



Digital platforms at work. Champagne or cocktail of risks?

Ilsøe, Anna; Larsen, Trine Pernille

Published in:
The Impact of the Sharing Economy on Business and Society

DOI:
[10.4324/9780429293207](https://doi.org/10.4324/9780429293207)

Publication date:
2020

Document version
Publisher's PDF, also known as Version of record

Citation for published version (APA):
Ilsøe, A., & Larsen, T. P. (2020). Digital platforms at work. Champagne or cocktail of risks? In A. Strømmen-Bakhtiar, & E. Vinogradov (Eds.), *The Impact of the Sharing Economy on Business and Society: Digital Transformation and the Rise of Platform Businesses* (pp. 1-20). London: Routledge.
<https://doi.org/10.4324/9780429293207>

The Impact of the Sharing Economy on Business and Society

The emergence of new platform business models, notably the sharing economy, is impacting the economy in various ways, altering the structure of many industries, and raising a number of economic and political issues.

This book investigates the widespread influence of the sharing economy on businesses and society, as well as examining its underpinning economic principles and development. This volume presents an exhaustive review of the existing knowledge on the sharing economy and addresses several major areas of concern for incumbent businesses. It also explains the business models for those who are interested in embarking on their own ventures and provides an excellent source for further research. It takes an in-depth look at controversial labour policies, such as using labour as self-employed contractors or using regulatory grey areas to expand in markets. It is highly multidisciplinary, establishing links between economics, finance, marketing and consumer behaviour. This contribution on the sharing economy will enable researchers and graduate and doctoral students to expand and improve their understanding of this topic and identify new research problems in all of these areas.

The book will also appeal to policy makers, regional and local government decision makers, and those interested in labour markets transformation

Abbas Strømmen-Bakhtiar is Professor of Strategy and Technology at the Graduate School of Business, Nord University, Norway. His field of interest includes, but is not limited to, Digital Economy, Sharing Economy, Cloud Computing, Technology Management and Strategic Management. His most recent work is the book *Introduction to Digital Transformation and Its Impact on Society*.

Evgueni Vinogradov is a Senior Researcher at Nordland Research Institute, Bodo, Norway. His fields of interest include, among other areas, entrepreneurship and company establishment. He has broad experience from evaluations of business-oriented instruments and regional and industrial policy measures in Norway.

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The Impact of the Sharing Economy on Business and Society

Digital Transformation and the Rise of
Platform Businesses

**Abbas Strømme-Bakhtiar and
Evgueni Vinogradov**

First published 2020
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN
and by Routledge
52 Vanderbilt Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

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British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

A catalog record has been requested for this book

ISBN: 978-0-367-26428-4 (hbk)

ISBN: 978-0-429-29320-7 (ebk)

Typeset in Bembo
by Swales & Willis, Exeter, Devon, UK

Dedicated to my wife Bente for her love and support
Abbas Strømmen-Bakhtiar

For my beloved wife Irina, who is so caring and supportive
Evgueni Vinogradov



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Preface

Access economy, peer economy, collaborative consumption, hippienomics, on demand economy, collaborative economy, gig economy, people economy, enabling economy, and empowering economy are some of the synonyms used for the often mentioned 'sharing economy'. But, 'sharing economy' is a misnomer, real sharing is one of the most important ingredients in the glue that holds societies together; hence, sharing has been with us for as long as human societies have existed. Indeed, we don't notice how our daily lives are full of small acts of sharing. In our homes, we share everything with our spouses and children except the toothbrush and some very personal items. We are also very generous towards our friends. They can borrow items, such as our tools, car, our cabin and other items. Then, it is our neighbours that can borrow items that they may need. Next, we have the constant sharing of roads, busses, schools, hospitals, parks and other public places. In addition, we freely give advice and inform others (sharing information), without expecting anything in return. In all these acts of sharing we seldom think about profit. Indeed, it is profit that changes the act of sharing into an economic exchange, rational and impersonal.

Throughout the ages, items such as rooms, horses, cars, construction equipment, and anything else of significant value were rented out for a price. The value of the object, the cost of finding a customer, finalising a contract and the ease of enforcing the said contract, determined the duration of the rental agreement and/or the price of service provided. There was also the critical issue of trust. In large physical markets, it is difficult to ascertain the trustworthiness of a stranger that one is entering into an economic transaction with. Only repeated dealings and proper enquiry can reduce the risk. The costs of all these activities or the "transaction costs" were high enough to influence the minimum rental period or the minimum cost of the services provided.

With the advent of the Internet and advances in communication, location, payment and Web technologies (Web 2.0), transaction costs were dramatically reduced, allowing for shorter contract time, and more innovative services. Many of the transactions are now provided by what is called a digital platform. Through these platforms, people can book flights, find taxis, book hotels, buy and sell shares and conduct a myriad of other economic transactions.

These platforms perform three key roles: provide an open, plug-and-play infrastructure, make available a secure transaction mechanism and provide a reputation system that many claim solves the problem of screening so that strangers can comfortably interact with each other. According to Simon (2011, Kindle Location 773) “the platform is becoming one of the most important business models of the new millennium – and with good reason. Buoyed by the success of Amazon, Apple, Facebook and Google, many exciting new companies are hitching their wagons on the platform” (see Figure 0.1).

We can say that the advent of the digital platform made the sharing economy possible. This is quite evident in the many definitions provided by organizations and scholars. For example, in their book *What's Mine Is Yours: The Rise of Collaborative Consumption*, Botsman and Rogers (2010, sec. Kindle locations 159–160) mix the traditional sharing with the rental/service platform business model. They define the collaborative consumption as “traditional sharing, bartering, lending, trading, renting, gifting and swapping, redefined through technology and peer communities”.

A more precise definition is provided by the Department of Management and e-Government of the Norwegian Ministry of Local Government and Regional Development (CMD), which defines sharing economy as “Coupling between individuals and/or legal entities through digital platforms that facilitate the provision of services and/or sharing of assets/property, resources, expertise or capital without transferring ownership rights” (*Kartlegging av delingsøkonomien i Norge*, 2016). In other words, sharing economy is a digital platform-based business model. These platforms have dramatically reduced the transaction costs, which in turn have opened the door to a world of innovations. This paper presents some of these innovations and their effects on the markets.

Chapter 1 explores the profitability of businesses using digital platforms. The results of the analysis demonstrate that the scope and size of income generated via digital platforms remains limited and online income is typically a supplement rather than the main income source. In addition, the findings also make a linkage between education, income and social status with the type of activities pursued on these platforms. For example, while highly educated persons with high incomes are active on capital platforms like Airbnb, the low-skilled workers, migrants, unemployed and young people are attracted to labour platforms such as Uber.

Chapter 2 examines three archetypes of financial sharing economy business models: the active investment in an idea; the banking clone and the hybrid. Activities, their linkages and who performs them vary with these archetypes, while the trustee and trust-facilitating activities also vary among them, making users, their ideas, or the platform the essential carrier of trust-establishing activities. The more trust, relying on the user, the more affective it is and the more limited is the spread of providers. This partially explains the success and failure of financial sharing economy operations.

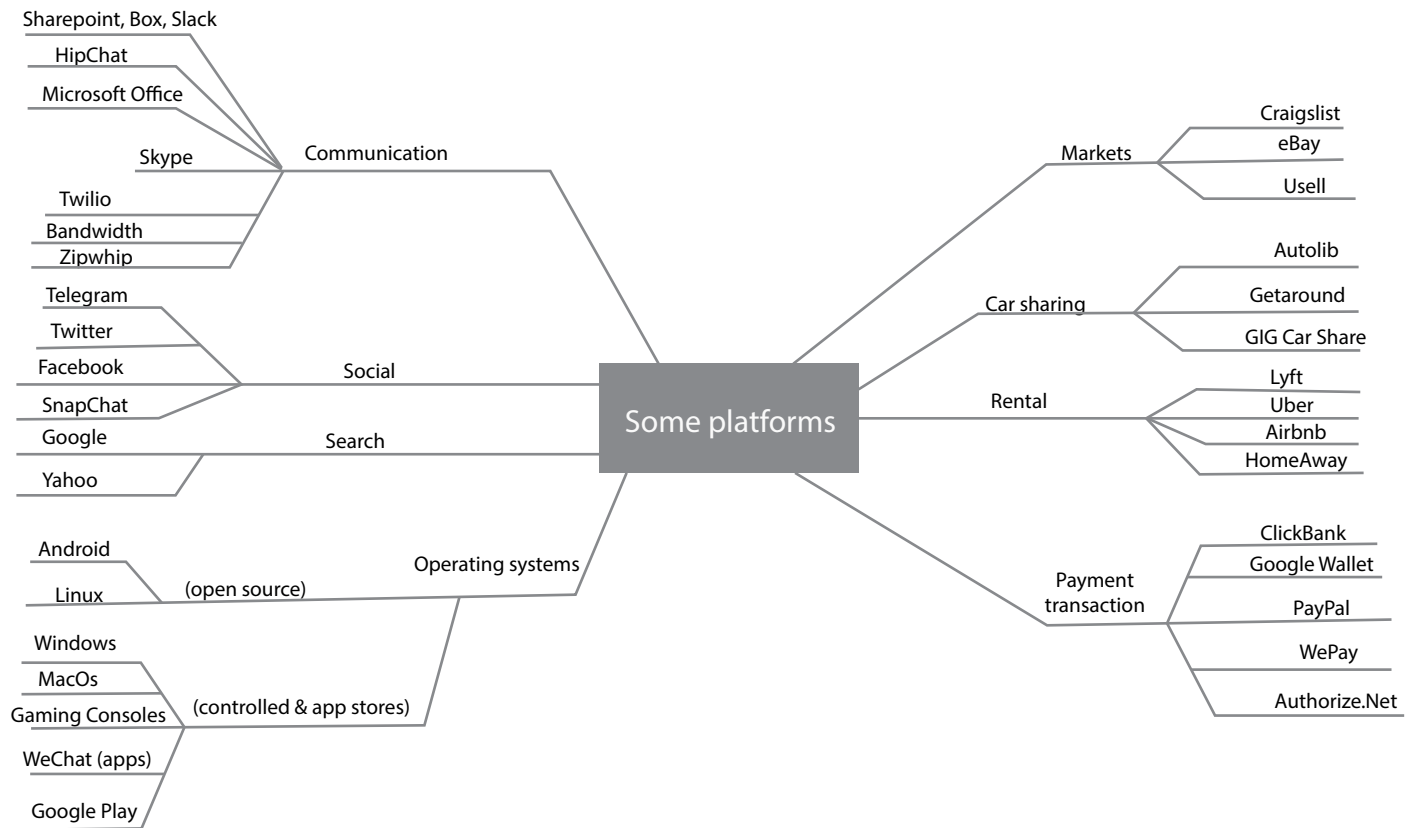


Figure 0.1 Some examples of platform models employed.

Chapter 3 examines the subject of Mobility as a Service (MaaS) as a new phenomenon of the sharing economy in transport services. The idea revolves around the meta-platform that integrates different platform solutions, like taxis, trains, buses, boats, ferries, and bike-sharing, into one platform. In such a meta-platform or alliance, trust, control and risk reduction are major issues that are examined and considered.

Chapter 4 looks at the effects of the increasing Airbnb activities on Norwegian house and rental prices. The adverse effects of Airbnb and other online marketplace and hospitality service brokerages on local rental conditions have been observed in many countries such as Germany, United Kingdom, Spain and others. This chapter concludes that if Airbnb expands at even half of its current rate of expansion, in a few years major Norwegian cities such as Oslo, Bergen, Trondheim and Tromsø will face a shortage of rental accommodation for their local populations.

Chapter 5 describes the sharing economy as a distinct type of digital entrepreneurship and gives first insights into its impact on regional economic development, which represents a hitherto unexplored topic. Using Airbnb rental data for the touristic destination of Østfold, a peripheral region of south-eastern Norway, this chapter describes digital entrepreneurship in the sharing economy as an alternative to traditional accommodation services and link its growth to regional employment and unemployment. Furthermore, the analysis indicates that the growth of these digital entrepreneurs in the region is driven by opportunity rather than necessity.

Chapter 6 looks into how the sharing economy has found its way into the offshore logistics operations in the ice-infested waters of the Barents Sea. This chapter shows how the sharing economy principles enable a number of value-creating activities in offshore logistics and create a shared value of collaborative resource utilization for local industries. It is further shown that some sharing economy principles can have trade-offs for allocation of transport resources in an optimal way to be able to respond quickly to any possible emergencies in hostile environments like the Arctic region.

Abbas Strømme-Bakhtiar and Evgueni Vinogradov



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1 Digital platforms at work

Champagne or cocktail of risks?

Anna Ilsøe and Trine Pernille Larsen

Introduction

Digital platforms such as Uber and Airbnb that facilitate the purchase and sale of services are an emerging phenomenon across the Western world and allow citizens to accrue income online. Since 2010, their effect on Western economies has attracted increasing academic and political attention (Collier et al. 2017). The debates emphasise, among other things, the implications of digital platforms for an individual's wage and working conditions (Wood et al. 2019) and national industrial relations (IR) models (Degryse 2017). Digital platforms are argued to change the employment relationship (De Groen and Maselli 2016), ease circumvention of labour standards (Goods et al. 2019), lead to unfair competition (Söderqvist 2017) and contribute to increased inequality (Schor 2016). Less researched are the potential linkages between distinct types of digital platform services and the levels of labour precariousness across and within Western economies.

This paper offers a novel perspective on the scope of digital platform economies and the dynamics between the institutional framework and the individual's exposure to precariousness when active on distinct digital platforms, even in densely regulated labour markets like Denmark. Denmark is well known for its universal welfare protection and strong IR-institutions that seemingly cushion individual's risks of in-work poverty, earnings inequalities and high job insecurities (Campbell and Price 2016). Thus, Denmark represents a critical case for examining the interlinkages between digital platforms and risks of precariousness, as institutions are in place to balance out potential labour market inequalities.

Our main research questions are: what is the scope of the digital platform economy; are distinct digital platforms associated with different levels of precariousness; and, if so, why. Our focal point is the individual's income generated via digital platforms and to what extent the low levels of protection on platforms are buffered by the wider institutional setting. The latter is defined here as employment and social protection provided to the individual through, for example, other jobs, the IR-system and the welfare state in terms of collectively agreed wages, statutory social assistance and unemployment benefits.

To address these questions, we draw on the first large-scale randomised survey on digital platforms in Denmark. Theoretically, we have sought inspiration from Thelen and Weidemann (2018). We infer that, although digital platforms have become more widespread, they are not necessarily accompanied by rising levels of precariousness, even if such online activities often operate outside the framework of most countries' labour laws and collective agreements. We argue that the risks of precariousness depend on how the wider institutional framework for social and employment protection, in combination with the individual, are able to mitigate the risks of operating in a non-regulated online market. In this context, we distinguish between two types of digital platforms: *labour platforms*, defined as digital intermediaries providing purchase and sale of typically labour-intensive services such as Uber; and *capital platforms*, which facilitate and provide rental of private property like Airbnb.

These two types of digital platforms are both expected to be associated with risks of precariousness, but at different levels due to the combined effects of a weak regulatory framework offering low levels of social protection and the differing characteristics of individuals accruing income from capital and labour platforms (Grimshaw et al. 2016; Rubery et al. 2018; Wood et al. 2019). Access to capital platforms is typically related to private ownership, whilst other dynamics like educational attainments and skill levels are assumed to apply to labour platforms (Healy et al. 2017). These differences are expected to influence individuals' exposure to precariousness, especially as their individual characteristics indicate their ability to compensate for the low levels of social and employment protection dominating capital and labour platforms.

This article is divided into five sections. First, we briefly discuss distinct forms of digital platforms. We then develop an analytical framework by reviewing the literature on digital labour, atypical and precarious employment. After this, the methods and data set used are presented, followed by our analysis. Finally, we discuss our findings.

Introducing the concepts of capital and labour platforms

There have been many concepts at play with regard to digital platforms. The European Commission (2016) has used the concept 'collaborative economy', whereas Danish unions prefer the concept of the 'platform economy' (LO 2016). A widely used concept is the 'sharing economy', which is often used in relation to distinct types of platforms where sharing, including exchange, rotation and fundraising take place (Schor 2016).

There is ample research that utilises various categories of digital platforms to capture the plethora of activities involved (Howcroft and Bregvall-Kåreborn 2019: 25). Such categories often include both narrow and wide definitions of digital platforms. Fuchs and Sevignani (2013) operate with one of the widest definitions, including paid and unpaid virtual work as well as

users, providers and founders of digital platforms. We use a rather narrow definition and focus solely on the providers, i.e., those who accrue income through the digital platforms. We thereby omit the customers and founders, mainly because our aim is to gain insights into whether distinct digital platforms entail different exposure to risks of precariousness. Furthermore, we distinguish between two main types of digital platforms, while recognising that other studies operate with different categories and classifications.

The two main types of digital platforms used here are: 1) *capital platforms* that facilitate rentals of private property or belongings like Airbnb; and 2) *labour platforms* that facilitate the purchase and sale of typically labour intensive services like Uber (Farrell and Greig 2016; Schor and Attwood-Charles 2017). Other research also uses such categorisations, but tend to use them to illuminate common features associated with online activities rather than to explore the potential linkages between distinct platforms and the levels of precariousness, which is our paper's empirical focus (Howcroft and Bregvall-Kåreborn 2019: 25). The more specific characteristics of Danish labour and capital platforms are described in the analysis since the specifics of platforms typically vary depending on the national context including the regulations applicable to distinct platforms.

One of the challenges when investigating the size of income generated via digital platforms is to decide, which types of websites and apps fall within and outside these categories. With regard to labour platforms, we include platforms that facilitate work tasks – either as gigs (small tasks in the physical world) or as crowd work (small tasks done on the computer) (De Stefano 2016; Schmidt 2017). We have adopted a relatively narrow definition of capital platforms, which omits websites that facilitate buying and selling of used goods in our study. We are aware that this definition may result in our figures being more conservative compared to other studies like Farrell and Greig (2016). The reason for this choice is that we want to uncover whether and, if so how, digital platforms contribute to securing an ongoing income for individuals rather than an occasional sale of used belongings.

Digital platforms and risks of precariousness

Digital platforms are often considered to be yet another form of non-standard employment that exerts a downward pressure on wages, entails unfair competition and increases the risks of precarious employment in terms of poor job quality, lack of voice and high employment insecurities (Berg 2016; Goods et al. 2019). Such studies rarely distinguish between different digital platforms and their levels of precariousness and thus face similar criticism to much of the literature on atypical work. The latter research often overlooks the fact that a full-time permanent position is no guarantee against precariousness, whilst atypical work does not necessarily equal precariousness (Keune and Pedaci 2019: 2). However, strong links appear to exist between atypical work and precarious employment, although the risks of precariousness typically

assume a different shape depending on the type of non-standard employment, where the welfare settlement and national IR-systems seem to play a part in cushioning the associated risks of precariousness (Campbell and Price 2016).

The dynamics between the institutional framework and the individual's exposure to precariousness when active on distinct digital platforms are less researched than other forms of non-standard employment (Schor and Attwood-Charles 2017). To encounter these shortcomings, we have sought inspiration from other streams of research on precarious and non-standard employment. Such studies typically emphasise different mechanisms fostering the recent rise in precarious employment (Emmenegger et al. 2012; Doellgast et al. 2018). They point, for example, to the changing landscape of industrial relations, with declining union densities, shrinking collective agreement coverage along with welfare retrenchment and labour market reforms that increasingly tie social benefits to employment status and collective agreements (Palier and Thelen 2010; Kalleberg and Vallas 2018: 5). The implications of these developments are argued to be a shift from collective mitigated risks by means of welfare and IR-settlements, towards increased individualised risks due to eroding employment and social protection (Kalleberg and Vallas 2018: 5). The regulatory setting with regard to digital platforms – especially labour platforms – is assumed to only fuel this development since digital platforms often redefine the traditional notion of employers and workers and facilitate solo self-employment. Thus, platforms abrogate the traditional employer responsibility of shouldering the costs of employee protection with resultant increased individualised risks of precariousness (Palier 2018). Much welfare and IR-literature stresses the pivotal role of the established system in striking new balances between flexibility and security to mitigate the gaps in protection emerging within the IR-settings and welfare arrangements following the growth in atypical work, including digital platforms (Grimshaw et al. 2016). To explore the scope of digital platforms and the potential linkages between distinct digital platforms and precariousness, we have sought inspiration from the work by Thelen (2019), Thelen and Weidemann (2018), although we only draw on selected aspects of their concepts. We choose this literature due to their notion that both the institutional framework for employment and social protection in combination with individual characteristics such as age, gender, ethnicity, educational attainment and employment prove critical to counteract or multiply precariousness. This will allow us to ascertain whether some digital platforms involve greater risks of precariousness than others, and how the institutional framework for social and employment protection in combination with the individual are able to mitigate the risks of operating in a less-regulated digital market.

Collective and individual risk protection

Thelen and Weidemann (2018) operate with two dimensions of risk – collective and individualised risk protection – and argue that they are pivotal to individuals' exposure to precariousness. *Collective risk protection* is concerned with how and to what degree established welfare and labour market institutions

provide a safety net to mitigate risks of precariousness through social and employment protection. Here, we only consider employment and social protection provided by the IR-system and welfare state in terms of collective agreed minimum wages, statutory unemployment benefits and social assistance, while recognising that other forms of social protection like private insurances, health care etc., also buffer individuals from the low protection offered on digital platforms. *Individualised risk protection* is concerned with the individual's own resources and thus their ability to limit their risk exposure by securing other viable means of funding such as holding other jobs and having savings. The individual's characteristics such as age, ethnicity, gender, educational attainments and employment records prove pivotal to securing alternative avenues against precariousness (ibid.). Although collective and individualised risk protection are independent arrangements with different origins, they mutually reinforce one another by, in some instances, limiting or increasing individuals' exposure to precariousness depending on the institutional framework and the individual's characteristics. High levels of collective risk protection can compensate low levels of individualised risk protection and vice versa. However, the combined effects of low levels of collective and individualised risk protection may also increase risks of precariousness (ibid.). Therefore, risks of precariousness are expected to assume different forms across distinct types of non-standard employment, countries and institutional settings.

Applying the concepts of individualised and collective risk protection to our notion of two distinct digital platforms (i.e. labour and capital platforms), we expect that the activities taking place via these platforms will be associated with different levels of precariousness. Both the regulation of capital and labour platforms, including wage-setting and working conditions, is often left to market forces, since the traditional safety net of labour laws and collective agreements is limited, if not non-existent (Aleksynska et al. 2018). Therefore, digital platforms typically offer low levels of collective risk protection, leaving employment and social protection to be shouldered by the individual or the wider regulatory framework for social protection (Schor and Attwood-Charles 2017). We expect that the characteristics of individuals active on capital and labour platforms, and thus their level of individual risk protection, will differ, since distinct dynamics apply depending on the particular exchange of services.

Labour platforms entail that individuals in their capacity as labourers will accrue income by providing and selling their skills and services via the platform through various assignments. The possibility of offering small amounts of services in a highly flexible online setting may allow for new income opportunities for individuals with restricted working capabilities, or struggling entering the traditional job market (Healy et al. 2017). Therefore, we expect that low-skilled workers, women, migrants and young people will be overrepresented on labour platforms since studies on atypical work finds that these groups are particularly at risk of precariousness (Rubery et al. 2018). Such groups often work on the edges of the labour market or in less regulated sectors, where atypical work also tends to be widespread (Grimshaw et al. 2016).

Capital platforms operate in a different way, where income arises from commodifying private property exchanges by leasing private cars, houses or apartments via the platform. Thus, access to capital platforms seems implicitly conditioned by individuals' holding properties – rentals or acquired private property – to lease via the platform. The ability to acquire and then lease private property requires a relatively secure source of income gained through stable employment or by other viable means. Therefore, individuals active on capital platforms may hold stronger positions within the traditional labour market than their peers on labour platforms, where low entry barriers may ease integration of marginalised groups into the labour market (Healy et al. 2017).

The assumed differences in the characteristics of individuals active on capital and labour platforms are expected to influence their exposure to precariousness. We posit that low levels of precariousness will be found on capital platforms: individuals engaged in such online activities will, in their capacity as property owners and/or (often) secure employees in the traditional labour market, have other means to compensate for the weak regulatory framework characterizing capital platforms. Their high level of individual risk protection is expected to shelter them against the online risks of precariousness. The wider institutional framework for employment and social protection may also add another layer of protection, particularly if the capital platform providers combine their online activities with jobs in the traditional labour market. In such instances, online income is mainly a top-up for existing income sources and can be considered a pleasant, but unnecessary luxury like champagne.

The situation is expected to be somewhat different on labour platforms, where risks of precariousness are assumed to be more common due to the combined effects of the individual characteristics of platform workers and the weak regulatory framework for wage and working conditions. Their low levels of individual risk protection may only increase their risks of precariousness, especially if the wider regulatory setting for employment and social protection also fails to compensate for the gaps in protection on digital platforms. Therefore, labour platforms may involve a cocktail of risks, whilst the implications seem less severe on capital platforms due to individual's ability to compensate for the lack of social protection characterizing platforms through other viable means.

The developed analytical framework is used to study the scope of digital platforms and individuals' exposure to precariousness on distinct platforms. Such an analysis may also contribute to the further development of the models by Thelen and Weidemann (2018) into analytical tools when applying those models to forms of non-standard employment other than those for which their models were initially developed.

Methods and used data

To examine the scope of digital platforms, including the potential ties between distinct online activities and individuals' risks of precariousness, we

draw on a large-scale survey involving 18,000 randomly selected Danish citizens aged 15–74 years, conducted as part of the Danish Labour Force Survey 2017. We thereby offer a novel cross-sectoral platform perspective in an emerging field, where most research either tends to focus on certain sectors or single case studies (Howcroft and Bregvall-Kåreborn 2019).

The Danish Labour Force Survey is conducted quarterly by Statistics Denmark and is based on a random sample of the population,¹ who are interviewed, using a combination of web survey and phone interviews. The quality and size of the Danish Labour Force Survey gives us access to solid figures on the scope of digital platforms, which are a growing, but still limited, phenomenon. The standard survey also includes many relevant questions on demographics to which we added three questions on digital platforms. We asked the respondents, if they had accrued income by performing tasks found via digital platforms during the last 12 months. We also asked, if they had had income by leasing their property via digital platforms during the past 12 months. The third question addressed the level of income generated via digital platforms. Prior to data collection, we conducted a pilot test and adjusted the wording of the questions. The survey was conducted during the first quarter of 2017 and received responses from 18,043 Danes, corresponding to a response rate of 54 percent.

The data generated as part of the Danish Labour Force Survey was used to examine the potential linkages between distinct types of digital platforms and risks of precariousness, using descriptive statistics and regression analysis. We used the following dependent and independent variables in our analysis.

- *Dependent variables*: income via labour platforms, income via capital platforms, total income from platforms.
- *Independent variables*²: gender, age, ethnicity, education, employment status, total income of employed citizens.

Our analytical strategy was twofold: Firstly, we examined how digital platforms are regulated in Denmark (based on desk research) and mapped the share of Danes with incomes from the two types of digital platforms, along with the related income levels from such sources (descriptive statistics). Secondly, we examined the profile of platform providers (their labour market status, demographic characteristics) and thus sought to answer our main research question of whether distinct digital platforms involve greater risks of precariousness than others (regression analysis). The latter analysis includes two binary regressions (using linear probability models): one examining the correlation between an individual's likelihood of accruing income via a labour platform and their individual characteristics; and a second regression analysis on the characteristics of people who have accrued income via a capital platform.

Analysis

Digital platforms and the Danish labour market

The first digital platforms arrived in Denmark in the 2000s. The first capital platform was a Danish-owned car-pooling service (GoMore), which was launched in 2005 and later developed into a site for private car rentals. Labour platforms came a few years after the first capital platforms. Uber launched its Uber Pop service in Denmark in 2014, but ceased their services again in April 2017. Throughout 2015 and 2016 different Danish-owned labour platforms emerged, especially within the field of cleaning (for instance Happy Helper and Hilfr). There has been considerable debate in the media and among Danish politicians and social partners, as to how to perceive and regulate digital platforms. Recent court rulings have contributed to clarifying matters.

Capital platforms are by definition not part of the labour market, as income from rentals through platforms is considered to be a capital return according to Danish law (Ilsoe and Madsen 2018). Nevertheless, income via capital platforms may still affect individual's behaviour, not least regarding risks of precariousness since activity on a capital platform, in principle, is related to private ownership. Debates on capital platforms have centered on the lack of tax payments on income accrued via the platforms, and Danish tax authorities, among others, have produced a number of guidelines on how to correctly report private income via capital platforms.³ In Spring 2018, the Danish government signed an agreement with Airbnb that granted higher thresholds for tax-free income via the platform on condition that all income accrued via the Airbnb platform is automatically reported to the Danish tax authorities. However, the agreement has not been implemented yet.

Labour platforms are considered as part of the Danish labour market. Therefore, income generated via labour platforms is subject to income taxation. Labour platforms typically operate by allowing larger or smaller bids of particular tasks to be performed by individuals who are not employed by the platform, and thus not considered to be workers or employees. Instead, they are perceived as self-employed or independent contractors that provide services facilitated through and by the platform. Individuals active on labour platforms are legally obliged to register with the Danish VAT register and pay VAT, if their income via the platforms reaches a certain threshold (€6,666 per year).

Both capital and labour platforms operate in a less-regulated online setting, where market forces regulate pricing and working conditions (Ilsoe and Madsen 2017). The notion of individuals selling their services via digital platforms being self-employed leaves them with limited, if any coverage from Danish collective agreements and labour laws. However, Danish social partners have, with varying success, attempted to cover individuals on platforms,

especially those operating on the labour platforms.⁴ Nonetheless, most individuals engaged in online activities operate outside the range of the Danish IR-model. This leaves most platform workers in a protective gap with lower levels of collective risk protection than employees covered by collective agreements or Danish labour laws (Ilsøe and Madsen 2018). They often share these conditions with other forms of non-standard workers on the Danish labour market (freelancers, temporary employed and marginal part-timers etc.), who also tend to have less coverage from Danish laws and collective agreements (Larsen 2011; Scheuer 2017).

The Danish labour market is characterised by wage and working conditions being primarily regulated through collective agreements signed by social partners at sectoral and company levels (Larsen et al. 2010). Legislation plays a more limited role – primarily in areas like gender equality, health and safety, holiday entitlements, vocational and further training (Due and Madsen 2008). This institutional set-up cushions, to some extent, the effects of the unregulated digital platforms. An example of how the Danish IR-model limits the effects is the collective agreed wages' positive knock-on effects on wage-setting in the unorganised parts of the labour market, including digital labour platforms (Larsen 2011). Digital cleaning platforms like Happy Helper⁵ and Hilfr⁶ offer an hourly price ranging from €15.70 to €16.60 to their service suppliers, which nearly resembles the minimum collective agreed wage (€17) within the Danish cleaning sector (DI 2017). However, while such platform workers may receive nearly the same minimum hourly payment as their peers covered by collective agreements, their hourly payment is considerably lower than the average hourly wages (€22.30) within the cleaning sector due to their limited access to wage supplements (Ilsøe et al. 2017). Furthermore, with the exception of Hilfr, they also have no rights to other collectively agreed benefits like pensions, further training, paid sick leave or maternity leave and are thus expected to shoulder such costs individually without being compensated through higher hourly payments (Ilsøe and Madsen 2018). Therefore, the Danish IR-model appears unable to compensate for most protection gaps on digital platforms, leaving it to the Danish welfare state or individuals themselves to provide a safety net when active in the digital labour market.

The Danish welfare state provides, with its universal citizenship-based welfare services, limited usage of means-testing and employment-related benefits – a safety net for those operating on the edges of the labour market (Esping-Andersen 1999). However, shifting Danish governments have gradually tied social protection to employment status and collective agreement coverage (Larsen and Mailand 2018). This adds to the pressure on platform workers with regard to social protection: they often struggle to meet the tighter eligibility criteria for unemployment benefit and social assistance. They thus experience lower levels of collective risk protection as most welfare institutions are founded on the assumption of employees' holding permanent full-time positions or working full time on a self-employed basis. On the other

hand, the Danish social assistance and unemployment benefit schemes may prevent a race to the bottom on the platforms: they implicitly provide a wage floor, which is difficult for the platforms to ignore, if they want to attract individuals to sell their services. The lowest level of monthly unemployment benefits range from €1,665 for part-time insured workers to €2,457 for full-time insured workers. Moreover, monthly levels of social assistance range from €972 to €2,000 depending on age and provider roles (Mailand and Larsen 2018). Therefore, Danish social protection may also limit a downward spiral on wage and working conditions on digital platforms.

Digital platforms, their scope and size of generated income

The digital platforms operating in Denmark involve only a small fraction of the workforce. Our survey results indicate that 2.4 percent of Danes had purchased and sold services via either a digital labour or a capital platform during the last year. Around 1.4 percent – had accumulated income by leasing their private properties via a capital platform, whilst 1 percent of Danes reported income arising from labour platforms. Thus, Danes seem more likely to use capital platforms than labour platforms to top up their income (Table 1.1). These results are in line with a number British and American quantitative studies (Farrell and Greig 2016; Katz and Krueger 2016; Rubery et al. 2018)

Activity on one type of platform is rarely related to activity on other types of platforms. Less than 0.1 percent have been active on both types of platforms within the last year. Therefore, most individuals involved in such online activities often generate income exclusively from capital platforms (1.4 percent of Danes) or labour platforms (0.9 percent of Danes), respectively (Table 1.1).

The level of income accrued via digital platforms is relatively modest on both labour and capital digital platforms. For example, 61 percent of Danes generating income via a labour platform within the last 12 months had earned less than €3,330 annually before taxes whilst 71 percent of Danes providing services via a capital platform had generated less than €3,330 annually before taxes within the last year (Table 1.2).

Table 1.1 The share of Danes aged 15–74 accruing income via digital capital and/or labour platforms during the past 12 months in percent

	<i>Accrued income solely via labour platform</i>	<i>Accrued income solely via a capital platform</i>	<i>Accrued income via both capital and labour platforms</i>	<i>Total share of population accruing income from capital or labour platforms</i>
Yes	0.9	1.4	0,1*	2.4
No	99.1	98.6	99.9	97.6
Total	100	100	100	100

Source: authors' own calculations based on weighted data, * unreliable estimate due to small N.

Table 1.2 How much money have you accrued via websites or apps over the past 12 months – before taxes? (In percent of all who reported an income via a labour of capital platform, respectively)

	<i>Labour platforms</i>	<i>Capital platforms</i>
Less than DKK 25.000 (€3.330)	61	71
DKK 25.000 (€ 3.330) or more	12	19
Don't know	28	9*
Total	100	100

Source: authors' own calculations based on a weighted data, * unreliable estimate due to small N.

The modest level of income generated via a capital and/or labour platform indicates potential risks of precariousness. Furthermore, the division between individuals active on labour platforms and capital platforms calls for further investigation – especially with regard to their demographics, labour market status and educational attainment as these factors are assumed to influence such individuals' level of risk protection and thus exposure to precariousness (Rubery 2015).

Labour platforms and individuals' exposure to risk of precariousness

Less than 1 percent of Danes have sold services via a labour platform, and few of these – 12 percent – generated more than €3,330 within the last year. A large minority group – 28 percent – were unable to report on their annual income generated via a labour platform (Table 1.2). This indicates that unless such platform workers combine their income via the labour platform with other income sources, they face increased risks of precariousness, particularly considering the Danish living costs. In this context, our regression results demonstrate that labour market status and a number of demographic variables correspond closely with whether or not individuals offer and sell their services via a labour platform (Table 1.3).

Labour market status appears to influence the activity levels on labour platforms. Unemployed workers seem more likely than others to generate income via a labour platform, followed by retirees, students and other people outside the labour force.⁷ In fact, employed people are less likely than others to do so (Table 1.3). When looking at employed citizens active on the platforms, we find an over representation of those with lower earnings. Thirty-two per cent of these are located in the two lowest income deciles of adult Danes. Further analyses also indicate a close link between employment contracts, earnings and activity levels on labour platforms. Fixed-term and temporary agency workers are more active on labour platforms than employees with other employment contracts. Likewise, we find an overrepresentation of employees with low tenure (less than three years) on the labour platforms. These results suggest that labour platforms, in line

Table 1.3 Linear probability regression model: probability of income on capital and labour forms depending individual characteristics

	<i>Labour platforms</i>		<i>Capital platforms</i>	
	<i>Base model</i>	<i>Full-model</i>	<i>Base model</i>	<i>Full-model</i>
Male (ref)	0.00 (.)	0.00 (.)	0.00 (.)	0.00 (.)
Female	-0.04*** (0.00)	-0.08*** (0.00)	0.02*** (0.00)	0.07*** (0.00)
15–19 years (ref)		0.00 (.)		0.00 (.)
20–29 years		-0.29*** (0.01)		0.33*** (0.01)
30–39 years		-0.40*** (0.01)		0.43*** (0.01)
40–49 years		-0.28*** (0.01)		0.34*** (0.01)
50–59 years		-0.51*** (0.01)		0.50*** (0.01)
60–74 years		-0.64*** (0.01)		0.65*** (0.01)
Danish (ref)		0.00 (.)		0.00 (.)
Other ethnic backgrounds		0.10*** (0.00)		-0.10*** (0.00)
Primary education (ref)		0.00 (.)		0.00 (.)
Upper secondary & vocational training		0.17*** (0.01)		-0.16*** (0.00)
Higher education (short)		-0.06*** (0.01)		0.07*** (0.01)
BA		-0.02*** (0.01)		0.07*** (0.01)
MA & PhD		-0.09*** (0.01)		0.10*** (0.01)

(Continued)

Table 1.3 (Cont.)

	<i>Labour platforms</i>		<i>Capital platforms</i>	
	<i>Base model</i>	<i>Full-model</i>	<i>Base model</i>	<i>Full-model</i>
Employed (ref)		0.00 (.)		0.00 (.)
Unemployed		0.26*** (0.01)		-0.24*** (0.01)
Retirees etc.		0.17*** (0.00)		-0.16*** (0.00)
Constant		0.72*** (0.01)	0.70*** (0.00)	0.28*** (0.01)
N (weighted data)		97,787	97,787	97,787
r ²		0.19	0.00	0.19

Linear probability model
Standard errors in parentheses
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

with our expectations, especially attract groups with low individual risk protection in that they are more likely to be at the margins of the Danish labour market. Such groups rarely have alternative resources at their disposal to limit their exposure to precariousness and are thus unable to compensate for the weak regulatory framework characterising labour platforms. Their low levels of individual risk protection seem even more apparent when controlling for other factors such as age, gender, ethnicity and educational attainment (Table 1.3).

Activities on labour platforms seem to be age related: young people aged 15–19 years are more likely to offer and sell services via a labour platform than their older peers. However, the effect of age diminishes somewhat when controlling for other factors (Table 1.3). Our regression results also indicate that men are more likely than women to accrue income via labour platforms. The same applies to low-skilled workers, whilst those with higher education (short, BA or MA/PhD) are least likely to do so. Moreover, people with ethnic backgrounds other than Danish are more likely to be active on labour platforms (Table 1.3). These findings contribute to a picture where many platform workers seem to have limited individual means to counteract their exposure to low income on digital platforms and thus risks of precariousness: they are more likely to be low skilled with scarce financial resources. In fact, the combined effects of their individual characteristics seem to reflect

a cocktail of risks, where the wider institutional framework offer some collective risk protection. Many platform workers in their capacity as unemployed workers, retirees, students or social assistance claimants receive unemployment benefits, student allowances or social assistance, which they often appear to combine with income accrued via labour platforms. Thereby, Danish social protection schemes seem to compensate for the low levels of individual risk protection and weak regulatory framework dominating Danish labour platforms.

Capital platforms and individuals' exposure to risk of precariousness

Around 1.4 percent of Danes had generated income via a capital platform within the last year and, among those, 71 percent had earned less than DKK 25,000 (€3,330) while 19 percent reported higher financial returns from the capital platform. Around 10 percent were unable to report on their annual income generated via a capital platform (Table 1.2). The reported income levels via capital platforms appear modest and thus capital platforms seem to entail similar exposure to risks of precariousness as the labour platforms insofar as the individuals active on capital platforms are unable to top up their income via the capital platform with other sources of income. Our regression analysis of who accumulates income via capital platforms demonstrates a close interaction with labour market status and demographic characteristics, although with very different results compared to the individuals active on labour platforms (Table 1.3).

Among capital platform providers, the oldest segments (50–59 years, 60–74 years) are most likely to generate income via capital platforms, whereas youngest people aged 15–19 years are least likely to lease their properties via a capital platform. Focusing on labour market status, employed people are most likely to accumulate income via a capital platform. Retirees, students and other people outside the labour force come in second, whereas unemployed people are least active on capital platforms when measured in terms of financial returns. It seems that individuals active on capital platforms often have an older age profile than their peers on labour platforms as well as they are more often employed. Further analysis indicates that they often hold open-ended contracts. This is perhaps not surprising, as many tend to settle in the labour market with a stable or increasing income, as they grow older. Such stability allows people to purchase their own home, car, and other belongings, which they afterwards can lease via capital platforms. Combining our analysis with income data, we find that 30 percent of employed providers of services on capital platforms have a total income in the top two income deciles of the Danish adult population. Thus, Danes with a higher total income seem overrepresented on capital platforms, whilst we saw the opposite among individuals active on labour platforms.

Such results imply, in line with our expectations, that capital platforms attract very different groups from labour platforms in that the former is more likely than the latter to have a stronger foothold in the traditional labour

market and to have other means of income at their disposal. They thus have higher levels of individual risk protection that shelter them against the unregulated online market and its associated risks. The high levels of individual risk protection among individuals active on capital platforms are further underlined when controlling for other factors such as gender, ethnicity and educational attainment (Table 1.3).

In contrast to the labour platforms, women are more likely than men to accumulate income via capital platforms. Education and ethnicity also play a role, but in a different way from the patterns found among providers on labour platforms: people with higher education (BA or MA/PhD) are more likely to generate income via capital platforms compared to their peers with lower levels of educational attainments. Moreover, and in sharp contrast to our findings regarding individuals on labour platforms, we also find that ethnic Danes are overrepresented on capital platforms (Table 1.3).

These results imply, in line with our expectations, that the combined effects of the individual characteristics of people active on capital platforms reduce their exposure to precariousness in that their high-skill levels, combined with stable employment and substantial savings, provide them with a safety net that compensates for the gaps in protection dominating the online market. The Danish welfare state and IR-model seem to only strengthen or multiply their risk protection since they add another layer of social and employment protection for most individuals, especially those that combine their online activities with jobs in the organised labour market. This also indicates that risks of precariousness seem less common on capital platforms, but only because individuals, in combination with the social protection offered by the wider institutional framework, are able to compensate for the weak regulatory framework of capital platforms. Therefore, online income resembles a pleasant, but unnecessary luxury, like champagne.

Discussion and conclusion

Citizens of the Western world increasingly seek supplementary income online – either by leasing their property or by taking on extra assignments via a digital platform. This has given rise to academic and political debates on how to conceptualise and regulate such online activities, including their implications for an individual's exposure to precariousness when active on distinct platforms like labour and capital platforms. Three main aspects are emphasised in the discussion of our findings.

Firstly, our analysis demonstrates that income accrued via digital platforms is rather modest in Denmark with 2.4 percent of Danes providing and selling their services via online apps or websites. In most cases such sources of online income represent a supplement rather than the main source of income for individuals active on digital platforms, findings that echo other European and American studies (Katz and Krueger 2016; Rubery et al. 2018). However, among the 2.4 percent of individuals actively providing and selling services

via a digital platform, marked differences can be traced between those active on a labour platform and their peers on capital platforms. It is rarely the same people selling their labour and renting out their private properties via digital platforms. Less than 0.1 percent of Danes have been active on both types of platforms within the last year and further analyses indicate, in line with our expectations, that the characteristics of the individuals active on labour platforms and capital platforms differ considerably when comparing their demographics, labour market status, level of educational attainment and overall income levels. In fact, certain groups such as young people, low-skilled, low paid and unemployed people, temporary employees and non-ethnic Danish were more likely to accrue income via labour platforms; whilst their older and often higher educated and more well-off peers with stronger labour market ties (they were employed) tended to be overrepresented among capital platform providers. Our results echo other American and European studies, which also suggest that it is rarely the same people selling their labour and leasing their private properties/possessions via websites and apps (Farrell and Greig 2016; Katz and Krueger 2016). The fact that labour platforms seem to attract low-skilled workers, young people, unemployed and low-income groups points to their limited means to purchase private property which can then be leased via a capital platform. This also seems to explain the limited overlap between individuals accruing income via digital labour and capital platforms as well as their level of exposure to precariousness when active online.

Secondly, our findings support our notion that capital and labour platforms are associated with different levels of precariousness, even if both platforms represent less or non-regulated online settings. The differences in the characteristics of individuals accruing income via labour and capital platforms put individuals on labour platforms at greater risks of precariousness than their peers on capital platforms due to their lower levels of individual risk protection. Therefore, individuals renting their properties via capital platforms seem in a better position than individuals on labour platforms to mitigate the effects arising from the weak regulatory framework and thus to limit their exposure to precariousness. Their higher skill levels combined with stable employment and substantial savings provide them with a safety net that compensates for the gaps in protection dominating the online market. The Danish welfare state and IR-model seem to strengthen capital platform providers' risk protection since the wider institutional framework adds another layer of social and employment protection especially for those that combine their online activities with jobs in the organised labour market. The situation is somewhat different for most groups active on labour platforms, even if the Danish welfare state and IR-model also – to some extent – shoulder their risks of low levels of social protection on the labour platforms. In fact, labour platforms appear to especially attract groups that seek to gain a foothold in the Danish labour market. Unemployed people and young people at the start of their

career are more likely to generate income via labour platforms than other platform providers. Likewise, non-ethnic Danes were overrepresented – a group that generally find it difficult entering the Danish labour market (Ejrnæs 2006). This indicates – in line with our expectations – that labour platforms, on the one hand, may contribute to increased risks of precariousness due to the combined effects of a rather unregulated setting and individuals with low levels of individual risk protection. However, on the other hand, labour platforms may also foster labour market inclusion for groups often struggling to gain employment.

Thirdly, with regard to the wider institutional framework and its pivotal role in mitigating the effects of low levels of social and employment protection on digital platforms, the Danish welfare state and IR-model seem to make a difference, but in distinct ways. Our analysis points to the fact that people using capital platforms are of less risk of precariousness than those using labour platforms. The recent government led reforms that tighten the eligibility criteria for unemployment benefits and social assistance seem to place additional pressure on some digital platform providers (Mailand and Larsen 2018). Their low income generated via digital platforms suggest few contracted hours and especially those with no other jobs may struggle to qualify for unemployment benefits and social assistance as these schemes are earnings-related or depend on past employment records, including the number of hours worked while in employment (Larsen and Mailand 2018). Therefore, the established institutional framework seems in some instances to contribute to the cocktail of risks for some digital platform providers, especially those selling their services via labour platforms. The policy implications thus far have been a reform that implicitly eases platform workers access to unemployment benefits by allowing all types of income and not just waged-work to account towards individuals accrued rights. Likewise, some social partners have started to negotiate collective agreements covering especially labour platforms to strengthen such individual's safety net when operating online (Ilsøe and Madsen 2018). However, further configurations of existing welfare and IR-arrangements seem to be needed to cover the protective gaps, where relaxed eligibility criteria in terms of lowering the threshold for past employment records and number of hours worked may be a way forward to cushion the risks of precariousness, especially among those working for low income on labour platforms.

On the other hand, our findings suggest that the Danish social assistance and unemployment benefit schemes along with the knock-on effects of the collectively agreed wages on the unregulated labour market may also limit downward pressures on price setting on the digital platforms. They implicitly provide an informal wage floor, which is difficult for the platforms to ignore if they want to attract individuals to sell their services via the platform. Therefore, the established Danish welfare and IR-systems seemingly and to some extent prevent employers from utilising labour platforms to circumvent the existing labour market system to curb labour costs, as much of digital platform literature

argues and seen with the recent rise of other forms of atypical employment in several countries (Rubery 2015; Berg 2016; Kalleberg and Vallas 2018). Our findings support this notion, as most individuals active on labour platforms complement their scarce income generated via the platform with unemployment benefits, social assistance, or other welfare-regulated social benefits. Optimists would argue that platforms foster labour market inclusion and that we have only seen the beginning of this potential – platform services will grow and contribute to growth and employment – for marginalised as well as other groups. Pessimists, however, would look at the risks of precariousness, especially in countries where the wider institutional framework fails to deliver a buffer that counteracts the weak regulatory framework characterising the digital platforms (Wood et al. 2019). Further studies, including longitudinal data on platform providers, their employment status and income, can tell us, whether platform work over time contributes to labour market integration or segmentation. Such studies might also include other variables as indicators of precariousness than the classic demographic variables used in previous studies (Kalleberg 2011; Thelen 2019). This could be variables on health and safety issues, stress and perceived employment insecurity (Gash et al. 2007). Our study offers important conceptual and methodological insights and experiences that can be of relevance for such future research. Firstly, the conceptual distinction between labour and capital platforms is crucial as these platforms attract very different crowds. Secondly, it is important to include both forms in future research to investigate their various effects since not only labour platforms, but also capital platforms may influence the structure and composition of the future labour market and its regulation.

Notes

- 1 There are always some uncertainties associated with using sample data. Statistics Denmark deals with selection bias in two ways. Firstly, all analyses are based on a weighted sample, which means that the results can be said to be a representative expression of the entire Danish population. Secondly, numbers representing fewer than 7,000 individuals are reported as uncertain in the analysis – and numbers representing fewer than 4,000 individuals are not displayed (Statistics Denmark 2012).
- 2 We included these variables since most studies on precarious employment indicate that they play a key role in determining the risks of precariousness (Kalleberg 2011; Thelen 2019). Due to a small NN, the variable ‘total income of employed citizens’ could only be included in the descriptive statistics.
- 3 www.skat.dk/skat.aspx?oid=2236769.
- 4 In Spring 2018, the Danish union 3F (United Federation of Danish Workers) and the cleaning platform Hilfr signed a collective agreement which, among other things, sets a minimum wage and different labour standards.
- 5 Source: happyhelper.dk.
- 6 Source: hilfr.dk.
- 7 This might seem counter intuitive, but platform work is rarely registered in the traditional administrative Danish registers, which means that citizens can be registered as out of work and participate on labour platforms at the same time.

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Notes

Chapter 1

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- 7 This might seem counter intuitive, but platform work is rarely registered in the traditional administrative Danish registers, which means that citizens can be registered as out of work and participate on labour platforms at the same time.

Chapter 3

- 1 https://www.lexico.com/en/definition/sharing_economy.
- 2 For more information on the SDGs we refer readers to <https://sustainabledevelopment.un.org/sdgs>.

Chapter 5

- 1 The beginning of the sample may not include all actual listings, but we still observe a positive trend from October 2015 until the end of the sample.
- 2 According to Airdna.co, the number of active Airbnb and Homeaway rentals have grown from 4,248 in the first quarter of 2016 to 5,066 in the beginning in 2019, i.e., a growth of 19%.
- 3 Data for the number of Airbnb listings is from Airdna and data for overnight stays is from Statistics Norway. Data for the unemployment rate in Østfold is from the Norwegian Labour and Welfare Administration (NAV), and is not the same as in Figure 5.4 which only provides annual data for the unemployment rate in our sample. All of the data series are monthly.

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