas in the developing world gender roles and the expectation that women should take care of children played an important role in their decision to stay home and to perform crowdwork, as is evident from their textual responses in our survey:

> I can only work from home because my husband is away the whole day at work and I have to take care of my children and home. (Respondent on CrowdFlower, Italy)

> I have two kids and I have to take care of my mother in law, who is sick. (Respondent on AMT, India)

Due to its low entry barriers crowdwork is also often seen as a way of earning money for individuals who might face difficulties in accessing the labour market, such as those with health problems (Zykowski et al. 2015; Hug 2017) or the unemployed (Kuek et al. 2015; Borchert et al. 2018). A comparison of health status across tenure showed that respondents with longer experience were more likely to consider their status of health as good, fair, or poor rather than very good. Almost 22% of the highly experienced respondents had a current physical or mental health condition or illness lasting or expected to last 12 months or more, and 67% of them stated that this problem affected the kind of work they might do (Table 1). In comparison, for new entrants these proportions were 19 and 53%, respectively. Thus, for workers with health problems, platforms do provide an avenue to undertake paid tasks from home, which was also expressed in the textual answers:

> *[I can only work from home] because I am a stroke survivor and my left side of body is paralyzed and I can only work from my right hand. So can't find a full time job outside of my home work space.* (Respondent on AMT, India)

> *I have Fibromyalgia. Holding down a job outside my home is close to impossible. It is a widespread muscle and nerve pain. Working from home gives me the benefit of shifting my work schedule around the pain level for any given day.* (Respondent on Prolific, United States)

With regard to unemployment, a study in the United States provides evidence "that individuals turn to online labour markets in times of local economic hardship" (Borchert et al. 2018: 30). In line with Berg (2016) we find that about one-third (32%) of the workers reported that they had been unemployed before they started crowdwork. In developing countries this share was highest among new entrants (43%) and lowest among highly experienced workers (25%), while in developed countries it ranged between 28% (intermediate) and 32% (highly experienced). However, only 8% of all workers indicated that their inability to find other employment opportunities was the reason to undertake crowdwork. This share was lowest among the highly experienced workers in developing countries (3%). Workers in developing countries were more likely to indicate that "pay is better than other jobs available" as a reason for undertaking crowdwork than those in developed countries. This was the case for 22% of the workers in Latin America (largely from Venezuela and Brazil) and 9% of the Indian workers on AMT. This indicates that it is probably not the lack of employment opportunities as such, but that of well-paid work due to their skill premium, that incites these individuals to undertake work on online platforms with the hope of earning better incomes, without necessarily taking into consideration the learning prospects in such tasks.

5 Working conditions of crowdworkers with different levels of experience

A major concern with regard to online labour platforms relates to the employment status of crowdworkers. Every platform has a participation agreement that lays out terms and conditions to which workers have to agree to gain access to work, and there is no space for negotiation. Microtask platforms, in their terms of use, specify that the worker is "self-employed", "freelancer" or "independent contractor", which does not allow him/her to avail of any benefits or labour protections that a regular employee receives (De Stefano 2016; Berg et al. 2018; Johnston/Land-Kazlauskas 2018). These terms allow the platforms to circumvent any legal and social responsibility towards the worker, as in most countries social benefits are linked to employment status. In this section, we discuss how this impacts the working conditions of crowdworkers with different levels of experience, with a particular focus on remuneration, working time and flexibility, autonomy and control, and social protection.

5.1 Remuneration

The survey data allow us to derive hourly earnings on the basis of the number of hours worked and income earned from crowdwork in a typical week. It distinguishes between time spent doing paid work (i.e. actual work tasks that the crowdworker was paid for) and time spent doing unpaid work (i.e. time spent looking for tasks, earning qualifications, researching requesters through online forums, communicating with requesters or clients, leaving reviews, and carrying out unpaid/rejected tasks). Existing studies on microtask platforms, which mainly focus on AMT, have found remuneration to be quite low (see e.g. Ipeirotis 2010; Berg 2016; Hara et al. 2018; Berg et al. 2018), and our data confirm these findings for a larger number of platforms and for workers with different levels of experience.

Figure 4 presents the distribution of hourly paid and unpaid work for workers with different experience levels. The distribution for hourly paid work is skewed towards the left for all groups, and becomes even more skewed when unpaid work is taken into consideration. There seems to be a substantial improvement in earnings over the first year of work on platforms, with average earnings increasing from US$3.74 to $4.92 per hour of paid work, and from $2.70 to $3.76 per hour of paid and unpaid work. However, after two years of experience, there is no further increase in earnings. Due to the skewed distribution,
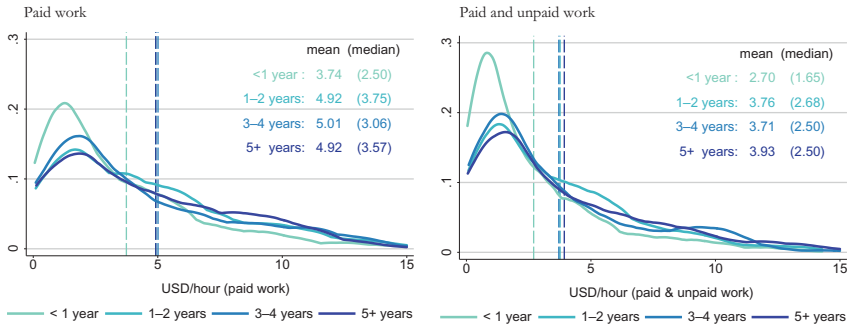
Figure 4: Hourly earnings by experience (US$).
Note: Data trimmed at 1 and 99% by platform. Vertical dashed lines indicate mean.
Source: ILO survey of crowdworkers, 2017.

between 57 and 67% of workers earned less than the average hourly wage for their respective group. The "typical" (median) worker earned much less than the average, namely between $1.65 (new entrants) and $2.68 (intermediate) per hour of paid and unpaid work.

The lower earnings of new entrants can be partly explained by the fact that a large proportion of them (45%) worked on CrowdFlower and Microworkers, the two platforms that were found to have the lowest earnings in the sample, and high turnover rates. In addition, independent of the platform, lower rates for workers with little experience are also due to the fact that "novice workers are often willing to accept poorer paying jobs as an interim means to the bigger goal of better paying (more interesting) work" (Martin et al. 2014: 8).

This apart, workers also spend substantive amounts of time looking for tasks, earning qualifications, researching requesters, and participating in discussions on online forums, as well as carrying out unpaid/rejected tasks. On average, our survey shows that workers spent 24.5 hours per week doing crowdwork, which is similar to other studies (Berg 2016). About three-quarters of this time was spent doing paid work, while a quarter was spent doing unpaid work. One might expect that more experienced workers would spend comparatively less time doing unpaid work due to increased efficiency in searching for tasks. However, highly experienced workers spent around 19 minutes doing unpaid work, while new entrants spent around 22 minutes of unpaid work for every hour of paid crowdwork, indicating a rather small improvement. Though it is estimated that 100,000–600,000 tasks are available at any given time on a particular platform,[8] securing a desirable, well-paying task can be difficult due

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8 See http://faircrowd.work/platform/amazon-mechanical-turk/ [November 20, 2017].

to the high level of competition for tasks from other workers across the globe, with hundreds of workers waiting for well-paid tasks to appear and grabbing them before someone else does (Beerepoot/Lambregts 2015; De Stefano 2016; Berg et al. 2018; Kessler 2018). An analysis of AMT found that about 25% of the tasks were valued at $0.01, 70% offered $0.05 or less and 90% paid less than $0.10 (Ipeirotis 2010). So if a worker was dependent on similar such platforms, then it would be her/his responsibility to find numerous such repetitive tasks to make decent hourly earnings. In this global competition, longer experience does not imply any competitive advantage.

Furthermore, also within the same platform new entrants have lower earnings compared with those with more experience. On some platforms, such as Microworkers (US$2.07 per hour for new entrants compared with $2.19 per hour for highly experienced workers) and CrowdFlower ($2.42 per hour for new entrants compared with $3.16 per hour for highly experienced workers), the average earnings increased very little with experience. On others, such as Prolific ($3.68 per hour for new entrants compared with $5.01 per hour for highly experienced workers), earnings increased more with experience. On AMT, earnings as well as returns to experience differed between American and Indian workers: American new entrants earned $6.06 per hour of paid and unpaid work, compared with $6.90 per hour for highly experienced American workers; Indian new entrants earned $2.29 per hour of paid and unpaid work, compared with $2.48 per hour for highly experienced Indian workers. Returns to experience were comparatively high on Clickworker, where new entrants earned on average $2.54 per hour of paid and unpaid work, while highly experienced workers reported earning more than 2.5 times that amount, namely $6.89 per hour. From our own experience of working on the platforms,[9] it seems that Clickworker offers a quite limited number of tasks to new entrants, and that with increased time spent on the platform and a more complete worker profile the number and variety of tasks available increases to some extent.

In addition, a high proportion of workers earn below their local minimum wage. For instance, taking into account paid and unpaid work, nearly two-thirds of the American workers earned less than the federal minimum wage (US$7.25 per hour) in 2017, and fewer than 10% of German workers on Clickworker reported earnings above the German minimum wage of €8.84. In the global competition for tasks on online platforms, Northern American or European workers rival with workers in developing countries for the same microtasks,

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9 For the purpose of our research on microtask platforms, we set up worker accounts and completed some tasks on Clickworker, Prolific and Microworkers. We did not manage to gain access to AMT or CrowdFlower.

which brings down the equilibrium price for low-paid tasks (Beerepoot/ Lambregts 2015) and aggravates the concern of low pay. Although one would assume that, given global competition, earnings would not differ significantly across regions, we find strong differences with regard to earnings between the global North and global South (see Figure 5), as was observed in the case of AMT or oDesk (see also Beerepoot/Lambregts 2015; Berg 2016; Berg et al. 2018).
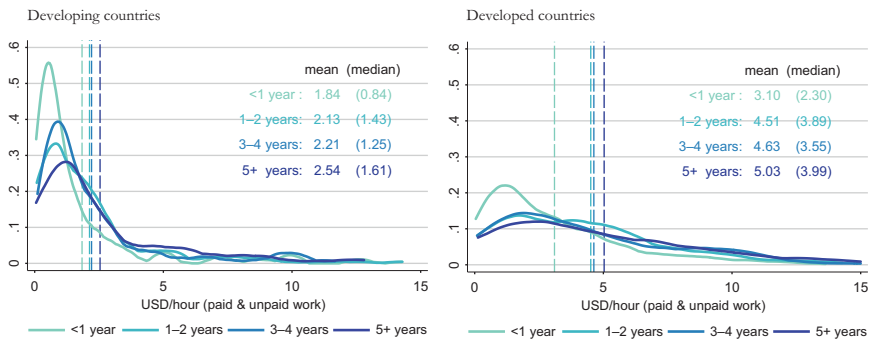

Figure 5: Hourly earnings (paid and unpaid work) for workers in developing and developed countries (US$).
Note: Data trimmed at 1 and 99% by platform. Vertical dashed lines indicate mean.
Source: ILO survey of crowdworkers, 2017.

Workers in developing countries earned much less than their counterparts in developed countries. On average, workers in developing countries earned $2.09 per hour of paid and unpaid work (median: $1.18), compared with developed countries where workers earned $3.94 per hour (median: $3.02). Furthermore, earnings increased more strongly with experience in developed countries than in developing ones. Between new entrants and highly experienced workers, the earnings increased by $0.70 in developing countries (from $1.84 to $2.54 per hour of paid and unpaid work) and by $1.93 in developed countries (from $3.10 to $5.03). Moreover, even highly experienced workers in developing countries earned less than new entrants in developed countries.

While some part of the difference might be explained by the different distribution of workers in the regions across platforms,[10] most of it stems from differential treatment of workers. Many platforms offer features that allow clients

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10 For instance, Prolific, which is one of the platforms with highest pay, is mainly used by workers in the developed world, whereas two-thirds of the respondents on CrowdFlower, which offers comparatively low pay, are from the developing world.

to restrict access to their task according to various criteria, including the country of origin/residence of the worker, gender or age (see also Figure 8). Therefore, differences in earnings between workers in developing and developed countries can be found even within the same platform (Berg 2016; Berg et al. 2018; Rani/Furrer forthcoming). For instance, as mentioned earlier, on AMT there is a large differential between the hourly earnings of American and Indian workers. Highly experienced Indian workers earned on average \$2.48 per hour of paid and unpaid work, while highly experienced American workers earned \$6.90 per hour. Many of the best paying tasks, such as content creation and editing, are often available only to American workers, whereas low-end and low-paying tasks, such as data collection and content access, are left to Indian workers.[11]

Discrimination based on nationality or gender was also observed on other platforms, such as oDesk (Beerepoot/Lambregts 2015) where, similar to our findings, the authors find that experience and skills do not necessarily translate into better earnings. It is argued that exploitative pay and discrimination is ubiquitous in the online marketplace due to an institutional and regulatory vacuum (ibid.).

Overall, our findings show that earnings on all the platforms are quite low, especially when considering the workers' high education levels (see Table 1). There is no guarantee that if workers gain some experience and work on the platform for a longer time there would be a regular flow of work and their earnings would increase due to a reduction in search costs, rejections, etc. Due to discriminatory practices, especially workers in developing countries have to content themselves with carrying out low-skill, low-pay tasks that offer little or no possibilities for improving their skills, earnings, or future career prospects. Workers also remarked on the absence of benefits due to longer experience, or opportunities to develop skills:

> *I would increase the payment per work in crowd work. In addition to that workers with more skills should get more jobs.* (Respondent on Microworkers, India)

> *[I would like] more diverse jobs with more training and qualifications, promotions for better more challenging positions for loyal, accurate, and consistent workers. More pay for more challenging positions.* (Respondent on Clickworker, United States)

> *I have been working for Amazon Mturk for the last six years, but the amount of jobs and the payment hasn't improved a bit even though I have got a 98.4% approval rating. I wish things improve so I can work from home for ever.* (Respondent on AMT, India)

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11 See Hirth et al. (2011) for evidence on differences in pay between categories of tasks on the platform Microworkers.

5.2 Flexibility

Flexibility in working time and place is often heralded as one of the main advantages of working on microtask platforms. However, in reality this flexibility is often illusory, as workers have to constantly look for work and might not be in control of their work schedule, as they need to adapt to the temporal distribution of jobs (Kessler 2018; O'Neill 2018). Comparing workers with different levels of experience on the platforms, we find that new entrants tend to work fewer days of the week, as well as fewer and less extreme hours than those with one or more years of experience (Table 2). The differences between intermediate, experienced, and highly experienced workers were quite small. For instance, the share of workers working six or seven days a week was 46% for new entrants and ranged between 53 and 60% for the other groups. Whereas this could be seen as a sign of increased flexibility, it is more likely a sign of higher dependence and of having to be available

Table 2: Intensity of crowdwork, by experience.

	New entrants (<1 year)	Intermediate workers (1–2 years)	Experienced workers (3–4 years)	Highly experienced workers (5+years)	Total
Number of hours/week					
…doing paid CW	16.2	20.4	20.4	20.4	18.6
…doing unpaid CW	5.8	6.2	6.9	6.6	6.2
…in total doing CW	21.7	26.3	27.0	26.7	24.5
Share of individuals (%) doing CW…					
…in the morning [5 am–12 pm]	50.4	55.1	60.5	62.6	54.8
…in the afternoon [12 pm–6 pm]	56.9	65.2	59.1	63.9	60.3
…in the evening [6 pm–10 am]	65.1	69.3	70.6	74.4	68.2
…in the night [10 pm–5 am]	42.6	41.4	43.9	42.4	42.5
…on 6 or 7 days per week	45.9	53.2	59.6	56.7	51.5

Source: ILO survey of crowdworkers, 2017.

around the clock in order to be able to complete high-paying work before it disappears (see also Kessler 2018).

In addition, many women combine crowdwork with care responsibilities. About 21% of women in the sample had small children (aged 0 to 5 years) and nonetheless spent 20 hours per week on the platform, which is less than five hours fewer than the overall sample. Many of them worked at night (36%) or during the evening (65%).

As it is often difficult to find sufficient tasks on a single platform, many individuals worked on more than one. The number of different platforms used also increases with experience: about 44% of the new entrants work on more than one platform, whereas 55% of all highly experienced workers do. This indicates that many crowdworkers are not only piecing together an income from different jobs within the same platform, but also from different microtask platforms.

5.3 Autonomy and control

The workers on microtask platforms are supervised by an algorithm that controls the work process, workers' submissions and the payment, as the quality for most microtasks is determined through a majority voting algorithm. Microtask platforms usually offer the possibility to the requester/client to reject work – and thereby refuse payment to the worker – if the work is "not done to their satisfaction". A major complaint by crowdworkers was that their work can be unfairly rejected, and in consequence not remunerated. Often little or no justification for such rejections is provided due to the "black box" of the algorithm (Pasquale 2015) and in some cases requesters still get to keep the work, which can lead to abuse of the system and wage theft. While some rejections might be justified, in that the worker did not follow the instructions properly or made mistakes, sometimes the reason for rejection lies beyond the workers' responsibility, for instance in a mistake in the task design, unclear instructions, technical errors or dishonesty (McInnis et al. 2016).

Figure 6 presents the rejection rates reported by workers with different levels of experience. Rejections rates were low and quite stable on AMT[12] and Prolific.

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12 On AMT, only individuals with an approval rating of 95% or higher were eligible to complete the survey. This is a commonly used criteria to assign tasks on AMT and the platform strongly recommended us to use it.
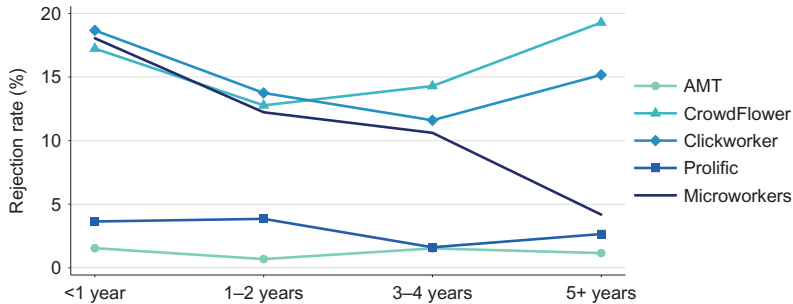
Figure 6: Rejection rates, by experience and platform.
Source: ILO survey of crowdworkers, 2017.

On Microworkers, the rejection rates dropped sharply from 18% among new entrants to 4% for highly experienced workers. On CrowdFlower and Clickworker the rejection rates fluctuated somewhat, and were lowest for intermediate and experienced workers, but somewhat higher for highly experienced workers. Overall, it seems that there is a small learning effect at the beginning, but thereafter workers have little means to improve their work or lower their rejection rates. This is because often no explanations are provided as to why the work is rejected, although it has been shown that proper and timely feedback could help improve the quality of microtask work (Dow et al. 2012), which would improve outcomes for both workers and requesters, as was also opined by some workers:

> *Rejected work should be commented always so that the user can learn from his mistakes.* (Respondent on Clickworker, Germany)

> *I would like for requesters ... to be more lenient about there being a learning curve for all types of work. When you work at a real job, you are given time to learn and make mistakes and are given feedback, but in crowd work, the first time you make a mistake (usually for a task that has vague instructions) you are rejected maybe even blocked.* (Respondent on AMT, United States)

The workers have little or no communication possibilities with requesters, due to the design of the platform, and there are very little means to ascertain why a submission has been rejected and whether a requester is honest and fair or not. The only and often time-consuming way to avoid such requesters is to follow discussions on online forums or, in the case of AMT, use the Turkopticon plug-in (see Irani/Silberman 2013). The use of online forums was comparatively higher among experienced workers (around 40%) compared with new entrants (31%).

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5.4 Social protection

A relatively small proportion of workers dependent on crowdwork are covered by social protection (European Parliament 2017; Berg et al. 2018). In our sample, 44% of those workers for whom crowdwork was not the main income source were covered by a retirement plan, 66% by health insurance, and 39% by social insurance programmes.[13] These figures were much lower for workers for whom crowdwork was the main income source, notably 16% for retirement plans, 52% for health insurance, and 32% for social insurance programmes. When comparing coverage figures for workers with different levels of experience on platforms, there was a slight increase in coverage for workers with longer experience. However, this increase was mainly due to fewer workers answering "don't know" rather than a decrease in the number of workers who said that they were not covered. Overall, therefore, it seems likely that there is neither an increase nor a decrease in social protection coverage associated with longer work on the platforms. This contrasts with the situation in the "traditional" offline labour markets, where one would expect that especially workers who have worked for the same company or employer for a sustained period of time should be in a formally institutionalized work relationship where they are entitled to social protection coverage.

6 Skills mismatch and opportunities for skill development

As mentioned earlier, the levels of education of these workers are high, with a large proportion of workers possessing a university degree. When one further disaggregates university degrees into different disciplines, the education profiles are indeed impressive, especially in developing countries, where about 57% of the workers are specialized in science and technology (12% in medicine and natural sciences, 23% in engineering and 22% in IT and computers) (Figure 7). A high proportion of new entrants (33%) compared with highly experienced workers (11%) have an engineering background, indicating that engineering graduates might use crowdwork in the short term. In the developed countries, about 41% have a degree in humanities and other social sciences, and this share is highest among the highly experienced workers (49%). Humanities and other social

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13 Social insurance programmes taken into account include unemployment benefits, worker's compensation, disability benefits, and others.
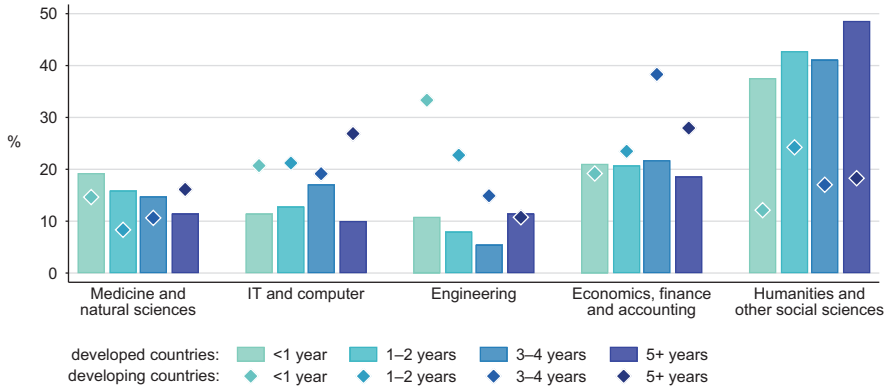
Figure 7: Distribution of crowdworkers holding a university degree in developing and developed countries, by discipline and experience.
Source: ILO survey of crowdworkers, 2017.

sciences are found to be more common among women (46%) than men (22%), who are more likely to have degrees in engineering or IT and computers. The diverse backgrounds of workers confirms the notion that platforms provide opportunities to workers from different disciplines or non-specialists to access the online labour market (Sundararajan 2016).

Given the education profiles of the workers, it is important to understand what tasks they perform or what the content of work is. We have improvised an existing taxonomy of microtasks (Gadiraju et al. 2014) based on our survey where the respondents were asked to describe up to five different task that they typically performed on the platforms. Accordingly, we have classified the tasks into ten categories: categorization; content access; content moderation; artificial intelligence (AI)/machine learning; data collection; market research/ reviews; verification and validation; transcription; content creation and editing; and surveys and experiments.[14] The majority of these microtasks are low-end and mind-numbing, and require little specific skills and instruction, as also observed by other researchers (Schriner/Oerther 2014; Margaryan 2017).

For instance, content access tasks, which include creating (fake) user accounts on websites, clicking through pictures, or watching and liking or sharing a video, require no particular expertise as illustrated by the example in Figure 8. The worker simply follows a set of instructions laid down, blindly and without much thinking. Similarly, even tasks that might seem more

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14 See Berg et al. (2018) for more details.

Youtube: Watch + Comment + Subscribe + Like

Work done: **25**/^{30}
You will earn **$0.24**
Task takes less than **6** min to finish
Job ID: 00d9d7439e16

Employer: ████████
add to Exclude List
add to Include List
Tasks will be rated within **7** days

You can accept this job if you are from any of these countries:

🇧🇪 🇨🇭 🇫🇷 Belgium, Switzerland, France

Youtube/Vimeo/Dailymotion/Vevo → Any 3 Tasks (specify in the title)

? What is expected from Workers?

1. Login to your personnal account and go to https://youtu.be/████████

2. Watch 100 percent of the video
3. Place a nice comment in French
4. Click Subscribe with alert
5. Give a blue thumb

! Required proof that task was finished?

1. Youtube Account name
2. Comment
3. URL of your channel

Figure 8: Example of a content access task.
Source: Screenshot of a task on Microworkers, http://www.microworkers.com [27.06.2018].

complex, such as artificial intelligence, are actually not demanding and do not require technical skills. Microtasks classified as artificial intelligence usually consist in providing data (video, voice recording, etc.) to train machine learning algorithms. Examples include "speak 6 sentences for speech research", "record and upload a list of words and sentences", or "record 30 hand gestures using your laptop camera".[15]

Categorization tasks are easy and quick and include tagging, bookmarking, pinning, etc. Examples include "classify images of dresses along 8 categories", "select all images that contain cars", or "classify a book according to its writing

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[15] The examples listed in this section are actual tasks found on AMT, Microworkers or Clickworker.

genre". Transcription tasks involve transcribing information from different types of media into written form, such as "count the number of items from a specific brand on a photo of a supermarket shelf", "write the prices shown in an image", or "transcribe a short audio file".

The content of these tasks clearly shows that there is no need for any specific skills or high levels of education to perform them. Whereas some tasks such as content creation and editing, transcription or translation could also qualify as macrotasks as they require specific skills, breaking them into smaller and more easily manageable microtasks (Cheng et al. 2015) leads to deskilling of tasks. Tasks such as promotion of YouTube videos or websites, or writing fake reviews for products, places or companies are also ethically debatable and raise questions whether these highly-educated workers should be doing these jobs, rather than applying their skills to the needs of their countries' public and private industries or development process (Rani/Furrer forthcoming).

An analysis of the survey shows that workers with different education levels performed all types of tasks. For instance, a sizable proportion of workers with higher levels of education performed tasks like categorization, content access and transcription (Berg et al. 2018). Such skills mismatch was also reported by 30% the workers surveyed (1200) on four microtask platforms (European Parliament 2017). Similarly, two-thirds of the respondents in a survey reported divergence between their qualification and the tasks completed on two crowd-work platforms (Bertschek et al. 2016).

In addition, our survey shows that there is only a limited relationship between experience on platforms and the types of task performed. The tasks that were most often performed by the survey respondents included surveys and experiments (carried out by 65% of all respondents), content access (46%), data collection (35%), and transcription (32%) (Table 3). The share of workers performing content access tasks decreased slightly with experience, whereas the share of workers performing categorization, content creation, surveys, and transcriptions increased. Nevertheless, almost 44% of highly experienced workers performed content access. Overall, the longer someone has been working on the platforms, the larger the variety of tasks performed, but there is little evidence that the tasks become narrower and more specific as workers gain more experience.

Irrespective of their level of experience and education, workers perceived this feeling of skills mismatch and a high proportion of them (between 76% (Clickworker) and 89% (AMT)) felt that they possessed skills to carry out more demanding tasks than those available to them. The desire for more high-skill tasks was also expressed in their textual answers:

Table 3: Share of crowdworkers who carry out a specific type of task, by experience.

	New entrants (<1 year)	Intermediate workers (1–2 years)	Experienced workers (3–4 years)	Highly experienced workers (5+years)	Total
Categorization	19.8	27.6	33.4	24.8	24.8
Content access	49.9	43.6	42.6	43.7	46.1
Content moderation	7.9	6.8	9.2	8.3	7.9
AI/machine learning	6.9	8.9	10.1	10.0	8.2
Data collection	33.6	33.6	40.7	39.0	35.4
Market research / reviews	14.0	16.2	15.6	12.1	14.7
Verification and validation	10.4	12.7	14.1	7.1	11.4
Transcription	24.7	31.9	44.1	44.6	32.4
Content creation and editing	19.6	20.0	22.7	27.2	21.0
Surveys and experiments	61.8	65.5	68.0	71.5	64.9

Source: ILO survey of crowdworkers, 2017.

> *I am someone who likes to be up and about, use my hands, and engage in a variety of activities. With crowd work, I feel stifled, and I'm not fully making use of all of my skills. It becomes boring and stifling after a while.* (Respondent on Prolific, United States)
>
> *In the beginning, I had hoped that I would also get some higher quality type of work, which could be translating documents, things like that. But that doesn't happen very often. It is usually very simple, basic work. It is not really what I expected in the beginning.* (Clickworker respondent in personal interview)

The last respondent had expected to use his training as an economist and his language proficiency, "but counting bottles of shampoo on a shelf is not linked to anything [in my normal day job], of course". In the interviews, many workers expressed similar unfulfilled desires for more relevant work.

Hence, the opportunity to develop one's skills seems to be quite low on most platforms. The only platform where there seemed to be some form of progress in the tasks performed was Clickworker, where the share of workers doing unin-spiring and monotonous jobs like content access decreased from 46 % (new entrants) to 29% (highly experienced workers); and for categorization it decreased from 27% (new entrants) to 17% (highly experienced workers). On

the other hand, the share of workers carrying out content creation increased from 20% (new entrants) to 42% (highly experienced workers) and that of transcription from 15 to 25%. These tasks are often somewhat better remunerated, which also explains the increase in earnings with increased experience, as observed for Clickworker in the earlier section.

There were also diverging opinions about the opportunity to learn and use the skills for professional development. Some workers found that working on online platforms helped them improve their computer skills and non-native English-speakers remarked that crowdwork was useful to them as a way of practising or improving their English – a skill they saw as valuable for their own future opportunities beyond crowdwork:

> *I am very happy working at crowd, because I can improve my English and gain money at the same time.* (Respondent on CrowdFlower, Brazil)

> *I'm satisfied because I can improve my skills and exercise language.* (Respondent on CrowdFlower, Poland)

> *Crowd working has increased my skills on how to use the computer to my advantages* (Respondent on Microworkers, United States)

> *It's interesting because you can gain skills doing it. Many people learn javascript to increase productivity, and go on to get a coding job.* (Respondent on Prolific, United States)

Despite the level of tasks being low-skilled, many workers expressed that they would like to have further job-related training on the platform (between 9% (Prolific) and 51% (CrowdFlower)). The desire for skills training was higher among new entrants than among workers with more experience, which could be due to their hope that this would lead to accessing more complex tasks and improving their incomes. Indeed, many felt that they would require training to perform tasks such as content creation and editing (27%) and transcription (23%). Many workers also expressed the need for training when they were asked what they would improve about work on online platforms:

> *Include training program and some long-term benefit for the people working in this platform* (Respondent on Microworkers, United States)

> *There should be more job opportunities. More importantly, some sort of training should be provided to be able to complete certain tasks, instead of considering the crowd worker as de facto unqualified.* (Respondent on Clickworker, France)

> *I would like to have access to tasks that could help me use and develop my skills as a computer technician and webmaster* (Respondent on AMT, United States)

However, training options are quite rare in microtask platforms, and often the workers must shoulder the responsibility for the cost and training time (Barnes

et al. 2015; Margaryan 2016). There were also some concerns about future career prospects and the extent to which the work experience on microtask platforms would help towards future employment prospects:

> *I have severe health issues in the past that prevented me from functioning in a normal work environment. Now that I'm almost recovered it is difficult to find a job without experience. No one considers working from home as legitimate work experience.* (Respondent on AMT, India)

> *Crowdwork kept me from being homeless, or at least from having to move back in with my parents, but it's also a curse, since being out of the regular workforce for this long makes it difficult to find a decent job.* (Respondent on Prolific, United States)

In fact, in personal interviews many workers expressed that they were reluctant to inform their immediate family members and friends about the work they performed on the platforms, as it was not perceived as serious work (see also Huws et al. 2017). This perception also created a sense of insecurity among some of the workers about how such work should be reflected in their resumés, as they feared that it might not be valued as work. The following discussion on a social network group for AMT captures their concern:

> *I'm thinking about applying for some part time jobs. Would anyone be willing to share what they put on their resumes for mturk?* (AMT worker #1)
>   [The responses to the question then were:]

> –   *Information on data processing* (AMT worker #2)
> –   *Independent contractor* (AMT worker #3)
> –   *Freelance contributor* (AMT worker #4)
> –   *I put something like ... Perform a wide variety of cloud-based tasks including writing, transcription, and data entry* (AMT worker #5)

These responses indicate workers' insecurities with regard to how this kind of work is viewed by others. In addition, there is a risk of not being able to reintegrate into the offline labour market after a sustained period of working on platforms, due to lack of recognition for this work. No doubt, crowdwork provides easily accessible work and some immediate financial benefits, but the low levels of tasks performed on microtask platforms offer very limited opportunities towards career advancement.

7 Conclusions

The digital platform economy model is increasingly gaining popularity globally. Platforms reduce transaction costs and allow firms to lower production cost by

outsourcing work to a scalable, highly educated workforce using digital taylorism instead of undertaking the jobs in-house. Among workers, it is popular due to its low entry barriers and the (alleged) freedom to work when, where, and on what they want. Although an ever-growing number of publications is dealing with platform-based labour, little effort has been made to understand whether performing work on microtask platforms over a longer duration leads to ensuring work and income security and providing opportunities for skill development.

This paper contributes to addressing this gap based on novel survey data collected on five globally operating microtask platforms and in-depth interviews with workers. The findings show that more than half the workers have worked on platforms for over a year, and 10% have performed crowdwork for more than five years. The highly experienced workers showed a larger financial dependence on crowdwork, and were more likely to belong to groups that face difficulties in accessing the traditional labour market, such as individuals with health problems, women with care responsibilities, and those in developing countries.

The findings further show that the returns to experience are meagre in terms of work and income security: The increase in earnings with experience is modest on most platforms, and highly experienced workers face the same risks as new entrants with regard to low pay, discrimination, high work intensity, and lack of autonomy, control and social protection. We further observed that while workers were highly educated, the tasks performed on these platforms were simple and repetitive, and required no specific skills. This results in a skills mismatch and in an underutilization of the workers' capacities. Workers' hopes of obtaining more interesting and relevant tasks with more experience remained unsatisfied, and opportunities for skill development and career advancement were deficient.

In short, the findings show that experience does not ensure work and income security on microtask platforms, or improve workers' skills. Therefore, it is not sustainable in the long run for workers in its current form. The question arises: how long can such microtask work continue in its present unregulated form? The negative outcomes observed are not inherent to the concept of crowdwork, or to microtask work. Measures are needed to ensure better outcomes for both workers and clients so that the benefits are more equally distributed. There is a need for not only better regulation to protect workers and ensure income and work security in the future, but also improved features that enable the workers to employ and enhance their skills, and better recognition of work done on platforms.

Platforms are currently self-regulated, and there is a need for exchange between governments, employers and workers' representatives about how platforms should be regulated. Moreover, social protection systems have to be

adapted or developed to the specific situation and needs of such workers. Depending on national circumstances, such measures will most likely include a combination of contributory (mainly social insurance) and tax-financed elements of the social protection system, which together can provide at least a basic level of protection for all.

Similarly, opportunities for continuous learning and professional development are crucial to the performance and satisfaction of workers. In addition, in order to realize their personal development, it is essential that crowdwork platforms offer to workers the possibility to perform more complex jobs, training and career advancement opportunities. There is potential for skill development in microtask platforms which would be beneficial to both workers and requesters. For example, research has shown that timely, task-specific feedback on the quality of work – a feature currently not present on microtask platforms – can help crowdworkers to improve their work over time (Dow et al. 2012). Similarly, the development of a platform that combines learning and crowdsourcing to benefit both workers and requesters could help workers acquire the skills necessary to accomplish complex creative tasks (Dontcheva et al. 2014). The model includes tutorials that help workers gain new skills (e.g. photo editing), which enable them to complete more complex tasks, are potentially marketable in other contexts, and also improve the sustainability of microtask systems.

Improved skill advancement possibilities, together with features that enable workers to export their work and reputation history, could help workers build a resumé (Berg et al. 2018), so that they can have better future prospects. If crowdwork were to "move beyond simple deskilled tasks to complex professional work" (Kittur et al. 2013: 5) it might benefit from an increased acceptability and recognition of the work outside the platform. This could help to ensure better opportunities for workers, both on the platforms and in the offline labour market. Presently, little is known about the transitions from online to offline labour market and the usefulness of skills acquired in the online labour market. This is an issue that requires further research.

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