Understanding Work in the Online Platform Economy: A Critical Review

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Abstract

The outlines of the impact upon work of the ever more pervasive online platforms are beginning to come into focus. Previously, fairly settled terms such as “jobs”, “employment”, “labor”, and even “work” itself are, for some, being replaced by “income generation” or “value creation”. To capture the difference between platform-organized work or labor and traditional activities, we use the commonly used term “platform work.” This raises the question of whether a different context for the way goods and services are delivered is emerging. This essay reviews the extant understanding of the impact of platforms on work.

Initial analyses hailed platforms as new organizational forms that could create an economy based upon communitarian ideals such as “sharing”. Unfortunately, this narrow optimistic formulation has given way to a realization that platforms are capitalist enterprises. In contrast, there have been increasing concerns about platforms’ capacity to generate significant numbers of even mediocre quality jobs, their contribution to existing inequalities, and the work experiences of those dependent upon platforms for their income. In this review, we suggest that most studies of platform work have been too narrow, focusing only on a small number of highly visible platforms that provide in-person and remote platform work. To comprehend the true extent of platform work, we argue it is necessary to extend study beyond in-person and remote service provision to include platform-mediated sales and virtual product provision. We then assess the impacts of platformizing these four categories of platform work across four different aspects of work: management power, work processes, social protection and labor rights, and skill demand and career prospects. Our conceptual analysis provides a more comprehensive understanding on the effects of online platforms on the changes in work that may serve policymakers facing the challenge of formulating, and reformulating their targets, the categories of their policies.
1. From Sharing to Online Business Platforms

Since their emergence in the mid-1990s (Parker and Van Alstyne, 2005\(^4\)), online platforms (hereafter we discuss only online platforms and not other types of platforms), digital places or infrastructures designed to mediate transactions and other valued exchanges of goods, services, or data/information (Gawer, 2014\(^5\)), have expanded their presence into a growing number of sectors (Kenney and Zysman, 2016\(^6\); Srnicek, 2017\(^7\); Van Dijck et al., 2018; Zuboff, 2019\(^8\)). By one measure, as of 2020, platforms were operating in 70 percent of all US service industries, which accounted for over 5.2 million establishments (Kenney, Bearson, and Zysman, 2021\(^9\)).

It has become accepted that online platforms represent a new institutional form that differs from both markets and hierarchies (Williamson, 1975\(^10\)) and network structures (Powell, 1990\(^11\)), though it has features of all three. What is clear is that the adoption of platforms as intermediaries is deeply changing value creation, competition, power relationships, and institutional structures (Cenamor & Frishammar, 2021\(^12\); Gawer, 2014 \(^13\);

The rise of the platform economy has attracted considerable academic and policy interest. One of the areas that has received the greatest attention is the impact of platforms on work (Srnicek, 2020). Early analyses hailed platforms’ potential for facilitating “sharing” and creating value creation outside the existing market structures (Benkler, 2006; Schor, 2016). In these formulations, platforms were meant to allow individuals across the entire spectrum of skills and capabilities to earn income by providing value in terms of a good or service to a user (Howcroft and Bergvall-Kareborn, 2019). Some believed that online platforms could facilitate the integration of those unable or unwilling to work regular schedules (Manyika et al. 2016).

Initial analyses identified few drawbacks except violations of consumer privacy and, perhaps, firms such as Airbnb and Uber violating local zoning or national labor laws (Rahman and Thelen 2019). More recently, the initial optimism has turned into growing concerns about platforms’ capacity to generate even mediocre-quality opportunities to

generate income (Cirillo et al. 2021\textsuperscript{23}), their contribution to existing inequalities, and their impact on employment in other established sectors (de Stefano, 2016\textsuperscript{24}; van Dijck, Poell, and de Waal, 2018\textsuperscript{25}).

There is much confusion in the literature analyzing “work” conducted through platforms.\textsuperscript{26} As we discuss later, outside the direct employees and contractors to platforms, by definition, those transacting across a platform do not work for the platform. Ipso facto, the platform does not provide employment or “jobs” for those transacting across the platform. What provides is a virtual location where the various sides of the platform can transact and thus creators or sellers of goods or services can generate income. Clearly, a term such as “employment” is not meaningful. But even the looser term “job” that still connotes something relatively permanent is too concrete, as these jobs are at the will of the platform and thus also ephemeral and not socially recognized. The word “labor” when it means “the expenditure of physical or mental effort” is adequate, but it often is associated with wages, which income earned through the platform is not. Similarly, one meaning of the word “work” has the implication of wages or salary, which again is an inaccurate description of the income generated over a platform. To capture, the unique nature of income generation through providing value across a platform, it might be intellectually useful to term the activities we will discuss at “platform work” or “platform labor.”\textsuperscript{27} In the rest of the document, we will use

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\textsuperscript{26} We accept the definition that “work” is an activity involving mental or physical effort done in order to earn income. This definition does not specify a particular form of control of the labor process such as employment, contract, etc.

\textsuperscript{27} In previous work, one of us, Kenney, introduced the term “platform-dependent entrepreneurs” to describe the relationship between the platform and what the management literature euphemistically calls “complementors” (Cutolo and Kenney 2021#; Cutolo et al. 2021#)
these terms to separate work monetized over a platform, from work and labor in traditional settings.

The impact of platform work is still unclear. The majority of recent studies have focused only on a remarkably small number of large, visible platforms such as Uber, Lyft, and Deliveroo and a subset of in-person and remote platform jobs (ILO, 2021\textsuperscript{28}, Kilhoffer et al, 2020\textsuperscript{29}; Brancati, Pesole, and Fernández-Macías, 2020\textsuperscript{30}; de Groen et al, 2021\textsuperscript{31}; Kenney, Bearson and Zysman, 2021; Wood et al. 2019\textsuperscript{32}). These scholars and policy-makers deliberately exclude the larger and, almost certainly, greater source of income that come from individuals and small businesses (that employ people) selling products and services across platforms and the enormous number of creators and influencers that use platforms to generate income. Our paper addresses this gap by looking at a broader set of categories of platform work. To do so, we build on Bearson, Kenney, and Zysman’s (2021)\textsuperscript{33} taxonomy of platform-enabled work, which identifies seven different types of work that can be attributed to platform firms (see Figure One). We use this framework to evaluate the impact of platform work in four different labor spheres: management power, work processes, social protection and labor rights, and skill development.


As online platforms continue to reconfigure the landscape of work and governments develop different policy responses, our conceptual analysis will provide a more comprehensive and nuanced perspective on the effects of the wide scale adoption of online platforms on labor. Our contribution speaks to scholars interested in the transformation of capitalisms and the impact of the platform economy on work and employment. The paper is also valuable to policymakers interested in regulating working conditions in platform work. The diversity of value-creating activity conducted across online platforms means that organizing and describing the types of labor/value-creating activities will identify research problems and the difficulties state actors might have in regulating work conditions.

The remainder of the paper is organized as follows. Section Two showcases the limitations of existing studies and defines the scope of the paper by contrasting two different perspectives on the relationship between platforms and work. The first, which we call a “narrow” perspective, reflects the view that most of the literature has taken on platforms. We contrast this with what we call a “broader” or more comprehensive perspective that identifies the multiple types of work created by or affected by platforms. Section three builds on the broad definition outlined in section two to discuss four spheres that are being affected by platform work and the direction in which different types of platform work are affecting them. The final section weaves these threats together and outlines future avenues for research.

2. Understanding Platform Work

2.1 Narrow and the broad perspectives

Platform adoption accelerated in the second half of the 2000s with the introduction of technological innovations such as the iPhone. In 2021, eight of the world’s ten most valuable
publicly traded firms were platforms (Statista, 2021). This includes large or “gatekeeper” platforms such as Facebook, Google, and Amazon, each of which exceeds 2 billion monthly active users (Kenney, Bearson and Zysman, 2021). As platforms have matured, their number have increased, and their presence expanded across a larger number of areas of economic activity (Gawer, 2021). Recent studies have identified 516 active platforms and an additional 74 inactive platforms in the EU27 (de Groen et al, 2021) and 777 active labor platforms worldwide (ILO, 2021). Others show that online platforms are present in 70 percent of service sectors in the US, representing 5.2 million establishments affected directly or indirectly by these structures (Kenney, Bearson and Zysman, 2021).

As platforms have become pervasive, so has their power to reorganize, disperse, and recompose work (Kenney and Zysman, 2016). This raises urgent questions about the impact on online platforms on the nature and the allocation of work, management power, work processes, and skills. In turn, these micro-level questions feed into broader concerns about institutions and the ability of national economies to provide economic opportunity: Do platforms exacerbate preexisting trends toward a rise in contingent work arrangements and social inequality? What types of regulation and institutions can be developed or adapted to ensure worker protection in the platform economy?

The first step in answering these questions is to systematically characterize the different types of platform labor. A number of recent studies have introduced such taxonomies. At the outset, we hasten to add that in terms of economic value, none of the platforms examined by most of these studies are the most important in terms of value created. The ILO (2021) distinguishes between workers who are employed directly by a platform on a

full time-time, part-time, or fixed-term basis (internal employment), and those whose engagement and work are mediated through web-based and location-based platforms (external employment). The OECD (2016) defines two categories of platform work in service markets: services delivered physically (e.g., Airbnb or Uber) versus digitally (e.g., Upwork or Amazon Mechanical Turk). Analyses based on the EU’s COLLEEM survey (Pesole et al 2018) and Urzi Bracanti et al (2020), follow a similar distinction between activities that are carried out online and offline or on-location as do De Stefano (2016) and Howcroft, and Bergvall-Kareborn, (2019). By contrast, Kalleberg and Dunn (2016) focus instead on the type of platform workers are associated with, rather than the location of the work, and identify four types of platforms: crowdwork, online freelance, delivery/home tasks, and transportation. Khun and Maleki (2017), develop a framework to classify platform workers based on two factors: workers’ autonomy, and their dependence on the firm. Finally, Abraham et al. (2019) avoid the development of a taxonomy by presenting platform work as a type of non-employee work. Specifically, they define “gig employment” as “one-off jobs on which workers are paid for a particular task or for a defined period of time” (p 13).

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The taxonomies discussed above are based on analyses of a small subset of platforms operating in a few categories. For instance, the EU’s COLLEEM survey examines 52 platforms, 40 of which correspond to three categories of in-person services: personal transportation services, delivery services, and domestic work (de Groen et al, 2021). Most recently, the European Trade Union Institute (ETUI) carried out a survey in 2021 that added to the in-person services, remote clickwork (e.g., Amazon Mechanical Turk), remote professional work (e.g., Upwork). Each of these taxonomies fall within what is a “narrow” perspective that considers only labor remunerated for services directly rendered and compensated over a platform (Bearson, Kenney and Zysman, 2021).

These narrow classifications are problematic for several reasons: First, such classifications exclude large sectors of activity in which platforms have become or are becoming pervasive. To illustrate, the ETUI rules out the largest categories of platform income generation -- influencers (YouTube, Instagram, TikTok), online rentals (Airbnb), and product sales online (Amazon Marketplace, app stores, Etsy, etc.) (Piasna, Zwysen, and Drahokoupil, 2022)\(^\text{43}\) -- without any doubt, more income is earned through these platforms than in the labor platforms receiving so much attention.

However, even when it includes influencers and sellers, these taxonomies still exclude the vast population of workers whose activities have been transformed. These range from the finance sector to online gaming to healthcare. In addition, narrow taxonomies exclude different categories of work including indirect platform work and work affected by platforms. Indirect platform work includes activities such as lawyers, script writers, marketing specialists, and multimedia artists that assist platform content creators (Bearson, Kenney and Zysman, 2021). By work affected by platforms we refer to the reorganization of entire legacy

industries as a result of the rise of platforms (van Dijck, Poell, and de Waal, 201844). One such example is the advertising industry, where social media, online search engines, streaming media platforms, online stores, and online gaming platforms have transformed traditional media buying-planning activities beyond recognition (Australian Competition & Consumer Commission, 202145) and placed industry incumbents in positions of dependence on the platform owners and their control over consumers.

The limitations of the narrow perspective have important implications: by excluding enormous areas of platform-based economic activities, they dramatically understate the impact of platforms on work. The focus on a small subset of platforms highlights effects derived upon certain types of work while ignoring other effects, possibly leading to biased conclusions. Nonetheless, the most important limitation is qualitative: by focusing on a narrow set of platforms and effects, the narrow perspective ultimately fails to see the platform economy as a transformational force reverberating across all types of economic activities and most types of work.

The narrow perspective contrasts with what could be termed a “broad” perspective, which builds on a framework articulated by Bearson, Kenney and Zysman (2021). This perspective identifies three types of actors in the platform economy: platform firms, platform-dependent providers (there may be multiple sides, for example, for YouTube this would be creators and advertisers), and prosumers (for YouTube this would be viewers). Here, they build on Ritzer and Jurgenson’s (201046) concept of prosumption to characterize users who generate data that can be monetized by platforms. These authors consider each of these as the

site of distinct categories of labor that differ in terms of type of economic relationship to the platform, the types of actors involved, compensation, work conditions, and the process of value creation.

While Bearson et al. (2022) identify seven types of work related to the platform, in terms or direct employment by the platform, they distinguish between regular employees and contractors whose compensation and labor conditions differ dramatically -- these two groups are not considered in this paper. Our focus is on the platform-dependent complementors, which can be separated into: 1) actors that sell their goods or services through the platform, 2) actors that are contracted through the platform but provide physical services in person, 3) actors whose work is contracted for but provided remotely through the platform, and 4) actors that create content to be posed on a platform but receive compensation either through advertisement, subscription and/or patronage.

**Platform-Mediated Income Generation**

<table>
<thead>
<tr>
<th>Platform Mediation</th>
<th>Employment Type</th>
<th>Typical Platform</th>
<th>Compensation Mechanism</th>
<th>Labor Conditions</th>
<th>Value-Creation Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sellers</td>
<td>Independent vendors</td>
<td>Amazon, Craigslist, eBay, Etsy</td>
<td>Difference between purchase and sales price</td>
<td>Vendor controls</td>
<td>Sales but can include logistics</td>
</tr>
<tr>
<td>In-Person Service Provision</td>
<td>Contracted service through platform</td>
<td>Uber, Lyft, PostMates, GrubHub, Airbnb</td>
<td>Payment upon completion, by hour worked, or gig</td>
<td>Physical service</td>
<td>Provide service or monetize asset</td>
</tr>
<tr>
<td>Remote Service Provision</td>
<td>One-time project contract</td>
<td>Upwork, Fiverr, Freelancer, AMT</td>
<td>Agreed upon by job</td>
<td>Digital service</td>
<td>Project work</td>
</tr>
</tbody>
</table>
These types of work can be further expanded to include work that is related to or affected by platforms. As mentioned above, these include indirect platform workers, who perform tasks or render services, remotely or in person to support the activities of platform workers (for instance lawyers, actors, musicians, scriptwriters, web designers) and those in legacy industries whose work is radically transformed, as a result of platform pervasiveness.

2.2 Scope of the paper

Some types of platform work raise issues that are related to broader trends in labor markets or that are not necessarily derived from the platform’s governance structure. Other types of work raise issues that either affect very large portions of society or specific professions. We exclude these types of work from the core analytical section in the third section of our paper for two reasons: a) to concentrate only on those categories that can be linked to the intrinsic features of platforms as new institutional forms; and b) to emphasize broader features about the organization of labor that affect broad, yet relatively well-defined categories of workers across industries. This section briefly discusses our rationale and provides a brief overview of the literature for the excluded types of work.

With regard to regular platform employees and contractors, there have been a variety of issues ranging from a lack of diversity, sexual harassment and dramatic pay and benefits...
disparities between regular employees and contractors. These issues have gained salience following large-scale protests by platform employees such as the 2018 Google Walkout and more recent protests at other platforms such as Netflix and Facebook. (Hicks, 2018; Hodgson and Kuchler, 2018; Au-Yeung, 2021; Koblin and Sperling, 2021). However, these are longstanding issues that, in the USA, are pervasive across white-collar professional and managerial occupations, where certain ethnic groups and males tend to be overrepresented while women and other ethnic groups are underrepresented and concentrated in the lower-paid job categories (Bearson, Kenney and Zysman, 2021; Lazonick et al. 2022).

Contractors working for the platform have been linked to issues of compensation, labor conditions, precarious employment, and firms’ resistance to unionization (Gillespie 2018; Perry et al, 2021; McGee, 2021). These issues also transcend platforms and are a manifestation of broader concerns about the impact of declining union membership, automation, globalization, offshoring and outsourcing (Goos et al., 2014; Autor et al., 2021).

(Huws, 200957, 201458; Weil, 201459; Hyman, 201860). Because of these reasons, we exclude these two types of work as they are directly related to the operation of the platform and are part of “normal” labor relations’ practices.

The other important group of value creators for the platform are users whose usage of the platform provides the “raw material”, data, from which value is extracted by selling the insights from it to advertisers or, more directly, through commission from third-party sales or subscriptions. In the case of users of Google’s or Facebook’s “free” products, monetization is through advertisements. Researchers have coined the term “prosumer” for these users because they produce data as they consume platform services that can be converted into value and sold (Ritzer and Jurgenson 201061). In this sense, everyone who connects to a platform is a prosumer. Although prosumers raise issues that are directly derived from platforms, the size and diversity of this group have led most social science scholars to examine their concerns from the point of view of data governance and fundamental rights rather than labor or value creation. Specifically, scholars have focused on how platform firms manage and use prosumers’ personal data and protect prosumers’ privacy (Scott Morton et al. 201962;
Finally, we exclude indirect platform work and legacy work affected by platforms. These types of work raise issues that are sector- and or profession-specific and therefore are better served through in-depth case studies. Indirect platform work encompasses a broad swathe of activities ranging from insurance agents (Catlin et al. 2018) and automobile salespersons (Barley, 2015) to software and website developers and multimedia artists; groups that vary dramatically in terms of skills, types of work, and compensation (Bearson, Kenney and Zysman, 2021; Piasna et al, 2022). We also exclude fulfillment work, such as that is performed by the preponderance of Amazon employees, because it is not directly

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related to the platform. Despite these exclusions, the sheer diversity of work attests to the
pervasiveness of platforms but also makes it difficult to cover all the possible professions and
to study them as a single group or to draw generalizations from individual cases.

Similarly, the impact of platforms on work in legacy industries varies significantly in
terms of timing, intensity and qualitative changes, making in-depth industry analyzes a more
appropriate tool. Some authors have already started to move in that direction. For instance,
Van Dijck, Poell, and de Waal (2018), while exploring the impact of platforms in the
healthcare, education, media and urban transport sector, they concentrate on clashes between
platform demands and the value systems in legacy sectors. A few researchers have explored
the impact of platforms on legal practices (Dubois, 2021; McPeak 2019; Yao 2020). Another profession that has received significant attention is journalism. Mellado and Alfaro
(2020), study the impact of platforms on the scope of journalists’ work and Kempton and
Ahern (2021) and Grygiel and Lysak (2021) explore the impact of social media on
journalists’ roles, routines and values. Similarly, in the culture industries, such as music, the

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increasing intermediation of online platforms affects not only the organization of the music industry but the actual work of making music (Morris, 2021\textsuperscript{81}; Nordgård, 2017\textsuperscript{82}).

The four categories of platform work that we discuss are: independent sellers that offer their goods or services, individuals that provide in-person services, those who work remotely through the platform, and consignment workers that create content for platforms. The following section explores the state of knowledge in four broad spheres of labor organization affecting these categories of platform work.

3. Effects of Platforms on Work

While the management literature has studied the distinct governance structure of platforms and their competitive dynamics, we are only starting to understand their implications for work. One difficulty is that platform work is relatively recent, and while there is a growing number of legal cases, outside the many reactions to labor relations in ride-sharing, relatively few countries have adopted legislative responses specific to platform labor. In addition, platforms operate across borders, but labor law is determined at national level and there are important cross-country differences (Spasova et al, 2019\textsuperscript{83}), which affect policy preferences and policy procedures (Sieker, 2021; Prassl and Risak, 2017).

This section explores the existing research in four spheres that are central to the conventional work arrangements in advanced economies and are being directly challenged by the economic dynamics and the technological underwiring of online platforms: management power, labor protection and rights, work processes, and skill demand and career prospects. In


what follows, we explain the tensions between the existing understanding of each of these spheres and platform work, discuss ways such tensions have been explored in the literature and identify potential lines for further inquiry.

3.1 Management Power

Employment, whereby an organization hires workers and management (hierarchy) has control over the work process, is central to the legal definition of work (Stone, 2006; Williamson 1996). This conceptualization has defined how the state and society thinks about work (Weil 2014). However, employees differ from complementors that deliver a service over a platform in some fundamental ways (Moore and Joyce 2019). Employees are paid by the employer for their time and the relationship is embedded in a contract that has obligations and responsibilities for both sides. In fact, an entire body of law has emerged to manage this relationship and these bound by management power.

In contrast, online platforms define themselves as technology firms that facilitate transactions between independent workers and clients (Khun and Maleki, 2017). The implication is that platforms are intermediaries rather than employers and value creators are self-employed independent contractors (Berg, 2016). This reality and numerous studies show that the relationship between online platforms and workers is based on an extreme asymmetry of power. These asymmetries derive from platforms’ architecture and design and from the incentives and mechanisms that platform firms use to attract different types of

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workers (Cutolo and Kenney, 2021). Given that the value is created or transacted by the sellers and buyers, the platform’s overarching managerial goal is to retain the various participants on the platform as it is only a “distribution” mechanism that “taxes” the value transacted across it (Pfeiffer 2022).

Platform power stems from the ability to attract and retain both workers and buyers to the platform, lower transaction costs for both, unilaterally control and alter the technical architecture of the ecosystem to influence participant behavior, and leverage network and long-tail effects (Cusumano et al. 2019; Parker et al. 2016). Online platforms use a variety of mechanisms to exercise their power over workers. These include withholding information, using reputation metrics to assess workers, gatekeeping and exclusion from the ecosystem for violations of community conduct, imposing platform-specific interfaces, unilaterally setting and changing the terms of engagement with workers with little or no notice, blocking workers from establishing direct relationships with clients, rate and price determination, or using obscure ranking systems and rating mechanisms.

Analyses based on qualitative case studies provide further evidence of the use of such power mechanisms to assign tasks to workers, surveil, and discipline them (Kellogg et al., 2020; Mateescu and Nguyen, 2019). For example, Rosenblat and Stark’s (2016) analysis

characterizes several features in the Uber system that showcase the asymmetries of power and information in favor of the platform (Berg and Johnston 2019)\(^96\); These include surge pricing, blind passenger acceptance with low minimum fares, account deactivation for canceling unprofitable fares, a rigid rating system, GPS tracking, institutionalized nudging, and decentralized, automated support systems. Veen et al (2020\(^97\)), analysis of Deliveroo and UberEATS highlights three features through which these platforms exercise power: the use of information to limit workers’ choice, the obscure character of performance evaluation systems, and the platforms’ panoptic perspective. Ivanova et al (2018\(^98\)) also discuss the use of notifications, monetary incentives, internal competition for work shifts and information withholding to exercise power.

Not all platform workers are similarly vulnerable to these mechanisms. Those for whom platform is the main source of income, or who have made a significant capital or reputational investment to work through the platform are likely to be more disadvantaged (Khun and Maleki, 2017, Lehdonvirta, 2018\(^99\)). Among the businesses that offer their outputs through the platform, small, successful online businesses are likely to be the most vulnerable Churchod et al. 2020\(^100\). Small businesses are more likely to lack access to the resources and capabilities necessary to offset and minimize the effect of platforms' power wielding mechanisms by engaging in protective mechanisms of their own, such as multihoming. In addition, successful platform vendors are potential targets of platforms that may decide to


leverage the data accumulated by the vendors and their customers to compete directly with them (Zhu and Liu\textsuperscript{101}, Wen and Zhu, 2019\textsuperscript{102}).

3.2 Work Processes

The technological and organizational dimensions of digital platforms and the new forms of management power that derive from them, challenge existing work processes and outcomes (Shapiro, 2018). In particular, the multi-sided nature of platforms, their use of algorithmic systems to manage relationships with workers, the shift in the balance of power between platforms and workers and reliance on large contingents of independent contractors, have triggered changes in management practices (direction, control, and discipline), human resources functions (worker recruitment, motivation, performance evaluation, and dispute resolution), working conditions (flexibility, anonymity, disaggregation of jobs into clearly defined tasks), and output distribution and delivery (Khun and Maleki, 2017; Lee et al, 2015; Wood, 2019, 2021\textsuperscript{103}).

These areas have received differing levels of attention by scholars. The most studied aspect is perhaps the impact of platforms on management practices. Lee et al (2015) coined the term algorithmic management to refer to the use of mathematical formulas to govern the relationship between platform firms and workers. Kellogg et al (2020) argue that algorithms afford six mechanisms to direct, control, and discipline workers: 1) restricting information or access to people or resources; 2) recommending, or influencing behavior, usually through tools such as nudges and surge pricing; 3) recording finely-grained data about a wide range of worker behavior, including beyond working hours, to

provide real-time feedback; 4) rating, or gathering user- and peer-generated feedback and using predictive statistics to forecast workers’ future performance; 5) replacing, or even automatically firing underperforming workers by accessing a reserve army of global workers that can be recruited rapidly; and 6) rewarding or using algorithms to recompense workers with opportunities, higher pay and promotions, penalize them, or gamify the work experience. Kellogg et al argue that algorithms’ comprehensiveness, instantaneity, interactivity and opacity, make such mechanisms qualitatively different and more intrusive than traditional forms of management control. Nonetheless, the absence of human supervisors, and flexibility in deciding when, where and how to work simultaneously grants workers more autonomy, leading to what Mazmanian et al (2013\textsuperscript{104}) call the “autonomy paradox”.

The autonomy paradox helps explain contrasting assessments on algorithmic management. Some studies connect algorithmic management to a host of negative effects for workers, including anxiety, isolation, overwork, sleep deprivation, exhaustion, precarity, unsocial, irregular work schedules, and discrimination (Wood et al, 2019; Vallas, 2019\textsuperscript{105}; Vallas and Kovalainen, 2019\textsuperscript{106}; Lee et al, 2015; Schneider and Harknett. 2019\textsuperscript{107}; Kallengert, 2009\textsuperscript{108}; Rosenblat et al, 2017\textsuperscript{109}). However, negative effects coexist

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with more positive ones such as higher levels of flexibility, autonomy, task variety and complexity (McAfee & Brynjolfsson, 2017; Shapiro, 2018; Wood et al, 2019).

A growing literature has also explored the role of algorithms in transforming human resource functions. The technological architecture of platforms has transformed recruitment processes in at least three ways. The first is enabling platforms that do not provide in-person service to recruit from a larger, global workforce (Wood et al, 2019; Kellogg et al, 2020). In addition, algorithms help accelerate recruitment (Valentine et al, 2017; Salehi et al. 2017) via comprehensive skills and personality assessments (Ajunwa & Greene, 2019) or by facilitating the identification of minority workers (Kellogg et al, 2020). Finally, rating platforms such as glassdoor.com or kununu.com, enable firms to disseminate cues about their reputation and reduce information asymmetries to attract candidate applications (Schaarschmidt et al, 2021; Carpentier and Van Hoye, 2020; Carpentier et al, 2019).

Platforms’ algorithms are carefully guarded trade secrets since they are a core competitive advantage (Shapiro, 2018). Workers’ difficulty understanding the rationale behind algorithmic decisions fosters feelings of alienation and loss of control (Shapiro,

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2018; Graham et al, 2017\textsuperscript{117}), which result in lack of trust and motivation, lower productivity and high levels of worker turnover (Tomprou and Lee, 2022\textsuperscript{118}; Bergvall Kareborn and Howcroft, 2014; Howcroft and Bergvall Kareborn, 2019; Lee et al, 2015; Shapiro, 2018). Platforms, especially those that require higher skills levels, may counter these effects by providing an environment that support worker autonomy, flexibility, specialization and autonomy (Jabari et al, 2019\textsuperscript{119}). Alternatively, platforms compensate for these negative effects through their ability to engage new contingents of workers rapidly and exercise the types of pervasive types of control described above. However, such a business model ultimately fuels a vicious circle of distrust, high turnover, and control that should give us pause.

Whereas managers in legacy work settings appraise workers’ performance periodically through subjective, human evaluations, platforms aggregate quantitative and qualitative feedback from internal and external resources to provide feedback in real-time (Kellogg, 2020). Platforms collect a constant stream of finely-grained data about a broad range of worker behavior. For example, platforms that mediate in-person services such as Uber use geolocation positioning to match drivers and customers, collect data on canceled trips, and assess drivers’ quality (Rosenblat and Stark, 2016). Platforms that provide remote services such as Amazon Mechanical Turk and Upwork, track the frequency of workers’ keyboard presses and mouse movements and take shots of workers’ screens to assess speed and productivity (Wood et al, 2019).


In addition to their use of internal data, in a variety of settings platforms utilize online reviews and rating systems by clients and consumers, very often anonymous, based on their idiosyncratic personal opinions, experiences and criteria (Cameron and Rahman 2022; Maffie 2022; Orlikowski and Scott, 2014 to manage and discipline their workers. While management has always tried to enlist consumers, with platforms rating systems, the obstacles to undertaking a rating are far lower and thus may encourage expression.

The result of the enrollment of consumers in managerial functions, and the reliance on opaque algorithms means that there is often no pre-established procedure in place to challenge either a rating or the algorithmic decisions derived because of the rating (Wexler, 2018) As a result, there are less opportunities to appeal for exceptions based on human empathy (Lee et al, 2015). These decision processes may violate notions of procedural justice. For example, to appeal various decisions workers may need to collect their own data, at their expense, in order to challenge platforms (Rosenblat and Stark, 2016).

Not surprisingly, given the power asymmetry and the dependence of the platform on algorithms as management tools, the work processes on the platform are determined by the needs and values of the platform owner. Those whose work process is subject to the platform have little voice and their main response is exit -- a problem that many platforms experience.

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3.3 Social Protection and Labor Rights

Labor law normally assumes an employment relationship in which management has supervision of a set of workers. These relationships are assumed not to be spot-market transactions, but rather have some degree of permanence (Stone, 2006). Of course, on the peripheries of the labor market there are non-standard employment arrangements (independent contractors, temporary and on-call workers, and part-time workers) that have limited or no access to basic employment rights such as social insurance, occupational health and safety protection, antidiscrimination legislation, holiday, family, and medical leave, and low to no collective bargaining rights (Kalleberg, 2018; Shevchuk, 2019). However, this fissured labor market is seen as an aberration that might be remedied by legal or government action. In contrast, for platforms, the relationship to the workers is, by definition, transient as it is designed to only be an anonymous matcher of a consumer and producer.

The platform, by its relationship with its complementors, has no obligations to them (De Groen et al, 2021). This enables platforms to shift the cost and responsibilities for complementor protection, taxes, and administrative costs to the workers themselves or society, as a whole (Cappelli and Keller, 2013). Because they are working “at will”, these workers are extremely vulnerable (Behrendt and Nguyen, 2019). As of 2022, only a minority relies on platform work as their main source of income: While approximately 30 percent of the working population in Europe have done some platform work, only 1.1 percent earned more than half of their income from this type of work (Piasna et al, 2022). But as the

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number of people whose income is generated through a platform increases, governments need to find ways to overcome the labor protection gap or risk increasing levels of societal polarization.

Although there is a broad awareness of this inherent feature (Gawer and Srnicek, 2021; Sieker, 2021; Joyce et al, 2019; Huws, 2017; Prassl and Risak, 2017; Forde et al, 2017), the literature on social protection for platform work is still in its infancy. As we saw, even defining the scope of platform labor is difficult due to the remarkable variety of value-creating activities underway and the diversity among the value creators. For these reasons, most contributions provide a general overview of the problems, but usually these are limited to one of our categories of platform work. Not surprisingly, few conceptualize the range of options available, and there is little comparative research into the motivations and the political underpinnings of different policy approaches or their effects.

Some authors (de Stefano, 2016; Joyce et al, 2019), see platform work as a manifestation of broader trends toward the casualization of work and the demutualization of risks. Joyce et al (2019) build on this assessment to argue that issues related to the social protection gap among platform workers would be best addressed through measures that tackle problems of insecure work more broadly, but he fails to make specific suggestions.

Among those who see platform work as an area that requires targeted policy responses, Prassl and Risak, (2017) suggest four different, complementary approaches:

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128 Sieker, F. 2021. Platform work and access to social protection across major European countries. Hertie School of Governance.
redefining the concept of an employer based on the actual functions that platforms exercise, redefining the concept of an employee based on the level of economic dependency of the worker, creating an intermediary category between employee and self-employed, or equating platform work to existing figures that regulate three-party employment relationships such as temporary agency work. The first two options underline the fact that definitions of workers and employers differ across legislations, making it difficult to make generalizations (Forde et al., 2017). Critics of the third option point out that intermediate categories could still differ across legislations, creating gray zones that lead to increases in arbitrage and litigation (De Stefano, 2016).

Sieker (2021) proposes bridging the labor protection gap by integrating platform work into existing industrial relations systems and reclassifying platform workers as employees. He argues that legislations that already provide high levels of protection to non-permanent workers would likely opt for the first, while those on the opposite end of the spectrum would prefer the second. Interestingly, the recently proposed EU Directive on Improving Working Conditions in Platform Work, appears to validate the second of these approaches by proposing a framework to address the “misclassification” of platform workers based the principle of the primacy of facts and the contestable presumption that there exists an employment relationship.

3.3 Skills demands and career prospects

The study of platform work skills is still in its infancy. Empirical studies have concentrated on a narrow set of platforms such as Amazon Mechanical Turk and Upwork that broker the delivery of online services (CEDEFOP, 2020, 2021). By contrast, skills in

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the context of in-person services, platform vendors, and content creators have been rarely discussed, or only in the context of workers’ ability to game the algorithm (Shapiro, 2018; Rosenblat and Stark, 2016; Wood et al, 2018).

The literature’s concentration on only a narrow set of platforms is particularly constraining when it comes to understanding platform skills because these vary dramatically depending on the type of work performed. For instance, Upwork workers tend to have complex cognitive (formal) skills in areas such as foreign languages and translation, legal advice, or software and technology development (CEDEFOP, 2020133). By contrast, Uber drivers require little more than a driver’s license and a certain level of digital literacy (Rosenblat and Stark, 2016). The need for non-cognitive skills, or capabilities that do not rely on structured learning processes (Wagner, 2014134), such as communication, learning to learn, adaptability, agility, absorbing knowledge fast, creativity, curiosity, and imagination, also vary drastically for different types of platform work (CEDEFOP 2021135).

These variations are important because they translate into important differences in terms of the frequency, costs, and pathways workers pursue to develop their skills (CEDEFOP, 2020). Complex cognitive skills such as software development, require significant analytical capacity, they take time to develop, usually through formal, structured educational programs, and they evolve quickly, requiring a constant investment in updates. By contrast, less complex cognitive skills such as driving, or conducting simple, routine tasks such as those required for Amazon Turk workers, necessitate some

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but not much prior formal training or regular updating, and non-cognitive skills such as communication, or raising one’s profile on a platform are often learnt through experience (FEDEFOP, 2021).

Despite these differences, there are three important aspects of the context for skill development that are both common across types of platform work and different from work in conventional settings. First, while employers normally provide training that enable employees to maintain their skills, platforms do not assume responsibility for their workers’ learning and skill development (Margaryan, 2019136). Some scholars argue that individualized training practices may lead to lower skills levels and lack of worker autonomy across the workforces of advanced economies (Fleming, 2017137). However, recent empirical analyses (CEDEFOP, 2020, 2021) show that platform workers are regularly involved in skill development, although they focus on just-in-time skill development rather than formal, longer-duration educational programs associated with the development of overarching skills, such as critical thinking, and they favor informal and often free learning resources such as online communities, feedback from clients, or YouTube videos (CEDEFOP, 2020). As the share of platform work over total work continues to grow, the impact of these over the overall skills of national workforces will need to be explored although the overall effect is uncertain because is not uncommon for platform workers to have some form of tertiary education (ILO, 2021; de Groen et al, 2021), or to pursue a university degree while engaged in platform work (Wood et al, 2018).

While platforms do not assume responsibility for skill development, they do provide signals to workers as to the types of skills that are in higher demand. For instance, Upwork publishes periodical lists of top skills on their website. Platforms also facilitate skill development through certification programs, or by connecting experienced workers with others who seek to develop their skills (CEDEFOP, 2021). Kässi and Lehdonvirta (2019) find that these certifications may not necessarily contribute to cognitive skill development, but they help workers without established reputations validate their competences.

A second important contextual aspect is the substitution of human managers for algorithms (Lee et al, 2015). The absence of formal, human appraisal procedures, the opacity of algorithmic rating weighing (Rosenblat and Stark, 2016; Shapiro, 2018; Kellogg, 2020), and the volatility and contradictions inherent to customer ratings based on personal views (Orlikowski and Scott, 2014), mean that whereas platforms gather a stream of live data about workers and their performance, such data does not necessarily translate into actionable information for skill development. Instead, workers are forced to self-regulate, that is, to develop their own strategic career goals, identify skills gaps and create plans to develop them and evaluate their achievements (Zimmerman and Kitsantas, 2005). This, by itself, involves a combination of non-cognitive skills, such as self-reflection, strategic planning, and self-management, that are inherently hard to develop.

Algorithmic management has been linked to negative effects on workers’ motivation (Tomprou and Lee, 2022; Lee et al, 2015), short-term thinking (CEDEFOP, 2021), and high levels of employee turnover (Rosenblat and Stark, 2016). Exploring the connection

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between algorithmic management and workers’ ability to develop long-term career
enhancing strategies could be a fruitful line of inquiry. As platform work continues to
grow, the ability of workers to develop and implement long-term career plans for
themselves will be critical in assessing the quality of platform work.

Finally, the recognition of workers’ skills, experience and reputations are connected
to the individual platforms for which they work. As workers seek to operate across
platforms, or move up toward more specialized types of work, including offline work,
skills portability becomes an important issue. CEDEFOP (2020) identifies four main
barriers to skills portability: platforms’ lack of incentives, the absence of broadly
accepted skills standards, technical challenges that would require data sharing across
platforms and ambiguity in existing data protection regulation. Research into the types of
skills that might be useful for platform workers will be necessary prior to the introduction
of policies aimed at skill development.

In respect to platform-organized markets, skills will be sectoral and it seems unlikely
that formal training will provide significant advantage. For some genres of platform work,
skills and their portability take on entirely new meanings. For a ride sharing driver, skill
portability seems fairly simple and may be reduced to learning how to manage and game
the algorithms. In other cases, significant skills may be developed. For example,
successful influencers or platform-based sellers may manage multiple platforms and
entire staffs of contractors or even employees.

The notion of skill formation has typically been conceptualized as a function of
formal training or, at least, apprenticeships through which a set of skills that match a
fairly stable market are created. However, because the platform itself is constantly
endeavoring to absorb more of the entire value in the transaction it intermediates, those
skills may be transient. To illustrate, until quite recently, Uber pursued autonomous
vehicles in the hopes of disintermediating drivers. Similarly, initially Amazon sellers did their own fulfillment. However, when Amazon introduced its fulfillment services, it also discouraged Marketplace sellers from self-fulfillment. Thus, the skills developed by sellers were made obsolete. In such dynamic environments, the most general skill of an ability to adapt to changes may be of greatest importance.

Career formation for platform work varies markedly depending on the type of work performed. However, it should be stipulated, beyond the benefits of longevity as a possible incentive to the buyer, platforms provide little additional compensation to long time users. In ridesharing, to speak of a career is almost meaningless. There is no advantage to seniority or learning. For influencers and sellers, career formation is possible. In the sense, that success can create viable businesses that may be long-term.

4. Conclusion

The rise and maturation of the platform economy has brought new forms of work, reorganized existing work, and changed the activities involved. Little wonder that assessment of the impact of platforms on work remains uncertain. Indeed, the labels themselves are tossed up in the air, raising the question of what we call work, who is a worker, and how we measure and count workers. Policy makers, as a consequence, will face the challenge of formulating, and reformulating the targets and the categories of their policies as they seek to adapt modern social protections and labor market regulations to this new era.

The increasing intermediation of platforms into all types of industries makes them become ever more important to large sectors of the economy, posing problems for policy makers and firms. Consider as we conclude, two examples. First, Uber began a discussion of sharing and gig work. Analysts started looking at gig workers and counted Uber drivers. But if Uber drivers are not employees, a legal designation, should we count them as workers? Or,
in fact, if they are contractors, are the simply “petite bourgeois”? As important, the objective of the work does not change, but the rules and the work process have changed -- an Uber driver does not need to know the city, they just follow the computer-generated instructions. As we argued here, the debate about categories matters precisely because different rules apply to the several categories—employees, contractors and gig workers, independent entrepreneurs are all labels we apply to those doing work in, on, and around platforms. A second perspective is provided by businesses formed in the pre-platform era that now find themselves intermediated with their customers through a platform. As Steve Barley (2015) showed us, the work of the car salesman has changed profoundly and requires new skills. Or, for example, already prior to the Covid-19 pandemic, restaurants were becoming dependent upon platform rating firms such as Yelp and Google Reviews -- to secure customers, even those specifically searching for their restaurant, had to purchase advertisements to preempt potential competitors. With the pandemic, restaurants became dependent upon the delivery platforms that were able to charge extortionate rates even as they were able to redirect customers to competitors including ghost kitchens (Kenney et al. 2022). This illustrates the increasing ambit of these platform firms and the subtle ways that they transform competition and work in existing industries.

The previous concentration by policy-makers and researchers on ride-sharing and other types of platform-mediated, in-person and remote service provision when discussing labor effects has given way to an understanding that platform-mediated sales and content creation are likely to be incredibly impactful, in economic terms, as entire industries and the work and workers in them are reconfigured. Thus, the effects of decisions made regarding competition or even regulatory decisions about the legality of certain terms and conditions in contracts between the platform and its users can have significant implications on the conditions under which complementors work and earn income.
If one accepts that platforms are a new institutional form through which what Pfeiffer (2022) terms “distribution” operates and that this is likely irreversible suggests that the categories or “mental models” of employment and jobs, derived from the past, may no longer describe the arrangements by which an increasing number of people secure income. We are not suggesting that traditional employment will disappear, as the platform firms themselves have regular employees, merely that an increasing proportion of all transactions will be done over platforms. This will have a profound effect upon the conditions for work and how labor is organized and motivated. Self-exploitation in terms of working hours and conditions may be exacerbated and even become the norm as management is increasingly algorithm driven and these drive the work pace in an environment of mass surveillance that realizes Bentham’s vision of a panopticon.

As this critical review has shown, the continuing subsumption of work as an activity and labor as a process, into a world dominated by platforms and algorithmic management is a vital topic for labor and management scholars.

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