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## RESEARCH ARTICLE

# Gender and precarity in platform work: Old inequalities in the new world of work

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### Abstract

Platform work creates a work model that is both a curse and a blessing for vulnerable labour market segments. Based on research on female precarity, the article expects that remote platform work—so-called crowdwork—could especially attract women who need to combine income and care responsibilities. This article investigates whether women experience more precarity on crowdwork platforms than men, and why their risks differ. It analyses data from a quantitative survey with crowdworkers in Germany and the United States. The results indicate higher precarity risks for women due to care work, which are also indirectly mediated via the employment status. The higher commodification of labour and weaker social infrastructure lead to generally greater precarity risks for platform workers in the United States. The high differences between women and men in Germany underline the gendered nature of labour market dualization and precarization as well as the traditional division of housework. Policy measures should address both platform work and these structural inequalities.

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# 1 | INTRODUCTION

In the capitalist division of labour, women are in a structurally vulnerable labour market position as they often face a ‘second shift’ of unpaid care work, including in particular housework and childcare, that are central for the reproduction of labour (Hochschild & Machung, 2012).<sup>1</sup> Especially in countries with a weaker welfare state and social infrastructure, ‘the gendered division of housework and care activities, which are unpaid and undervalued, but also never completed’ limits the extent and time available for paid work and negatively affects women’s bargaining position in the labour market (Piasna & Drahokoupil, 2017, p. 326). Even without care responsibilities, women often find themselves in a segmented labour market, including the undervalued tertiary sector, as societal stereotypes and legacies translate into structural inequalities (Bettio et al., 2013; England, 2005).

Against this background of structural constraints on women’s workforce participation, the question has been raised of whether the gig economy improves, transforms or aggravates gender inequalities. In platform work, app- or internet-based companies mediate jobs ‘on-demand’ to formally independent workers. Supporters argue that platform work can function as a ‘social equalizer’ by providing easy and less discriminatory access to income for otherwise disadvantaged groups (Hoang et al., 2020, p. 3). Aside from the income, the spatial and temporal flexibility has been shown to be a significant motivator for people to pursue platform work (Berg et al., 2018; Schor & Vallas, 2021). This is especially the case for the remote form of platform work, so-called *crowdwork*. Platforms such as Amazon Mechanical Turk (AMT) and Upwork organise location-independent services that are performed online. Women with care responsibilities could therefore turn towards working such fragmented online gigs as they can flexibly self-select jobs, interrupt whenever required—and most importantly stay at home (Adams-Prassl & Berg, 2017).

Throughout history, however, home-based solo self-employment has been among the most precarious strategies for income generation—characterised as it is by individualisation, low incomes and social insecurity. In addition, the algorithmic management of platform work is intensifying fragmentation, invisibility and competition (Irani, 2013). Crowdwork could thus reinforce women’s placement in a secondary and more precarious labour market and enhance their dependence on a partner (Piasna & Drahokoupil, 2017; Rubery & Piasna, 2016).

Gender-sensitive studies on platform work—as well as studies focusing on other dimensions of inequality—are still scarce (Adams-Prassl & Berg, 2017; Churchill & Craig, 2019; MacDonald & Giazitzoglu, 2019; Piasna & Drahokoupil, 2017). This article addresses this gap by asking to what extent gender differences are reproduced within crowdwork. The analysis builds on data from an online survey with 1131 crowdworkers based in Germany and the United States performing both micro- and macrowork. This enables a comparison of distinct institutional contexts and skill levels. First, the article compares the socioeconomic backgrounds and working conditions of men and women in the sample, and second, examines to what extent gender directly or indirectly affects precarity risks. The analysis is guided by the assumption that these should differ between men and women as a result of distinct positions on the labour market (framed as economic precarity) and distinct positions in the household (framed as household precarity). The conceptual focus is thus on the interplay between gender, employment and welfare systems.

The findings indicate higher precarity risks for women in the sample. These higher risks can be directly linked to the unequal division of unpaid care and domestic work, and indirectly to fragmented and precarious employment backgrounds. An important finding involves the

role of welfare policies. While gender differences are found in both institutional contexts, the overall precarity risks are much lower in the Germany-based sample than in the US-based sample. This can be linked to the more deregulated labour market, a more radical commodification of labour and weaker welfare state in the United States. The article confirms previous findings of gender differences in platform work and highlights the role of welfare policies to aggravate or mitigate these risks (Adams-Prassl & Berg, 2017; Churchill & Craig, 2019).

The remainder of the article is organised as follows. First, literature on the labour market precarity of women and precarity in platform work is reviewed and connected. Next, the methodology and data are presented. In the third part, the empirical findings are presented: First, the work situation of women and men in the sample is compared descriptively; second, the direct and indirect influence of gender is estimated by means of multivariate models. Finally, conclusions and implications are drawn.

## 2 | LITERATURE REVIEW

### 2.1 | Precarity and gender

Precarity can be defined as a situation of economic insecurity resulting from atypical employment statuses such as part-time work, temporary work, self-employment, zero-hour contracts, and contingent work (ILO, 2016). These statuses are connected to low wages, low predictability, fragmented career paths and income hybridisation, as well as reduced social protection, labour rights and collective voices compared to the so-called standard employment that characterised most of the industrial postwar era. In a wider sense, precarity is therefore also characterised by stressful working conditions and subjective insecurity.

Precarity is highly gendered. Worldwide, women continue to earn less, recorded in the so-called gender wage gap. Their employment rate is lower and they are overrepresented in atypical (especially part-time and temporary) employment, low-wage jobs and the undervalued tertiary sector (ILO, 2016; Schmid & Wagner, 2017). Bettio et al. (2013) show that in continental Europe the gender segmentation of labour markets is, despite different levels and trends, high and stable.

Of particular interest to this article is the research debate on what conditions lead to women's overrepresentation in unemployment or precarious employment (Häusermann & Schwander, 2010; Kenrick, 1981). The present study focuses on 'the division between [paid] market work and [unpaid] reproductive work' (Kreimer, 2004, p. 227; see for e.g., also Folbre, 1994). According to the ILO (2016):

The greater domestic and care responsibilities of women influence their choice of occupations, so that when they do participate in the labour market, they are often limited in the jobs that they can take on. (p. 119)

Therefore, women turn to atypical employment, in particular part-time and self-employment as this offers more spatial and temporal flexibility, making it easier to meet work and nonwork commitments than full-time employment. In particular studies on self-employment highlight the gendered dynamics that underlie the (constrained) choice of atypical employment (Duberley & Carrigan, 2013; Foley et al., 2018; Hundley, 2000). In Germany, 20% of (solo) self-employed women (as opposed to 2.5% of men) name care responsibilities for children or other family

members as a motivation for pursuing self-employment (data from 2011) (Bögenhold & Fachinger, 2015). Similarly, 46% of self-employed women in the US work fewer than 35 h (as opposed to 18% of men); 84% of them reported noneconomic reasons such as taking care of children and other family members, as well as contributing a secondary income to their households (data from 2012; Adams-Prassl & Berg, 2017).

In the context of a gendered division of work on national labour markets and in the nucleus of the family, self-employment is then both a curse and a blessing for women, as formulated by Adams-Prassl and Berg (2017):

[H]omework gives opportunities to some women [...] who may otherwise not be able to work or [to reconcile] paid work with domestic responsibilities. This flexibility comes at a cost in terms of the stress of reconciling paid and unpaid work [...], but also because the pay and benefits of home-based work are often lower [...]. (p. 5)

Research also highlights the interacting effect of employment status and gender on material (in)security. For instance, fewer hours of work lead to fewer earnings for women but not for men. Self-employment greatly reinforces the gender pay gap (Gruber, 2019; Lechmann, 2014). Williams (2000) shows that in the United States, substantial penalties arise for women (but not for men) with regard to future earnings when turning to self-employment. Similarly, Hundley (2000) shows that work interruptions for child birth, marriage, and family size increase the chances of women's career paths fragmenting and taking an atypical form.

Platform work is often studied for its novelty in algorithmic management, but less from the perspective of perpetuating existing (gender) inequalities. Research on the situation of women in labour markets suggests that they could face higher precarity risks in platform work that are directly shaped by more precarious employment backgrounds, which are in turn often conditioned by unequally distributed domestic care responsibilities. Adding to this, feminist and institutionalist research has highlighted the central role of welfare systems, as they structure the need for people to pursue flexible and often precarious employment.

## 2.2 | Welfare policies

Institutionalist research shows that national welfare policies can lower precarity risks by decommodifying labour and reducing the necessity to accept any kind of work (Seeleib-Kaiser, 2014). Nevertheless, gender differences can remain. The first reason is because welfare policies may be selective and can even reinforce existing inequalities (Häusermann & Schwander, 2010). Research on the dualization (as a specific form of segmentation) of labour markets has shown that employment systems are often deregulated where workers have less primary and secondary power; it is precisely in these sectors, however, that women (and migrants) are overrepresented (Emmenegger et al., 2012; Schwander, 2019). In addition, feminist scholars have shown that addressing only the commodification of labour is insufficient to understanding female precarity. Instead, they have highlighted the need to also address the unequal divisions of work within families through policies of defamilisation and dedomestication (Bussemaker & Van Kersbergen, 1994; Kröger, 2011). The availability and type of welfare state provisions are therefore crucial to the study of gender differences in labour markets, as they shape whether and how (primarily) women can combine family and work.

The institutional differences between Germany and the United States have been well researched (Henderson & White, 2004; Kaufmann, 2003; Seeleib-Kaiser, 2014). In recent decades, some convergence has taken place. Entitlements from pensions and unemployment insurance systems have been dismantled while precarious forms of employment have increased. Nonetheless, there are still significant differences. Job protection and coverage in the event of unemployment or illness is still higher in Germany than in the United States. Moreover, Germany has followed a dualizing trajectory; deregulation and precarious employment expanded in parallel with the continued existence of a regulated (especially male industrial) core (Häusermann & Schwander, 2010; Palier & Thelen, 2010). An important difference is also that there are much more comprehensive parental leave options and lower-cost childcare options in Germany than in the United States (Brady et al., 2020).

These differences in welfare regimes have been shown to result in different outcomes for female labour market participation (Lohmann, 2001). The United States is characterised as a dual full-time worker model because of the high commodification of labour. At the same time, particularly mothers are constrained in the choice of jobs because of weak parental leave and lack of childcare provision. As formulated by Arum and Müller (2009):

The US labour market, conversely, is said to display less gender structuration, higher rates of female labour force participation and more pronounced defamilisation. (p. 448)

Conversely, Germany is characterised by a rather traditional division of unpaid care work, and a family breadwinner legacy that has been modified with women's integration into the labour market on a part-time basis, including highly precarious mini-jobs (Dingeldey, 2016). There continues to be a specific legacy of full female employment and a better public childcare provision in Eastern Germany however (Lohmann, 2001). Aisenbrey and Fasang (2017) summarise the differences between the liberal US and conservative German model as follows:

[I]n Germany, all work-family trajectories are highly gender-specific irrespective of social class. In contrast, patterns of work-family interplay across the life course in the United States are, overall, less gendered, but they differ widely by social class. (p. 1448)

Research on gender, employment and welfare regimes suggests higher precarity risks for all crowdworkers based in the US than in Germany due to the higher commodification of labour. At the same time, gender differences might be more pronounced in Germany due to the gendered dualization of labour markets.

## 2.3 | Platform work and precarity

Platform work has been characterised as a new form of precarious work (De Stefano, 2016; Huws et al., 2018; MacDonald & Giazitzoglu, 2019). This is attributed, on the one hand, to the solo self-employed status of platform workers. It implies reduced labour and social rights, assurances and protections. Risks and overhead costs are shifted to workers. In particular, low or insecure piece wages have attracted a lot of criticism.

Precarity risks are further intensified by the algorithmic management of labour relations. One consequence that is particularly pronounced in crowdwork is the reduction of temporal and spatial boundaries (Irani, 2013). Work becomes available at any time and place. While this can provide enhanced flexibility and self-determination to workers, it can also lead to atypical, blurred working hours and multiple job juggling (Huws et al., 2018; Wood et al., 2019). Moreover, crowdwork creates a global labour market with enhanced competition that may put the most vulnerable social groups in particular in a race to the bottom for jobs (Martin et al., 2016).

A ‘utopian discourse’ suggests, however, that the platform economy can also provide new possibilities for income generation, even new freedoms of microentrepreneurship without bosses and rigid work schedules (Schor & Vallas, 2021, p. 5.5). In particular social groups that face barriers to the labour market—for example, due to discrimination and inequalities based on gender, ‘race’ and ethnic origins, disabilities, health conditions, age or geographical location—are said to potentially benefit from this new online labour market (Zanoni, 2019). Hoang et al. (2020) as well as Schor (2017), however, provide indications that the platform economy reinforces social inequalities. Moreover, while studies have highlighted the predominantly sideline character of platform work in high- and middle-income countries (Berg et al., 2018), scholars also point to the context of income hybridization or fragmentation and in-work poverty (Pongratz & Bormann, 2017; Smith, 2016).

There is increasing research into the heterogeneous socioeconomic and demographic backgrounds of (primarily on-site) platform workers that shape the extent of precarity risks in the work model (Rosenblat, 2018; Schor, 2015). Based on empirical research with Uber drivers in Boston, Robinson and Vallas (2020) emphasise differences between full-time and part-time workers. Between and within these groups, precarity is experienced differently due to different levels of economic dependence. The authors argue that the platform economy has generated new inequalities by drawing together workers with distinct market power and embeddedness in the socioeconomic system. In our quantitative study, Krzywdzinski and Gerber (2020) show that the extent to which these inequalities and fragmentation can be “weaponized” (Rosenblat, 2018, p. 54) by platforms varies by country. We show that US crowdworkers display a greater likelihood of precarity but are also more satisfied with crowdwork, and link this to the radically commodified and more precarious local labour market.

Even if the work model can be described as precarious, everyone is not equally affected by precarity. Constituting a central dimension of social inequality, different precarity risks in platform work must also be expected by gender.

## 2.4 | Platform work and gender

Platform research sensitive to gender (and other dimensions of inequality) is just at the beginning (Foong et al., 2018; MacDonald & Giazitzoglu, 2019; Piasna & Drahokoupil, 2017; Schor, 2017). A number of studies show that despite the promise of enhanced equality in the online labour market, discrimination takes place due to client prejudices and within algorithmic labour relations (Cook et al., 2018; Leung & Koppman, 2018). Moreover, studies by Churchill and Craig (2019) and Adams-Prassl and Berg (2017) provide empirical indications that gender inequalities are also reproduced due to the different, structurally constrained labour market and home positions of women. Churchill and Craig (2019) focus on online and onsite platform work in Australia. A central finding is that platform work is



more often a main income for men than for women and women more often indicate (aside income) flexibility and schedule fit as their main motivating factors. Adams-Prassl and Berg (2017) focus on gender differences on AMT, a crowdwork platform for microtasks. Their data shows that even on the same platform, women on average earned 82% of what men earned, or a dollar less per hour. The gap was highest amongst the lowest earning crowdworkers and lowest for higher earning crowdworkers. The authors trace this gender pay gap on AMT back to ‘domestic responsibilities’ being ‘overwhelmingly shouldered by women’, which affects ‘how they carry out their work and thus what they can earn’ (p. 1). They found that women and men in their sample were similarly educated, worked a similar number of hours per week and had similar experience levels on AMT. Women were, however, more likely to have children and additional care roles. They pursued crowdwork because it was difficult for them to work outside the home. This multitasking of care and platform work limited the time windows and jobs they could do:

Faced with interruptions from young children or adult family members, women appear less able to select the longer, more complex tasks [...]. As a consequence, low-earning women are more likely to be constrained to accepting menial “penny HITs” [...] because they can be performed quickly [...]. This can cause their remuneration to suffer [...]. (Adams-Prassl & Berg, 2017, p. 2)

Men, in comparison, more often engaged in crowdwork to top up their noncrowdwork income. They were more likely to have another noncrowdwork job, and more likely to be working in a professional or technical occupation.

Berg et al. (2018) present similar results from a survey that covers 3500 workers in 75 countries working on five microtask platforms. Female survey participants reported nearly three times more often than men that they work from home due to care responsibilities. At the same time, the researchers found that female participants spent nearly as many hours per week on the platforms and often worked at night or during the evening (ibid.: 16–17).

Overall, this suggests that ‘female employment might expand in the new digital economy’ but might not ‘lead to the creation of secure and adequately paid employment’ (Piasna & Drahokoupil, 2017, p. 315). Instead, it could reinforce the segmentation of women in an inferior and precarious labour market.

## 2.5 | Research hypotheses and strategy

Three major expectations can be derived from the existing research to guide the empirical analysis:

**Hypothesis H1:** *Women are in precarious working conditions on crowdwork platforms more often than men.*

As a first step, the economic situations, working conditions, employment status and motives of women and men in the sample are compared in terms of absolute distributions. Differences by type of crowdwork (microwork vs. macrowork) and institutional context (Germany vs. United States) are also considered.



In a second step, to control for other socioeconomic factors, the main effect of gender is estimated with a multivariate model. The model is conducted on two statements from the survey that express economic precarity and household precarity as motivations for crowdwork: 'I depend on my income from crowdwork' and 'I need to be flexible to look after children or other family members'. A direct effect of gender can be expected on household precarity, but might be more ambiguous with regard to economic precarity as women can also be the secondary earners in family households.

The literature review highlights that the institutional context or employment status is central in shaping the opportunities or constraints for women. Therefore, in addition to estimating the direct effect of gender, the indirect effects are also estimated by means of group dummy comparisons. The two dimensions of precarity—the labour market and home position—are considered separately in the following two hypotheses.

**Hypothesis H2:** *The economic precarity of women is mediated via educational capital, the employment status and the country.*

Economic precarity is shaped by the availability of alternatives, which, in turn, is expected to be shaped in particular by three factors: *educational capital* (a), *employment status* (b) and *country* (c). If these online labour markets work similarly to offline labour markets, gender effects in economic dependence should be lower amongst survey participants with an academic degree than those without. More mixed interaction effects can be expected with regard to the employment status. On the one hand, atypical employment (part-time, self-employed) or nonemployment (unemployed, retired, unable to work) can be expected to increase the economic dependence on crowdwork for all respondents. On the other hand, it may also reduce dependence for women embedded in a double-earner household, earning an additional income alongside their partner and shouldering most of the unpaid care work. Moreover, differences are expected between Germany and the United States due to the different welfare models. A more generalised precarity is to be expected amongst US-based crowdworkers due to the more radical commodification of labour and lower welfare policies, including for example the lower availability of public childcare, which constrains employment options. Conversely, precarity may be lower overall in Germany due to the lower commodification of labour and stronger welfare policies. At the same time, gender differences in economic precarity risks could nevertheless be high, reflecting the conservative welfare model and gendered dualization processes which have placed women in the precarious employment segment.

**Hypothesis H3:** *Household precarity of women is mediated via care obligations and the country.*

Household precarity is shaped by the necessity to balance income generation with care responsibilities, which, in turn, is expected to be shaped by the presence of *children* (a) and the *country* (b). Having children can be assumed to increase the likelihood of precarity for all participants—but it should have a stronger effect on women because of the uneven distribution of care work. Moreover, the different welfare models are again expected to result in different outcomes for all respondents but for women in particular. Above all, US women are expected to 'choose' crowdwork because of household precarity, as social infrastructure for child or elderly care is low and costly and parental leave policies absent. Conversely, the necessity to crowdwork due to precarious household conditions should be lower amongst women (and

men) in Germany due to better public social infrastructure and welfare policies. However, gender differences could also be high in Germany because of the male breadwinner legacy.<sup>2</sup>

### 3 | DATA AND METHODS

The article is based on quantitative data from an online survey that was conducted in the context of the research project ‘Between digital bohemia and precarity. Work and performance in the crowd’ (2016–2019) at the Berlin Social Science Center. The survey was conducted with crowdworkers on 15 platforms between December 2018 and June 2019.<sup>3</sup> Sampling followed two prime objectives: First, to recruit a balanced mix of crowdworkers performing different types and complexities of work; and second, to recruit a balanced mix of crowdworkers based in Germany and the United States to understand the impact of different institutional settings on the working conditions and motivations for crowdwork (see Krzywdzinski & Gerber, 2020). Likewise, attempts were made to maintain a balance by age, gender and activity. However, this was not always feasible or verifiable.

With regard to the type of work, the distinction between micro- and macrotasks was used (Berg et al., 2018). *Microtasks* refer to routine support tasks (e.g., image categorisation, audio transcriptions) or tasks that do not require specific knowledge (e.g., product descriptions, app testing). They can be broken down into short and standardised components and completed within seconds or minutes for a few cents or euros. *Macrotasks* are more complex and require a high degree of creativity and specific, often professional knowledge (e.g., design activities, software programming, scientific problem-solving). They cannot be broken down and are usually organised as multiday or multiweek projects. The pay is higher but also more uncertain (when for example organized as contest).

On four of the platforms, the survey could be placed as a paid job. On the other platforms, it had to be spread via internal (private messages and internal forums) or external channels (social media groups, LinkedIn, Reddit)—with much lower response rates.

The survey lasted approximately 15 min and consisted of 28 questions covering: (a) basic information on the work situation (e.g., working hours, type of tasks), (b) work organisation and control (e.g., payment, ranking systems); (c) motivation for crowdwork (e.g., income, care work, fun); (d) sociodemographic and socioeconomic backgrounds (e.g., age, income). Participants received a payment between 4.50 and 15 euros or USD.<sup>4</sup> The height depended on the common rates on the platform but guaranteed at least a minimum wage per hour. Moreover, pay was higher on macrotask platforms to attract the mostly professional crowd.

In total, the sample comprises 1131 valid responses. All were ex-post examined and checked for consistency. For a focused analysis, participants who reported a third country of residence or gender were excluded. The final sample used for this article consists of 1088 responses. Table 1 summarises the composition of the sample.

The data represents a convenience sample and does not allow for conclusions to be drawn beyond the platforms and crowdworkers surveyed. It is worth mentioning, however, that the platforms surveyed include some of the biggest, and together unite about 14 million registered crowdworkers. Moreover, the sample largely corresponds to existing empirical information for Germany (Serfling, 2018) and the United States (Difallah et al., 2018; Popiel, 2017). Furthermore, the sample avoids focusing only on one individual platform, which is the dominant approach in current research.

**TABLE 1** Sociodemographic composition of the sample (in %)

|                            | Women | Men   |
|----------------------------|-------|-------|
| Age                        |       |       |
| <22 years                  | 7.13  | 10.04 |
| 22–29                      | 21.98 | 26.58 |
| 30–39                      | 33.86 | 32.75 |
| 40–49                      | 20.00 | 16.37 |
| 50–64                      | 15.64 | 11.97 |
| >64                        | 1.39  | 2.29  |
| Country of residence       |       |       |
| Germany                    | 44.0  | 56.71 |
| US                         | 52.19 | 39.73 |
| Education                  |       |       |
| Without academic degree    | 34.26 | 35.21 |
| With academic degree       | 65.74 | 64.79 |
| Type of crowdwork          |       |       |
| Microwork                  | 73.86 | 76.94 |
| Macrowork                  | 26.14 | 23.06 |
| Household                  |       |       |
| Single                     | 37.62 | 43.13 |
| In a relationship, thereof | 60.00 | 53.87 |
| Single earner              | 11.68 | 13.73 |
| Double earner              | 44.75 | 37.85 |
| Without children           | 57.82 | 69.37 |
| With children              | 41.78 | 30.11 |
| N                          |       |       |
| 1088                       | 505   | 568   |

Source: Krzywdzinski and Gerber (2019).

## 4 | FINDINGS

The analysis proceeds in two steps. First, information on the socioeconomic situation, motivations and perceptions of women and men in the sample is analysed descriptively in terms of absolute distributions and bivariate relations. Country (Germany/United States) and type of crowdworking (microwork/microwork) are also taken into consideration. Second, the hypotheses that expect a direct and indirect influence of gender on precarity are tested with multivariate analyses that control for other socioeconomic factors.

All results refer to weighted data. In the qualitative case studies, platforms provided some basic information about the composition of crowdworkers by gender and age. On the basis of

this, a platform-specific weighting variable was calculated to correct for possible sampling biases resulting from access and sampling difficulties.

4.1 | Descriptive analysis: Working conditions of women and men in comparison

4.1.1 | Economic situation

With regard to the amount of the monthly net income earned through platform activity (Table 2), the responses show that within the sample crowdwork mostly constitutes additional income—both for men and women. However, nearly a quarter of respondents reported earning more than 50% of their income from crowdwork. Generally, the share of monthly income from crowdwork is higher in the United States and amongst macroworkers, providing the first indications of the higher commodification of labour in the United States and the professionalism of macrowork. Overall, women (26%) in the sample stated slightly more often than men (22%) that they earn more than 50% of their monthly net income through crowdwork. The gender difference in financial reliance is particularly strong when considering only those who generate 100% of their income through crowdwork: About 36% of them were male while 64% were female. When considering only macroworkers and US-based

TABLE 2 “Through my platform activity I earn a monthly net income of about:” (in %)

| Net income through platforms | <25% of monthly net income | 25–<50% of monthly net income | 50–<75% of monthly net income | >75% of monthly net income |
|------------------------------|----------------------------|-------------------------------|-------------------------------|----------------------------|
| Total                        | 60.02                      | 16.09                         | 6.91                          | 16.98                      |
| Men                          | 62.04                      | 16.18                         | 7.34                          | 14.44                      |
| Women                        | 57.37                      | 16.46                         | 6.66                          | 19.52                      |
| Micro total                  | 64.94                      | 15.85                         | 5.83                          | 13.38                      |
| Men                          | 68.41                      | 15.48                         | 5.66                          | 10.44                      |
| Women                        | 60.92                      | 16.78                         | 6.21                          | 16.09                      |
| Macro total                  | 44.55                      | 16.84                         | 10.28                         | 28.32                      |
| Men                          | 42.51                      | 18.32                         | 12.49                         | 26.67                      |
| Women                        | 46.24                      | 15.43                         | 8.06                          | 30.26                      |
| Germany total                | 71.40                      | 12.47                         | 5.00                          | 11.13                      |
| Men                          | 71.93                      | 13.83                         | 4.79                          | 9.46                       |
| Women                        | 70.63                      | 11.20                         | 5.43                          | 12.73                      |
| US total                     | 47.21                      | 20.16                         | 9.05                          | 23.59                      |
| Men                          | 48.56                      | 19.38                         | 10.83                         | 21.23                      |
| Women                        | 45.08                      | 21.33                         | 7.80                          | 25.79                      |

Source: Krzywdzinski and Gerber (2019). Weighted data.

crowdworkers, however, the gender distribution of those who generate more than 50% of their income from crowdwork is almost even.

Table 3 shows that 68% of participants reported earning a monthly net income of less than 2000 euros/USD; conversely 32% reported incomes above this. The total monthly net incomes of women in the sample are much lower than those of men. There is a particular gender income gap amongst the lowest and highest strata: 24% of women reported earning less than 500 euros/USD per month (compared with 12% of men); conversely, only 24% of women reported earning more than 2000 euros/USD per month (compared with 40% of men). The income gap between the genders is strong both in Germany and the United States, as well as within microwork and macrowork. Macroworkers generally reported higher net incomes, again reflecting the more professional nature of the work and the higher skill level. Interestingly, US respondents reported higher net incomes than German respondents. Taken together with the results from Table 2, this could indicate that many crowdworkers in Germany rely on platform income to top up low wages from other employment, so-called income hybridisation. The higher monthly net incomes in the United States could reflect the lower taxes and higher importance of private social provisions.

The greater economic precarity of women was also evident in subjective perceptions. Female respondents (57%, men 44%) more often fully or partially agreed with the statement ‘I depend on my income from crowdwork’. While this gender difference was higher amongst microworkers (women 53%, men 39%), macroworking women (69%, men 59%) voiced economic dependence most often. Similarly, the gender difference was higher amongst crowdworkers in Germany (women 43%, men 30%), while US women voiced economic dependence most often (70%, men 62%). Again, the higher economic dependence of all

TABLE 3 “My total monthly net income (in Euro/USD) is:” (in %)

| Net income    | <500  | 501–1000 | 1001–2000 | >2000 |
|---------------|-------|----------|-----------|-------|
| Total         | 17.99 | 21.53    | 28.39     | 32.08 |
| Men           | 12.34 | 19.87    | 27.98     | 39.81 |
| Women         | 24.11 | 22.89    | 29.06     | 23.94 |
| Micro total   | 21.41 | 24.93    | 27.69     | 25.97 |
| Men           | 15.78 | 23.60    | 28.41     | 32.21 |
| Women         | 27.66 | 25.90    | 27.44     | 19.01 |
| Macro total   | 7.24  | 10.85    | 30.60     | 51.30 |
| Men           | 1.81  | 8.43     | 26.67     | 63.10 |
| Women         | 12.97 | 13.47    | 34.16     | 39.41 |
| Germany total | 18.68 | 24.98    | 30.44     | 25.89 |
| Men           | 12.77 | 23.10    | 30.68     | 33.45 |
| Women         | 26.56 | 26.88    | 30.72     | 15.84 |
| US total      | 17.21 | 17.65    | 26.09     | 39.05 |
| Men           | 11.76 | 15.46    | 24.30     | 48.48 |
| Women         | 21.84 | 19.20    | 27.52     | 31.44 |

Source: Krzywdzinski and Gerber (2019). Weighted data.

macroworkers and US-based respondents reflects the higher professionalism and commodification, respectively. Accordingly, women on macrowork platforms (61%, men 53%; for comparison microwork: women 56%, men 43%) or women based in the United States (64%, men 57%; for comparison in Germany: women 49%, men 38%) were particularly likely to fully or partially agree with the statement: ‘The uncertainty of whether I will get enough jobs in a month and earn enough money worries me a lot’. Overall, it must be emphasised that almost half of all respondents (irrespective of country or task type) experience this burden (women 57%, men 46%).

The results show that women are more likely to earn a greater share of an overall lower income through crowdwork. This greater economic dependence is also subjectively perceived. In absolute terms, women on macrotask platforms or in the United States seem to face the highest economic precarity risks. The findings run counter to those from a similar study by Churchill and Craig (2019), who found men to be more financially dependent than women. However, their study included male-dominated onsite platform work such as ride services and food delivery. The greater financial dependence of women in this sample could thus further underline the gendered nature of home-based forms of platform work.

4.1.2 | Working conditions

A relevant indicator to assess working conditions is time, including the total hours spent on crowdwork as well as the blurring of work-time boundaries. Table 4 confirms that crowdwork constitutes a side-line for many, but not all: About 53% of respondents reported only being

TABLE 4 “In a typical week I work on platforms approximately” (in %)

| Hours per week | Up to 10 h | 11–20 h | 21–30 h | 31–40 h | >40 h |
|----------------|------------|---------|---------|---------|-------|
| Total          | 53.39      | 21.95   | 14.39   | 6.55    | 3.73  |
| Men            | 55.13      | 22.25   | 13.86   | 5.53    | 3.22  |
| Women          | 51.6       | 22.08   | 14.95   | 7.78    | 3.59  |
| Micro total    | 56.98      | 19.84   | 13.62   | 6.18    | 3.37  |
| Men            | 59.89      | 19.94   | 12.22   | 4.74    | 3.22  |
| Women          | 54.26      | 20.19   | 15.03   | 7.88    | 2.64  |
| Macro total    | 42.09      | 28.58   | 16.79   | 7.69    | 4.85  |
| Men            | 40.55      | 29.35   | 18.91   | 7.98    | 3.21  |
| Women          | 43.24      | 28.00   | 14.70   | 7.46    | 6.60  |
| Germany total  | 64.76      | 20.40   | 10.24   | 3.32    | 1.27  |
| Men            | 66.08      | 20.81   | 10.08   | 3.03    | 0     |
| Women          | 63.21      | 20.56   | 10.78   | 3.77    | 1.68  |
| US total       | 40.59      | 23.68   | 19.05   | 10.18   | 6.49  |
| Men            | 40.21      | 24.22   | 19.02   | 8.95    | 7.61  |
| Women          | 40.85      | 23.48   | 18.82   | 11.48   | 5.36  |

Source: Krzywdzinski and Gerber (2019). Weighted data.

active for up to 10 h per week, while 25% of respondents did crowdwork for more than 20 h per week. The differences are minor with regard to gender, with women in the sample reporting only slightly more hours per week than men, also when differentiating by type of crowdwork and country. In general, US-based respondents reported more hours, suggesting that it more often constitutes a main income activity.

Participants were also asked whether they organised their working time according to the available work—even if this meant working late in the evening, at night, or on weekends. The responses show a high level of working on demand, with 78% of male and 87% of female respondents fully or partially confirming this statement. Again, respondents on macrotask platforms (women 91%; men 88%) and in the United States (women 92%, men 88%) reported these blurred work schedules most often. Gender differences were, however, particularly strong on microtask platforms (women 86%, men 75%) and in Germany (women 82%, men 71%).

In sum, the results confirm previous findings and show that women crowdwork at least as many hours per week as men, or more (e.g., Berg et al., 2018). All participants, but in particular women, report highly flexible working hours. Again, women in the United States and on macrowork platforms seem at greatest risk of highly blurred working hours.

#### 4.1.3 | Employment status and motives

Table 5 summarises the primary employment status of the survey participants (aside from crowdwork).<sup>5</sup> Both in Germany and the United States, many respondents only work on

**TABLE 5** Primary employment status of survey participants (in %)

| Employment status | Full-time employed | Part-time employed | Self-employed | University/education | Unemployed/retired/unable |
|-------------------|--------------------|--------------------|---------------|----------------------|---------------------------|
| Total             | 29.48              | 14.44              | 27.82         | 13.22                | 15.05                     |
| Men               | 37.05              | 13.02              | 26.17         | 14.13                | 9.62                      |
| Women             | 21.42              | 15.91              | 29.54         | 12.09                | 21.04                     |
| Micro total       | 32.78              | 14.75              | 21.49         | 15.73                | 15.25                     |
| Men               | 41.04              | 13.39              | 18.96         | 17.66                | 8.95                      |
| Women             | 24.25              | 16.16              | 23.81         | 13.57                | 22.21                     |
| Macro total       | 19.12              | 13.44              | 47.70         | 5.31                 | 14.43                     |
| Men               | 24.83              | 11.89              | 48.26         | 3.31                 | 11.71                     |
| Women             | 12.52              | 15.16              | 47.50         | 7.43                 | 17.38                     |
| Germany total     | 29.55              | 12.74              | 24.78         | 19.18                | 13.75                     |
| Men               | 37.41              | 11.88              | 22.31         | 20.19                | 8.21                      |
| Women             | 19.64              | 14.21              | 27.40         | 17.75                | 21.00                     |
| US total          | 29.39              | 16.34              | 31.24         | 6.51                 | 16.52                     |
| Men               | 36.57              | 14.59              | 31.43         | 5.86                 | 11.55                     |
| Women             | 23.06              | 17.49              | 31.24         | 6.84                 | 21.09                     |

Source: Krzywdzinski and Gerber (2019). Weighted data.



platforms as a side-line and also perform a full-time or part-time job, study for a degree, or are also self-employed beyond platform work. This points to its characteristic income hybridisation. The results again confirm the professional nature of macrowork with most respondents being self-employed.

Looking at the distributions by gender, the classic labour market inequalities as described in the literature review seem to be reproduced. Men (37%) in the sample were much more likely than women (21%) to have a regular full-time job. Conversely, many women held an atypical (part-time, self-employment) or very often also no other employment (i.e., unemployed, retired, unable to work) aside crowdwork. These gender differences in the primary employment status can be found both within the micro- and microwork sample as well as the German and US sample. The results indicate that women in the sample are more often than their male colleagues in fragmented and precarious employment situations. Especially the high share of women being retired, unemployed or unable to work is striking. This links to the much lower monthly net incomes of women in the sample, possibly as secondary earner in the household.

The findings are underlined by female respondents more often fully or partly agreeing to the statement 'I don't have other job prospects' (women 38%, men 24%). This perceived lack of alternatives is highest amongst women on microwork platforms (women 40%, men 25%) as well as in Germany (women 39%, men 23%). Conversely, more women (and men) in macrowork (62%, men 66%) and the United States (65%, men 68%) fully or partly saw a 'personal future in crowdwork'. Gender differences in perceiving crowdwork as long-term strategy were, however, more pronounced in microwork (women 57%, men 43%) and Germany (women 49%, men 38%).

Crowdwork seems to be both a curse and blessing, which can be linked to the reasons for performing this type of work. The easy access to income is a central motivation for both genders (95%). In addition, the data points to greater domestic responsibilities of women. More women (42%) than men (30%) reported having children. Amongst those with children, 84% of female respondents and 58% of male respondents fully or partially agreed with the statement that they pursue crowdwork in order 'to be flexible to look after children or other family members'. This corresponds to previous findings (Adams-Prassl & Berg, 2017; Berg et al., 2018; Churchill & Craig, 2019). Again, gender differences with regard to care responsibilities (including respondents with and without children) are strongest in microwork (women 55%, men 34%) and Germany (women 43%, men 25%). On the whole, however, this care motivation is highest in the United States (women 66%, men 51%) pointing to the weaker social infrastructure.

The findings suggest women are more likely to crowdwork in the context of precarious employment statuses, choosing this type of flexible and home-based work because of care obligations and a lack of alternatives. Crowdwork is therefore more often perceived as a longer-term income strategy. The findings also indicate lower labour market mobility for women in microwork, explained by the lower skill levels requirements. Moreover, the findings also indicate lower mobility for women in Germany, which could reflect the dualized labour market that women find themselves in in the conservative German welfare model.

## 4.2 | Multivariate analysis: Main and interacting effects of gender on precarity

The bivariate analysis provides indications that the women in the sample are exposed to the risks of precarity to a larger extent. The following section presents the results from ordinal

logistic regression models to estimate whether and to what extent the gender differences observed in the bivariate analysis are driven by differences in education, employment status, having children and country of residence. For this purpose, two statements from the survey are used as dependent variables. First, the statement ‘I depend on my income from crowdwork’, which is analytically termed economic precarity and reflects constrained income opportunities that result from the labour market position. Second, the statement, ‘I work on the platform because I need to be flexible to look after children or other family members’, which is analytically termed household precarity and reflects constrained work opportunities that result from the household position. Both the labour market position and home position are important in structuring precarity risks. Table 6 summarises the main effects. Tables 7–10 uses group dummies to compare women and men with different educational attainments, in different employment, (institutional) country and household contexts. All other variables from Table 6 have been included as control variables. They remain stable in terms of significance and direction of effects. The discussion of the findings is based on the theoretical expectations formulated in the three hypotheses.

**Hypothesis 1:** *Direct gender effects on economic and household precarity?*

**TABLE 6** OLS, main effects (odds ratios; robust standard errors in brackets)<sup>a</sup>

|  | <b>Economic precarity:<br/>“I depend on my income<br/>from crowdwork”</b> | <b>Household precarity: “I need<br/>to be flexible to look after kids<br/>and other family members”</b> |
|--|---|---|
| Women (comp. men)  | 1.247 (0.186)   | 2.042** (0.294)   |
| Academic degree (comp. no<br>academic degree)              | 0.914 (0.153)   | 0.918 (0.142)   |
| Children (comp. no children)                               | 0.971 (0.172)   | 5.200** (0.914)   |
| In a relationship (comp. single)                           | 0.810 (0.135)   | 1.239 (0.200)   |
| Part-time employed<br>(comp. full-time)                    | 2.214** (0.417)   | 1.677* (0.350)  |
| Self-employed (comp. full-time)                            | 2.817** (0.569)   | 1.678* (0.355)  |
| Unemployed, pensioner, unable to<br>work (comp. full-time) | 2.250** (0.606)   | 1.881* (0.477)  |
| In education (comp. full-time)                             | 2.307** (0.726)   | 0.775 (0.209)   |
| Share of platform on monthly income                        | 1.844** (0.146)   | 1.135* (0.068)  |
| US (comp. Germany)   | 3.620** (0.632)   | 2.459** (0.396)   |
| N  | 971   | 954   |
| Pseudo- $R^2$  | 0.1585  | 0.1262  |

*Note:* Level of significance \*\* $p < 0.01$ , \* $p < 0.05$ . Control variables: platform dummies, duration of presence on the platforms, number of platforms used and age. Weighted data.

Abbreviation: OLS, ordinal logistic regression.

<sup>a</sup>The odds ratio quantifies the strength of association between two variables. For example, 1.247 for women with regards to economic precarity means that women have a 1.247 times higher likelihood of having the outcome as compared to men. The robust standard error measures the uncertainty of the estimate.

**TABLE 7** OLS, groups by gender and education (odds ratios; robust standard errors in brackets)

| <b>Gender × education</b>                                      | <b>Economic precarity:<br/>“I depend on my income<br/>from crowdwork”</b> | <b>Household precarity: “I need<br/>to be flexible to look after kids<br/>and other family members”</b> |
|--|---|---|
| Women × academic degree (comp.<br>men × academic degree)       | 1.276 (0.219)   | 2.088** (0.351)   |
| Women × no academic degree<br>(comp. men × academic<br>degree) | 1.352 (0.323)   | 2.210** (0.486)   |
| Men × no academic degree (comp.<br>men × academic degree)      | 1.129 (0.214)   | 1.124 (0.225)   |
| All other variables from Table 6 included as control variables |   |   |
| <i>N</i>   | 971   | 954   |
| Pseudo- <i>R</i> <sup>2</sup>                                  | 0.1585  | 0.1262  |

*Note:* Level of significance \*\**p* < 0.01, \**p* < 0.05. Weighted data.

Abbreviation: OLS, ordinal logistic regression.

The results of the first multivariate model estimating the direct drivers of economic and household precarity highlight the central role of the employment status and institutional context (see Table 6, left column economic precarity, right column household precarity). Having atypical employment (part-time employment, self-employed) or no other employment (retired, unable to work, unemployed) aside crowdwork considerably raised the chances for survey participants of both economic and household precarity, compared to those in full-time employment. Similarly, respondents in the US on the whole were more likely to face economic and household precarity than respondents in Germany, reflecting the liberal welfare model in the former and conservative welfare model in the latter. Because of higher labour commodification and lower welfare policies, US workers face greater pressure to combine care and wage work. Surprisingly, there is no main effect from educational attainment.

Gender has a main effect on household precarity, but not on economic precarity. Being a woman raised the chances for household precarity in the sample. Unsurprisingly, having children also considerably raised this risk. Hypothesis 3 examines the extent to which both conditions mutually reinforce each other. The results show no main effect of gender on economic precarity. They point towards the expected direction but are not significant. However, on the basis of the literature, an indirect effect is suspected, mediated via educational attainment, employment status, and the country (see Hypothesis 2).

In sum, Hypothesis 1, stating a direct gender effect on precarity (regardless of the employment, household, or country setting), can only be confirmed in part: while household precarity in the sample was strongly related to gender, no evidence for such a direct gender effect could be found on economic precarity. To identify indirect gender effects, the impact of the four independent variables (educational attainment, employment status, country, number of children) are measured for men and women separately (see Tables 7–10).

**Hypothesis 2:** *Indirect gender effects on economic precarity.*

**TABLE 8** OLS, groups by gender and employment status (odds ratios; robust standard errors in brackets)

| <b>Gender × part-time<sup>a</sup></b>   | <b>Economic precarity:<br/>“I depend on my income<br/>from crowdwork”</b> | <b>Household precarity: “I need<br/>to be flexible to look after kids<br/>and other family members”</b> |
|---|---|---|
| Women × full-time (comp.<br>men × full-time)  | 1.570 (0.378)   | 1.884* (0.493)  |
| Women × part-time (comp.<br>men × full-time)  | 2.514** (0.583)   | 2.930** (0.744)   |
| Men × part-time (comp.<br>men × full-time)  | 3.060** (0.787)   | 1.894* (0.529)  |
| All other variables from Table 6 included as control variables                          |   |   |
| <i>N</i>  | 971   | 954   |
| Pseudo- <i>R</i> <sup>2</sup>   | 0.1590  | 0.1222  |
| <b>Gender × self-employed<sup>b</sup></b>   | <b>Economic precarity:<br/>“I depend on my income<br/>from crowdwork”</b> | <b>Household precarity: “I need<br/>to be flexible to look after kids<br/>and other family members”</b> |
| Women × full-time. (comp.<br>men × full-time)   | 1.573 (0.378)   | 1.880* (0.491)  |
| Women × self-empl. (comp.<br>men × full-time)   | 3.669** (0.979)   | 2.959** (0.837)   |
| Men × self-empl (comp.<br>men × full-time)  | 3.215** (0.744)   | 1.690* (0.418)  |
| All other variables from Table 6 included as control variables                          |   |   |
| <i>N</i>  | 971   | 954   |
| Pseudo- <i>R</i> <sup>2</sup>   | 0.1586  | 0.1263  |
| <b>Gender × no employment<br/>(unemployed, retired, unable<br/>to work)<sup>c</sup></b> | <b>Economic precarity:<br/>“I depend on my income<br/>from crowdwork”</b> | <b>Household precarity: “I need<br/>to be flexible to look after kids<br/>and other family members”</b> |
| Women × full-time. (comp.<br>men × full-time)   | 1.571 (0.378)   | 1.871* (0.489)  |
| Women × unemployed,<br>pensioner, unable to work<br>(comp. men × full-time)             | 3.090** (0.972)   | 4.540** (1.378)   |
| Men × unemployed, pensioner,<br>unable to work (comp.<br>men × full-time)               | 2.172* (0.817)  | 1.015 (0.398)   |
| All other variables from Table 6 included as control variables                          |   |   |
| <i>N</i>  | 971   | 954   |
| Pseudo- <i>R</i> <sup>2</sup>   | 0.1585  | 0.1278  |

<sup>a</sup>Level of significance \*\* $p < 0.01$ , \* $p < 0.05$ . Control of employment statuses other than full-time and part-time. Weighted data.

<sup>b</sup>Level of significance \*\* $p < 0.01$ , \* $p < 0.05$ . Control of employment statuses other than full-time and self-employed. Weighted data.

<sup>c</sup>Level of significance \*\* $p < 0.01$ , \* $p < 0.05$ . Control of employment statuses other than full-time and unemployed, pensioner or unable to work. Weighted data.

**TABLE 9** OLS, groups by gender and country (odds ratios; robust standard errors in brackets)

| <b>Gender × country</b>  | <b>Economic precarity:<br/>“I depend on my income<br/>from crowdwork”</b> | <b>Household precarity: “I need<br/>to be flexible to look after kids<br/>and other family members”</b> |
|--|---|---|
| Women × Germany (comp.<br>men × Germany)                       | 1.409 (0.325)   | 2.390** (0.519)   |
| Women × US (comp.<br>men × Germany)                            | 4.512** (0.965)   | 5.094** (1.112)   |
| Men × US (comp. men × Germany)                                 | 4.070** (0.807)   | 2.845** (0.594)   |
| All other variables from Table 6 included as control variables |   |   |
| <i>N</i>   | 971   | 954   |
| Pseudo- <i>R</i> <sup>2</sup>                                  | 0.1588  | 0.1267  |

Note: Level of significance \*\**p* < 0.01, \**p* < 0.05. Weighted data.

Abbreviation: OLS, ordinal logistic regression.

**TABLE 10** OLS, groups by gender and presence of children (odds ratios; robust standard errors in brackets)

| <b>Gender × children</b>                                       | <b>Economic precarity:<br/>“I depend on my income<br/>from crowdwork”</b> | <b>Household precarity: “I need<br/>to be flexible to look after kids<br/>and other family members”</b> |
|--|---|---|
| Women × no children (comp.<br>men × no children)               | 1.260 (0.229)   | 1.533* (0.286)  |
| Women × children (comp. men × no<br>children)                  | 1.206 (0.287)   | 11.593** (2.677)  |
| Men × children (comp. men × no<br>children)                    | 0.990 (0.214)   | 3.262* (0.736)  |
| All other variables from Table 6 included as control variables |   |   |
| <i>N</i>   | 971   | 954   |
| Pseudo- <i>R</i> <sup>2</sup>                                  | 0.1585  | 0.1296  |

Abbreviation: OLS, ordinal logistic regression.

Note: Level of significance \*\**p* < 0.01, \**p* < 0.05. Weighted data.

In terms of economic precarity, an indirect gender effect was found with regard to the *employment status* (b) and the *country* (c). First, the likelihood of economic precarity rose for both men and women in the sample holding an atypical (part-time, self-employed) job or no other employment status (unable to work, retired, unemployed) (as compared to full-time employment) (Table 8, left column). The bivariate analysis showed, however, that atypical or nonemployment were strongly related to gender differences in the first place. For example, 63% of full-time workers in the sample were male whereas 55% of part-time workers were female and 68% of nonworking respondents were female. Women in the sample were more often in atypical employment or no other employment whereas men were more often in full-time employment. This is a good example of how gender inequalities can arise, even if at first glance there does not seem to be a gender effect. Second, and as expected, aside from employment

status, the risks for economic precarity also increased considerably for all crowdworkers in the US sample, but particularly for US women, reflecting high labour commodification (Table 9, left column). Against expectations, there are no differences between the groups of men and women by *educational attainment* (c) (Table 7 left column).

In sum, Hypothesis 2 can be partly confirmed: the employment status and welfare regime not only have a direct effect on economic precarity but also potentiates the risks for women.

### **Hypothesis 3:** *Indirect gender effects on household precarity.*

In terms of household precarity, as expected indirect gender effects could be identified that work via the *presence of children* (a) and the *country* (b). The likelihood of doing crowdwork because of care obligations unsurprisingly increased for both genders with children, but considerably more for women (Table 10, right column). This points to the gendered nature of care work and the role of crowdwork therein. With regard to the interaction of gender and country (Table 9, right column), the results show that being a woman or being in the United States, but above all being both, considerably raises the likelihood of crowdworking because of care responsibilities. This reflects the lack of public childcare or parental leave schemes that particularly impact women balancing care work with an income. The considerable difference between women in the United States and Germany (and also men respectively) highlights the expected impact of the different welfare models and different provisions of social infrastructure. However, the strong gender differences in household precarity in Germany underline the persistence of unequally distributed care responsibilities within the nucleus of families, and the legacy of the conservative welfare model.

In sum, Hypothesis 3 is fully confirmed. Household precarity is deeply gendered. This is also noticeable for other socioeconomic conditions. For example, both women with and without an academic degree show a higher likelihood of crowdworking than men because of care obligations. Similarly, even women in primary full-time employment (apart from their platform work) have a higher likelihood of reporting care obligations as motivation for crowdwork than men (in primary full-time employment). An atypical employment status (part-time or self-employed) also raises the likelihood of reporting care obligations as a motivation for crowdwork among men, but it does so to a greater extent for women. The risk of household precarity is particularly high for women who do not work at all (but not for men), presumably because they have often withdrawn from the labour market due to these care obligations.

## **5 | SUMMARY AND CONCLUSION**

The article investigated whether the higher precarity risks of women on the labour market would also be reflected in platform work, and in particular in the location-independent and highly flexible crowdwork. The analysis was based on quantitative data from an online survey with crowdworkers based in the United States and Germany and active on both microtask and macrotask platforms.

The bivariate analysis indicated an accumulation of precarity characteristics amongst women in the sample. Female survey participants earned a greater share of an overall lower income through crowdwork. They more often reported feeling economically dependent on crowdwork, working flexible hours, and having atypical or no other employment aside crowdwork. While voicing a stronger desire for alternatives, they were also more likely to

perceive crowdwork as a long-term option. In addition, multivariate models were estimated to examine the direct and indirect effects of gender on precarity while controlling for other socioeconomic factors. For this purpose, two statements from the survey were used that were analytically termed economic and household precarity and reflect constraints that result from the labour market and home position respectively. A direct gender effect was found for household precarity, defined as the necessity to engage in crowdwork due to domestic care responsibilities. Household precarity for women was further aggravated by the presence of children and the US institutional setting. No direct gender effects were found for economic precarity, defined as financial dependence on crowdwork. Indirect effects could, however, be identified via the employment status and institutional setting. Generally, having atypical or no employment raised the risks of economic precarity, but women were more often affected by it. Similarly, while the US institutional context considerably raised the risks for all respondents, US women are particularly affected by economic precarity.

Overall, crowdwork can serve as a magnifying glass to study how gender inequalities are reproduced in the digital world of work. Women face higher precarity risks directly shaped by their household position and indirectly via their employment status. The article adds to the debate on the extent to which platform work can overcome traditional labour market inequalities. Far from being a 'social equalizer', for the already vulnerable labour market groups, crowdwork is an insecure form of work underpinned by structural, labour market and household constraints (Hoang et al., 2020, p. 3). At the same time, the results show that while the work model itself can be characterised as precarious, not all platform workers can necessarily be identified as precarious. This adds to the literature discussing the new degree of workforce heterogeneity within platform work and its implications for workers' organisation and collective actions (see for e.g., Robinson & Vallas, 2020; Wells et al., 2021).

A central finding of the article is that institutional differences matter in the international, digital platform world. The article shows that welfare policies can aggravate or mitigate the insecurities inherent within crowdwork, or platform work more generally. All US crowdworkers, and in particular US women, face high precarity risks. This reflects the liberal US welfare model, with a high commodification of labour and weak social security and infrastructure, especially with regard to childcare. An important, open research question remains as to why the US women with children in the sample opt out of the common US pattern of working regular full-time jobs and chose crowdwork (full or part-time) instead. Some of them may be a far, extremely vulnerable end of a spectrum of US women's employment patterns that is forced to forgo regular employment, as for example single mothers in remote areas. Others could be a subset that prefers a different model of reconciling work and family than the social norm and that can also afford to forego regular employment, for example because the partner earns well. A lack of part-time options (and social policies) and stronger full-time norm could leave women in the United States (unlike in Germany) with a difficult trade-off: regular employment without good work-family compatibility or opting out to models such as crowdwork with better compatibility but higher precarity. In Germany, precarity risks are overall lower for men and women in the sample, which reflects the lower commodification of labour and stronger social security system. Nevertheless, the article highlights persisting gender differences. They reflect the legacy of a conservative welfare model and family breadwinner households. Despite better social infrastructure and some public policies, women in Germany are more likely than men to hold atypical, often part-time employment or no employment. The ongoing unequal division of domestic responsibilities and childcare continues to be a central driver for women's placement in precarious employment.



The findings on the role of crowdwork in the context of the female labour market and household precarity are all the more important in light of the COVID-19 crisis. Early studies show that the lockdown in spring 2020 led to a retraditionalization of care work (Hipp & Bünning, 2020). Subsequent austerity policies and unemployment can also be expected to affect women in particular ways—if not directly via the labour market, then indirectly via the unequal division of unpaid care work. The article highlights the need for policy measures that address both the regulation of platforms as well as the underlying structural inequalities for women and other vulnerable labour market segments.

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## ENDNOTES

- <sup>1</sup> Gender is understood as social rather than biological category.
- <sup>2</sup> The data does not allow for differentiation between Eastern and Western Germany.
- <sup>3</sup> The platforms examined in the qualitative and quantitative part of the research only partially overlap, as access to crowdworkers was not possible on all.
- <sup>4</sup> In the remainder of the article, euros and USD are denoted as equivalents for the sake of simplicity. The amounts refer to euros and were converted into USD accordingly.
- <sup>5</sup> Survey participants were able to select more than one option. To identify the most important source of income aside crowdwork, the data was sorted by logical priority: For example, a full-time job was assumed to be the primary status, even if respondents also specified self-employment.

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