



JRC SCIENCE FOR POLICY REPORT

Platform Workers in Europe

*Evidence from the
COLLEEM Survey*

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Executive Summary

The recent surge of digital labour platforms has led to new forms of work organisation and tasks distribution across the workforce. This has raised several questions about the functioning and the benefits deriving from the reorganisation of work that those platforms entail and the associated risks.

The European Commission assessed online platforms in a May 2016 communication, focusing on both their innovation opportunities and regulatory challenges. In June 2016 the Commission also adopted its European Agenda for the Collaborative Economy, which clarified the concept and provided some guidance on the employment status of platform workers and the EU definition of worker.

The European Pillar of Social Rights aims to address some of the policy challenges associated to new forms of employment, including platform work. As accompanying initiatives, the Commission presented in December 2017 a proposal for a new Directive on transparent and predictable working conditions, and in March 2018 a proposal for a Council Recommendation on access to social protection for workers and the self-employed.

A crucial issue in designing the policy response to the emergence of digital labour platforms is the lack of reliable evidence. In 2017, the JRC conducted the COLLEEM¹ pilot survey², an initial attempt to provide quantitative evidence on platform work, responding to calls by the European Council and the European Parliament. The survey provides a basis for an initial estimation of platform work in 14 Member States³.

How many platform workers are there in Europe?

The COLLEEM survey contains a direct measure of service provision via platforms by the respondents in 14 EU Member States. It asks whether the respondent has ever gained income from different online sources, among which there are two corresponding to labour service platforms: "*providing services via online platforms, where you and the client are matched digitally, payment is conducted digitally via the platform and the **work is location-independent, web-based***" and "*providing services via online platforms, where you and the client are matched digitally, and the payment is conducted digitally via the platform, but **work is performed on-location***".

Estimates indicate that on average **10%** of the adult population has ever used online platforms for the provision of some type of labour services. However, less than 8% do this kind of work with some frequency, and less than 6% spend a significant amount of time on it (at least 10 hours per week) or earn a significant amount of income (at least 25% of the total).

Main platform workers are defined as those who earn 50% or more of their income via platforms and/or work via platforms more than 20 hours a week. They account for about 2% of the adult population on average.

There are **significant differences** across countries: the UK has the highest incidence of platform work. Other countries with high relative values are Germany, the Netherlands, Spain, Portugal and Italy. By contrast, Finland, Sweden, France, Hungary and Slovakia show very low values compared to the rest.

¹ COLLaborative Economy and EMPloyment

² The survey aims at being representative of all internet users between 16 and 74 years old in the selected countries. A commercially available list of internet users in the selected countries (CINT) was used as sampling frame. The fieldwork was carried out in the second half of June 2017, with a final sample of 32,409 (around 2,300 per country).

³ Germany, Netherlands, Spain, Finland, Slovakia, Hungary, Sweden, United Kingdom, Croatia, France, Romania, Lithuania, Italy, Portugal.

Who are the platform workers?

The **typical European platform worker is a young male, educated to a degree level.**

The **proportion of women decreases as the intensity of platform work increases.** There is, however, substantial heterogeneity across countries.

The fact that most platform workers are highly educated is not surprising given that to be able to provide services via platform one needs to be a savvy internet user, and internet use tends to be correlated with higher education.

Despite conventional wisdom, a typical platform worker is likely to have a family and kids. Furthermore, regardless of age, **platform workers tend to have fewer years of labour market experience than the average worker.**

Employment status of platform workers

The employment status of platform workers is a controversial issue and one of the most relevant from a policy perspective. Estimates from the COLLEEM survey reveal that when asked about their current employment situation, **75.7 % of the platform workers claimed to be an employee (68.1%) or self-employed (7.6%).**

A first possibility is that platform workers also have a regular job as employees or self-employed (in a more traditional sense) and are therefore covered by standard employment legislation. A second possibility is that platform workers are not really sure of their employment status and may see themselves as employees, only because they provide a certain type of service with regularity through the same platform.

*This is surprising because in most cases the providers of labour services via platforms are formally independent contractors rather than employees, but it also reflects the uncertainty surrounding this issue in policy and even legal debates around Europe. In short, **the labour market status of platform workers remains unclear**, even to themselves. Interviewed platform workers declared themselves to be self-employed (as main or side job) in 54% of the cases, while a large minority (38 %) claim to be an employee.*

What types of services are provided and coordinated via labour platforms?

Labour services provided by digital labour platforms can be broadly distinguished as services **performed digitally** (i.e. micro tasks, clerical and data entry, etc.) or services **performed on-location** (i.e. transport, delivery, housekeeping, etc.). On average half of the overall platform workers perform both digital and on-location services.

According to the level of skills required by different services we can distinguish between: i) professional services (high skills); ii) non-professionals services (medium skills) and iii) on-location services (low skills).

The majority of platform workers provide more than one type of services, and are active on two or more platforms, often combining high- and low skilled activities, suggesting that some platform workers may be reducing income risk (and possibly increasing variety in work). The most common labour service provided is 'online clerical and data entry'. However, the largest proportion of platform workers provides professional services.

Gender also influences the type of services provided: 'software development' and 'transport' are the most male dominated services. By contrast, 'translation' and 'on-location services' are the mostly female dominated ones.

The market for digital services is global and this may lead to some specialisation on services provided for some countries. The majority of the services do not show much variety across countries; however some country patterns could be identified. Slovakia and Croatia appear to specialise in services that require a low-medium level of education. Romania is amongst the top countries for the provision of non-professionals services. The Netherlands mostly provides services that require high digital skills such as software and interactive.

One third of platform workers have a **mismatch⁴ between the lower-skilled tasks they perform and their high level of education/skills.**

What are the motivations and conditions of platform work?

Flexibility and autonomy are frequently mentioned motivations for platform work, but these results should be interpreted cautiously: the **lack of alternatives** is also mentioned as an important motive for working on platforms.

The conditions of platform work are more polarised than those of regular workers. Working conditions for platform workers appear to be **flexible**, but also **intense**. Platform work can be arduous and, for some workers, involving long hours.

Key policy implications

The implications of digital labour platforms for work and employment are ambivalent. On the one hand, they can **lower the entry barriers to the labour market, facilitate work participation** through better matching procedures and **ease the working conditions of specific groups** (i.e. workers with strong family responsibilities, people with disabilities or health conditions, youth, people not in education, employment or training – NEETs -, older workers, long-term unemployed, people with a migrant background).

On the other hand, **digital labour platforms typically rely on a workforce of independent contractors whose conditions of employment, representation and social protection** are at best **unclear**, at worst **clearly unfavourable**.

The **status of platform workers** is probably the most **complex policy issue** at stake. The actual nature of the employment relationship is nebulous in most cases. **This is particularly problematic because employment status is key for access to social security, training entitlements and coverage by legislation on working conditions.** Therefore the **need for a clarification of the employment status of platform workers** appears obvious.

The findings presented in this report suggest an **emerging phenomenon** of increasing importance but **still modest in size**. If platform work remains significant but small in the future, a **two-pronged policy response is likely to suffice**, focusing on (i) fully grasping its job creation and innovation opportunities and (ii) adjusting existing labour market institutions and welfare systems to the new reality and mitigating its potentially negative consequences for working careers and working conditions. Examples of this are the proposal for a directive on transparent and predictable working conditions, and the proposal for a Council Recommendation on access to social protection for workers and the self-employed in the social fairness package adopted by the Commission on 13 March 2018 as well as the targeted legislative measures adopted by some countries.

However, if platform work continues to grow in size and importance to become a more significant reality in our labour markets, or if some of the key features of platform work

⁴ The analysis of mismatch takes into account only platform workers who perform a unique type of service and should be considered as indicative at this stage. Further details are in section 6.

spread across **other forms of employment** as already seem to be happening in some cases, ***policy interventions may need to be of a more ambitious nature.***

Indeed, a scenario of general "platformisation" of labour markets and working conditions would require a profound rethinking of labour market institutions and welfare systems.

Furthermore, a scenario in which there would be a significant increase in the provision of digitally performed platform work - people providing professional and non-professional labour services from their own places of origin - might lead to more opportunities for people to provide professional and non-professional labour services from their own places of origin - on-location services excluded - through a digital single market. A serious challenge in this scenario is the increased exposure of workers to global competition.

From the regulatory point of view, the categories catering for the specificities of platform workers might be in need for a review. In a labour market with more unstable working careers, a wider use of schemes based on personal accounts for workers' entitlements might be required. From the social protection point of view, progress towards insurance models not based on employment status could be necessary.

1 Introduction

The economic and social impact of new technologies is always ambivalent. On the one hand, new technologies are an essential driver of economic growth and social progress, on the other hand they can also disrupt existing socioeconomic structures and the cultural and institutional mechanisms that maintain them.

Although technical change is always present in human history, its pace and socio-economic implications are non-linear. The recent increase on digitalisation with recourse to Artificial Intelligence, the highest penetration of broadband internet, the development of the Internet of Things and the platform economy has opened the ground to new forms of work organisation and tasks distribution across the workforce and are changing the future scenarios for the type of jobs that will be needed and the technology's potential to substitute work. Digital platforms are one of those technologies.

1.1 The emergence of labour platforms

Digital platforms emerged by the combination of decentralized information networks, big data analytics and mobile digital devices. They are also a new form of coordinating economic activity. As such, they do not fit neatly into either of the two main forms of economic coordination of contemporary capitalism, firms (organisations) or markets. Platforms incorporate elements of both (they put together supply and demand of a certain good or service, and also directly manage the transaction), but also *transcend* them (they can provide more transparency and efficiency, and expand the range of economic activity). Platforms can be defined as digital networks that coordinate transactions in an algorithmic way (Fernández-Macías 2017).

The use of digital platforms to coordinate all kinds of economic activity has been growing with the expansion of the Internet. A more recent development is the use of digital platforms for the intermediation and coordination of service transactions. Whereas transactions of goods involve only indirectly a labour relationship, most service transactions involve a direct labour relationship between the supplier and demander (be it virtual or physical). The rapid proliferation of these *digital labour platforms* in the past years has raised several questions about the functioning and the benefit deriving from the reorganisation of work that those platforms entail and the associated risks. **Digital labour platforms are the object of this paper.**

Whether digital labour platforms are defined as 'sharing economy', 'collaborative economy' or 'gig economy' has subtle implications for the way they are perceived, studied and eventually regulated. The label chosen suggests different characteristics attributed to platforms. Those who emphasise the potential of platforms to boost productivity, unleash creativity, unlock the commercial value of underused personal assets or reorganise work in a more efficient and flexible manner tend to use positive wording such as 'sharing' and 'collaboration' to refer to platforms, understood as means to redistribute the value created by new types of ecosystems (Kenney and Zysman 2016). Those who emphasize the unprecedented control over work organisation that digital labour platforms can facilitate, or their potential fragmentation of work and breakdown of labour relations, tend to use negatively loaded terms such as "gig-work". In this paper, we avoid using those normatively biased terms and use instead relatively neutral terms such as "digital platform economy", "digital labour platforms" and "platform workers". **Digital labour platforms are defined as digital networks that coordinate labour service transactions in an algorithmic way.**

The implications of digital labour platforms for work and employment are ambivalent. On the one hand, they can lower the entry barriers to the labour market, facilitate work participation through better matching procedures and ease the working conditions of specific groups (i.e. workers with strong family commitments, people with disabilities or health conditions, youth, people not in education, employment or training – NEETs -, older workers, retired, long-term unemployed, people with a migrant background). On the other hand, digital labour platforms typically rely on a workforce of independent

contractors whose conditions of employment, representation and social protection are at best unclear, at worst clearly disadvantaged.

In most cases, independent contractors are not covered by the labour rights and welfare support applicable to dependent employment. Health and safety regulations and social security contributions are typically the responsibility of independent contractors alone. Both the platforms and the platforms' clients tend to discharge themselves of any responsibility with respect to the conditions of work and employment of the independent contractors. This can result in a cheaper and more flexible supply of labour services, but at the expense of precarious conditions of work and employment for workers. Furthermore, the revenues generated through this form of labour are not channelled through the standard tax system resulting in foregone tax revenues and a lower tax base to finance e.g. welfare assistance or training, which again has a negative impact on the workers.

However the implications of digital labour platforms go beyond working conditions and employment regulation: they can involve a significant reorganisation of work and production processes. We can call this (potential) effect of digital labour platforms an 'unbundling of tasks', which is in fact a radical deepening of the division of labour. The principle of the division of labour suggests that jobs specialisation raises productivity, and leads to a more effective control of the production process. However, jobs as we know them today do not consist of a unique task; rather they are bundles of tasks with higher or lower degrees of complementarities. Combining complementary tasks into jobs increases workers' productivity and facilitates the organization of production. Any unbundling of tasks, therefore, should be such that the gains from additional task specialisation exceed the loss in productivity (Görllich 2010).

Up to today the limits of task specialisation were mostly attributed to the presence of transaction costs and limited market size. Digital labour platforms change the limits of task specialisation, facilitating the unbundling of tasks. The augmented computing power, in particular thanks to the advent of cloud computing, gave access to abundant resources of computer storage and data collection that, together with the mediation of algorithms, allow for an efficient distribution of resources and a consistent reduction of transaction costs. Furthermore, digital labour platforms can also broaden the geographic boundaries of labour markets and operate very efficiently at a global scale. The ability of digital platforms to pool together at almost no cost millions of service providers, with increasing offshoring and outsourcing of tasks, can result in even further task specialisation to the detriment of jobs as we have traditionally known them.

The broader social implications of this breakdown of jobs and unbundling of tasks are still unclear. It is a well-known insight of Social Sciences that jobs are not only contracts for the provision of labour services, but positions in the social structure that provide access to resources, identity and recognition. In Durkheim's words, jobs are a crucial anchor of "organic solidarity", a system of representations rooted in and reflective of concrete social groups (Lincoln and Guillot 2004). The dissolution of jobs into atomised tasks provided via digital platforms could undermine this crucial role of jobs as anchors of the social structure.

1.2 Policy challenges

The challenge for policy making is how to deal with this ambivalence of technological change. On the one hand, policy should foster a positive environment to nourish innovation. On the other hand, it should assess its potential social and economic implications and ensure that it does not undermine basic principles such as fairness, social protection or equal opportunities. Specifically, digital platforms pose additional

policy challenge in terms of the time for intervention⁵. Technological change often requires changes in policies and regulations, in order to deal with this ambivalence.

Despite an increasingly lively debate on this issue, recent policy interventions at EU and national level have not addressed directly the situation of platform workers, with few exceptions. At national level, some countries have adopted measures to clarify the legal status of platform workers or improve their access to social protection, but such policy responses remain timid. At EU level, the European Commission assessed online platforms in a May 2016 communication⁶, focusing on both the innovation opportunities and the regulatory challenges they represent. In June 2016 the Commission also adopted its European agenda for the collaborative economy⁷, which clarified the concept and provided some guidance on the employment status of platform workers and the EU definition of worker.

Other recent EU initiatives aim to address some of the policy challenges associated to new forms of employment, including platform work. The principles of the European Pillar of Social Rights⁸ related to secure and adaptable employment and access to social protection are worth noting in this regard. As accompanying initiatives, the Commission presented in December 2017 a proposal for a new Directive⁹ on transparent and predictable working conditions across the EU, updating EU rules on employment contracts. It takes account of new forms of employment including platform workers. In addition, in March 2018 a proposal for a Council Recommendation¹⁰, aiming at the provision of access to adequate social protection to all workers and the self-employed in Member States, was presented. Other initiatives such as the New Skills Agenda for Europe¹¹ include measures to tackle the implications of on-going changes in the world of work for education and skills.

1.3 Aims and structure of this report

This report tries to contribute to the debate on the socio-economic impact of digital labour platforms and its policy implications, providing tentative answers to some simple but important questions about this emerging phenomenon. How many platform workers are there in Europe? What kind of people are they? What kind of work is provided and coordinated via platforms? What are the conditions of platform work? For these purposes, we analyse the results of the COLLEEM pilot survey; a unique dataset collected in 2017 to provide some initial tentative evidence on work in digital labour platforms.

The COLLEEM pilot survey represents an initial attempt to provide quantitative evidence on digital platform work, responding to recent calls by the European Council¹² and the European Parliament¹³ in this direction. Concerning the magnitude of the phenomenon,

⁵ Digital platforms are organised around the development of codes and algorithms that impose new behavioural constraints (as for example in the cases of Airbnb and Uber). This poses further policy challenges in terms of the time for intervention. Should the policy maker intervene at the stage of the creation of algorithms imposing some predefined rules or should simply act as a ruler trying to govern the ex-post results of the new technology?

⁶ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0288&from=EN>

⁷ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2016%3A356%3AFIN>

⁸ Following a proposal from the Commission in April 2017, the European Pillar of Social Rights was jointly proclaimed by the European Commission, the European Parliament and the Council in November 2017. For more information see: https://ec.europa.eu/commission/sites/beta-political/files/social-summit-european-pillar-social-rights-booklet_en.pdf

⁹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017PC0797>

¹⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:0132:FIN>

¹¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0381&from=EN>

¹² The Council conclusions on the Future of Work: making it e-Easy (7 December 2017) invited the Member States and the European Commission to take into account of the changing forms of employment when developing and implementing employment, including occupational health and safety, education and training, and social policies. <http://data.consilium.europa.eu/doc/document/ST-15506-2017-INIT/en/pdf>

¹³ The European Parliament report on the European Agenda for the collaborative economy (11 May 2017) drew attention to the lack of data relating to changes in the employment world brought about by the collaborative economy and called on the Member States and the Commission to gather more reliable and comprehensive data in this respect.

the COLLEEM survey allows us to make an initial estimation (setting upper and lower bounds) of the incidence of platform work in 14 Member States¹⁴. It also provides a snapshot of the main characteristics of platform workers and the type of services provided through digital labour platforms, as well as some initial evidence on the working conditions and motivations of platform workers. The evidence from this pilot survey can provide some basis for a more informed policy debate on digital labour platforms in Europe.

Box 1: The COLLEEM pilot survey

In 2017, the JRC in partnership with DG EMPL commissioned an online panel survey on digital labour platforms (COLLEEM) in fourteen Member States. Although COLLEEM is a full survey with a large number of respondents, we consider it as a big pilot or exploratory survey, because of the formidable methodological and measurement problems involved in a first international survey of an emerging phenomenon such as platform work. The survey was conducted by PPMI, and it aims at being representative of all internet users between 16 and 74 years old in the selected countries. A commercially available list of internet users in the selected countries (CINT) was used as sampling frame, with non-probability quota sampling of respondents by gender and age groups. The fieldwork was carried out in the second half of June 2017, with a final sample of 32,409 (around 2,300 per country). To correct for self-selection and non-probability bias as much as possible, post-stratification weights were computed by adjusting the sample proportions to known population proportions (drawn from Eurostat's LFS and ICT surveys) for three variables: level of formal education, frequency of internet use and employment status. Weights were trimmed in the estimation process to avoid excessively large values.

The report is structured as follows. Section 2 discusses the existing literature on platform work and provides some contextual information on the platform economy within the EU. Section 3 provides an initial estimate of the number of platform workers in the 14 Member States that participated in the COLLEEM survey. This section also classifies platform workers according to the number of hours they work and the income they generate through digital labour platforms. It also discusses some methodological problems of the COLLEEM pilot survey and how to correct them. Section 4 describes the main socio-demographic characteristics of platform workers. The section portrays platform workers in terms of age, gender, family composition, education and employment status. Section 5 discusses the employment status of platform workers. Section 6 analyses the types of labour services provided through digital labour platforms. Labour services are categorised according to the level of skills required, and then analysed in terms of gender and educational levels. Section 6 also checks for the presence of labour service specialisation at country level by looking at the distribution of tasks for main and significant platform workers by country. Section 7 discusses the motivations of platform workers, and section 8 their working conditions. Section 9 discusses the implications of these findings for the design and implementation of public policies in the employment and social fields. Finally, section 10 concludes.

<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2F%2FEP%2F%2FTEXT%2FBREPORT%2BA8-2017-0195%2B0%2BDOC%2BXML%2BV0%2F%2FEN&language=EN>

¹⁴ Germany, Netherlands, Spain, Finland, Slovakia, Hungary, Sweden, United Kingdom, Croatia, France, Romania, Lithuania, Italy, Portugal.

2 A review of the literature

In the context of the COLLEEM project, an attempt to compile a comprehensive mapping of Europe's platform economy has been carried out by Fabo et al (2017a), who provide information on service platforms active in the EU 28 Member States in the first half of 2017. According to this study the European platform economy has evolved rapidly in the last decade, with most platforms set up from 2010 onwards. The European platform economy is still immature and unstable, in particular with respect to their main competitor platforms (mostly US ones). The highest concentration of European platforms is in large central EU countries, while there are generally fewer platforms operating in small EU Member States. This study also found that platforms create very few jobs related to the functioning of the platform itself. The job creation potential of the platform economy seems thus almost entirely related to the workers that provide labour services via the platforms, generally not as direct employees but as independent contractors. Specifically on digital labour platforms, the authors found great differences in terms of the autonomy these platforms grant to their workers or contractors. While some let them decide the organisation of their work and remuneration, many limit autonomy to an extent that resembles dependent employment.

A recent JRC study by Codagnone et al. (2016a) defines and conceptualises digital labour platforms as markets, proposing a distinction between those that allow the remote delivery of electronically transmittable services (i.e. Amazon Mechanical Turk, Upwork, Freelancers, etc.) and those where the matching and administration processes are digital but the delivery of the services is physical and requires direct interaction. The former category is called Online Labour Markets (OLMs) and is potentially global. The latter broad type is termed Mobile Labour Markets (MLMs) and is by definition localised. This study concludes that: i) individuals engage in these activities primarily for money, for a large segment of them this work is their primary source of income, and most are under-employed and self-employed and fewer are unemployed and inactive; ii) matching frictions and hiring inefficiencies are widespread and even the OLMs are far from being globalised online meritocracies; iii) a behavioural approach to big data exploration should be further applied because there is emerging evidence of biases contributing to hiring inefficiencies.

Some recent studies from Europe and the US try to provide some basic information on the conditions of workers in some specific platforms (see Gómez et al, 2016; Hall & Krueger, 2016; D'Cruz & Noronha, 2016; Gandini, Pais & Beraldo, 2016). They provide insights on the working relationships, demographics, incentives, aspirations and income dynamics of platform workers. However, very few studies analyse data from a representative sample of the population of platforms workers and even fewer do this in a comparative way.

According to Katz and Krueger (2016), who conducted a survey (RAND-Princeton Contingent Work Survey: RP-CWS) in 2015 on alternative ("contingent") working arrangements in the US, the percentage of workers engaged in alternative working arrangements (temporary help workers, help agency workers, on-call workers, contract workers, and independent contractors and free lancers) rose from 10.7 % in 2005 to 15.8 % in 2015. Such an increase represents almost the full net employment growth observed in the same period. In the context of this study, they also tried to quantify the percentage of platform workers in the US relative to all workers, and estimate it as only about 0.5% in 2015.

These figures are consistent with a JPMorgan Chase Institute study on the US Online Platform Economy (Farrell and Greig 2016) that recently produced an estimation of 0.5% of adults working for platforms in a given month in the US (0.9% if capital platforms are included), and around 1.5% of adults having ever worked for platforms (4.3% if capital platforms are included).

By contrast, a study carried out by the US Federal Reserve (Robles and McGee, 2016) - based on the Survey of Enterprising and Informal Work Activities (EIWA) - sets the

prevalence rate of platform work in the US at a much higher rate. The authors of the study, Robles and McGee, first screened the "qualifying respondents" by asking whether they had engaged in any sort of online or offline informal work activities in the previous six months (36% of the adult population). They then show that 12% of the respondents in this group provided services via digital labour platforms. A back of the envelope calculation suggests that the prevalence rate of platform work in the US can be set at 4.3%.¹⁵ It should be noted that the estimates may represent a lower bound, since the authors only mention the names of eight specific labour platforms plus a vague category "other websites which enable informal paid or side work activities" which may or may not include the platforms we are interested in.

The figure found by Robles and McGee is much higher than the one found by Katz and Kruger, possibly due to the fact that the EIWA survey is broader in terms of coverage (all adult population) and timing (the previous six months). Numbers roughly comparable to those of Robles and McGee were found in a study financed by Upwork and Freelances Union. Another study commissioned by Burston-Marsteller, the Aspen Institute and TIME¹⁶, documents that -according to a 2015 survey of 3000 Americans 22% of the U.S. population has provided some services through a digital platform. However, the definition of services used is quite general and does not include only labour services¹⁷.

In Europe, a study by FEPS, UNI Europa and University of Hertfordshire (Huws et al, 2017) looks at platform workers' characteristics, working conditions, etc. in the UK, Sweden, Germany, Austria, the Netherlands, Switzerland and Italy. The study combines data from an on-line survey and 15 in-depth qualitative interviews with platform workers. This study estimates the percentage of the working age¹⁸ population that has ever provided (paid) services via platforms, whether as main or secondary activity. Their estimation is 9% for Netherlands and the UK, 10% for Sweden, 12% for Germany, 18% for Switzerland, 19% for Austria and 22% for Italy. However, only around half of them provide services via platforms frequently (i.e. at least weekly). This study also shows that, in most cases, income from platform work represents a small share of their income (less than 10% of all personal income). Nevertheless, for some it is the only source of income (from 3% in the Netherlands to 12% in Switzerland).

Huws et al. also discuss the gender distribution of platform workers: in 5 countries, males are more likely to perform platform work (59% in Austria, 57% in Switzerland, 62% in Germany, 56% in the Netherlands, and 61 % in Sweden), while the opposite is true in Italy (48% for males) and UK (48%). Similar numbers are found for "core" platform workers (those who provide services at least weekly). Concerning the types of services provided, most platform workers indicate that they have provided many different types of services via platforms. However details on the types of services are not provided. Platform workers are more likely to be young (i.e. below age 34), with some interesting variations across countries: the highest percentage of young platform worker is reported in Sweden (59%) and the lowest in Italy (39%), with the remaining countries in intermediate positions. With the exceptions of Italy and the Netherlands, young workers compose more than half of the "core" platform workers population. When looking at employment status, platform workers tend to describe themselves as full-time employees, with the highest values found in Germany (58%) and the lowest in Italy (41%). However, it is unclear whether these responses reflect the belief of platform

¹⁵ Please note that in their paper, Robles and McGee mention 13%, because they include respondents who earn income from Etsy (a platform for exchanging goods), which we would exclude. Conversely, they exclude care.com (a digital labour platform for carers, babysitters, cleaners, etc), which we would include, so we used the numbers on page 50, and recalculated it by adding up the proportion of respondents who provided services via the following platforms: Amazon Mechanical Turk, Care.com, Fiverr, Freelancer, Uber, Lyft, Sittercity and Task Rabbit.

¹⁶ See <https://www.aspeninstitute.org/publications/demand-economy-survey/>.

¹⁷ The services provided include ride sharing, accommodation sharing, task services, short-term car rental and food and goods delivery. <https://www.slideshare.net/Burson-Marsteller/the-ondemand-economy-survey>

¹⁸ The age range varies by country: UK (16-75); Sweden (16-65); Germany (16-70); Austria (18-65); Netherlands (16-70); Switzerland (15-79) and Italy (16-70).

workers of being employed full-time by the platform or it is their actual status on the off-line labour market.

An interesting source of information on labour platforms is provided by the Online Labour Index (OLI), developed by the Oxford Internet Institute (Kässi and Lehdonvirta, 2016). The OLI is an economic indicator "that provides the online gig economy equivalent on conventional labour market statistics. It measures the utilisation of online labour across countries and occupations by tracking the number of projects and tasks posted on platforms in near-real time (Kässi and Lehdonvirta, 2016, p. 1). The OLI is constructed by tracking all the projects/tasks posted on the six largest English-language online labour platforms, representing at least 70% of the market by traffic. The projects are then classified by occupation and country of the employer. The results are published as an automatically updated open dataset and it is possible to visualize interactive charts showing changes by occupations and countries (see <http://ilabour.oii.ox.ac.uk/online-labour-index/>).

3 How many platform workers are there in Europe?

Anecdotal evidence, media accounts and the market valuation of some companies suggest that the provision of labour services through online platforms is growing at a very fast rate. But how many people are actually providing labour services via online platforms in Europe today? This is a very important question for social and employment policy. First, because the categories assumed by existing labour regulation do not always apply in a direct and unambiguous way to platforms. Second, because work in platforms is relatively opaque to everyone except the platforms themselves (it is relatively opaque even to the service providers and buyers). This opacity, as well as the sheer novelty of the phenomenon, explains the surprising lack of reliable statistical evidence on platform work. We simply do not know how many people are actually providing services via online platforms.

There have been, however, some attempts at estimating the amount of people providing work via platforms. The estimates for the US found by Farrell and Greig (2016 and 2017) and Katz and Krueger (see the previous section) are perhaps surprisingly low, although it is important to note that they tried to measure work via platforms which can be considered as a "main job" of the respondents, while a significant amount of work via online platforms may take place as secondary activity.

On the contrary, the estimates provided by Huws et al. for Europe are much higher than the ones previously mentioned for the US, partly as a result of a much broader definition of work via online platforms.

The COLLEEM survey contains a direct measure of service provision via platforms by the respondents in 14 EU countries. It asks whether the respondent has ever gained income from different online sources, among which there are two corresponding to labour service platforms: "*providing services via online platforms, where you and the client are matched digitally, payment is conducted digitally via the platform and the work is location-independent, web-based*" and "*providing services via online platforms, where you and the client are matched digitally, and the payment is conducted digitally via the platform, but work is performed on-location*". Table 1 below shows the (weighted) percentage of COLLEEM respondents that answered positively to at least one of those two options, the number of cases such a percentage corresponds to the total sample in each case. The numbers are relatively high, closer to Huws et al. estimates than to the US studies previously mentioned. According to this initial estimate, the share of adult internet users in each country that has ever provided labour services via platforms would range from nearly 16% in Portugal to nearly 7% in Finland.

Table 1: Percentage of platform workers in Europe according to the 2017 COLLEEM survey, initial estimate

	%	Unweighted Cases	Unweighted N
United Kingdom	12.6%	268	2,320
Spain	15.1%	388	2,331
Germany	11.8%	247	2,319
Netherlands	10.6%	217	2,314
Portugal	15.7%	405	2,305
Italy	13.5%	375	2,317
Lithuania	13.5%	296	2,308
Romania	14.2%	311	2,307
France	8.8%	170	2,315
Croatia	12.1%	274	2,300
Sweden	7.8%	164	2,321
Hungary	8.9%	200	2,309
Slovakia	8.5%	183	2,313
Finland	6.9%	121	2,310
Total	11.9%	3,619	32,389

Source: authors' elaboration using the COLLEEM dataset. Note: the percentages reported in column 1 are weighted. We report the total unweighted numbers in columns 2 and 3 for additional clarity.

However, this initial estimate does not refer to the entire adult population, but to active internet users. If we want to provide an estimate of platform workers as a percentage of the total adult population, we need to correct the COLLEEM figures. Panel 1 of Table 2 below shows the figures of internet use for the entire adult population in each country according to the Eurostat ICT survey, which we can take to be the real population values.

Table 2: Percentage of platform workers in Europe according to the 2017 COLLEEM survey, adjusted estimate

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
	1. ICT survey Internet use			2. COLLEEM Internet use			3. COLLEEM/ICT	4. Platf. W. within frequent			5. Adjusted estimate
	Daily	Weekly	Less	Daily	Weekly	Less		%	Cases	N	
United Kingdom	88%	5%	7%	93%	5%	2%	105%	12.9%	268	2,306	12.0%
Spain	67%	10%	23%	87%	10%	3%	126%	15.1%	386	2,319	11.6%
Germany	78%	9%	13%	87%	10%	3%	111%	12.0%	245	2,292	10.4%
Netherlands	86%	6%	8%	92%	6%	1%	108%	10.6%	212	2,280	9.7%
Portugal	60%	8%	32%	94%	4%	2%	144%	15.6%	403	2,295	10.6%
Italy	66%	1%	33%	96%	1%	2%	146%	13.3%	371	2,306	8.9%
Lithuania	60%	11%	29%	91%	7%	2%	138%	12.9%	292	2,300	9.1%
Romania	42%	14%	44%	92%	7%	1%	177%	14.4%	311	2,302	8.1%
France	70%	11%	19%	85%	11%	4%	119%	8.6%	168	2,299	7.0%
Croatia	63%	7%	30%	92%	7%	1%	142%	11.6%	272	2,298	8.1%
Sweden	85%	6%	9%	92%	6%	2%	108%	7.9%	163	2,299	7.2%
Hungary	71%	7%	22%	91%	8%	1%	127%	8.5%	198	2,303	6.7%
Slovakia	68%	11%	21%	87%	11%	2%	123%	8.7%	183	2,297	6.9%
Finland	85%	6%	9%	91%	6%	3%	107%	6.6%	119	2,297	6.0%
Total				90%	8%	3%		11.9%	3,591	32,193	9.7%

Source: authors' elaboration using the COLLEEM dataset and the Community survey on ICT usage in households and by individuals (ICT survey).

There is wide variation across countries: whereas in Finland, Sweden, Netherlands and the UK more than 90% of adults use the internet at least once a week, in Romania only 56% of the adult population do. If we compare those population values with those of our

sample (shown in panel 2 of table 2) we can get an idea of how biased (towards frequent internet users) the COLLEEM survey is: in the latter, in all countries more than 95% of respondents use internet at least once a week (in fact, in nearly all countries more than 90% of respondents use internet daily).

It is important to note that *this is not a bug but a feature* of the COLLEEM sample: it would be absurd to sample non-internet users for a study of work on internet platforms. But if we want to provide an estimate of platform workers *as a percentage of the adult population*, we need to correct for the bias of having a sample which only includes active internet users. The third panel of table 2 shows a simple ratio of frequent internet users (daily and weekly) in COLLEEM compared to Eurostat's ICT survey. Panel 4 shows the share of platform workers within frequent internet users in COLLEEM (we drop infrequent users, which is a very small sample and probably unreliable).

Assuming that the sample of frequent internet users of COLLEEM is representative of the population of frequent internet users in each country, we can use the ratio in panel 3 to adjust the share of platform workers within frequent internet users, and make it relative to the total adult population. This is the adjusted estimate shown in panel 5 (the last column) of table 2. This estimate shows platform workers according to the COLLEEM survey as a percentage of the adult population in each country. Although the numbers are still higher than the previously mentioned US studies, they are significantly reduced in those countries where there is a large proportion of non-internet users (Romania, Portugal, Italy, Lithuania, Croatia), since in those countries the COLLEEM sample differs most from the adult population. According to this adjusted estimation, the share of adults that have ever done some work via online platform is slightly above 10% in UK, Spain, Germany and Portugal, and around 7% or lower in France, Sweden, Hungary, Slovakia and Finland, with the other countries in between.

However, that figure refers to those that have ever used online platforms to provide work services, which is still too broad as a measure of platform workers. There may be a significant number of respondents who have done platform work very sporadically or even just once, which would not be very relevant for policy purposes. Also, if we want to evaluate the importance of platform work as a form of employment, it would be better to use a concept that is similar to that of employment in Labour Force Surveys (perhaps even referring to gainful employment in a particular week). The COLLEEM survey does not include a question of whether the respondents did platform work on a particular week, but it does ask for the frequency of service provision via platforms, which can be used to approximate a more relevant figure of share of platform workers. In panel 1 of

Table 3, we can see the percentage of platform workers that, according to the COLLEEM survey, have provided services via platforms at least once a month during the last year (or since they started working in online platforms).

Table 3: Percentage of platform workers in Europe according to the 2017 COLLEEM survey, additional estimates

	I	II	III	IV	V	VI	VII	VIII
	1. Frequency		2. Hours		3. Income			
	% monthly or more	Estimate signif. frequency	10 or more hours pw	Estimate signif. hours	25% income or more	Estimate signif. income	<i>50% income or more</i>	<i>Estimate signif. income</i>
United Kingdom	82.5%	9.9%	56.1%	6.7%	71.0%	8.5%	<i>35.7%</i>	<i>4.3%</i>
Spain	80.5%	9.4%	56.7%	6.6%	52.1%	6.1%	<i>17.6%</i>	<i>2.0%</i>
Germany	78.3%	8.1%	63.1%	6.6%	62.8%	6.5%	<i>23.9%</i>	<i>2.5%</i>
Netherlands	89.1%	8.7%	55.0%	5.4%	66.8%	6.5%	<i>29.8%</i>	<i>2.9%</i>
Portugal	67.2%	7.1%	56.1%	6.0%	39.6%	4.2%	<i>15.4%</i>	<i>1.6%</i>
Italy	79.7%	7.1%	61.0%	5.4%	61.0%	5.4%	<i>20.4%</i>	<i>1.8%</i>
Lithuania	65.0%	5.9%	61.3%	5.6%	60.9%	5.6%	<i>17.7%</i>	<i>1.6%</i>
Romania	79.5%	6.4%	55.8%	4.5%	47.7%	3.8%	<i>9.7%</i>	<i>0.8%</i>
France	84.2%	5.9%	59.7%	4.2%	69.1%	4.8%	<i>25.8%</i>	<i>1.8%</i>
Croatia	64.3%	5.2%	63.9%	5.2%	36.6%	3.0%	<i>12.8%</i>	<i>1.0%</i>
Sweden	74.6%	5.3%	49.2%	3.5%	64.1%	4.6%	<i>23.0%</i>	<i>1.6%</i>
Hungary	74.8%	5.0%	62.0%	4.1%	52.7%	3.5%	<i>19.2%</i>	<i>1.3%</i>
Slovakia	73.4%	5.1%	39.6%	2.7%	53.5%	3.7%	<i>12.5%</i>	<i>0.9%</i>
Finland	68.7%	4.1%	48.9%	2.9%	54.4%	3.3%	<i>10.7%</i>	<i>0.6%</i>
Total	80.1%	7.7%	58.2%	5.6%	61.8%	6.0%	<i>24.0%</i>	<i>2.3%</i>

Source: authors' elaborations using COLLEEM data and Eurostat Labour Force Statistics (LFS).

For the entire sample of 14 countries, around 4 out of 5 platform workers in COLLEEM use platforms for service provision at least once a month. If we remove the remaining 20% (which of course, varies across countries), we generate an adjusted estimate of "relatively frequent" platform workers which is almost 8% for the entire sample of countries, ranging from 9.9% in UK to 4.1% in Finland (column II).

However, the frequency of use of platforms for service provision may not be a very good indicator of the significance of work via platforms because we do not know how much work was actually carried out in each occasion. A more meaningful indicator of the significance of the work carried out via platforms is the number of hours dedicated to it. Panel 2 of Table 3 above shows the percentage of platform workers in the COLLEEM survey that say they work at least 10 hours per week in the related services. On average, only a bit more than 50% of those identified as platform workers regularly work more than 10 hours a week for platforms. If we use this as a more restrictive way to identify "significant" platform workers (that is, platform workers that perform a significant amount of work via platforms), then we come to a lower estimate than the previous one, as shown also in panel 2 of Table 3. The figures would range from less than 7% in the UK, to around 3% in Finland (column IV).

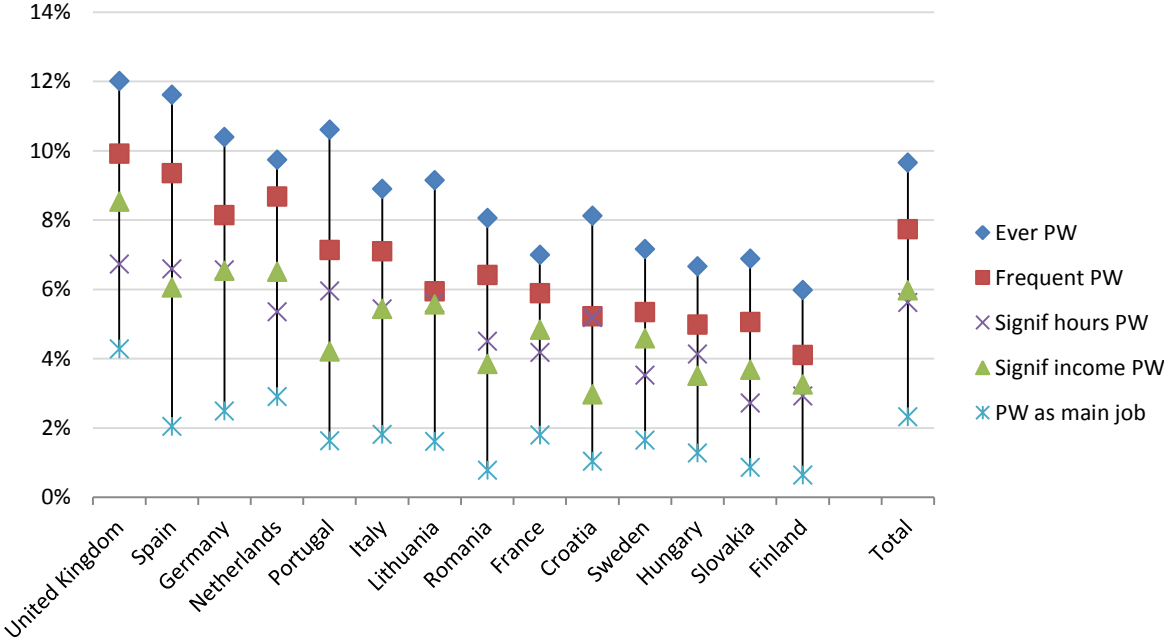
A final way of identifying those workers for whom platform work is actually significant is by taking into account the share of their income that comes from platforms. After all, employment is the provision of labour services in exchange for money, and if platform work does not generate a significant amount of income for the worker we can assume it is not a significant form of employment. Panel 3 of table 3 uses the information of COLLEEM on this issue, showing the percentage of workers that make at least 25% of their monthly income through platforms: this percentage is similar to that of "significant" platform workers discussed in the previous point, and leads to an adjusted estimation of platform workers which ranges from 8.5% in the UK to 3.3% in Finland (column VI).

In panel 3 of Table 3, we have also included (in italics) a much more restrictive estimation, based on the share of platform workers who generate at least 50% of their monthly income through platforms. Although this estimation is excessively restrictive (more than 25% of the monthly income is significant enough for policy purposes), it provides a very interesting figure because it shows those whose main job is platform work (i.e., those that get most of their income through platforms). This restrictive

estimation is also probably more aligned to the US estimations discussed at the beginning of this report which looked at platforms as an alternative type of employment and focused on those that mostly did platform work as a means of earning a living. The estimate in this case is much reduced, becoming 2% overall (in all countries), and ranging from 4% in the UK to 0.6% in Finland. In fact, with this restrictive measure the estimate is above 2% in only 3 of the 14 countries.

Figure 1 provides a final summary of our different estimations of the percentage of platform workers for the 14 countries which are part in the COLLEEM survey. Overall, they paint a picture of an emerging phenomenon in European labour markets, experienced by a significant minority of people but only really important as an actual form of employment for a very small minority. On average, as much as 10% of the adult population according to the COLLEEM figures (adjusting for the bias towards frequent internet users) would have ever used online platforms for the provision of some type of service involving some type of work. But less than 8% would do this kind of work with some frequency, and less than 6% would spend a significant amount of time on it (at least one fourth of the standard workweek of 40 hours) or earn a significant amount of income (at least 25% of the total) via this kind of work. As a main form of employment or main source of income, platform work remains extremely low in most countries, affecting around 2% of the adult population on average.

Figure 1: Different estimates of platform workers (PW) using COLLEEM data



Source: authors' elaborations using COLLEEM data. Data weighted using population weights.

The previous point referred to broad average patterns. However, there are significant differences across countries too. According to the COLLEEM survey, the UK would have the highest incidence of platform work consistently across the different estimations (once the bias of internet usage is adjusted for). It is a country where around 4% of the adult population would, according to COLLEEM, get 50% or more of their monthly income through platforms, which is a very significant number. Other countries with high relative values are Germany, Netherlands, and the three Mediterranean countries included in the COLLEEM survey (Spain, Portugal and Italy). By contrast, the two Scandinavian countries (Finland and Sweden) as well as France, Hungary and Slovakia, show very low values compared to the rest.

How do these figures look compared to previous similar studies? We have already mentioned that they seem clearly higher than those recently estimated for the US, although the difference is not that significant (except for some countries) when we consider only platform work as a form of employment that provides at least 50% of the monthly income, which is probably closer to the concept of platform work used in the mentioned US studies. In any case, it is possible that platform work is a more prevalent phenomenon in the EU than in the US, although anecdotal evidence and media accounts would not necessarily point in that direction. We should also mention that the only previous pan-European estimation of the incidence of platform work (see Huws et al. 2017) provides figures which are in line with ours, even higher in some cases.

Do these figures suggest that platform work is a relevant policy matter in the EU? They do indeed. As previously mentioned, they suggest that it is, at the very least, an emerging phenomenon that has affected a significant number of workers, and that provides a small but perhaps important source of income to some of those workers too. Even a relatively small incidence implies a very important growth of this type of work in recent years, since until recently it did not even exist. And the fact that it is probably not yet a full-fledged alternative to standard employment for any significant number of people suggests that this may be the perfect time to understand it better, and, if necessary, to regulate it better. Section 9 provides a short assessment of the possible implications of the survey's main results for employment and social policies.

4 Who are the platform workers?

This section provides a socio-demographic profiling of the three main categories of platform workers identified in the previous section. Respondents are classified according to the number of hours they spent working on platforms and the income they derived from platform work, in the following three categories:

1. **Platform work as main or very significant job:** respondents that earn 50% or more of their income via platforms and/or work via platforms more than 20 hours a week.
2. **Platform work as significant, but not main work:** respondents who earn at least 25% of their income via platforms (but less than 50%) and/or work via platforms at least 10 hours per week.
3. **Not significant platform work:** respondents who have performed platform work, but who neither earn at least 25% of their income via platform, nor work at least 10 hours.

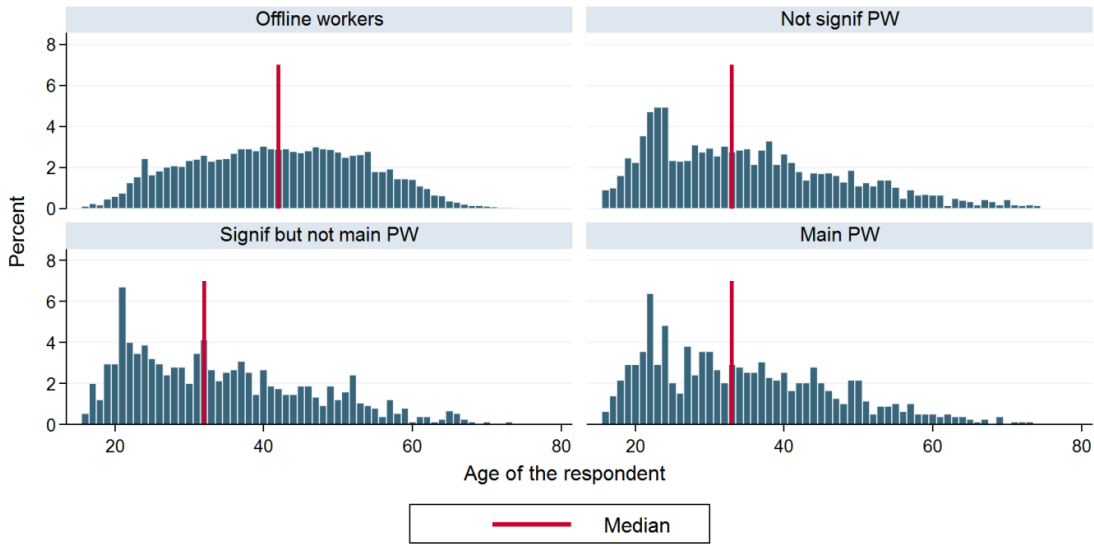
For reference, whenever possible we also compare the three categories of platform workers with **offline workers**, i.e. employees and self-employed, in the COLLEEM sample.

4.1 Profiling the platform workers: describing the COLLEEM sample

Age and gender

A previous JRC study documented how workers in digital labour markets tend to be younger than the equivalent general population (Codagnone et al., 2016). Our estimates from the COLLEEM survey corroborate these previous findings, since offline workers are on average 10 years older than platform workers (median age 44 vs. 34); the entire age distribution for the different categories of workers is shown in Figure 2. Two elements stand out from these charts: the first one is that the age distribution for the offline workforce in the COLLEEM sample is relatively symmetrical and *normal*, while for platform workers it is clearly skewed towards the young. The second element is that, even though the age distributions across different categories of platform workers are remarkably similar, we can still see a gradual shift toward the young as the significance of platform work intensifies.

Figure 2: Platform workers are younger

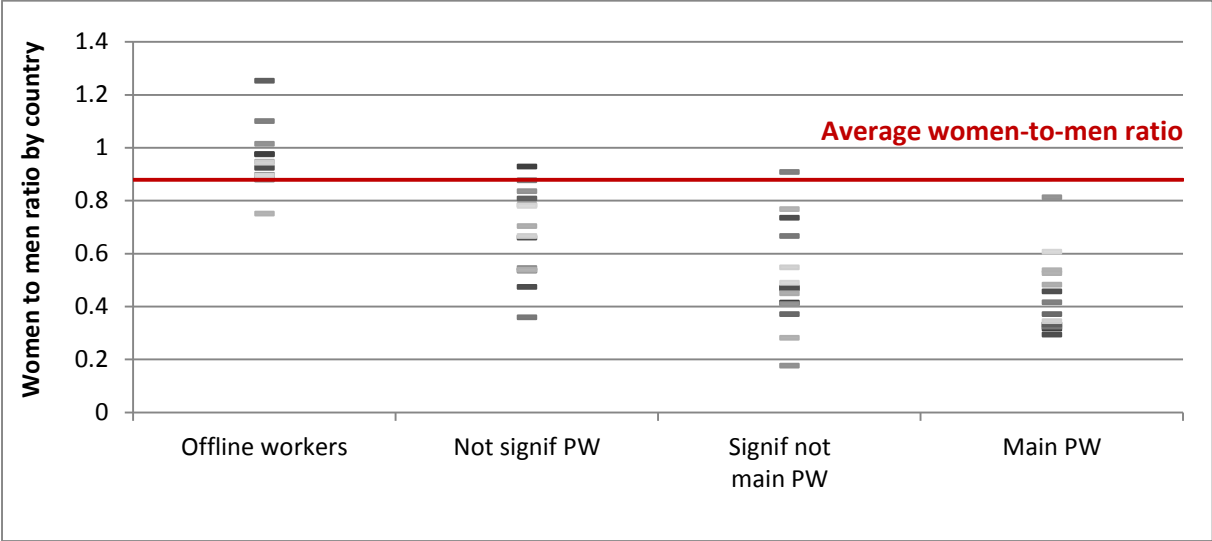


Number of observations: 20,880

Source: authors' elaborations using COLLEEM data. Data weighted using population weights.

In terms of gender distribution, we find that the representation of women progressively decreases as the intensity of platform work increases. More specifically, women represent 47.5% of the offline workers, 40.2% of the non-significant platform workers, 31.2% of the significant but not main platform workers and only 26.3% of the main and very significant platform workers. These estimates differ from some findings of previous literature. For instance, in his 2010 survey of Amazon mechanical Turk workers, Ipeirotis finds 70% of "turkers" are females (mainly in the US), although this concerns only a very specific platform that may have a peculiar gender profile. The 2017 study carried out by FEPS in cooperation with UNI Europa and the University of Hertfordshire (Huws et al., 2017). found a more even gender split among platform workers, with women performing between 39% (in Germany) and 52% (in Italy and the UK) of the weekly platform work (which they call crowd work). However, the Hertfordshire study surveyed only seven countries and among them only four (Italy, Germany, Sweden and the UK) are also part of the COLLEEM sample. Figure 3 shows that the representation of women among platform workers varies greatly by country. While the women to men ratios are well below one in most categories of platform workers across all 14 countries, there are still significant differences, and especially among those who provide services via platforms as their main occupation. For instance, in countries such as Croatia the women to men ratio for main platform workers approximates 0.29, which means that we find approximately one woman for every three men working mainly on platforms; by contrast, in Slovakia the proportion is nearly one to one. If we look at the women to men ratio among workers for whom platforms do not represent the main occupation, we find significantly more geographical dispersion. In particular, for workers that carry significant platform work but not as main occupation, the women to men ratio varies from 0.18 (i.e. one woman for every six men) in Finland to 0.91 in Portugal, where nearly as many women as men spend at least 10 hours working on platforms or earn at least 25% of their income through platform work.

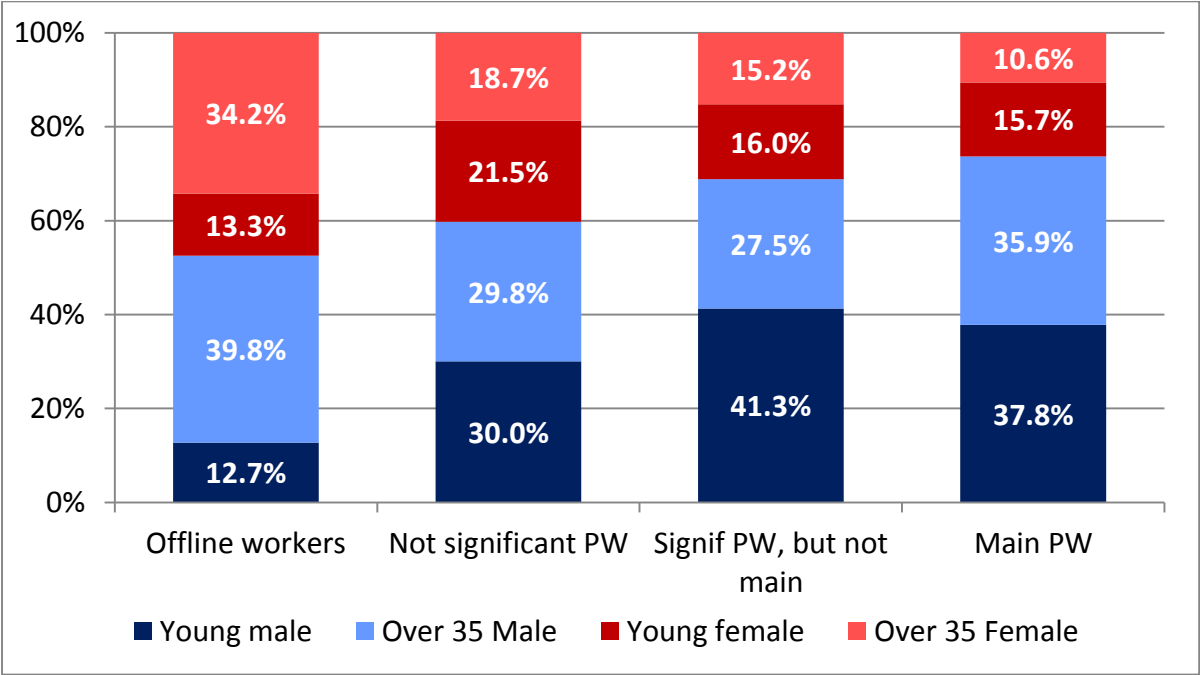
Figure 3: Platform work women to men ratios across 14 EU countries



Source: authors' elaborations using COLLEEM data. Data weighted using population weights.

If we look at gender and age combined (Figure 4), we notice an even more dramatic split, with the share of older women progressively decreasing as the intensity of platform work intensifies: while 34.2% of the offline workers are women aged 35 and over, the proportion nearly halves to 18.7% among those who sporadically provide services via online platforms, 15.2% of respondents who do some platform work, and only 10.6% among those for whom platform worker represents the main source of income. By contrast, the proportion of younger males rises substantially with the intensity of platform work, from 12.7% among offline workers to 37.8% among main platform workers. The distribution of younger women and older men across types of workers does not show the same clear trend, since offline workers and main platform workers appear more similar to each other than to not-significant platform workers.

Figure 4: Platform workers are mostly (young) males

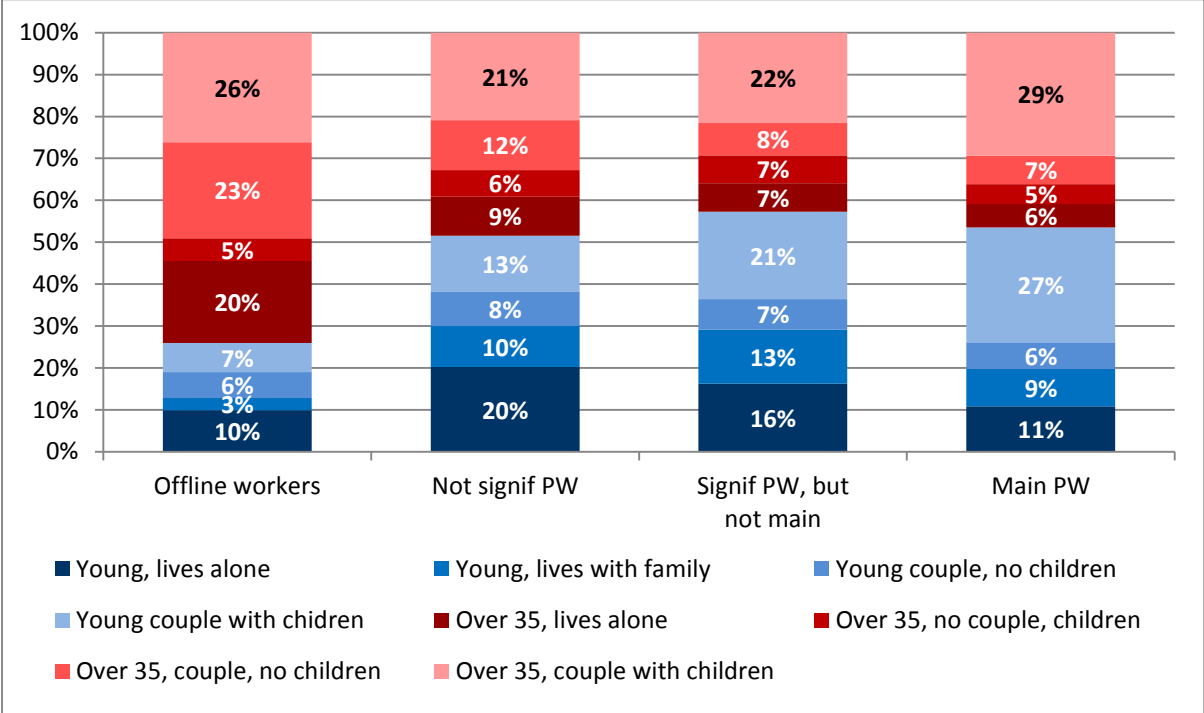


Source: authors' elaborations using COLLEEM data. Data weighted using population weights.

Household composition

The household composition of platform workers is another aspect likely to be relevant from a policy perspective, since the conditions of platform work may affect not just the workers themselves, but also their dependent spouses and children. Indeed, the fact that platform workers tend to be younger than offline workers does not necessarily imply that they are free from family commitments. To investigate this issue, we first looked at the distribution of dependent children among offline and platform workers. Initial simple estimates seemed to suggest that platform workers have on average more children than offline workers; however, because of the way in which the question is worded – how many dependent children younger than 18 live are currently living in your household – it is not possible to automatically infer the relationship between the respondent and the dependent children. In other words, we cannot know if the dependent children are brothers or sisters of the respondent, rather than sons or daughters; in fact, if a respondent is aged 16 or 17 the dependent child could be him/herself. For this reason, we combined information on marital status (being part of a couple or not), age (being above or below 35 years of age) and presence of children in the household (household with or without dependent children) to generate eight different household types. The results are reported in Figure 5.

Figure 5: Platform workers’ household composition



Source: authors’ elaborations using COLLEEM data. Data weighted using population weights.

Our estimates suggest that the proportion of young people without family commitments is relatively low both among offline workers (10%) and among main platform workers (11%), while substantially higher among those for whom platform work is less significant (20% and 16%). By contrast, older people without family commitments (over 35 and who live alone) represent a much larger proportion of the offline workers than of the main platform workers (20% vs. 6%).

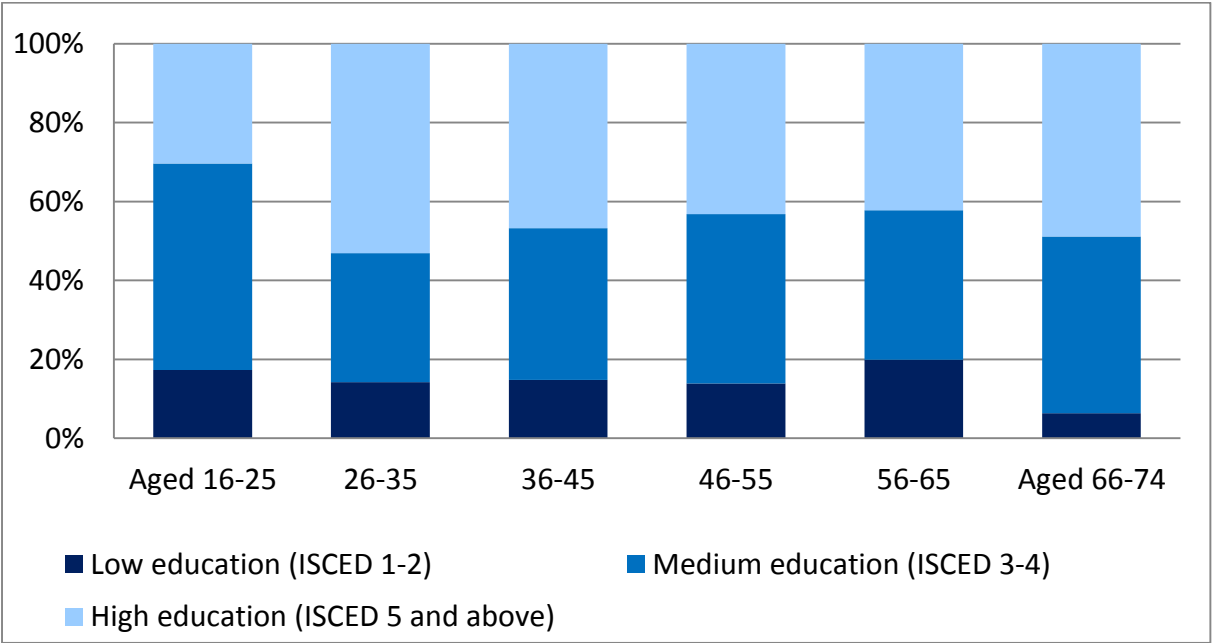
Given that people who are part of a couple (both older and younger than 35) and have children represent approximately one third of the entire COLLEEM workforce, it is not surprising to find that they are the dominant categories among main platform workers (56% combined). However, the fact that the proportion of older couples with dependent children is slightly larger among main platform workers than among offline workers (29%

vs. 26%) is somewhat unexpected and deserves further investigation.¹⁹ It is important to acknowledge that the difference is very small, and may not be statistically significant given the small sample of platform workers in the COLLEM dataset. However, it seems clear that according to these results, there is a significant proportion of people for which platform work is a significant source of income and have significant family responsibilities (including dependent children). This is important for policy purposes, since it contradicts the image of platform workers as young people with no family responsibilities, and suggest that the conditions of platform work may have implications that go beyond the service providers themselves, potentially extending to dependent children and spouses.

Education

Previous studies found platform workers to be more educated than the general population (Codagnone et al., 2016; Ipeirotis, 2010). This is hardly surprising given that digital platforms are obviously more likely to be used by frequent internet users, a population that is more generally educated than the average. However, the presence of so many young platform workers may give us a biased sample in the other direction, since many of them may not have completed their tertiary education yet. Figure 6 shows that the proportion of medium educated is substantially higher among the youngest platform workers (aged 16-25), while the tertiary educated are more frequent among the 26-35.

Figure 6: Educational attainment by age group of platform workers

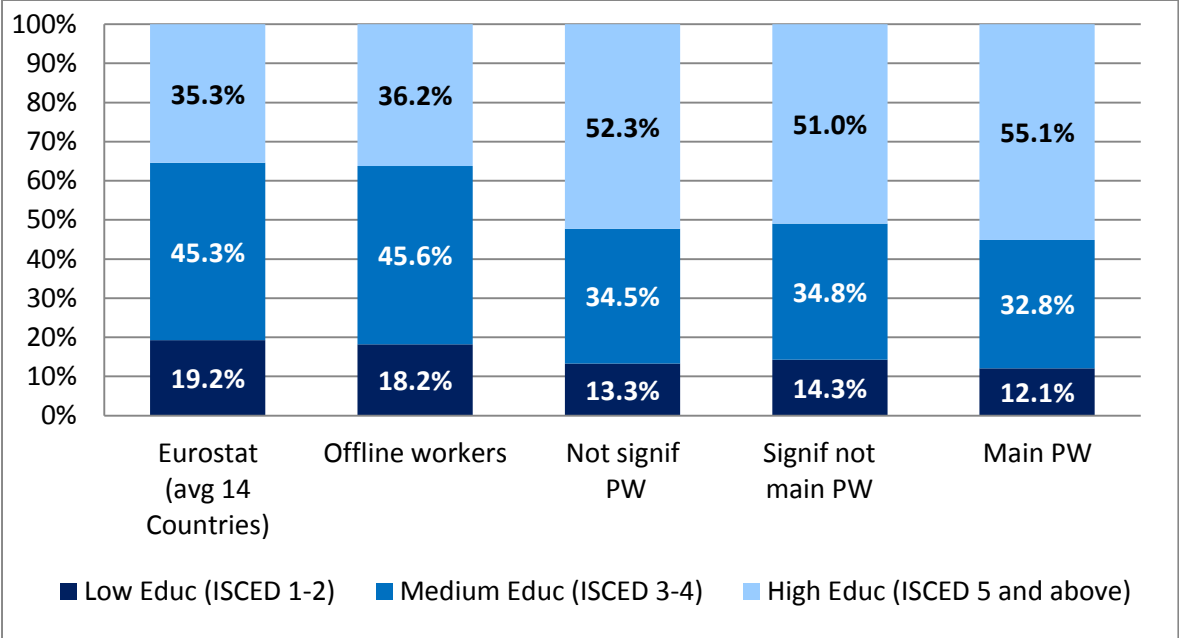


Source: authors' elaborations using COLLEEM data. Data weighted using population weights.

¹⁹ We checked whether the results may be driven by the presence of mothers who work mainly on platforms and may need more flexibility to care for their children, but found this not to be the case. We also checked whether it could be due to sampling issues, and found that, to a significant extent, the use of the COLLEEM population weights tends to inflate the representation of families with children among main platform workers, especially in the category of young couple with children shown earlier. However, even without weights the COLLEEM database suggests that there is a significant share of platform workers with family responsibilities and dependent children, as discussed in the main text.

For this reason, the next chart shows educational attainment across different types of workers, but only for those aged 25 and over. In addition, we compare the COLLEEM sample with information on workers aged 25 to 74 drawn from EUROSTAT. Figure 7 clearly shows that platform workers are significantly more educated than the comparable general population. Once again, this finding is in line with what has been already claimed by previous studies (Ipeiritis, 2010; Eurofound, 2015; Huws et al. 2017).

Figure 7: Platform workers are more educated



Source: authors' elaborations using COLLEEM and EUROSTAT data. COLLEEM Data weighted using population weights.

This higher educational level of platform workers can be interpreted in different ways. It could be that the types of service work performed via online platforms requires a higher than average level of skills, and therefore platforms could be a tool to improve the allocation of highly skilled workers to highly skilled tasks. Or it could be that some young and educated workers have difficulties in finding regular employment and resort to platform work just to make ends meet, as some of the qualitative evidence suggests (Eurofound, 2015; Huws et al.,2017).). This aspect will be investigated in later sections which will look at the tasks and motivations of platform workers more in detail.

4.2 Profiling the platform workers: an econometric approach

So far we have looked at our sample of platform workers and provided a description of who these workers are in terms of age, gender, education, work experience, and household composition. A useful additional exercise can be to predict, on the basis of selected socio-demographic characteristics, what type of person is more likely to be a platform worker. Using a multivariable econometric specification allows to control for the different effects, and therefore assess the specific influence that each of the observed variables has on the probability of being a platform worker.

To answer this question, we re-elaborate our definition of platform worker and focus only on those who provide services with a certain amount of regularity, the significant and main platform workers.

To this end, let y_i be a binary variable equal to 1 if the individual earns 25% or more of his or her income via platforms and or works on platforms at least 10 hours per week and zero if the individual is in the labour force, but is not a significant or main platform worker. By dropping all respondents who are neither part of the labour force, not working

on platforms we are left with 20,880 observations – 1,583 of which represent significant or main platform workers.

When decisions are represented as a discrete (binary) variable –1 for participation and 0 for non-participation – the corresponding probabilities can be estimated by maximum likelihood. We thus assume that there is a latent variable y^* and that this latent variable is a linear function of all the explanatory variables: $y^* = X_i\beta + \varepsilon$, $\varepsilon \sim N(0, \sigma^2)$, where X_i is a vector of regressors including gender, age (and age squared to allow for non-linear effects), education, household composition, years of experience, and country level fixed effects, while ε is the error term. Since y^* is unobserved, we do not know the distribution of the errors, ε ; in order to use maximum likelihood estimation, we assume that the errors follow a normal distribution (probit model).

The observed outcome y_i is equal to 1 if the unobserved latent is above a certain threshold τ and zero otherwise. The threshold is estimated together with the coefficients β by maximum likelihood.

Because most of the regressors are binary or discrete variables (except for age and experience) we calculate average marginal effects, i.e. how the probability of being a platform worker changes as the independent variables change, rather than marginal effects at means of all covariates in our sample. Results are reported in Table 1; the econometric specification reported in the first column does not account for country fixed effects, while the one reported in the second column does.

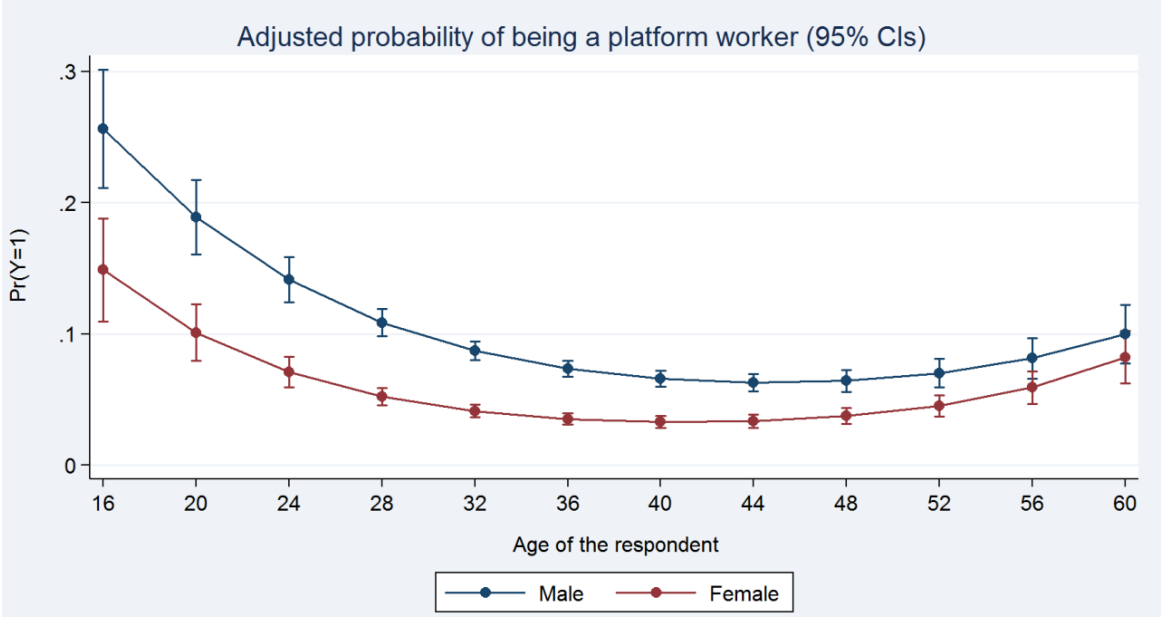
Estimates from the probit regression confirm most of the associations already suggested by the descriptive statistics. More specifically, we find that women are 4.2 percentage points less likely to be a platform worker than men; highly educated respondents are 1.4 percentage points more likely to be a platform worker than the medium educated, while there are no significant differences between medium and low educated. While respondents living in households with dependent children are 5 percentage points more likely to be a platform worker than respondents living in households without dependent children, being part of a couple shows no significant association by itself. So, in terms of family structure, what seems to matter the most is not whether someone is single, but whether he or she has children to support. This confirms our previous finding that platform workers are slightly more likely to live in households with dependent children according to the COLLEM database, a result which is difficult to explain and which merits further research in future waves of the survey.

The coefficients on age and experience are negative and highly statistically significant, but because the relationship is not linear, we cannot simply say that an extra year decreases the probability of being a platform worker by 0.2 percentage points, as reported in Table 1. We thus calculate the adjusted probabilities at representative values to give a better illustration of how the probability of being a platform worker changes (for men and women) with every extra year of age/experience and plot the results in Figure 8 and Figure 9.

Figure 8 shows that the probability of being a platform worker peaks at very young ages both for men (0.256) and women (0.148), reaches its minimum around age 40 to 44 (0.066) and then gradually rises again, up to age 60 (0.099). Women are less likely to be platform workers at every age, but the gender gap shrinks as people get older, from approximately 10 percentage points around age 20 to 2.5 percentage points around age 50.

The gender gap completely disappears past age 56 (as the overlapping confidence intervals in Figure 8 show). It is worth bearing in mind though that the number of cases before age 20 and past age 50 is substantially reduced, so that the results for the extremes have to be taken with caution.

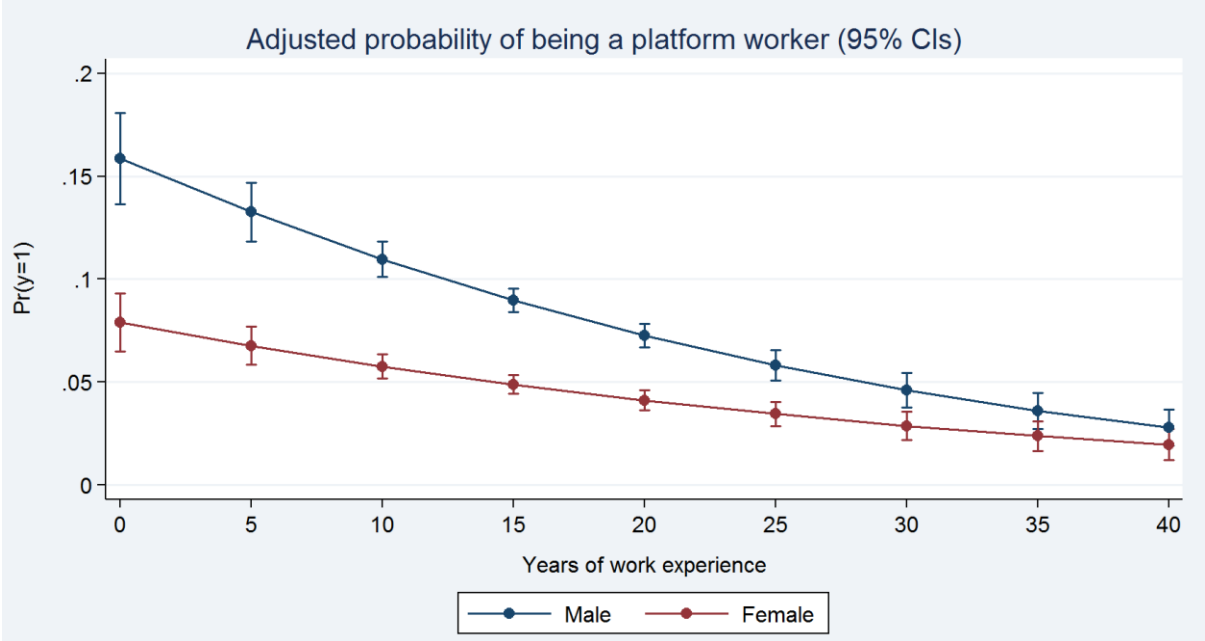
Figure 8: Probability of being a platform worker for men and women at representative ages



Source: authors' elaboration using the COLLEEM dataset. Note: the graph illustrates the predicted adjusted probabilities of being a significant platform worker for men and women at representative ages, including all the same controls as in table, plus an interaction of gender and age.

Figure 9 illustrates how, even after controlling for age, the probability of being a platform worker significantly decreases with years of experience. We can thus speculate that workers who provide labour services through online platforms are more likely to be less included in traditional labour markets.

Figure 9: Probability of being a platform worker for men and women at representative numbers of years of experience



Source: authors' elaboration using the COLLEEM dataset. Note: graph illustrates the predicted adjusted probabilities of being a significant platform worker for men and women at representative numbers years of experience, including all the same controls as in table 4.

Estimates in Table 4 (column II) also report the probability of being a significant platform worker by country of residence compared to those living in Germany. We choose Germany as the baseline because its proportion of platform workers is very close to the sample mean (approximately 7.7%).

Table 4: Average marginal effects/ change in probability of being a significant/main platform worker

	(I) AME/se	(II) AME/se
Prob(PW=1):	0.073	0.073
Female	-0.043*** (0.004)	-0.042*** (0.003)
Age + age squared	-0.002*** (0.000)	-0.002*** (0.000)
Respondent part of a couple (d)	0.004 (0.004)	0.005 (0.004)
Dependent child in the household (d)	0.051*** (0.004)	0.047*** (0.004)
<i>Education (Medium=baseline)</i>		
Low education (ISCED 1 and 2)	-0.000 (0.006)	-0.002 (0.006)
High education (ISCED 5 and above)	0.015*** (0.004)	0.016*** (0.004)
Years of experience	-0.003*** (0.000)	-0.003*** (0.000)
<i>Country of residence (Germany= baseline)</i>		
Croatia		-0.031*** (0.010)
Finland		-0.053*** (0.010)
France		-0.013 (0.010)
Hungary		-0.024** (0.010)
Italy		0.039*** (0.011)
Lithuania		-0.034*** (0.009)
Netherlands		0.002 (0.011)
Portugal		-0.017* (0.010)
Romania		-0.020** (0.010)
Slovakia		-0.046*** (0.009)
Spain		0.007 (0.010)
Sweden		-0.027*** (0.010)
United Kingdom		0.013 (0.011)
Pseudo R ²	0.0898	0.1054
Observations	20,397	20,397

Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

As we discussed earlier in section 3, the prevalence of platform work varies considerably by country, however a substantial fraction of the variation is explained by differences in the distribution of socio-demographic characteristics at the country level. Indeed, after controlling for the respondents' socio-demographics characteristics, we find that the probability of being a significant or main platform worker is lower than average in eight countries (Croatia, Finland, Hungary, Lithuania, Portugal, Romania, Slovakia, and Sweden), higher only in one country (Italy) and not significantly different from the average in the remaining four countries (France, Netherlands, Spain, and the UK).

To summarize this section, we can say that the typical European platform worker is a thirty something year old male. Despite conventional wisdom, he is likely to have a family and kids, to be educated to degree level and to have fewer years of labour market experience than offline workers.

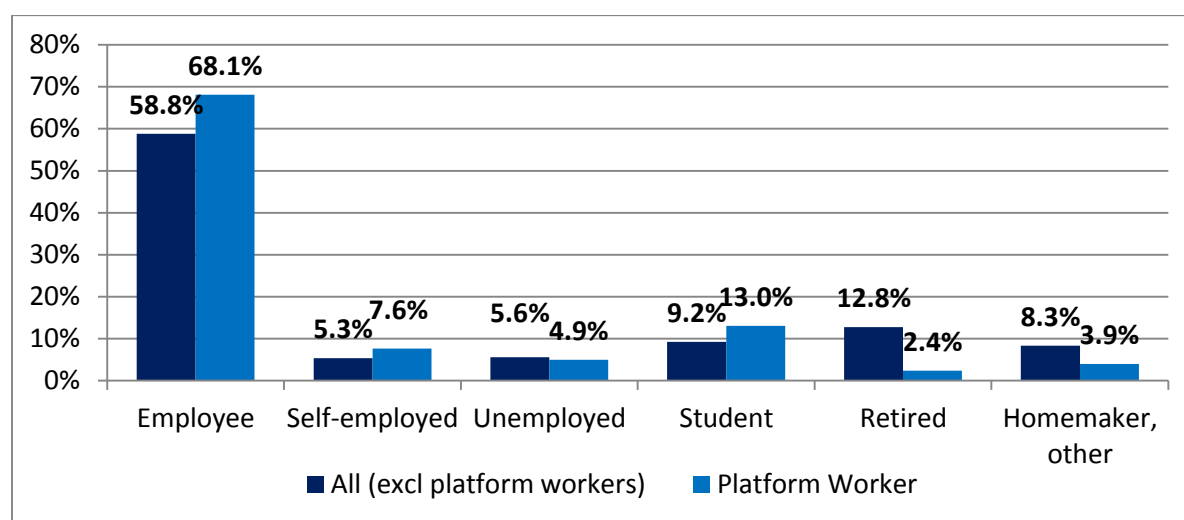
5 What is the labour market status of the platform workers?

The labour market status of platform workers is arguably one of the most important issues from a policy perspective (see section 9). The COLLEEM survey asked respondents to define their main employment status, from their own perspective. Figure 10 illustrates the self-defined employment status of all respondents, and compares them with platform workers (the broad definition, including all those who have provided services via platforms at any time). Three quarters (75.7%) of the people that have provided labour services via platforms define themselves as employees (68.1%) or self-employed (7.6%). The proportion of employees is 10 percentage points higher among platform workers than among the rest of the COLLEEM sample, while the percentage of self-employed is 2.3 percentage points higher.

So the broadly defined platform workers in the COLLEEM survey are more likely to declare themselves to be employees or self-employed than the general population. This may seem surprising considering that, as previously mentioned, in most cases the providers of labour services via platforms are considered to be independent contractors rather than employees (and therefore, it could be expected that platform workers were more often self-employed rather than employees). There are two possible reasons for these results. First, it could be that many of those that provide services via platforms are simultaneously working as regular employees (not via platforms) as their main activity, especially those that do platform work as a sporadic or light secondary activity. Second, it could be that, as previously mentioned, there could be some platform workers that do not engage in other activities and yet they consider themselves to be employees of the platform(s) they work for, even if in pure contractual terms that may not be the case. This latter possibility is most likely true in the case of people that provide labour services via platforms as their most significant economic activity.

Both of these possibilities would have rather different, but equally important, policy implications. In the first case (platform work as secondary activity of regular employees), the fact that platform workers are typically not entitled to some benefits of regular employment could be less of a problem since they would be covered from their main regular job. Also in that case, the conditions of platform work would impact much less on the lives of the concerned workers, being a secondary and plausibly not very important activity. In the second case (platform work as regular employment in all but name), it would be essential to measure the extent of the phenomenon and assess the conditions under which it is carried out, since it would by definition have very important implications for the working and living conditions of the concerned persons and their relatives.

Figure 10: Self-declared labour market status of platform and non-platform workers



Source: authors' elaboration using the COLLEEM dataset.

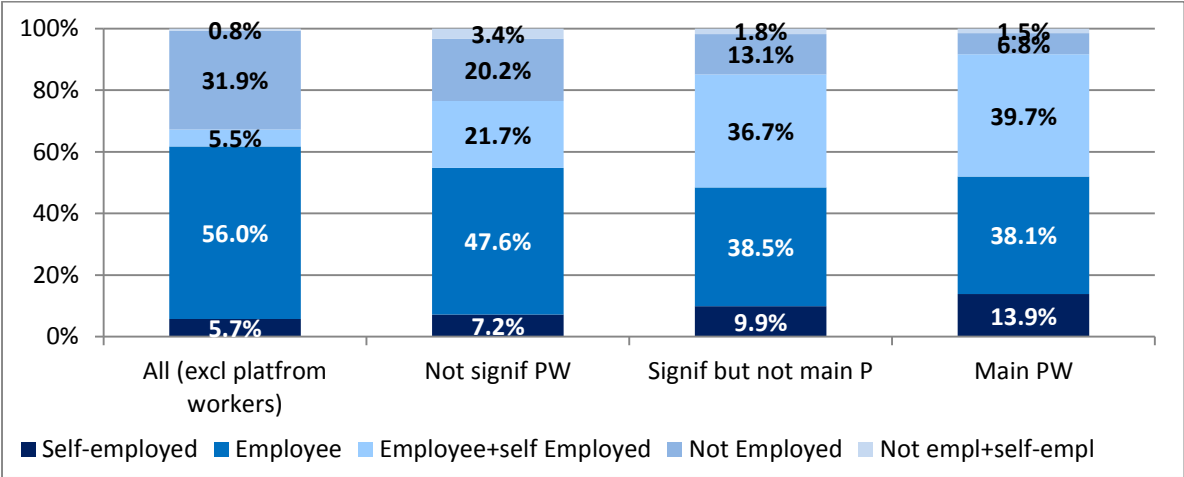
In order to differentiate both types of platform work, we used additional information on the employment status of respondents also included in the COLLEEM survey. In particular, respondents are asked whether they perform work as self-employed *in addition to their main activity*, a question which is addressed not only to employees but to all respondents (students, retirees, unemployed etc.). By combining information on main employment status and additional self-employment, we derived the following five categories:

- **Self-employed:** referring to those who claim to be self-employed (and clearly cannot have additional activity as self-employed);
- **Employee:** referring to those who claim to be employees as main occupation and have no additional activity as self-employed;
- **Employee + self-employed:** referring to those who claim to be employees as main activity, but also self-employed as additional activity;
- **Not employed:** referring to those who claim to be unemployed, retirees, students, and homemakers, and have no additional activity as self-employed;
- **Not employed + self-employed:** referring to those who claim to be unemployed, retirees, students, and homemakers, but claim to have additional activity as self-employed.

Figure 11 reports the proportion of respondents in each of the 5 categories among *main, significant but not main* and *non significant* platform workers and compares them with all other respondents. To be noted that this category does not refer to offline workers only (as in figure 5, 7, 8 and so on) because it includes also students, unemployed, retirees etc.

The results shown in Figure 11 suggest that, indeed, many see platform work as a form of self-employment, since for main platform workers the share of self-employed more than doubles compared to offline workers, from 5.7% to 13.9%. But importantly, the share of self-employed on the side (people that consider themselves mainly employees but have some self-employment on the side) grows much more significantly: it goes from 5.5% for the non-platform workers to nearly 40% for main platform workers. It seems quite plausible that this 40% of main platform workers are people that have a regular primary job (outside the platform economy), and consider their platform work as self-employment activity carried out on the side (even if it is very significant in terms of income or hours). The same would apply for the also important share of not significant or significant but not main platform workers that have a primary employee status but secondary activity as self-employed.

Figure 11: Redefining the labour market status of platform workers



Source: authors' elaboration using the COLLEEM dataset.

However there are still 38% of main platform workers who define themselves as primarily employees and explicitly say that they do not have a secondary self-employment activity. It seems very plausible that these are people for whom work on digital platforms is their main economic activity and they consider such activity to fit the definition of dependent employment. Even though this proportion of main platform workers who consider themselves employees is smaller than the proportion of main platform workers who consider themselves self-employed (adding self-employment as primary or secondary activity, it concerns nearly 54% of all cases), it is significant enough to show that the difficulty of classifying platform work as dependent or independent employment is not only an academic or policy debate, but a real ambiguity that concerns the workers themselves. In section 9 we discuss the policy and regulatory implications of these findings.

6 What kind of work is provided via platforms? A tasks approximation

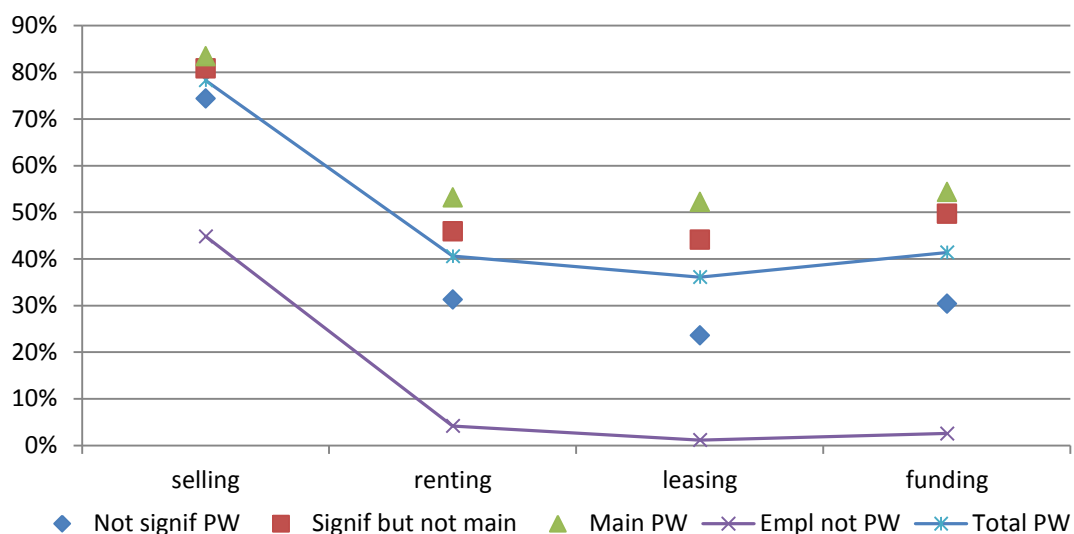
Platform work has been growing exponentially in the last few years. However, still very little is known about the various services provided through labour platforms and the business models defining the employment relationships of platform workers.

From a policy perspective, a challenging aspect of platform work is the so-called "unbundling" of tasks. In regular employment, labour input into production is never provided as individual tasks separately contracted; instead, tasks are bundled into coherent jobs or occupations, which are then assigned to specific workers under a labour contract. But in platform work, the labour service is in most cases provided as specific and individually contracted tasks: in this respect, platform work is unbundled and unstructured compared to regular work. This new division of labour enabled by the platform economy is one of the reasons behind the uncertainty about the classification of platform workers and the labour laws and regulations that apply.

One of the aims of the COLLEEM survey is to analyse the tasks performed by platform workers as so to gain a better understanding on if and how platform work is changing the organisation of work, the classification of workers and the fundamental labour rights associated, and the broader impact of the Internet as a source of income-generating labour activity.

As described in section 3, platform workers are frequent internet users. However this does not automatically imply they also frequently use platforms for their more general economic transactions. Figure 12 shows the participation in the online economy for economic transactions different from the provision of labour services. The sale of goods online is the most widespread online activity in the sample for both offline workers (i.e. employees and self-employed who never worked through digital labour platforms) and platform workers. Nevertheless, the percentage of platform workers selling goods online almost doubles the one of offline workers, confirming a greater familiarity with the online economy of the former. In this respect, there are no significant differences for the different categories of platform workers defined previously in section 4. In general, the participation in the online economy of main and significant platform workers is above average in all online activities considered, as shown by the comparison of the two lines in Figure 12.

Figure 12: Participation in online economy (not digital labour platforms) of platform workers

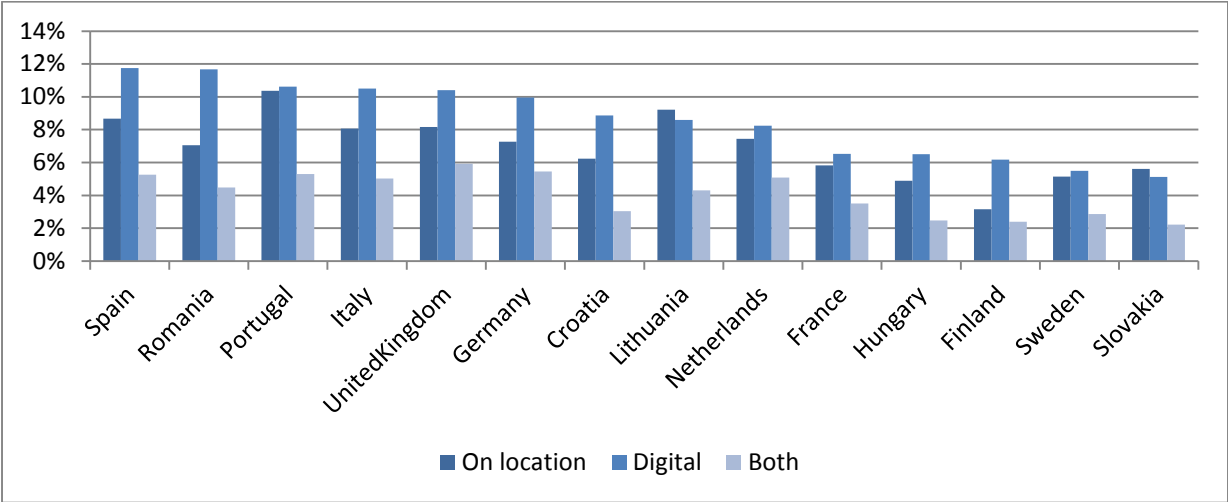


Source: authors' elaboration using the COLLEEM dataset.

Labour services provided via digital labour platforms can be broadly distinguished as services performed digitally (i.e. micro tasks, clerical and data entry, etc.) or services performed on-location (i.e. transport, delivery, housekeeping, etc.)²⁰. In both cases, the matching is digitally mediated and administered through the platform. However the first case allows the remote delivery of electronically transmittable services, while for the on-location services the delivery of the services is physical and/or requires direct interaction. Markets for on-line services are potentially global, while markets for on-location services are local by definition.

Figure 13 shows the country incidence of both types of labour platforms. Spain and Romania report the highest share of services performed digitally (12%), followed by Portugal (11%) which also registers the highest share of on-location services (10%). This figure also shows that on average half of the overall platform workers perform both digital and on-location services, suggesting that many platform workers perform more than a single type of task on digital labour platforms.

Figure 13: Types of provided services by country



Source: authors' elaboration using the COLLEEM dataset.

Beyond the basic categorisation of platform work by the locus of provision (digital or on location, as shown in figure 13), there is a wide array of different types of labour services that can be coordinated by platforms. Since compared to regular employment, these labour services can be characterised as tasks, a classification of the types of labour services provided via online platforms is essentially a classification of tasks. In the COLLEEM questionnaire, on the basis of the existing literature on this issue, and with the implicit criteria of skills required for carrying out the different tasks, the following classification of tasks provided via online platforms by the respondents was used:

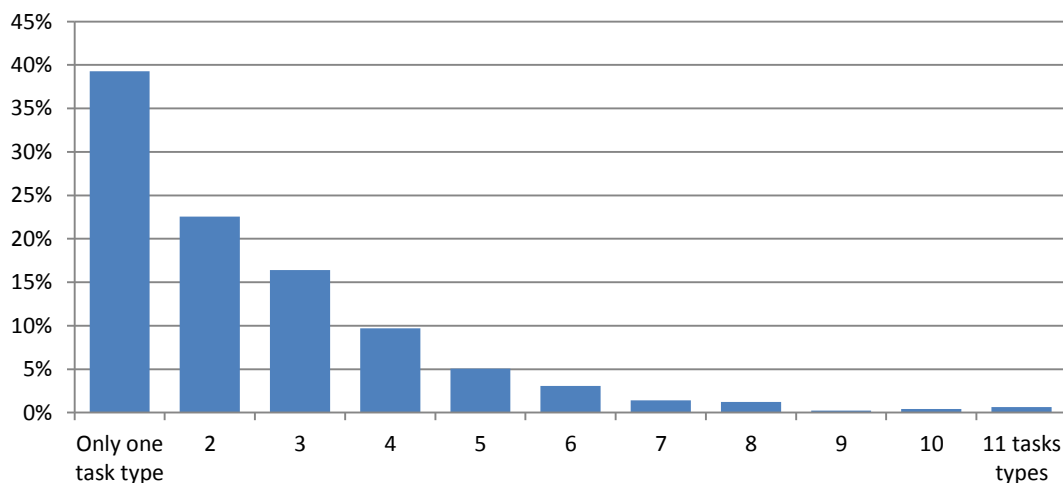
1. **Online clerical and data-entry tasks** (e.g. customer services, data entry, transcription and similar)
2. **Online professional services** (e.g. accounting, legal, project management and similar)
3. **Online creative and multimedia work** (e.g. animation, graphic design, photo editing and similar)

²⁰ This categorisation is to distinguish platform workers who provides services online ("performed digitally") and on location ("physically delivered") from workers on the traditional labour market ("offline workers"). The online provision of labour services via platforms is sometimes labelled *crowd work*, while the physical delivery of labour services coordinated via online platforms is sometimes labelled *gig work* (Fernández-Macias 2017).

4. **Online sales and marketing support work** (e.g. lead generation, posting ads, social media management, search engine optimisation and similar)
5. **Online software development and technology work** (e.g. data science, game development, mobile development and similar)
6. **Online writing and translation work** (e.g. article writing, copywriting, proofreading, translation and similar)
7. **Online micro tasks** (e.g. object classification, tagging, content review, website feedback and similar)
8. **Interactive services** (e.g. language teaching, interactive online lessons, interactive consultations and similar)
9. **Transportation and delivery services** (e.g., driving, food delivery, moving services and similar)
10. **On-location services** (e.g. housekeeping, beauty services, on-location photography services and similar)
11. **On-location ancillary services** (e.g. housekeeping, cleaning) **specifically to short-term rental accommodation** (i.e. apartments listed on Airbnb and similar).

Each platform worker in the COLLEEM survey was asked to classify the labour services they provided via digital platforms in as many of the task categories shown above as necessary. And as could be expected, there was a significant amount of overlap in the responses of platform workers, showing that most of them had provided labour services on two or more of the above categories. The distribution of platform workers according to the number of different task categories in which they provided labour services in the past is shown in Figure 14. Roughly 40% of total platform workers in the COLLEEM sample have only provided labour services in one of the task categories, another 40% perform between 2 (23%) and 3 (17%) task types and the remaining 20% have provided labour of at least three different task types.

Figure 14: Number of task categories in which labour services have been provided by respondents



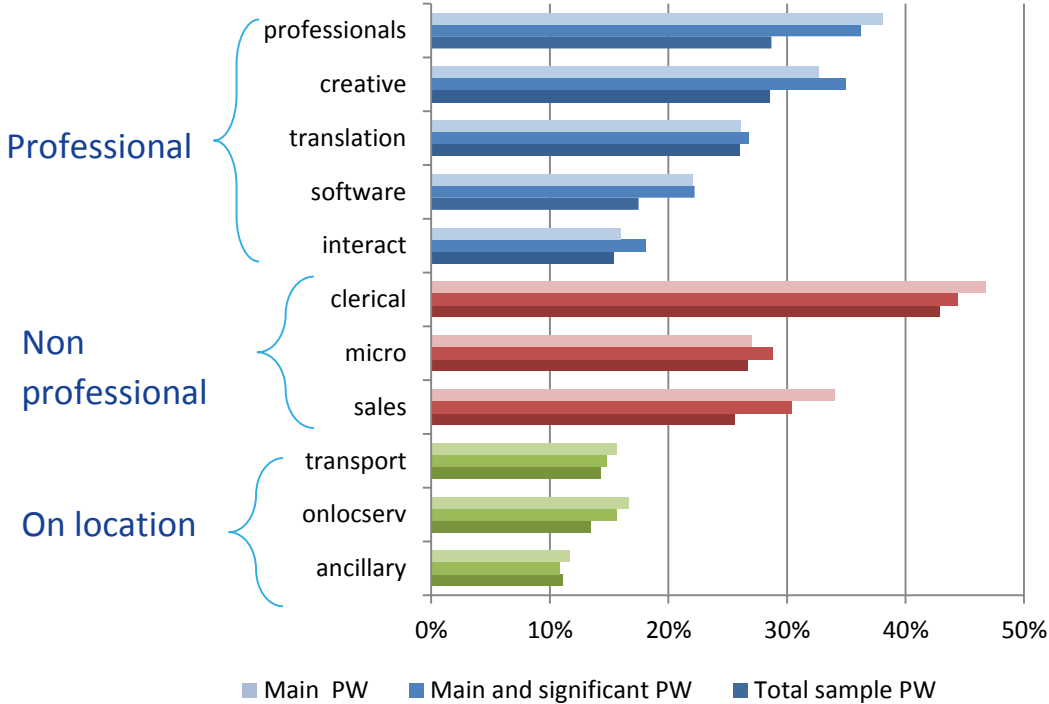
Source: authors' elaboration using the COLLEEM dataset.

The digital platforms for coordinating the provision of labour services are often grouped in three categories: i) online freelancing platforms (PeoplePerHour, Freelancer, Upwork, etc) that enable organisations to access to a network of freelancer with high and specialised skills; ii) microwork platforms (Amazon Mechanical Turk, CrowdFlower) that efficiently match independent workers to small tasks; iii) platforms that mediate physical services (such as Uber, TaskRabbit, etc). Although the COLLEEM questionnaire did not explicitly ask the specific platform that the respondent used for the provision of labour services, the list of 11 task types previously mentioned can be used to construct a similar typology of these broad types of labour services provided:

1. *Professional tasks* includes those labour services which require high skills and educational level typical of at least tertiary education, such as legal and accountancy services, software development, writing and translation.
2. *Non-professional tasks* refers to more repetitive and simple tasks that typically require medium skills and education; such as microtasks in general (objects classification, tagging, website review and similar), clerical and data entry tasks, sales and marketing support work.
3. *On location tasks* includes labour services which are physically provided, and which typically require low or no specific skills.

Figure 15 shows the distribution of the types of tasks that COLLEEM respondents provided via digital platforms, grouped in the three broad categories mentioned. The most common type of task provided is 'online clerical and data entry', which accounts for 43% of the total services provided by the total sample of platform workers, followed by professional and creative tasks (30%).

Figure 15: Types of provided services



Source: authors' elaboration using the COLLEEM dataset.

Figure 15 also shows the tasks breakdown differentiating main and significant platform workers²¹. If we restrict the analysis to main platform workers, the top three services provided become in order clerical and data entry (47%), professionals (38%) and sales (34%). That is, even if main platform workers in the sample tend to be better educated than the general population and the rest of the sample (see section 4), they are mostly concentrated in services that require medium skills and education, suggesting they might be overqualified with respect to the task carried out.

In order to analyse the extent of mismatch existing in digital labour platforms, more accurate information about the specific type of task performed and the time allocation spent in each task would be needed. Indeed, as previously shown (Figure 14), platform workers generally perform multiple tasks in different categories. That is, a high-skilled platform worker could engage at the same time in a number of services that require different levels of skills, making it difficult to determine the extent of match or mismatch between the skills of workers and the requirements of the task. As an attempt to address the issue of mismatch and over-qualification, we could look at those platform workers who only perform a unique task type and check if the skill requirement matches their level of education.

In Table 5 we report the data for the sub-sample of platform workers providing only one type of service. The percentage displayed should not be interpreted as representative of the population of platform workers but only as a rough approximation to the extent of mismatch in this particular sub-sample. In other words, each cell of the matrix in Table 5 reports the percentage of the match (or mismatch) overall of the total number of platform worker-service provided combination. The data are disaggregated by gender. The main diagonals (the green boxes) report the percentages of (roughly) correct matches by types of services and levels of education for each platform worker in the sub-sample. Off the diagonals (the blue and the orange boxes) are shown the mismatched combinations. That is the combination where platform workers perform a service either above or below is level of education. More specifically, the blue ones represent the amount of overqualified platform workers performing services that require lower skills. On the opposite, the orange ones correspond to platform workers who perform services that require skills above their level of education. Hence, as an example, if we look at the first column and the first row of the table the total of platform workers with high education who perform on-location services (typically requiring low skills), we can see that it is higher (6%) than the total of platform workers with low education (3.5%) performing professional services (typically requiring high skills). These results would indicate a significant mismatch and a tendency towards over-qualification in the sub-sample. However, the results should be interpreted with caution given the restricted number of observations and the lack of more detailed data for the correct assignation of the proper skills-education combination at the level of service provided.

Table 5: Measurement of mismatch

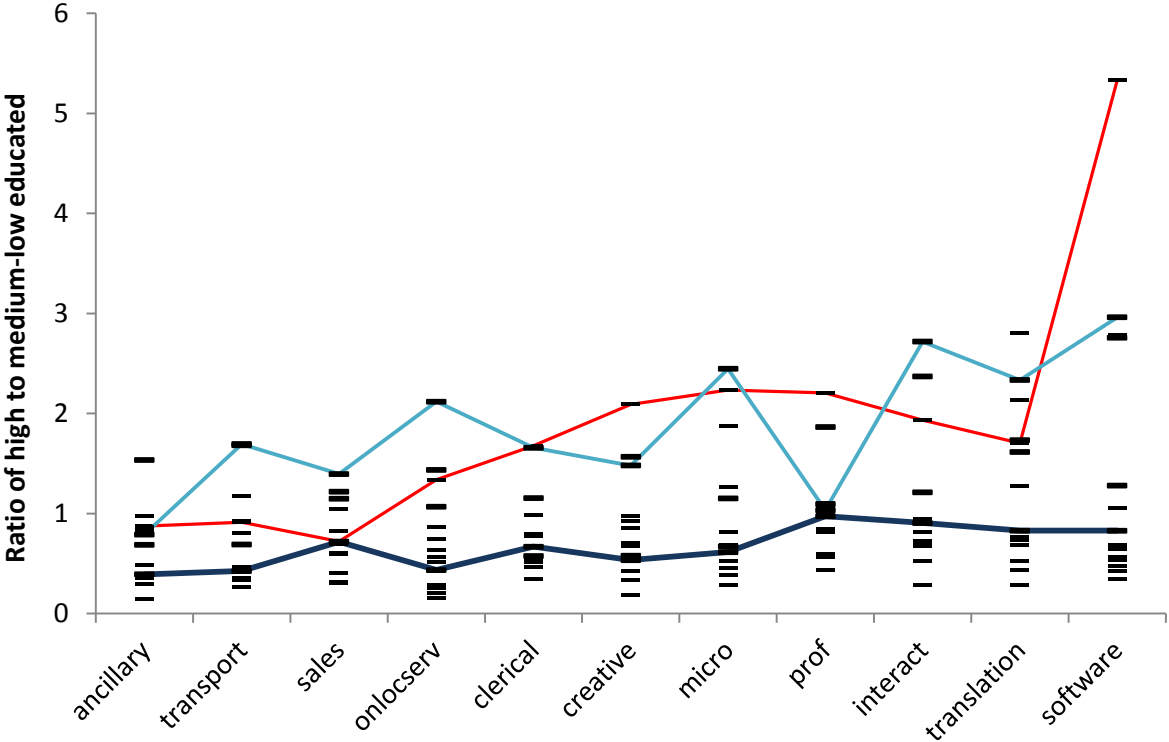
	Women			Men		
	On location	Non professional	Professional	On location	Non professional	Professional
Low education	2.0%	3.1%	3.5%	1.4%	5.7%	4.0%
Medium education	5.4%	15.2%	10.0%	7.4%	15.6%	14.1%
High education	6.0%	22.9%	32.1%	6.5%	19.2%	26.3%

Source: authors’ elaboration using the COLLEEM dataset.

²¹ The colour coding for the blue nuance in the legend of figure 18 applies to all three different colours (i.e. dark red=all sample; red =Main and significant PW and light red=Main PW, same for green),

Are there significant country differences in the educational profiles of platform workers performing the different types of tasks? Figure 16 reports the ratio of high to medium-low educated platform workers by country and task types. As could be expected, the proportion of high educated platform workers is concentrated in professionals tasks (interact, translation and software), as shown at the right end figure 19. But it is important to note that there are significant country differences in this respect. For example, Germany (the dark blue line) shows a quite stable distribution of platform workers' levels of education across tasks, whereas France (the red line) shows a general increase in the educational levels of platform workers consistent with the skills required by the task, reaching the peak in software development. The UK (the light blue line) instead has a less clear pattern across tasks.

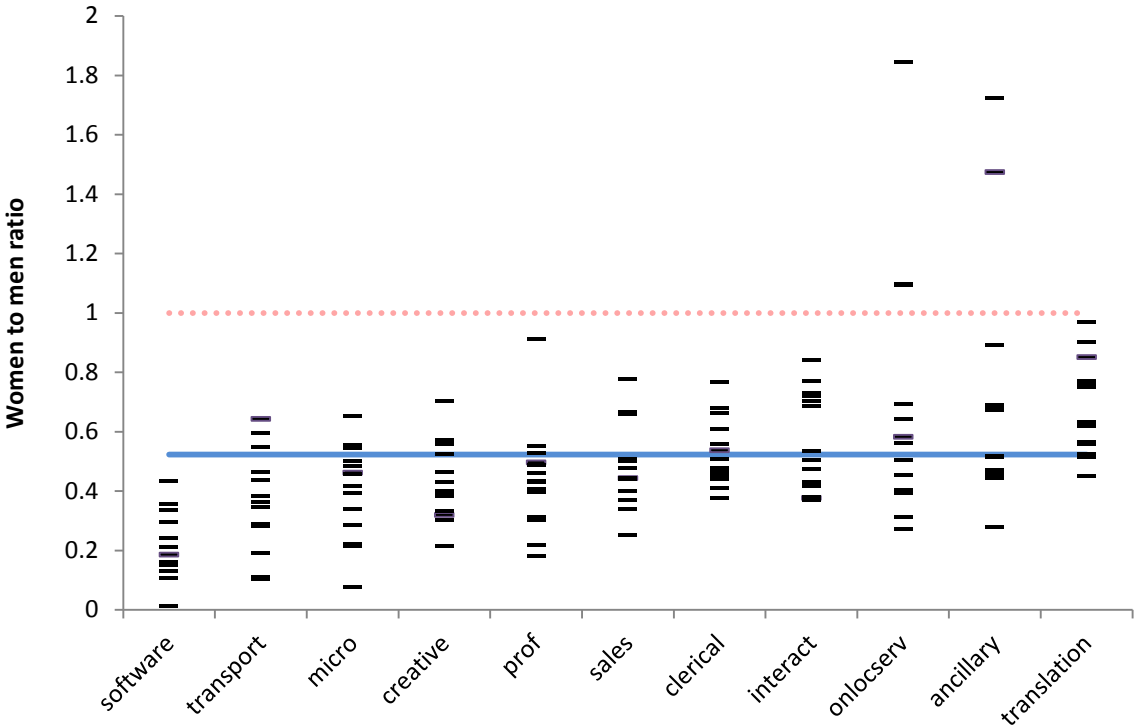
Figure 16: Types of provided services by educational levels



Source: authors' elaboration using the COLLEEM dataset.

The different types of tasks provided via platforms often have a different gender profile too, as shown by Figure 17. The red dotted line displays the 'gender parity' line, the blue line the average women to men ratio in all the countries and all platform workers, and each black line represents the observed ratio of women to men in a particular country and type of task. We can immediately see that the observed values go beyond the gender parity line - that is there are more women than men performing that task types - in very few cases: only in "on location" and "ancillary services", and only in Germany, Portugal, Spain and Slovakia. Not surprisingly, software development is the most male dominated task followed by transport. At the other end of the axis, the types of tasks with more female presence are on location, ancillary services, and translation.

Figure 17: Types of provided services by gender

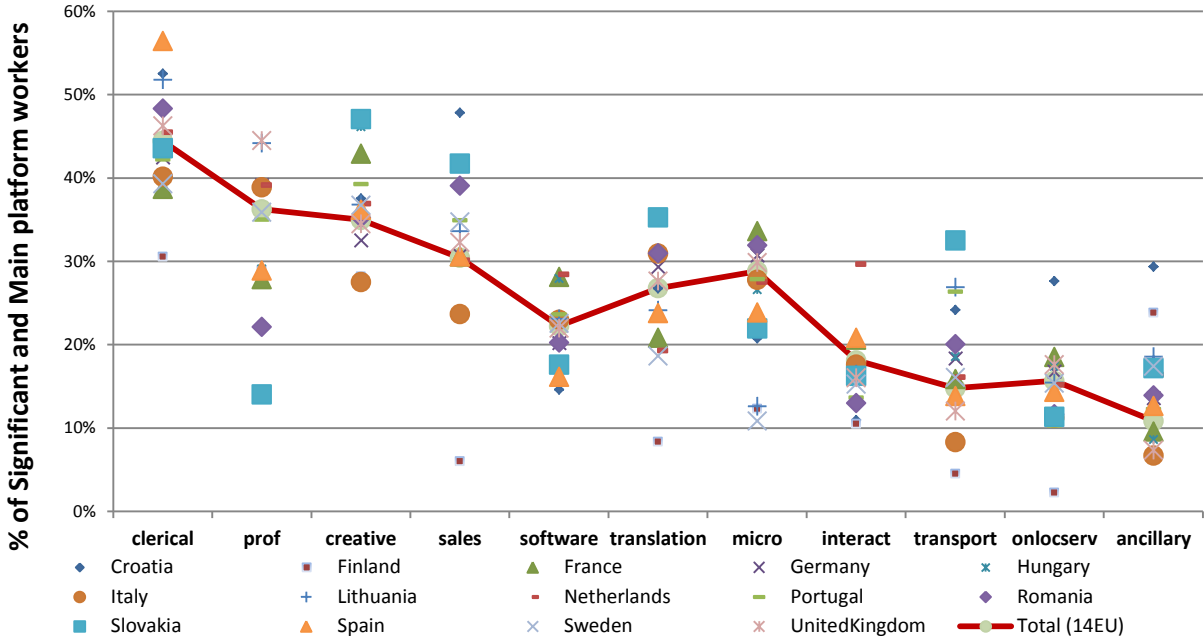


Source: authors' elaboration using the COLLEEM dataset.

Digital platforms give the opportunity to connect suppliers and demanders in different countries. The market for digital services is global and this may lead to some tasks specialisation for some countries. Figure 18 reports the distribution of tasks for main and significant platform workers by country. The majority of the tasks do not show much variety across countries, exceptions are professional services and transport. The diverse distribution of professional services could be explained by the different educational structure of the countries or also there could be a competitive language advantage. In the case of transport, the different distribution could also reflect the legal restrictions that some countries introduced for specific transport services (such as Uber). The red line shows the average value for the 14 Member States.

Even if Figure 18 does not show a clear task-type/country specialisation, some more interesting patterns could be observed. For example Slovakia and Croatia present above average values for task types that require a low-medium level of education (transport, on-location and ancillary services, and sales) while their shares of professional services are below the average. Spain is quite average on the most of the tasks except for 'clerical and data entry', which is also the most common service provided all over the 14 Member States. Romania is amongst the top countries for the provision of non-professionals services. The Netherlands shows above average values for tasks that require high digital skills such as software and interactive. Finland, by contrast, reports significantly below-average values for all the on-location services (transport and on-location) and for the digital services that require medium-low skills (i.e. sales and micro tasks).

Figure 18: Types of provided services by country for main and significant PW



Source: authors' elaboration using the COLLEEM dataset.

To the aim of analysing in depth the determinants of providing certain type of services on labour platforms, we extend our investigation to the characteristics that affects the probability of providing those services. Table 6 reports the results of a probit analysis where we look separately at the probability for platform workers to provide each type of service. The dependent variables (professional, non-professional and on-location) represent a binary choice that takes value 1 when the service is provided and 0 otherwise. For each independent regressor the average marginal effects (AMEs) are reported. The advantage of looking at AMEs is in their more straightforward interpretation since they describe directly the change in probability of providing certain type of service as the independent regressor changes. The stars in the coefficient represent their level of statistical significance.

Table 6 suggest that gender does not play a significant role in determining the type of service provided on labour platforms. Neither does age, except for a mildly declining probability of providing professional services for older workers. Being in a couple increases the probability of providing on-location services by 5.8 percentage points (p.p.) and having a dependent child increases it by 3 p.p., suggesting that this particular form of platform work may come as a source of extra income for those with family responsibilities. Having a child also increases the chance of providing professional services by 5.9 p.p.

The coefficients for education are not surprising. Having a high education increases the probability of performing professional services of 12 p.p. and reduces the probability of providing on-location services of 8.3 p.p. The years of working experience on the other hand seem not to affect the chances of providing any specific type of service.

Finally, Table 6 also reports the country effects. They estimate the probability of providing a specific service by country of residence compared to the probability of providing the same service by platform workers living in the baseline country (Germany²²). The results are not significantly different from the differences in the directly observed prevalence of each type of platform work already presented earlier in Figure

²² Out of the three categories (professional, non-professional and on-location), professional is slightly the biggest one and Germany reports the closest proportion of professional platform workers to the sample mean (69%).

18. Platform workers who lives in Croatia, Lithuania and Slovakia report an increased probability- respectively by 8.9, 15 and 13 p.p.- of providing on-location services with respect to German platform workers. Equally, these countries show a decrease in the probability of providing non-professional services. This partially confirms the results in Figure 18 that show above average values for tasks that require a low-medium level of education in these countries. Similarly, platform workers who live in Romania have an increase probability of performing non-professional services of about 11 p.p. Finally the lower probability associated to non-professional services in Spain has a less clear interpretation and it might capture the effects of other socio-demographics which are not evident from the analysis.

Table 6: Average marginal effects/ change in probability of providing specific services

VARIABLES	(1) Professional	(2) Non-prof	(3) On location
<i>Prob(y=1)</i>	0.69	0.66	0.30
Female	-0.002 (0.016)	0.004 (0.017)	-0.022 (0.016)
Age + age squared	-0.005*** (0.001)	0.001 (0.001)	-0.002 (0.001)
Respondent part of a couple (d)	0.029 (0.018)	-0.000 (0.018)	0.058*** (0.018)
Dependent child in the household (d)	0.059*** (0.017)	0.027 (0.017)	0.030* (0.017)
<i>Education (Medium=baseline)</i>			
Low education (ISCED 1 and 2)	-0.034 (0.032)	-0.028 (0.031)	-0.015 (0.031)
High education (ISCED 5 and above)	0.123*** (0.018)	-0.006 (0.018)	-0.083*** (0.018)
Years of working experience	0.002 (0.001)	-0.002 (0.001)	0.001 (0.001)
<i>Country of residence (Germany= baseline)</i>			
Croatia	0.022 (0.040)	-0.100** (0.042)	0.089** (0.042)
Finland	-0.004 (0.051)	-0.148*** (0.055)	-0.067 (0.048)
France	0.018 (0.047)	-0.015 (0.048)	0.038 (0.048)
Hungary	0.011 (0.044)	-0.002 (0.044)	-0.050 (0.042)
Italy	0.049 (0.037)	-0.095** (0.039)	-0.055 (0.037)
Lithuania	-0.032 (0.041)	-0.118*** (0.042)	0.152*** (0.042)
Netherlands	0.010 (0.044)	-0.052 (0.045)	0.016 (0.044)
Portugal	0.010 (0.037)	-0.042 (0.038)	0.002 (0.037)
Romania	-0.043 (0.040)	0.108*** (0.037)	0.059 (0.040)
Slovakia	0.014 (0.044)	-0.102** (0.047)	0.134*** (0.047)
Spain	-0.044 (0.038)	-0.076** (0.039)	0.008 (0.038)
Sweden	0.006 (0.046)	-0.163*** (0.049)	0.059 (0.048)
United Kingdom	0.027 (0.041)	-0.042 (0.042)	-0.046 (0.040)
Pseudo R ²	0.0285	0.0185	0.0263
Observations	3,422	3,422	3,422

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

7 The motivations of platform workers

Why do people engage in platform work? The COLLEEM questionnaire incorporates a series of sentences reflecting different possible motivations for people to work via online platforms, asking respondents to express how important each of them was in their own case.²³ The exact formulation was: "How important, if at all, have the following factors been to you as a motivation to work via online platforms?":

- I prefer flexibility over where I work
- I prefer flexible working time
- I prefer to work part time
- I have had difficulties in finding standard employment
- This offers attractive remuneration
- This offers interesting, fulfilling work
- This allows me to get by
- This offers a type of work that is more compatible with my family commitments than standard employment
- This allows me to work despite health issues or disability
- This allows me to find more clients / customers
- I like being my own boss"

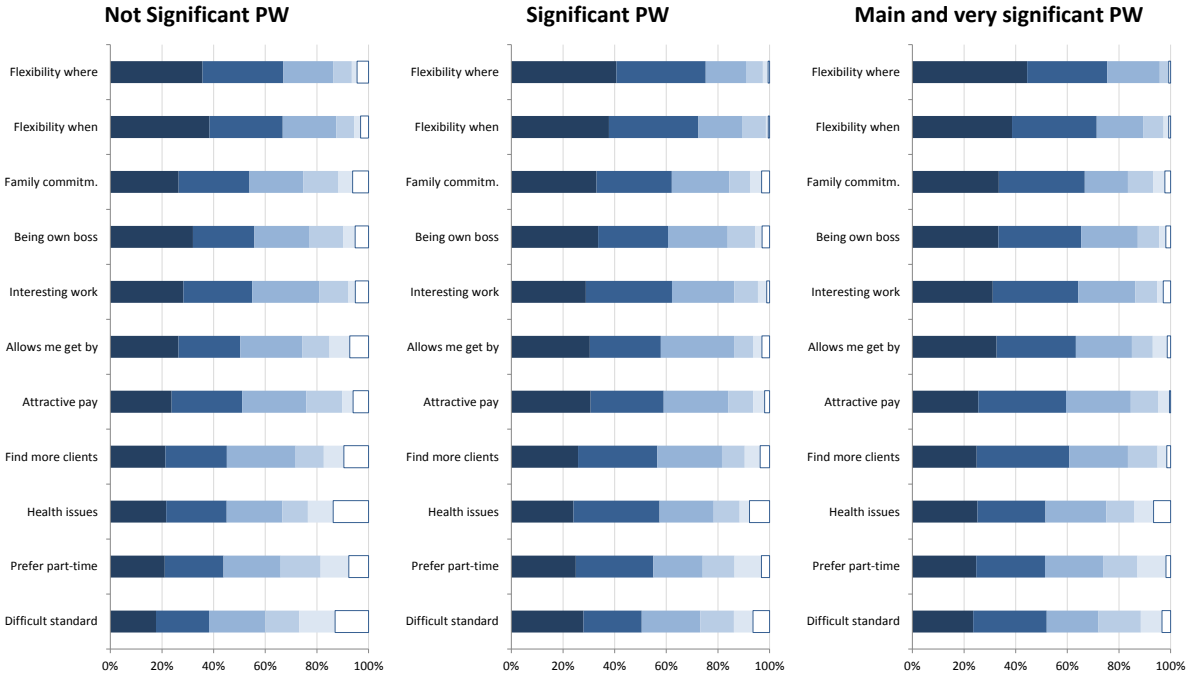
Obviously, the motivation of people for doing platform work is of great interest for a better understanding of this phenomenon, and the ways it can evolve in the future. But we have to acknowledge the severe limitations of the COLLEEM survey for studying this issue, which go beyond those of previous sections. The fact that many platform workers engage in many different types of platform work, which have different attributes and implications, means that it is unclear (for the respondent and for the analyst) what the motivations refer to. For instance, someone can engage in highly skilled professional platform work because "it offers interesting, fulfilling work", but also in repetitive microtask platform work because "it allows me to get by", and even in on-location unskilled delivery platform work because "I have had difficulties in finding standard employment". The pattern of replies would just show very high and seemingly inconsistent values for all the motivations in that particular case, because different options can apply to different tasks provided via online platforms by the same respondent. A second problem is that a long battery of standardized items in an online survey is likely to provide artificially homogeneous responses, simply because many respondents will click on the same option every time to move quickly to the next question. And finally, we can add the usual problems with questionnaire items of a strongly subjective nature (with responses often reflecting psychological traits rather than what they are supposed to measure) and with pre-defined lists of motivations (in which there can be important omissions).

The distribution of the responses to the motivation battery of items is displayed in Figure 19, broken down by different categories of platform workers following our approach. Probably as a result of the measurement problems just mentioned, we can see that the variability of the responses to these items is surprisingly low: most platform workers say that most of the stated motivations were important in their particular case, which sounds rather implausible. For instance, the motivation of "health issues" is mentioned as important by more than half of the respondents classified as regular platform workers, which does not seem very likely at all. As previously mentioned, this low variability and implausibly high values for all items suggest low quality in the response patterns, probably reflecting many instances of automatic and careless response, as well as some ambiguity in what the responses refer to.

²³ This question was formulated only to people that have provided labour services via platforms in the last twelve months. It includes all types of platform workers.

However, there is also some meaningful variation in the responses shown in Figure 19, which merit some analysis and discussion. The most frequently mentioned motivations refer to the flexibility and autonomy offered by platform work (flexibility on where and when to work, possibility to balance work and family commitments and being one’s own boss), followed by characteristics of the work itself (interesting work, attractive pay). The less frequently mentioned motivations are the negative ones (it is difficult to find a regular job, health issues, I prefer to work part-time), although as previously acknowledged, all the items receive very high scores.

Figure 19: Motivations of platform work, by categories of workers



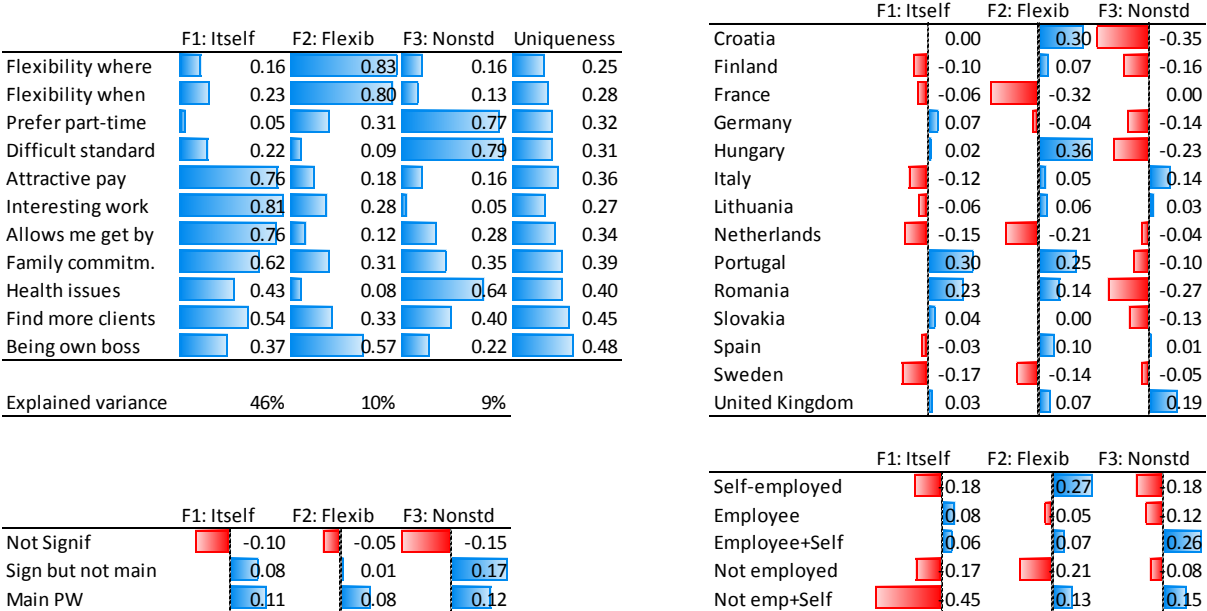
Source: authors’ elaboration using the COLLEEM dataset.

The differences by category of platform worker are small, something which again can be the result of measurement problems. Main and very significant platform workers have higher values overall, which can simply reflect the obvious fact that higher engagement in platform work generally involves a higher motivation. The differences in motivation between categories of platform workers are slightly higher for the negative items (difficult to find standard work, prefer part-time or health issues), which may suggest that some categories of workers are driven to platform work as main activity for lack of alternatives. However, the differences are very small and full of problems, so we should not read much into them.

An alternative approach to analysing the battery of items on the motivations behind platform work is to use principal components factor analysis. This approach looks at the observed patterns of correlations between the responses to the different items and generates new variables (factors) that are linear combinations of the original variables, constructed in such a way that they capture the maximum amount of common variance (correlation) of the original items. In other words, the factors can be understood as approximate measures of the latent (unobserved) variables that are behind a collection of variables which are empirically correlated, as is the case. Figure 20 below shows the results of such a principal components factor analysis conducted on the full set of variables measuring the different motivations for platform work. The factor analysis as such is shown in the first panel of Figure 20: three factors were extracted, explaining respectively 46%, 10% and 9% of the original variance of all items (so with those three factors we account for two thirds of all the original variation of the 11 items). The figure

also shows the rotated loadings, which facilitate the interpretation of each factor: factor 1 mostly summarizes the variability of the motivations “attractive pay”, “interesting work” and “allows me to get by”, and therefore we can interpret it as a latent variable measuring the degree of motivation linked to the attributes of platform work in itself (although the interpretation of the motivation “it allows me to get by” is somewhat ambiguous in this respect). Factor 2 is mostly associated with the motivations of flexibility on when and where to work, and of being one’s own boss, which suggests that it can be interpreted as a measure of flexibility and autonomy as a motivation for platform work. Finally, factor 3 is mostly linked to the “negative” motivations (difficulty in finding standard work, preference for part-time and health issues), and it can be therefore interpreted as a constrained choice of platform work as a non-standard form of employment. The indicator of “uniqueness” reflects the degree to which the original variables are not correlated by the three extracted factors (that is, how “unique” they are), and shows that being one’s own boss, finding more clients and having health issues are the motivations that are less correlated with the rest.

Figure 20: Factor analysis of motivations for platform work



Source: authors’ elaboration using the COLLEEM dataset.

An interesting aspect of this approach is that the extracted factors, which encapsulate more synthetically the information contained in the original variables, can be then used as variables measuring different types of motivations in their own right, as shown in the other panels included in Figure 20. This way, we can compare the motivations of different categories of platform worker. The motivation of “constrained choice for non-standard employment” is most frequent for the intermediate category of significant but not main platform workers, and least frequent for not significant or sporadic platform workers. It is difficult to interpret the country differences in terms of motivations shown in Figure 20: Portugal and Romania would have higher values for intrinsic and flexibility motivation, Croatia and Hungary would have higher scores for flexibility, and Italy and the UK have higher scores for the constrained choice of non-standard work. Finally, Figure 20 also shows the distribution of motivation scores for employment status, which suggest that the primarily self-employed do platform work mostly because of the flexibility it provides, while those that are primarily employees do platform work for its intrinsic and monetary rewards, and those that have some secondary self-employment activity are most likely to do platform work as a constrained alternative.

8 The conditions of platform work

Studying the working conditions of platform workers is at least as challenging as studying their motivations, if not more. The reason is, again, that platform workers can (and do) provide labour services of very different types across different platforms, and the conditions of each type can be quite different. This is in fact a corollary of the peculiar nature of platform work compared to regular work. Work provided via online platforms is generally packaged in *tasks* rather than *jobs*, and therefore the unit of analysis of the conditions of work in platforms would naturally be tasks rather than workers or jobs. But collecting information directly on tasks is very challenging because they are not easily observed or monitored except by the platforms themselves. The COLLEEM survey collects information on workers instead, and asks in general about their conditions of work in online platforms: we must assume that the respondent makes a kind of rough estimation of what would be the conditions *on average* of his or her work across different platforms, which will necessarily lead to less precise responses and more homogeneous response patterns. This problem is compounded by the measurement issues of long batteries of subjective questions in online surveys that we already mentioned in the previous section. So again, we must start by acknowledging the limitations of our data for the analysis.

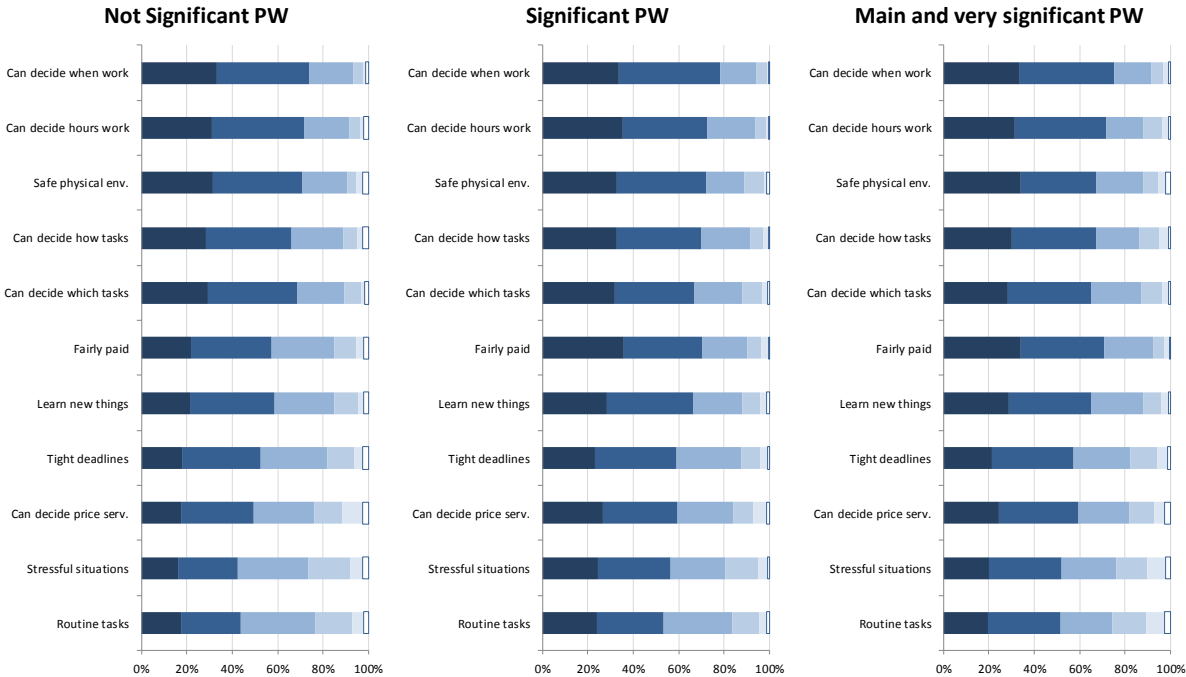
However, we must also acknowledge that the distribution of responses to the items measuring the conditions of platform work seem more plausible than that of motivations presented in the previous section.

Figure 21 displays the degree of agreement of respondents to the full set of working conditions items included in the COLLEEM survey²⁴, differentiating by category of platform worker. The items are sorted by the average responses given, and they suggest a wide agreement that the conditions of platform work are flexible and safe: according to responses, platform work allows most workers to decide when and how many hours to work, which tasks to perform and how, and all under safe environmental conditions. However, there is also a significant share of platform workers who say that their work via online platforms is stressful and routine, although they are not the dominant group.

Whereas all the three categories of platform workers have very similar values in terms of flexibility and safety, the negative conditions tend to grow with the intensity of platform work. More than half of significant and main platform workers consider their work via online platforms to be often stressful and routine, whereas the values for not significant platform workers are significantly lower (though far from insignificant). However, main and significant platform workers are also more likely to say that their work via online platforms is fairly paid.

²⁴ The sentences were: 1. I am remunerated fairly, 2. I can decide when to work, 3. I can decide how many hours to work, 4. I have a choice over which tasks I perform, 5. I can decide on how to perform my tasks, 6. I work in a safe and healthy physical environment, 7. I mostly work on monotonous/routine tasks, 8. I work on tasks that require me to learn new things, 9. I often have tight deadlines, 10. I often face stressful situations, 11. I decide myself what price to charge for my services. The response options ranged from strongly agree to strongly disagree.

Figure 21: The conditions of platform work, by type of workers



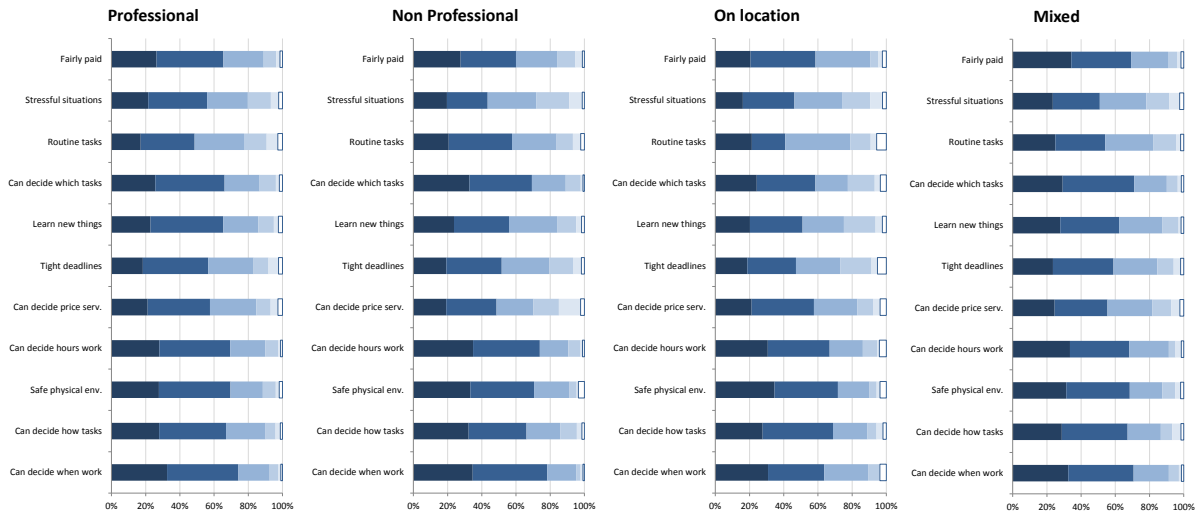
Source: authors' elaboration using the COLLEEM dataset.

There are also interesting differences in the conditions of platform work according to the dominant type of task performed, as shown in Figure 22. The classification of workers by dominant task performed must be understood as just an approximation, which was constructed by assigning workers to one of three categories (professional, non-professional or on-location) if they had only performed one type of tasks or the types of tasks they performed were mostly in one of the categories (for instance, if they provided work in four types of professional tasks but only one type of on-location). Respondents that provided labour in two or more categories with no dominant one were classified as "mixed".²⁵

Despite all the problems of this classification, there are some interesting differences in terms of working conditions. Respondents that predominantly provided professional services according to this approximation would in general be better paid but also face stressful situations more frequently. Non-professional platform work is associated with more routine tasks and less learning opportunities, but also less stressful situations. On-location platform work typically has less choice over the tasks to be carried out and less learning, but also a lower level of routine. As for those with a mixed task profile, their working conditions are more average as could be expected, although somewhat closer to those of professional tasks workers, perhaps reflecting that that is the dominant task category overall (as discussed in section 6).

²⁵ The problem with this classification is that the task category which is apparently less dominant may in fact be the most frequent. Since there is no measure of the amount of actual tasks provided for each type, but just in which types the respondent has provided labour services at least once, this approach is subject to very significant measurement problems and can be only used as a rough approximation.

Figure 22: The conditions of platform work, by dominant types of tasks performed



Source: authors' elaboration using the COLLEEM dataset.

One of the core dimensions of working conditions is the hours of work. In the COLLEEM survey, platform workers were asked both how many hours they work in general, and how many specifically on platforms. The results are shown in Figure 23 below, differentiating by categories of platform workers. For all platform workers, the total hours of work (including platform and non-platform work) are surprisingly low: almost one third of them work less than 10 hours a week, more than 50% of them work less than 30 hours a week, and only 15% work 40 hours a week, the working hours norm in most European countries.

If we look at the hours of work in platforms, the values are even smaller: 42% of platform workers work on platforms less than 10 hours a week, and three quarters less than 30 hours a week. So according to these results, most platform workers would have schedules typical of part-time work even for their regular jobs; and most of them would work extremely short hours via platforms.

Figure 23: Working hours of platform workers

	Total working hours (regular and platform work)				Platform work only	
	Not signif	Signif	Main	All	Main	All
Less than 10	49.31	23.15	5.02	28.5	0	42.08
10 to 19	13.71	20.04	8.6	13.93	13.76	20.81
20 to 29	6.08	11.92	15.85	10.69	33.1	14.84
30 to 34	3.4	7.36	13.15	7.48	10.48	4.69
35 to 39	7.17	6.99	10.84	8.24	7.31	3.21
40 hours a week	10.32	11.12	23.88	14.67	12.94	4.55
41 to 49	4.15	4.96	5.15	4.68	4.71	1.98
50 to 59	3.59	5.77	5.58	4.8	4.98	2.03
More than 60	2.3	8.69	11.92	7.01	12.72	5.81

Source: authors' elaboration using the COLLEEM dataset.

But as could be expected, there are significant differences by categories of platform workers. Whereas not significant platform workers tend to have very short work schedules even offline, the hours of main and very significant platform workers seem much closer to those of a regular worker, although they are still on the low side. Nearly 24% of platform workers have total (online and offline) schedules of 40 hours a week,

another 24% between 30 and 39 hours a week, and only 5% of less than 10 hours a week. It is interesting to see that for main and very significant platform workers there is a small but significant proportion of very long schedules (more than 60 hours a week), accounting for nearly 12% of all main platform workers.

Figure 23 also shows the hours of work via platform of main platform workers, and we can see that the most frequent schedule for this group is 20 to 29 hours, with an even larger proportion of very long schedules (nearly 13% of platform workers say they provide more than 60 hours of work via platforms a week). There is an inconsistency in Figure 23 with respect to the hours of work of main and very significant platform workers that we kept in the figure because we believe conveys useful information. There is a larger proportion of main and very significant platform workers with very long on-platform working hours (above 60 a week) than with very long *total* working hours. That is logically impossible, and shows that some main platform workers provide larger estimates of hours spent providing work on platforms than of hours spent doing any kind of work. Rather than dropping those cases or artificially correcting them, we opted to show them acknowledging the obvious contradiction, because what it suggests is that there is a small but significant share of main and very significant platform workers that work very long hours, and most of those very long hours are spent doing platform work.

Finally, the COLLEEM survey also collects some information on the remuneration of platform work. As Figure 24 shows, for the majority of cases the remuneration of platform work is based on the tasks performed (61% of the total), but it should be noted that there is a significant amount of platform workers that also receive a fixed daily, weekly or monthly remuneration, normally associated with regular dependent employment. In fact, more than half (51%) of main and very significant platform workers have this kind of fixed remuneration, although many of them also receive payments based on tasks performed (respondents could click on more than one choice, which is perfectly adequate because of the overlap between different types of tasks for the same worker). This reinforces the idea, discussed several times throughout this report, that for many platform workers (especially those that we have classified as “main and very significant platform workers”), the work performed via platforms may be very close or indistinguishable from regular dependent employment.

Figure 24: Basis of remuneration for platform work, by categories of workers

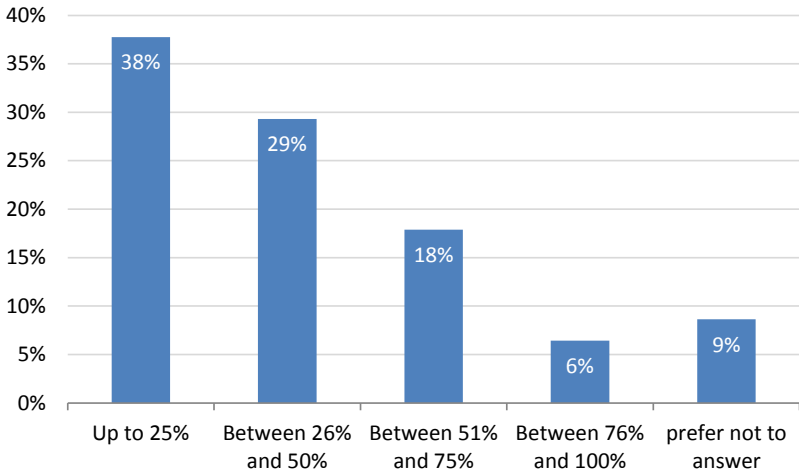
	Fixed daily/weekly/monthly	Based on tasks performed	Based on time worked
Not Signif	29%	66%	17%
Sign but not main	43%	59%	16%
Main PW	51%	56%	14%
Total	39%	61%	16%

Source: authors’ elaboration using the COLLEEM dataset.

The COLLEEM survey did not measure directly the income generated by platform work, but the total personal income of platform workers and the share of that income coming from platform work, which is shown in Figure 25 below. As we already know, in the majority of cases platform work acts a secondary source of income: nearly 40% of platform workers get less than 25% of their income via platforms, and a further 30% between 25 and 50%.

It must be noted that the question refers to share of personal income: since in many cases, platform workers are very young people that may in fact depend on their household income (e. g. parents’ income), even the values shown in Figure 25 are likely to overestimate the importance of labour platform as a source of overall income.

Figure 25: Share of personal income coming from platform work

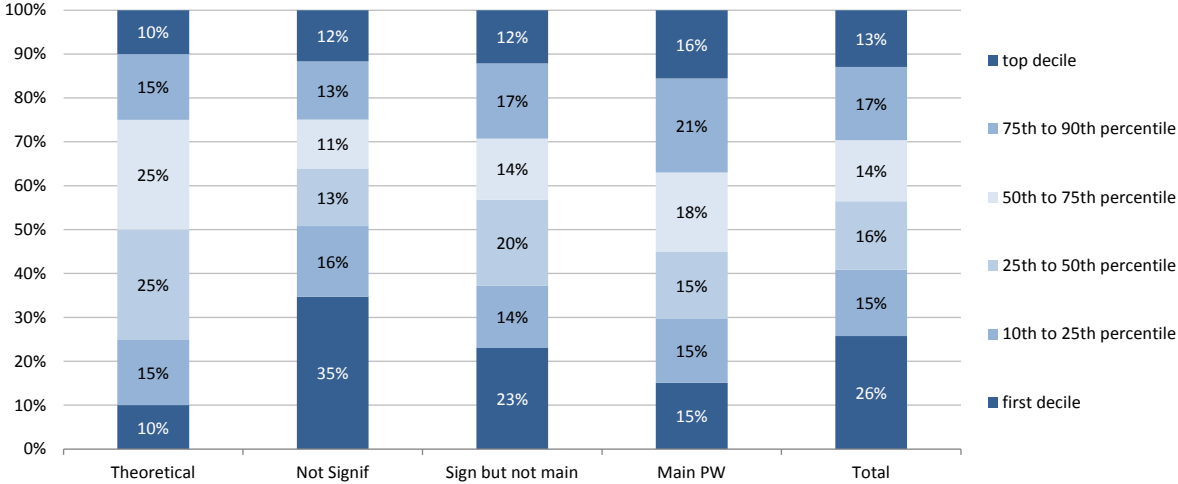


Source: authors' elaboration using the COLLEEM dataset.

The values for overall personal income of the different categories of platform workers allow us to assess their socio-economic conditions in very broad terms. In Figure 26, we see the distribution of income of platform workers by quantiles. The first bar on the left of the figure shows the theoretical distribution that is implicit in the quantiles used in the COLLEEM survey: the actual income intervals used corresponded to the empirical distribution of income in the general population according to other sources split by the shown percentiles, which allows us to construct this “theoretical” distribution. Therefore, it is theoretical only in the sense that it is not empirically observed in the COLLEEM survey itself, but in principle it should correspond to the real income distribution in each of the participating countries.

The main purpose of showing this “theoretical” distribution in Figure 26 is to serve as reference for the observed values of platform workers. The total values (for all categories of platform workers) suggest that there is a much larger share of low income individuals in the sample of platform workers than in the general population (26% in the lowest decile). The disproportionately high share of low-income is especially acute for not-significant platform workers, and declines for significant and especially for main and very significant platform workers, reaching a value of 15% in the latter case. So platform work seems generally associated with low income, but the more platform work provided the lower the incidence of low income. In fact, there is a parallel expansion of high income associated with the extent of platform work provided: whereas for not significant platform workers, the share of people in the top decile is similar to the overall population (around 10%), for main and very significant platform workers it is significantly higher (16%). The percentage of respondents in the second highest income category (75th to 90th percentile) also grows significantly with the extent of platform work provided.

Figure 26: Personal income distribution (all sources) of platform workers



Source: authors' elaboration using the COLLEEM dataset.

What this suggests is that although in general platform work tends to be associated with lower income, main and significant platform workers have a significant percentage also of individuals with high income, which may suggest a certain degree of polarisation in the income distribution of the most regular and significant platform workers.

Although the COLLEEM data has to be used with great caution for the analysis of working conditions of platform workers (mainly because the conditions can vary across tasks for the same worker, while the unit of analysis of COLLEEM is the worker and not the task), they do paint a more or less consistent picture. According to our results, platform work is generally flexible and safe, is paid by task, involves short work schedules, acts as a secondary source of income and is associated with low income levels. Those are the typical conditions of the majority of platform workers, but we could also identify a small but significant group of platform workers (often corresponding to our category of "main and very significant platform workers") for which platform work is also typically stressful and often routine, it can imply fixed remuneration as if it were regular employment, it can involve very long schedules and in some cases relatively high income. In other words, the conditions of platform work are diverse and perhaps even somewhat polarised: it seems to be a light and flexible form of work and secondary source of income for many, but also an arduous and routine form of work for others, involving long hours and a significant source of income.

9 Implications for employment and social policy

This section builds on the main findings of the COLLEEM survey presented in this report to derive some important implications of platform work for the design and implementation of public policies in the employment and social fields.

The results of the COLLEEM survey shed some light on the opportunities and the challenges of platform work as identified by the Reflection paper on the Social Dimension of Europe (European Commission, 2017a) which underlined the transformative potential of online platforms for the world of work, both in terms of new innovation and job creation possibilities and risks stemming from more irregular working patterns and working conditions.

What follows briefly describes the main issues at stake and outlines possible avenues to grasp such opportunities and respond to the emerging challenges.

An opportunity for the labour market integration of disadvantaged groups?

In general terms, the transformation of work and employment as a consequence of the digital revolution increases flexibility and labour market transitions. This makes careers more irregular and makes a large restructuring of labour markets likely, which underlines the importance of policy interventions to foster occupational mobility and support workers in transition with an appropriate combination of activation measures and adequate income support (OECD, 2017).

However, reaching out to those most in need of support is usually an important challenge for active labour market and income support policies. The socio-demographic profiling of platform workers presented in this report²⁶ provides useful information in this regard: the fact that many platform workers belong to vulnerable groups of jobseekers such as young people or women confirms that this could be a promising niche for the labour market integration of such groups (Eurofound, 2015). Given the nature of platform work, this can also be an alternative to more standard forms of employment for some workers from remote or disadvantaged regions, a target group which also tends to be challenging for public employment services.

In this context online platforms facilitate labour market matching and could usefully complement the role of public employment services, provided that appropriate measures are put in place to ensure decent working conditions, and also to facilitate transitions to more stable forms of employment through appropriate support policies. Moreover digital platforms can contribute to job creation by transforming informal into formal employment, while supporting also tax compliance and collection thanks to improved traceability (European Commission, 2016b).

Adjusting labour law to a new reality?

The status of platform workers is probably the most complex policy issue at stake. In most cases, labour platforms themselves argue that they are just mediators between service providers and their clients, which implies that the service providers are independent contractors rather than regular employees (and that the platform is not the employer). But this is a hotly debated issue in academic and policy circles, which has been often brought to court across Europe. Many argue that people providing labour services through online platforms have a subordinate employment status vis-à-vis the platform that should make them the platform's employees, with all the rights and obligations attached, while others argue that a new type of legal status (between self- and dependent employment) would be necessary for work provided through digital platforms (for a discussion, see Prassl and Risak 2015; De Stefano and Aloisi, forthcoming).

²⁶ As shown in section 4, COLLEEM depicts a profile of a platform worker who is younger than the equivalent general population. It also shows that a significant proportion of women try platform work. COLLEEM also shows that platform workers are significantly more educated than the comparable general population and have fewer years of labour market experience than offline workers.

Our findings suggest that even though a very large proportion of platform workers consider their work through platforms as a form of self-employment (either primary or as side activity), a significant number do perceive themselves as employees of the platforms. This is in line with some legal ruling in the US, for instance in the court cases against Crowdfunder, Lyft and Uber. Following these settlements, several US platforms have introduced some kind of minimum wage provision (Codagnone et al., 2016, 49); however, a proper regulatory framework for platform work is yet to emerge.

This complex reality, compounded by the unbundling of platform work discussed in section 6, leads to a situation in which the actual nature of the employment relationship is unclear in most cases (Codagnone et al., 2016). This is particularly problematic because employment status is key for access to social security, training entitlements and coverage by legislation on working conditions.

Therefore the need for a clarification of the employment status of platform workers appears obvious, as highlighted also by Huws et al. (2017), and there is a debate about the need for new categories in labour legislation. However, a more pragmatic approach in tune with the current state of play would not necessarily lead to new regulations, but to a more effective enforcement and an unambiguous framework (De Stefano and Aloisi, forthcoming). No regulatory framework has been put in place in Europe so far (Eurofound, 2015).

The issue was taken up by the European Commission in its European Agenda for the Collaborative Economy (European Commission, 2016a), which provided some clarifications on the EU definition of worker and called on Member States to i) assess the adequacy of their national employment rules considering the different needs of workers and self-employed people in the digital world and ii) provide guidance on the applicability of their national employment rules in light of labour patterns in digital labour platforms.

Implications for working conditions: what role for public policies?

Platform-based work provides new earning potentials for workers, but there are increasing concerns that it can also imply precarious work arrangements. This includes insecurity about pay, more limited access to training or benefits, information asymmetry, the lack of a reliable dispute resolution system, the possibility of privacy violation and the lack of support from colleagues and managers (Eurofound, 2015). The ILO has also stressed the concerns about low pay and access to social protection (ILO, 2018).

Our results confirm that these concerns are justified: according to the COLLEEM respondents, working conditions for platform workers appear to be flexible, but also intense. COLLEEM also shows that platform work can be arduous and, for some workers, involving long hours. Flexibility and autonomy are frequently mentioned motivations for platform work, but these results should be interpreted cautiously: COLLEEM respondents also mention the lack of alternatives as an important motive for working on platforms, and recent research suggests that most workers prefer stability and consistency in their work schedules (Mas and Pallais 2017). Furthermore, greater flexibility becomes a problem when it results in more irregular working careers, leading to reduced income and barriers to access to training and unemployment or other benefits.

These results call for a harmonisation of the conditions of platform workers towards those of regular employees. This includes access to benefits (see below), but also minimum wages and other issues. In particular, minimum wage policies can protect the income of a growing number of workers in low-wage jobs and their application to all workers should be considered. The reported intensity of working conditions also calls for a clarification of how health and safety at work regulations should be applied to platform workers. And there are also concerns about data protection issues, given the generalised use of platforms to monitor work performance. These are also clear policy implications from the Hertfordshire study (Huws et al., 2017).

Furthermore, it appears essential to ensure that platform workers have adequate access to training and lifelong learning. Measures to provide further training along the life

course, supporting life-long learning may become more and more important to sustain employability, especially for low-skilled workers in non-standard work arrangements. It seems particularly important to ensure that access to quality training is not linked to work status (OECD, 2017).

The potential negative impact of atypical forms of employment on working conditions and the protection of workers is specifically addressed at EU level by the European Pillar of Social Rights, which contains principles aiming at guaranteeing the right of workers to fair and equal treatment regarding working conditions and fostering innovative forms of work that ensure quality working conditions.

A reflection is also warranted on the application to platform workers of the EU acquis in the employment and social fields. The December 2017 proposal for a new Directive on transparent and predictable working conditions across the EU (European Commission, 2017b) takes account of new forms of employment, including platform workers, and aims to set new rights²⁷ for all workers, particularly addressing insufficient protection for those in more precarious jobs. It may also be considered if the Directive on Temporary Agency Work is applicable to some platforms, and if and how platform workers are covered by e.g. the Working Time Directive, which relies directly on an EU definition of worker.

What implications for the adequacy and coverage of social protection systems?

As highlighted by the Commission in its March 2018 proposal for a Council recommendation on access to social protection for workers and the self-employed²⁸, in most Member States the rules governing contributions and entitlements of social protection schemes are still largely based on full-time open-ended contracts between a worker and a single employer (European Commission, 2018). As a result workers with non-standard arrangements often do not have the same income and social security protection compared to workers with standard employer-employee contracts. The unclear legal status of these workers complicates the situation, as has been shown in this report and other studies.

Inadequate access to social protection may put some platform workers at higher risk of in-work poverty and social exclusion, and can increase inequalities. An important finding of the COLLEEM survey in this regard is the important proportion of people for which platform work is a significant source of income and have family responsibilities, including dependent children, which underlines the importance of adequate social protection.

Member States are starting to act to ensure access to social protection to all types of workers, and a number of countries are taking measures in this direction. In this regard, it is particularly important to note that, if adopted and fully applied, the above-mentioned Commission proposal would represent a major step forward in this direction. The Commission examined the option of proposing a Directive to address this issue but it has chosen to propose a recommendation given the diversity of situations and limitations of the legal framework to take action at EU level.

Irregular working careers result in a larger share of the unemployed not being eligible for unemployment benefits, which should be duly taken into account in this regard too, given the difficulties this creates for outreach to vulnerable groups. The recommendation does

²⁷ The Commission is proposing that all workers in the EU should have the right to: (i) more complete information on the essential aspects of the work, to be received by the worker, in writing, at the latest on the first day on the job (rather than up to two months afterwards), (ii) a limit to the length of probationary periods at the beginning of the job, (iii) seek additional employment, with a ban on exclusivity clauses and limits on incompatibility clauses, (iv) know a reasonable period in advance when work will take place, for workers with very variable working schedules determined by the employer, (v) receive a written reply to a request to transfer to another more secure job, and (vi) receive cost-free the mandatory training that the employer has a duty to provide.

²⁸ The Recommendation provides for: (i) closing formal coverage gaps by ensuring that workers and the self-employed in comparable conditions can adhere to corresponding social security systems; (ii) offering them adequate effective coverage, so that they can build up and claim adequate entitlements; (iii) facilitating the transfer of social security entitlements from one job to the next, and (iv) providing workers and the self-employed with transparent information about their social security entitlements and obligations.

take a broad approach in this respect and applies to unemployment benefits; sickness and health care benefits; maternity and equivalent paternity benefits; invalidity benefits, old-age benefits and benefits in respect of accidents at work and occupational diseases. Whether this approach will suffice to tackle this issue or more systemic changes will be required remains to be seen.

Furthermore, modern social protection systems should also be adapted to a context of more irregular careers and frequent transitions. This requires good coordination with active labour market policies and adequate support to workers in transition. Linking entitlements to individuals rather than jobs may contribute to this, while fostering mobility and mitigating the social cost of labour market adjustments (OECD, 2017). The social protection reform recently adopted in France aims to advance in this direction through the creation of a system of personal accounts for workers. Besides France, several other Member States have indicated they consider introducing similar systems.

10 Conclusions

Platform work is a new form of work, and it is also a constantly evolving one. Its complex and fluid nature poses important challenges for policy making. Looking forward, further analytical work to better understand this phenomenon is clearly needed. A close monitoring of developments in this area will be crucial in the coming years to underpin the necessary policy response at both EU and country level. In particular, we will need additional evidence to understand better the size and nature of platform work, in order to determine how far policy interventions will need to go to address it.

The findings presented in this report suggest an emerging phenomenon of increasing importance but still modest size. If platform work remains significant but small in the future, a two-pronged policy response is likely to suffice, focusing on (i) fully grasping its job creation and innovation opportunities and (ii) adjusting existing labour market institutions and welfare systems to the new reality and mitigating its potentially negative consequences for working careers and working conditions. Examples of this are the proposal for a directive on transparent and predictable working conditions, and the proposal for a Council Recommendation on access to social protection for workers and the self-employed in the social fairness package adopted by the Commission on 13 March 2018²⁹.

However, if platform work continues to grow in size and importance to become a more significant reality in our labour markets, or if some of the key features of platform work spread across other forms of employment, as already it appears to be happening in some cases, policy interventions may need to be of a more ambitious nature. Indeed, a scenario of general "platformisation" of labour markets and working conditions would probably require a profound rethinking of labour market institutions and welfare systems.

From the regulatory point of view, the categories catering for the specificities of platform workers might be in need for a review. In a labour market with more unstable working careers, a wider use of schemes based on personal accounts for workers' entitlements might be required. From the social protection point of view, progress towards insurance models not based on employment status could be necessary.

Furthermore, digital labour platform work beyond national borders giving people more opportunities to provide professional and non-professional labour services from their own places of origin – on-location services excluded - through a digital single market. In this scenario, disparities in employment and social performance inside the EU could be reduced, as at the same time workers exposure to global competition might increase.

Under this hypothetical but not impossible scenario, the EU could play a crucial role. New forms of work that transcend national boundaries represent a clear case for adapting and expanding the EU *acquis* in the field of employment protection and working conditions. The recent proposal to create a European Labour Authority could provide an opportunity to better monitor such new forms of employment at a supranational level. Although there is currently no legal basis for granting regulatory competences to the Agency, a longer term reflection on this may also be warranted. Finally, the legislative void in reference to the category of platform workers reflects also in an inadequate tax framework for those workers. The revenues generated through this form of labour are not channelled through the standard tax system resulting in foregone tax revenues and a lower tax base, which implies also a failure in redistributing the productivity gains associated to it.

²⁹ http://europa.eu/rapid/press-release_IP-18-1624_en.htm

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