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Introduction

Imagine losing your job and suddenly facing the tough decision of what to do next. With no immediate wage-employment opportunities available, you consider entering self-employment. This path could serve as a stepping stone, a temporary solution to make ends meet until you find a suitable job. However, uncertainty looms: Will this period of self-employment enhance your prospects, or will it trap you in a cycle that makes it harder to return to wage employment?

In the Netherlands, self-employment has been one of the fastest-growing among European countries, increasing from 8.6 percent to 12.3 percent of the active labour force between 2007 and 2017 (Centraal Bureau voor de Statistiek, 2019). A proportion of this labour force growth is due to workers who, unable to find wage employment, enter self-employment to maintain an income. However, this situation may create a precarious environment for the self-employed, as 6 percent of this population is at high risk of falling into poverty (International Monetary Fund, 2024). Given the steady growth of self-employment, it is crucial to understand the consequences of self-employment on workers' labour market outcomes.

Bruce and Schutze (2004) observe that those who enter self-employment have difficulty re-entering wage-employment, however they cannot pinpoint the causes. This research addresses this issue by accounting for the workers' reservation wages, providing insight into whether post-self-employment workers are more reluctant to return to wage-employment or are simply unable to do so. These insights may suggest potential strategies to assist those who entered self-employment but struggle to return to wage-employment. However, the current use of newly developed technologies makes it easier for individuals to improve their human capital, potentially increasing their reservation wages, complicating the determination of whether

assisting self-employed to return to wage-employment is an effective strategy (Barnes et al., 2015).

The consequences of self-employment on future labour market outcomes have been widely discussed in the literature. For instance, Bruce and Schutze (2004) use a panel study from 1979-1990 in the United States to examine the impact of self-employment on wages. They conclude that an additional year of self-employment decreases post-self-employment earnings, *i.e.*, return to wage employment, by 2.8% - 10.8%, indicating that human capital stagnates with self-employment. In contrast, Ferber and Waldfogel (1998), analysing data from 1979-1993 in the United States, find that self-employment results in higher wages for men compared to traditional employment, whereas for women, wage employment fares best. Kaiser and Malchow-Møller (2011), studying Danish men from 1990-1996, show that spells of self-employment are associated with lower hourly wages, confirming Bruce and Schutze's (2004) findings. A more recent study by Lougui and Borström (2023), examining displaced workers in Sweden between 2001 and 2006, concludes that those who re-enter wage employment after self-employment earn up to 20% more than those who do not enter self-employment. The literature thus presents a lack of consensus on the consequences of self-employment.

In the Dutch context, several studies examine labour market outcomes following displacement (Carreño et al., 2023; De Vries et al., 2019; Meekes & Hassink, 2022). De Vries et al. (2019) investigated workers between 2010 and 2011 who entered self-employment out of necessity compared to those who did so out of opportunity, finding that necessity-driven self-employed workers achieve worse outcomes, earning less annually than their opportunity-driven counterparts. Meekes and Hassink (2022) explore gender differences in coping with displacement, indicating that women are more likely to find flexible jobs with limited working hours. Carreño et al. (2023) find that displaced workers who move into flexible employment contracts, such as on-call, temporary-agency, and fixed-term contracts, experience wage

decreases. Unlike the self-employed, these individuals are employed by firms and receive salaries, yet they both share the flexible nature of their work arrangements (Katz & Krueger, 2017). Carreño et al. (2023) report a 14% earnings loss for individuals transitioning into these flexible contracts. Thus, these studies highlight that in the Netherlands, displaced individuals entering flexible work arrangements or self-employment tend to experience wage reductions and fewer hours worked.

The rise of the platform economy (PE) significantly disrupts traditional markets by introducing novel dynamics to self-employment and competing with established industries, as evidenced by Uber's impact on the taxi sector. This technology has witnessed explosive growth, with revenues surging from €3 billion to €14 billion between 2016 and 2020 (European Council, 2023). At its core, the PE is defined as "internet-based companies which provides an online service ensuring the supply of on-demand work, performed by individuals for individual clients or corporate customers, - on location or online" (European Commission, 2021). Platforms act as facilitators, maintaining a that efficiently matches on-demand workers with clients (Chan et al., 2019). Furthermore, it is important to distinguish the PE from the broader gig economy. Temp agencies, for instance, while offering flexible work arrangements, do not qualify as platform economies because they maintain a centralized workforce and lack a digital platform that facilitates direct interaction between workers and clients.

Even though academia discusses the consequences of self-employment on future labour market outcomes, the existing literature is relatively outdated as it omits the contemporary PE, which has significantly altered the landscape of self-employment (Bruce & Schutze, 2004; Ferber & Waldfogel, 1998; Kaiser & Malchow-Møller, 2011; Lougui & Borström, 2023). Therefore, there is a gap in the literature looking at the recent effects of self-employment, particularly in the context of PE's impact on the labour market. This gap includes understanding how self-employment influences an individual's reservation wage when returning to wage employment,

a factor that Bruce and Schutze (2004) fail to address. Consequently, this paper centres on the following research question: How does self-employment after job loss affect post-unemployment labour market outcomes?

To answer the research question, we make use of data from the LISS (Longitudinal Internet Studies for the Social Sciences) panel administered by Centerdata (Tilburg University, The Netherlands), which consists of a representative sample of Dutch nationals. Job displacement due to company closure or reorganization serves as an exogenous shock to examine the entry into self-employment and its impact on future labour market outcomes. Each individual is observed for three years before job displacement and five years post job displacement to thoroughly assess the effects of self-employment. The study focuses on people displaced between 2011 and 2018.

Propensity score matching is employed to control for potential confounding effects of observable variables, thereby reducing differences between the control and treatment groups. Every displaced worker is matched to two non-displaced workers who, based on observable characteristics, could have been displaced in the same year. Subsequently, a difference-in-differences is applied to compare self-employment outcomes on reservation wages, employment, working hours, and hourly wages.

This paper provides a novel contribution to labour economics by investigating the reservation wages of individuals transitioning to self-employment following involuntary job loss. Contrary to the expectation that platform availability would bolster income for the self-employed post-displacement, our findings reveal a 14.2% decrease in reservation wages, indicating a greater willingness to return to wage employment. This observed decline sheds light on the difficulties self-employed workers face when attempting to re-enter wage employment, as noted by Bruce and Schutze (2004). The research suggests this difficulty

stems from an inability rather than an unwillingness to attract wage-employment. If self-employed individuals had no interest in returning to wage employment, their reservation wages would increase. The observed decrease could potentially be attributed to challenges these individuals encounter in attracting work (gigs) or securing job offers.

The paper's structure follows a logical flow. Section 2 lays the theoretical background, exploring reservation wages, human capital, and the impact of PE on labour market outcomes, additionally formulating the relevant hypotheses. Section 3 discusses the data, and operationalization of key variables. Section 4 outlines the methodology, including the empirical strategy and data analysis techniques. Section 5 presents the results. Section 6 presents the analyses of the results reflecting on the hypotheses and theory. Finally, Section 6 concludes the paper by summarizing key findings, acknowledging limitations, discussing broader implications, and suggesting avenues for future research.

Theoretical Background and Hypotheses

Reservation Wage and Job Displacement

Following job displacement, the central economic dilemma for the unemployed individual is the "choice of the wage he would be willing to accept" (for a job) also known as the "reservation wage" (Mortensen, 1970). According to Mortensen (1970), a higher reservation wage will prolong the job search, as the individual will only accept offers that meet or exceed this threshold. The reservation wage is influenced by the rate of job offers that the individual receives (Mortensen, 1970). An individual with fewer job offers will likely lower their reservation wage, whereas someone with more offers can afford to maintain a higher reservation wage.

Self-Employment as an Alternative to Wage Employment

While the job search theory primarily applies to returning to wage employment, the dynamics shift when self-employment becomes a viable option post-displacement. Von Greiff (2009) discusses how the decision to enter self-employment involves different considerations. Unlike wage employment, self-employment does not rely on accepting or rejecting job offers but on the individual's decision to enter self-employment. However, the frequency of job offers still indirectly influences this decision. In the absence of job offers, an individual may be more inclined to consider self-employment (Von Greiff, 2009).

The motivation for opting for self-employment after job loss is multifaceted. Von Greiff (2009) elucidates that the value placed on different types of employment – (wage) employment, self-employment, and unemployment - varies depending on individual preferences and circumstances. While (wage) employment is generally preferred over unemployment, the choice between self-employment and unemployment depends on the entrepreneurial ability of the individual. In scenarios where wage-employment opportunities are scarce, an individual might choose self-employment if its earning potential surpasses that of unemployment benefits (Von Greiff, 2009). Consequently, during economic recessions or economic downturns, a decrease in earnings can lower the reservation wage for self-employment.

This is further supported by findings from De Vries et al. (2019) and Martinez-Cañas et al. (2023), which suggest that individuals enter self-employment for two primary reasons post-displacement. The first reason is a necessity, driven by a lack of job opportunities, consistent with the recession-push hypothesis (Martinez-Cañas et al., 2023; Von Greiff, 2009). The second is related to their entrepreneurial ability, where displacement catalyses starting a long-desired venture (De Vries et al., 2019; Von Greiff, 2009).

For those who enter self-employment out of necessity, it often serves as an interim stage in the job search process due to limited wage-employment opportunities (Balkin, 1990; De Vries et al., 2019; Lougui & Borström, 2023). The long-term impact of self-employment on employability and wage varies. For some, the experience gained through self-employment may enhance employability and lead to higher wages in future wage employment (Ferber & Waldfogel, 1998; Williams, 2000). For others, it may result in lower employability and wages (Bruce & Schutze, 2004; Kaiser & Malchow-Møller, 2011).

Wage Differences Before and After Self-Employment

A recurring inquiry in the literature pertains to the trajectory of wage difference before and after self-employment for displaced workers (Carreño et al., 2023; Lougui & Borström, 2023; Nyström, 2020). This debate centres around human capital, particularly the level of skill individuals possess before and following self-employment, and how the appreciation or depreciation of these skills impacts wages. Two main theories underpin this debate: the first involves push and pull factors, which signal certain skills to employers, and the second concerns sectoral and firm-specific skills.

The push and pull factors behind the decision to enter self-employment are crucial in interpreting the human capital of individuals by future employers. Push factors indicate that individuals had no other employment options and were compelled to pursue self-employment while pull factors suggest that individuals voluntarily choose self-employment (Dawson & Henley, 2012). These factors can signal different messages to employers, potentially affecting wages and employability.

Push factors can signal contradictory messages. On one side, it may suggest a lack of alternatives and possibly a deficiency in skills, implying a lower skill baseline compared to those who voluntarily enter self-employment (Martinez-Cañas et al., 2023). On the other side,

employers may view push motives as an indication of "fortitude and ambition" in the face of unemployment (Lougui & Brotström, 2023). Both perspectives hold merit as they may reflect the individual's skills, depending on the different circumstances.

In contrast, individuals pulled into self-employment are perceived to possess qualities that encourage them to seize business opportunities (Dawson & Henley, 2012). Characteristics, such as autonomy and independence signal different entrepreneurial motives, suggesting that those pulled into self-employment have stronger independence and leadership qualities (Martinez-Cañas et al., 2023). Consequently, those pulled into self-employment are deemed to have more skills due to their desirable entrepreneurial qualities, which display a certain level of resourcefulness (De Vries et al., 2019; Martinez-Cañas et al., 2023).

Given that displacement typically falls under "push" factors, individuals entering self-employment after displacement may exhibit the characteristics associated with push factors. However, De Vries et al. (2019) state that not all individuals pushed out of jobs into unemployment and subsequently self-employment do so out of necessity. Some may use this push as an opportunity to start their venture, significantly altering their post-self-employment labour market outcomes.

As for sectoral and firm-specific skills, displacement has a significant impact on these skills. Becker (1962) posits that occupational engagement enhance and improve human capital. Working within a firm allows individuals to continuously test and refine their skills maintaining sectoral relevance as they compete with other firms in the same industry, and improving their firm-specific skills (Williams, 2000). Consequently, when comparing the skills of the self-employed to those who remain employed, self-employed individuals are often perceived to have diminished skills due to a lack of sectoral relevance (Kaiser & Malchow-Møller, 2011; Neal, 1995).

Maintaining skills in the relevant sector is crucial for human capital in self-employment, as highlighted by Kaiser and Malchow-Møller (2011). They demonstrate that significant human capital losses in self-employment, occur primarily when individuals enter a different sector than their previous employment. Conversely, those who become self-employed within the same sector tend to maintain or even increase their wages (Kaiser & Malchow-Møller, 2011). This finding agrees with Neal (1995) that displaced workers who find new jobs in their pre-displacement industry, earn similar or greater returns to their pre-displacement wages. Therefore, individuals who enter self-employment in their relevant sector are more likely to maintain their skills, preventing skill depreciation and positively impacting their wages (Kaiser & Malchow-Møller, 2011; Neal, 1995).

Challenges in Re-entering Wage Employment Post Self-Employment

Bruce and Schutze (2004) highlight that self-employed workers often face greater difficulty in re-entering wage employment. Their research indicates that relative to wage employment, workers with self-employment spells experience a reduction in hourly earnings. This suggests that the worker's skills may have depreciated during the self-employment spell, complicating the transition back to full-time wage employment. Consequently, many find themselves accepting part-time positions instead (Bruce & Schutze, 2004).

However, Bruce and Schutze's (2004) conclusion – that skill depreciation or the failure of a self-employment venture leads to difficulty in re-entering wage employment and a higher likelihood of part-time employment – has limitations. Their study does not adequately consider the role of individual employment choices or the willingness to re-enter wage employment. They acknowledge that their inability to account for self-selection out of self-employment is a significant limitation. This self-selection bias means that individuals in unemployment versus self-employment may have different reservation wages for wage

employment, affecting their employment outcomes. This paper addresses this gap by accounting for individual's reservation wages post self-employment.

Reservation Wages and Re-entering Wage Employment Post Displacement

Reservation wages are influenced by an individual's employment status and their willingness to accept a new job. After job displacement, individuals who enter self-employment often experience an increase in their reservation wage compared to when they were unemployed (Koeing et al., 2016). This increase is because self-employment provides a baseline income, effectively raising their initial reservation wage. Consequently, these individuals become more selective about job offers, making them less likely to re-enter wage employment compared to those who are unemployed.

The reservation wage is also closely tied to an individual's skills. If an individual perceives their skills to be higher than the wages offered in wage employment, their reservation wage increases, making them less likely to accept available offers (Mortensen, 1970). Conversely, those with lower skills before displacement typically have lower reservation wages (Mortensen, 1970). The effect of a self-employment spell on skills – whether they appreciate or depreciate – can significantly impact the reservation wage. If individuals acquire new skills or enhance their existing ones during self-employment, their reservation wage increases, due to the perceived greater value they offer to future employers.

Following Bruce and Schutze's (2004) suggestion that skill depreciation hinders individuals from re-entering wage employment, we can infer that their reservation wage decreases as a result. This decline in reservation wage implies that the only available jobs for their re-entry are part-time positions, which they accept due to their lower reservation wage and diminished skills, or that they remain in self-employment. This situation underscores the difficulty

displaced workers face in securing full-time positions after a spell of self-employment, primarily driven by the perceived depreciation of their skills.

Impact of the Platform Economy on Labour Market Outcomes

Bruce and Schutze (2004) discuss the limitation of how the timeframe used in studies can affect labour market outcomes. This limitation is significant because previous literature on labour market outcomes of self-employment often omits the era of the rise of the platform economy (PE) (Bruce & Schutze, 2004; Lougui & Borström, 2019; Williams, 2000). The PE has significantly impacted self-employment by improving the accessibility and frequency of work. Before the PE, finding clients was more challenging and there was a higher cost for freelancers to enter into such work, diverting their focus from improving their craft (Eichhorst, 2016; Jonker-Hoffrén, 2020). Such as finding clients and establishing a network to find frequent work (Kenney et al., 2019).

Freelancers improve their employability for work by practicing their craft and becoming more specialized, thus potentially improving their skills, which in turn improves wages. User rating systems on these platforms motivate the self-employed to continually improve their skills, giving them a competitive edge and attracting more work (Barnes et al., 2015; Jonker-Hoffrén, 2020). However, Pouliakas and Ranieri (2022) argue that PE does not universally enhance skills. They contend that skill enhancement primarily occurs when platform work is combined with full-time employment, leading to a spillover effect between employment types. When platform use is a part-time venture, it does not significantly increase a person's skills.

Previously, firm-specific and sector-specific skills were difficult to maintain in self-employment. The absence of wage-employment made it challenging to maintain these skills (Lazaer, 2009; William, 2000). However, this has changed with the PE. Firms now use the

flexibility offered by platforms (crowdsourcing) to employ freelancers for specific assignments, allowing individuals to stay relevant with firm-specific skills even if they are not directly employed by the firm (Barnes et al., 2015). Additionally, the variety of platforms available today allows self-employed across multiple sectors to access services relevant to their skills, reducing the barrier to maintaining firm and sector-specific skills for those displaced into self-employment (Jonker-Hoffrén, 2020).

Analysing the impact of PE on displaced individuals transitioning to self-employment reveals whether human capital is accumulated or diminished (Bay & Koster, 2022). On the one hand, individuals entering self-employment today can attract projects more quickly, allowing them to practice their craft effectively and prevent skill depreciation. On the other hand, previous studies indicate that skill improvement may happen only under certain circumstances or may depend heavily on the skills already possessed by the individual before displacement (Barnes et al., 2015; Pouliakas & Ranieri, 2022).

In the current technological era, individuals are more capable of maintaining their human capital during self-employment due to an improved rate of matching in jobs relevant to their sectoral and firm-specific skills. The use of platform technologies and the ease of matching supply and demand enable self-employed individuals to consistently obtain gigs, preventing skill depreciation. This continuous engagement in relevant work can increase their wages and employability, facilitating a potential return to wage employment.

Platform Economy and Reservation Wages

The introduction of the platforms can affect the reservation wages of the self-employed in two significant ways. Firstly, if platforms allow for the improvement of skills, individuals' reservation wages increase as they maintain or enhance their human capital. This makes them less likely to return to wage employment. On the other hand, the reservation wage of self-employed individuals fluctuates based on the supply and demand for their services, influenced by the business cycle (Cumming et al., 2022). Therefore, the reservation wage towards wage employment heavily depends on the success of their self-employment and their ability to generate sufficient revenue. During economic downturns, when attracting gigs becomes difficult, wage-employment may become a more secure path, ensuring financial stability.

Hypotheses

Reflecting on the previous discussion we propose the following hypotheses:

(1) Displaced workers entering self-employment increase their wages and employability.

(2) *As a displaced worker enters self-employment, their reservation wage to re-enter wage-employment increases.*

Data

To conduct this study, we utilize the Longitudinal Internet Studies for the Social Sciences (LISS) panel, which comprises 7,500 individuals aged 16 years and older. “The sample of households are based on a true probability sample, taken from population register by Statistics Netherlands” (Centerdata, 2024). From these households, users are selected and invited to participate in surveys on an invite-only basis; self-registration is not possible. Annually, longitudinal surveys are collected and added to the panel for the selected households. Currently, the panel includes 16 waves ranging from 2008 to 2023. The Core Study survey gathers data on 8 topics, including work and schooling, health, economic situation, and personality.

The LISS dataset is constrained by its relatively small sample of exogenously displaced workers compared to other labour force datasets in the Netherlands. However, it does offer valuable information about job search efforts from individuals who have experienced displacement (see Appendix B). Moreover, the questionnaire includes data on individuals’ reservation wages, providing insight into the willingness to transition from self-employment to wage-employment. The LISS panel allows us to differentiate how individuals perceive their self-employment experiences, thereby avoiding overgeneralization of all self-employed individuals.

We use two questionnaires from the LISS panel: i) Background Variables, containing monthly data from 2008-2023, and ii) Work and Schooling, which encompasses yearly data across all 16 waves from 2008 – 2023. To merge the datasets, we align the monthly waves of the Background Variables questionnaire with the data collected by the Work and Schooling questionnaire. This ensures consistency in the timing of data collection, as the Work and Schooling data is collected over a span of three months each year. Therefore, we match the

monthly waves of the Background Variables questionnaire to the corresponding months during which the Work and Schooling data had been collected.

This study utilizes a robust dataset spanning three years of pre-displacement observations and five years of post-displacement observations. We focus on individuals who experienced involuntary job loss due to company closures between 2011 and 2018 (See Figure 1). This timeframe aligns with established research protocols in the field, where five years post-displacement serves as the standard timeframe for analysis (Bruce & Schutze, 2004; Carreño et al., 2023). Additionally, in the Netherlands, displaced individuals may receive benefits for a maximum of 24 to 38 months, a post-displacement period of five years was deliberately chosen to track the outcomes of individuals who may enter self-employment after exhausting benefits.

Dutch employees displaced due to firm bankruptcy or reorganization, are entitled to one month of unemployment benefits (UB) for each year worked, provided they have worked at least 208 hours in a year (Meekes & Hassink, 2022). Initially, recipients receive 75% of their wage for the first two months of UB, followed by 70% for up to 38 months (Meekes & Hassink, 2022). This policy applies to those displaced before January 2016. After January 2016, the UB system was altered, reducing the maximum duration of benefit receipt to 24 months (European Commission, 2024). For the first 10 years of employment, each year entitles the individual to one month of benefits, while years of employment before 2016, and from the 11^{th} year onward after 2016, entitle individuals to half a month of benefits per year (European Commission, 2024).

The selection of company closures or reorganization ensures job displacement resulting from an external, unforeseen event (exogenous shock). The year of displacement is defined as the year participants reported job loss due to company closure/reorganization. Due to the annual

survey format, reported job loss may have occurred anytime between May of the preceding year and May of the data publication year. For instance, if individual A reported displacement in the 2013 wave, the actual job loss could have happened between May 2012 and May 2013. Therefore, reported job loss occurred anywhere between Year = (-1) and Year = (0). However, we assume that the year of displacement is Year = (0).

Fig 1. Observation period of displaced workers (2008-2023).

Key Variables

In conducting the difference-in-differences analysis, four dependent variables will be utilized to assess the first and second hypotheses. These variables include employment, hourly wages, and working hours, aimed at evaluating whether self-employment post-displacement impacts an individual's wages and employability. Employment is operationalized as having wage employment or working to assist with family business. This distinction intentionally excludes self-employment or freelancing from the employment variable to isolate the effect of self-employment and observe if individuals transition back to wage employment post-displacement. The employment variable is represented as a dummy, where 1 indicates employment and 0 indicates unemployment. Hourly wage is derived from the imputed personal gross monthly income in euros divided by the number of working hours, with the natural logarithm of this wage used for analysis. Similarly, the natural logarithm of working hours is used to represent working hours.

To assess the second hypothesis regarding whether the reservation wage of the individual increases with self-employment, a variable is constructed from a question in the LISS Panel. Participants are asked, "Suppose someone offered you a job with the same number of hours, the same kind of work, and in the same place where you are currently working. What is the minimum net wage that they would have to offer you, for you to accept that new job?" (Centerdata, 2024). This question assesses the reservation wage of individuals, indicating how much they are willing to accept to change their jobs. However, since the time variation for such wages differs among individuals in terms of answer format (some express it as yearly wage, others as monthly), a new variable was constructed to standardize all values to estimate based on monthly wages. This adjustment was necessary as many individuals had missing data in certain waves regarding hours worked, making it difficult to calculate hourly wages.

The independent variable accounts for whether or not a person has been displaced from their job due to firm closure or reorganization. This ensures a level of exogeneity, as in the Netherlands, notification to the displaced workers is not required due to the time sensitivity of dismissal (Meekes & Hassink, 2022).

The analysis incorporates a range of control variables to account for potential confounding factors. To capture individual characteristics, we include age and, following Barnes et al. (2015), control for job tenure at the previous job before displacement. We also include a binary variable for higher education (coded 1 if an individual holds at least an HBO degree) to account for the influence of pre-displacement skills and experience on self-employment outcomes. Additionally, a dummy variable for urban density is included (coded 1 if residing in an area with a density of 1,500 or more people per square kilometer). This is relevant because research by Bay and Koster (2023) suggests that self-employment patterns differ between rural and urban areas in the Netherlands. Specifically, rural residents tend to engage in more stable, long-term self-employment, whereas urban residents are more likely to experience mixed or precarious self-employment, characterized by alternating periods of self-employment and short-term employment. Finally, marital status is controlled for as a binary variable (coded 1 if married) due to its documented influence on wages (Kaiser & Malchow-Møller, 2011).

Methodology

Empirical Strategy

In line with previous research, we implement specific sample selection criteria. Following Von Greiff (2009), the sample is restricted to individuals aged 25 to 55 during the displacement year. This criterion excludes those nearing retirement or still engaged in late-stage education, ensuring a focus on individuals with substantial pre-displacement work experience. Additionally, we select only solo self-employed individuals, defined as those running their businesses, without employing others, to address lower entry barriers in terms of capital, skills, and regulations (De Vries et al., 2019). This focus is particularly relevant in the Dutch context, where the solo self-employed group (ZZPers), benefit from minimal setup costs (€80) and simplified regulatory requirements (KVK, 2024).

The distinction between solo self-employed and employer self-employed individuals is crucial. Employer self-employed individuals, generally have higher wages and leadership roles and often return to higher-level positions upon re-entering wage employment (Baptista et al., 2012). Conversely, solo self-employed individuals constitute a broader and more heterogeneous group, resulting in more diverse outcomes (Bay & Koster, 2023). By focusing on solo self-employed individuals, we aim to gain a clearer understanding of the reservation wage dynamics within this specific and potentially more vulnerable segment of the self-employed population.

When matching to ensure pre-treatment comparability between the treatment and control groups, individuals must have three years of data before displacement. Unlike the pre-displacement period, we included displaced workers with varying numbers of post-displacement years. This decision allows for the inclusion of more treatments, acknowledging the challenge of obtaining complete observations for all participants over the nine-year study period. However, this imbalance may introduce potential bias to reduce the precision of the treatment effect (Huntington-Klein, 2021). The bias arises because the omitted years for the

treatment group are not observed, leading to potentially biased estimates for the individual period effects.

To address this issue, we focus on the overall difference-in-differences estimate rather than individual period effects (Huntington-Klein, 2021). By doing so, we can capture the average treatment effects across all periods, thus mitigating the impact of data imbalance. This approach ensures a more robust analysis of the treatment effects. [1]

The displaced sample includes only workers dismissed due to company closure or reorganization, removing potential bias regarding motives for entering into self-employment. This criterion ensures that individuals with different backgrounds and motives are displaced for the same reasons (Lougui & Broström, 2023). However, slight differences may exist in cases of company reorganization due to distinct dismissal rules in the Netherlands.
In the Netherlands, the principle of proportionality is followed, where for "mutually equivalent position, employees with shortest tenure in each age category must be proposed as candidates for dismissal" (Schouten, n.d.). This could bias those displaced by reorganization, as they are likely to be employees with less experience and lower skills, which can affect their reservation wages for entering and exiting self-employment and present a bias for the lower human capital they may possess. To mitigate such bias, propensity score matching is used to account for job displacement effects, which will be further discussed in the matching section below.
Given that the data does not include a variable indicating if individuals have used the PE during self-employment, we employ two strategies to indirectly increase the likelihood of self-employed individuals using platforms for their businesses. Firstly, the survey included a question regarding the possession of a simPC, serving as a proxy for household internet

[1] However, it is important to note that this approach might still result in reduced precision of the overall treatment effect, due to some missing data for some observations of workers in the treatment group.

access. The simPC service is provided for “individuals and households who do not have internet access” (Centerdata, 2024). In the dataset, only one participant in the treatment group lacked internet access, and immediately entered wage-employment. Therefore it was considered unnecessary to exclude this participant from the sample.

Additionally, the timeframe for selecting the sample spans from 2011 to 2018, ensuring the tracking of displaced workers during the emergence of platform dispersion. This period facilitates a suitable environment for freelancers to leverage these platforms. While this approach does not guarantee that all self-employed individuals will utilize platforms, it increases the likelihood of such platforms being available for their use.

Business cycles may influence displacement and individuals’ decisions regarding self-employment, as suggested by the recession-push hypothesis and the prosperity-pull hypothesis (Von Greiff, 2009). To address this, matching techniques are used to pair displaced individuals with controls from the same year of displacement who share similar characteristics, thus enabling a better observation of displacement effects amidst similar economic climates.

Given the variation in treatment years from 2011 to 2018, fixed effects are employed to the difference-in-differences to relax the assumption, all treated units are treated simultaneously in the same year (Huntington-Klein, 2021). Since the treatment of displacement due to firm bankruptcy and reorganization occurs in different years within the specified timeframe, each treatment participant is matched with a control from the same year of displacement to ensure the parallel trend assumption holds.

Matching

Given that the treatment assignment is through an exogenous shock, controlling for confounding variables is addressed to some extent. However, assigning a similar control

group is not straightforward. Displacement used as a treatment requires finding a control group where the only difference between the treatment group and the control group is job displacement. Confounding variables pose a significant concern in observational studies, potentially biasing estimates of treatment effects (Yang et al., 2019). Therefore, propensity score matching (PSM) serves two primary purposes in this context: firstly, to control for confounding variables by balancing measured confounders and risk factors, and secondly, to match comparable treatment and control groups, *i.e.*, finding non-displaced workers comparable to the displaced workers (Yang et al., 2019). We will follow the method developed by Yang et al. (2019) for conducting the propensity score matching, consisting of five steps:

1. Selecting covariates,

2. Assessing balance in risk factors before propensity score implementation,

3. Estimating and implementing the propensity score in the available sample,

4. Reassessing balance in risk factors after propensity score implementation,

5. Evaluate differences between match and unmatched after propensity score.

Since this study examines displacement across different years, we will conduct propensity score matching in a random order for each treatment year, and matched controls will be excluded from subsequent matching processes to avoid double matching. The covariates used for matching aim to limit observable characteristics related to self-selecting into firms more susceptible to closure. These include sex; age (25-55); higher education; level of urban density in the place of residence; industry sector (see Table 1); full-time work is operationalized as 35 hours or more per week following CBS' definition (Centraal Bureau voor de Statistiek, 2020); year. These variables are assessed in the year of displacement.

Table 1. Characteristics of sector of employment post matching.

	Displaced			Non-Displaced		
	N	Mean	St. Dev	N	Mean	St. Dev
Sector						
Agriculture, forestry, fishery, hunting (=1)	0	-	-	0	-	-
Mining (=1)	0	-	-	0	-	-
Industrial production (=1)	7	0.167	0.377	10	0.119	0.326
Utilities production, distribution and/ or trade (=1)	0	-	-	0	-	-
Construction (=1)	3	0.071	0.261	3	0.036	0.187
Retail trade (=1)	3	0.071	0.261	5	0.060	0.238
Catering (=1)	1	0.024	0.154	1	0.012	0.109
Transport, storage and communication (=1)	0	-	-	0	-	-
Financial (=1)	7	0.166	0.377	12	0.143	0.352
Business services (=1)	1	0.024	0.154	7	0.084	0.278
Government services, public admin., and mandatory social insurances (=1)	2	0.048	0.216	1	0.012	0.109
Education (=1)	1	0.024	0.154	6	0.071	0.259
Healthcare and welfare (=1)	8	0.190	0.397	18	0.214	0.412
Environmental services, culture, recreation and other services (=1)	1	0.024	0.154	2	0.024	0.153
Other (=1)	8	0.190	0.397	18	0.214	0.413
Total		42			84	

Note: This is the sector the individuals are in during the year of displacement. It does not account for sector switch.

To assess the balance in risk factors, we compare the average means of the treatment group (79 workers) to the control group (3454 workers) before PSM to identify potential imbalances. Cohen's D is used to quantify potential imbalances, calculated separately for each covariate. Analysis of Cohen's D results (shown in Table 2) under the first panel reveals a medium effect indicating a moderate difference between group means in the age and work hours covariates. For the remaining covariates, small effects suggest little difference between the group means, thus no need to exclude participants to minimize imbalances, as per Yang et al. (2019) where only large effects (Cohen's D > 0.8) necessitate participants' removal to rectify imbalances.

After PSM, 42 treatment units and 84 control units remain, with 37 treatment units dropped mainly due to the missing pre-treatment data, where many of the treatment groups had not responded for one or more years (see Table 2). Matching was conducted on a 1:2 ratio with a Caliper of 0.2. Post-matching, all covariates show small effects, with almost absent differences between groups. For instance, when examining age and work hours after PSM in Table 1, Cohen's D decreased from .61 to -0.09 and .67 to -0.12 respectively, drastically reducing differences. However, some differences between groups, particularly regarding the urban density covariate and industry sector, have risen but still fall within the range of small effect, indicating minimal differences between groups. Therefore, it can be concluded that the matched groups are comparable in observable characteristics.

Table 2. Characteristics of displaced persons before and after propensity score matching.

Characteristic	Panel 1: Before propensity score matching					Panel 2: After Propensity score matching				
	Treatment (n = 79)		Control (n = 3,454)		Cohen's D	Treatment (n = 42)		Control (n = 84)		Cohen's D
Age, mean (SD)	45.4 (8.30)		54.83 (16.19)		.61	44.9 (7.55)		44.2 (8.07)		-.09
Urban Density										
>=1500 per km2	34	43.04 %	1,340	38.30 %	-0.09	20	47.62 %	30	35.71 %	-0.24
< 1500 per km2	45	56.96 %	2,114	61.17 %		22	52.38 %	54	64.29 %	
Sex										
Female	52	65.82 %	1,806	52.28 %	-0.28	22	52.38 %	55	65.48 %	0.27
Male	27	34.18 %	1,648	47.72 %		20	47.62 %	29	34.52 %	
Education										
>= HBO	24	30.38 %	1,197	34.70 %	0.07	13	30.95 %	27	32.14 %	0.03
< HBO	55	69.62 %	2,257	65.30 %		29	69.05 %	57	67.86 %	
Work Hours										
Fulltime	29	36.71 %	2,369	68.53 %	0.67	19	45.24 %	33	39.29 %	-0.12
Parttime	50	63.29 %	1,085	31.47 %		23	54.76 %	51	60.71 %	
Industry Sector					-0.04					0.21

Notes: Individuals were matched on these characteristics as of Year = (0), which corresponds to data provided from 2011-2018.

Empirical Model

Pre- and post-displacement results of the treatment and control individuals will be assessed using an empirical approach. The workers in the treatment and control groups will be observed 3 years before and 5 years after the year of displacement (potential displacement for the control). In the first empirical model, four outcome variables are used to estimate the effect of displacement. This model is used to establish a baseline comparison of the effects of displacement on individuals in comparison to the non-displaced population. The four variables are hourly wages, working hours, employment, and monthly reservation wages. Such an empirical model is represented by the following equation:

$$Y_{it} = \delta DISPLACEMENT_i \times POST_t + \beta POST_t + \pi X_{it} + \alpha_i + \gamma_t + \varepsilon_{it}$$

In this equation, we are presented with a difference-in-differences equation. Y_{it} is the outcome variable for worker i in year t. $POST_t$ represents a dummy variable equal to 1 if the period is after the displacement, and 0 if the period is before the treatment. $DISPLACEMENT_i$ is a dummy variable indicating if worker i was displaced, if displaced the variable is = 1, and is = 0 otherwise. δ is the parameter of interest which captures the treatment effect post-treatment. πX_{it} represents the controls for time-varying covariates like age, and tenure. αi is the individual fixed effects, to control for time-invariant unobserved characteristics of each worker. As the treatments span from 2011-2018, not all individuals were treated in the same year, therefore γ_t is used to represent the time-fixed effects, controlling for time trends. εit is the error term.

A second equation is developed to see the effects of entering self-employment post-displacement on labour market outcomes. We include an interaction effect between self-employment, $DISPLACEMENT_i$, and $POST_t$ to account for this effect. Leading to the following equation:

$$Y_{it} = \delta DISPLACEMENT_i \times POST_t + \theta DISPLACEMENT_i \times POST_t \times SELFEMP_{it} + \rho SELFEMP_i + \pi X_{it} + \alpha_i + \gamma_t + \varepsilon_{it}$$

$SELFEMP_{it}$ is a dummy variable =1 if individual i is self-employed in year t. θ is the coefficient of interest that captures the differential displacement effect for those who enter into self-employment post-treatment. Thus assessing how job loss may affect the outcome variable differently for those who enter self-employment in comparison to those who do not. By including θ the model estimates if being self-employment reduces or increases the impact of job displacement on the set outcomes. $\rho SELFEMP_i$ is added to firstly control for the main effect of self-employment status on the outcome variable independent of the displacement effects. Secondly, it provides more insight on the self-employed population in comparison to the non-self-employed population regardless of the displacement, so as to understand how the self-employed labour market outcomes fairs in comparison to the rest of the populations. Setting a baseline for self-employed individuals.

Both hypotheses are tested using the second model, which allows us to examine the effects of entering self-employment after displacement on various outcomes, including hourly wages, hours worked, employment, and the monthly reservation wages.

In the first hypothesis, coefficient θ captures the differential effect on the outcomes (hourly wage, hours worked, and employment) for displaced individuals who enter self-employment, compared to workers that get displaced and do not enter self-employment and to non-displaced workers. If θ is > than 0 when Y = hourly wage or hours worked or employment, it

means that displaced workers who enter self-employment experience higher wages, work more hours, or higher employment rates for displaced self-employed workers, thus supporting the hypothesis. In contrast, values of $\theta < 0$ suggest the opposite. For the second hypothesis (H2), the second model is used to test Y = reservation wage. If $\theta > 0$ implies that displaced individuals who enter self-employment have a higher reservation wage in comparison to non-displaced workers and displaced workers that who did not enter self-employment, thus supporting the hypothesis.

Results

Displacement Effects

To understand the effects of self-employment on labour market outcomes and reservation wages, it is essential to first examine the effects of displacement on such outcomes. Equation 1 of the empirical model is employed twice: once without covariates (a) and once with the covariates of higher education, age, tenure, urban density, and marital status (b).

Table 3 presents the results for the first equation regarding (1) hours worked, (2) hourly wages, (3) employment, (4) monthly reservation wages. The results display that displaced individuals' hours worked decreased by 8.9 percent. Additionally, column 2a shows that the hourly wages of displaced workers decreased by 43.6 percent. Column 3a reveals that displaced workers experience a 32.5 percentage point decrease in employment compared to non-displaced workers over five years. Lastly, when workers are displaced, their reservation wage increases by an average of 10.7 percent.

The increase in the reservation wages can be attributed to several factors. First, the unemployment benefits provided in the Netherlands may cause individuals to maintain higher reservation wages, especially at the beginning of the unemployment spell (Addison & Portugal, 1989; Krueger & Mueller, 2016). Second, in our sample, 27 of the 42 displaced individuals found wage employment within five years post-displacement, leading to an average increase in their reservation wage. According to Von Greiff (2009), those with no other options but self-employment tend to reduce their reservation wages due to a lack of job offers. However, since most individuals in our sample found employment, their reservation wages increased over the years.

Table 3. Displacement effects on labor market outcomes (eq. 1)

	Hours Worked (log)		**Hourly Wage (log)**		**Employment**		**Monthly Res. Wage (log)**	
	1a	1b	2a	2b	3a	3b	4a	4b
Displaced *Post	-0.089*** (0)	-0.151** (0.0114)	-0.436*** (0)	0.015 (0.041)	-0.325*** (0)	-0.122 (0.082)	0.107*** (0)	0.118 (0.032)
Higher Education		0.187 (0.077)		0.279* (0.022)		0.098 (0.057)		0.032 (0.148)
Age		0.008 (0.003)		0.053 (0.011)		0.022 (0.007)		0.004 (0.003)
Job Tenure		0.001 (0.003)		0.003 (0.002)		0.007 (0.007)		0.004** (0.001)
Urban Density		-0.016 (0.016)		0.169** (0.004)		-0.011 (0.106)		0.006 (0.098)
Marital Status		0.059 (0.012)		-0.231 (0.045)		-0.132 (0.088)		-0.015 (0.072)
Constant	3.355*** (0)	2.899** (0.175)	2.128*** (0)	-0.122 (0.493)	0.756*** (0)	-0.184 (0.155)	7.617*** (0)	7.410** (0.141)

Note: Robust standard errors in parentheses. *p<0.1, **p<0.05, ***p<0.01, corresponding to the significance level. All values are rounded to the nearest thousandth decimal point.

The effects on hours worked, hourly wage, and employment align with previous studies on displacement (Deelen et al., 2018; Hyslop & Townsend, 2018; Tian et al., 2022). These studies suggest that earnings are negatively impacted by displacement and this impact can be long-lasting due to factors such as changing sectors post-displacement or entering lower-skilled occupations (Deelen et al., 2018). About 54% of the displaced individuals switched sectors post-displacement, which likely contributed to their losses (see Appendix A). The transition to a new sector often renders previous skills less relevant, resulting in lower wages due to a lack of sector-specific skills (Neal, 1995). Additionally, the reduction in hours worked suggests that displaced workers may seek more flexible work arrangements post-displacement (Meekes & Hassink, 2022).

Table 3 also includes a rerun of equation 1 with the control variables Higher Education, Age, Job Tenure, Urban Density, and Marital Status. Adding these covariates reveals notable changes: the effects of displacement on hourly wage, employment, and monthly reservation wage become insignificant. Furthermore, the significance level for hours worked decreases from 1% to the 5% significance level. Interestingly, the effect of displacement on hours worked was reduced even further to 15.1 percent, compared to the initial 8.9 percent. Higher education and urban density also appear to significantly influence wages. Finally, job tenure has a positive effect on reservation wages.

Self-Employment Effects Post Displacement

In Table 4, we examine the effects of entering self-employment post-displacement by running Equation 2. Initially, the equation is run without covariates (a) but includes the effect of self-employment (whether self-employed pre- or post-displacement, regardless of treatment or control group) and displacement to capture the treatment effect on outcomes and isolate the direct effect of being self-employed. The equation is then re-run with covariates (b) included.

In column 1a, the results indicate that for individuals who enter self-employment post-displacement (Displaced*Post*Self-employment) and the general self-employed population, the effect on total hours worked is not significant. However, for displaced workers (Displaced*Post), the reduction in hours worked is significant at the 5% level, showing a decrease of 7.6 percent, consistent with the results in Table 3.

For hourly wages, Displaced*Post experience an average decrease of approximately 41.5 percent, aligning with the results in Table 3. The variables for self-employment and Displaced*Post*Self-employment. Regarding employment, Displaced*Post*Self-employment experience a 26.3 percentage point increase in wage-employment compared to the remainder of the displaced and non-displaced populations. Conversely, the self-employed cohort experiences the highest job loss at 42.8 percentage points. Lastly, for monthly reservation wage, Displaced*Post*Self-employment see a reduction of 15.2 percent compared to the rest of the population, whereas Displaced*Post and the self-employed cohort see increases of 11.4 percent and 9.9 percent, respectively.

Table 4. Self-employment effects on displaced worker's labor market outcomes (eq. 2)

	Hours Worked (log)		**Hourly Wage (log)**		**Employment**		**Monthly Res. Wage (log)**	
	1a	1b	2a	2b	3a	3b	4a	4b
Displaced *Post *Self-employment	-0.273 (0.161)	-0.110* (0.013)	-0.582 (0.432)	0.103 (0.031)	0.273* (0.032)	-0.069** (0.002)	-0.152*** (0)	-0.142** (0.009)
Displaced *Post	-0.076** (0.001)	-0.144*** (0.004)	-0.415*** (0.003)	0.034 (0.017)	-0.317*** (0.000)	-0.098 (0.109)	0.114*** (0)	0.128 (0.004)
Self-employed	0.120 (0.164)	0.013 (0.007)	0.319 (0.436)	-0.713** (0.005)	-0.428** (0.0324)	-0.556* (0.046)	0.099*** (0)	0.101 (0.017)
Higher Education		0.190 (0.079)		0.297** (0.017)		0.114 (0.065)		0.035 (0.149)
Age		0.008 (0.003)		0.056* (0.009)		0.026 (0.010)		0.003 (0.003)
Tenure		0.001 (0.002)		-0.001 (0.005)		0.004 (0.010)		0.005 (0.002)
Urban Density		-0.009 (0.009)		0.194 (0.035)		0.020 (0.067)		0.008 (0.098)
Marital Status		0.0596 (0.012)		-0.224 (0.046)		-0.127 (0.087)		-0.017 (0.072)
Constant	3.348*** (0.010)	2.880** (0.197)	2.113** (0.021)	-0.228 (0.398)	0.777*** (0.002)	-0.288 (0.262)	7.611*** (0)	7.431*** (0.165)

Note: Robust standard errors in parentheses. *p<0.1, **p<0.05, ***p<0.01, corresponding to the significance level. All values are rounded to the nearest thousandth decimal point.

In column (b) of the outcomes, accounting for covariates introduces certain changes to the results in column (a). Firstly, the interaction effect of Displaced*Post*Self-employment becomes significant at the 10% level, with hours worked by this cohort reduced by 11%. Additionally, the effect of Displaced*Post on hours worked is reduced further from 7.6% to a 14.4% reduction, with the level of significance rising from 5% to 1 %. Secondly, for hourly wages, the effect of Displacement*Post becomes insignificant. Higher education and age also show significant effects on wages. Thirdly, the direction of the effect of Displaced*Post*Self-Employment on employment switches and increases in significance. Accounting for covariates, entering self-employment post-displacement results in a 6.9 percentage point decrease in employment compared to non-displaced individuals and the remainder of the displaced sample. The effect of displacement becomes insignificant, and the significance level of self-employment decreases from 5% to 10%. Lastly, for reservation wages, the effects of Displaced*Post and self-employed become insignificant when covariates are considered. The effect of Displaced*Post*Self-employment changes from a 15.2 percent decrease to a 14.2 percent decrease in reservation wages.

Analysis

Self-Employment post displacement effects on wages, hours worked, and employment

The first hypothesis posits that the wages and employability of displaced workers who enter self-employment increase. However, the results for hourly wages are insignificant regarding the effect of entering self-employment. Therefore, it cannot be concluded that entering self-employment post-displacement has any effect on hourly wages.

In terms of hours worked, there is evidence that entering self-employment post-displacement reduces hours worked by 11 percent. However, it is difficult to conclude that this reduction in hours worked directly correlates to a decrease in wages. Individuals could earn a higher hourly rate while working fewer hours. On the other hand, if we assume a direct relationship between hours worked and wages, then we could infer that individuals' wages decrease after entering self-employment post-displacement. Nonetheless, this reduction in hours worked could be interpreted as increased job flexibility, which is often associated with self-employment.

Regarding employability, the results from column 3b, which account for covariates, provide a more precise answer. These results reject the hypothesis that self-employment post-displacement increases employability. Individuals in this category experience, on average, a 6.9 percentage point loss in employment compared to the rest of the displaced cohort and non-displaced individuals.

This finding aligns with Bruce and Schutze's (2004) observation that it is challenging for self-employed individuals to return to wage employment. This difficulty may stem from employers' perceptions of individuals who entered self-employment out of necessity, particularly after displacement (Martinez-Cañas et al., 2023). Employers may view these

necessity-driven self-employed individuals as having lower skills, making them less likely to be hired back into wage employment (Martinez-Cañas et al., 2023).

Overall, when comparing the labour market outcomes between the Displaced*Post*Self-Employment cohort and the Displaced*Post cohort in Tables 3 and 4, the results consistently show reductions in hours worked and employment. However, the size of the effect differs, with the Displaced*Post group experiencing a more pronounced negative impact. For the Displaced*Post*Self-Employment cohort, self-employment seems to mitigate some of the negative effects of displacement on hours worked and employment.

It appears that the change in the labour market outcomes for self-employment has not drastically changed since the Bruce and Schutze (2004) study, despite the advent of platform economies. It is challenging to assess the effect of the PE due to the lack of significant results for hourly wages in the Displaced*Post*Self-Employment cohort. However, looking at the self-employed in general, there is a 71.3 percent loss in wages over the study period. This may suggest that the diffusion of new technology has not necessarily improved the skills of the self-employed; rather, it is highly dependent on the individuals' prior skills, as suggested by Barnes et al. (2015). This is further confirmed by the control variable for higher education, which indicates that the wages of highly educated individuals increased by 29.7 percent over the course of the study. This finding emphasizes the importance of pre-existing skills rather than the improvement of skills during self-employment, which then positively reflects in wages.

Self-Employment post displacement effect on reservation wages

The second hypothesis claims that displaced individuals who enter self-employment will have an increased reservation wage to re-enter wage employment. However given the results in table 4. we can reject this hypothesis. The results indicate that, on average, the individuals' monthly reservation wage decreases by 15.2% in (4a) and by 14.2% in (4b) rather than increasing. The initial hypothesis was based on the assumption that the PE, which can improve individuals' human capital after entering self-employment, would lead to an increased reservation wage, making them less inclined to leave self-employment.

This decrease in reservation wages can be attributed to several factors. First, the perception of the individual's skills may depreciate post-self-employment, affecting the reservation wage concerning opportunities available in the market (Mortensen, 1970). Second, it may be related to reduced job offers received by self-employed post-displacement. Consequently, reducing their reservation wage due to limited options. Third, given the unemployment benefits system in the Netherlands, it is possible that these individuals entered self-employment after exhausting their benefits, due to necessity, leading to a decrease in their reservation wage (Addison & Portugal, 1989).

When comparing the Displaced*Post*Self-Employment cohort to the Displaced*Post cohort, the effects on reservation wage do not align. The Displaced*Post cohort sees an increase, whereas the Displaced*Post*Self-Employment cohort experiences a significant decrease. To understand this further, we provide a comparison in Table 5 between both groups in the Year = (-2) to determine if they were comparable before displacement. The groups differ widely in many characteristics, with the self-employed cohort having higher wages than those who did not enter self-employment. Although the groups are not comparable in many attributes, the self-employed group tends to score higher on attributes that according to previous theory,

positively affect the reservation wage, such as more work experience and higher education (Mortensen, 1970).

Table 5. Individual characteristics of displaced workers who enter self-employment and displaced workers who do not enter self-employment.

	Panel 1: Displaced workers entering self-employment			**Panel 2: Displaced workers not entering self-employment**			
	N	Mean	St. Dev.	N	Mean	St. Dev	Cohen's d
Hours Worked (log)	6	3.531	0.326	33	3.412	0.530	-0.234
Hourly Wage (log)	6	3.017	0.533	36	2.239	1.249	-0.659
Employment (=1)	6	1	0	36	0.833	0.378	0.419
Monthly Reservation Wage (log)	4	7.544	0.311	22	7.509	0.526	-0.070
Female (=1)	6	0.167	0.516	36	0.583	0.5	0.851
Higher Education (=1)	6	0.667	0.516	36	0.278	0.454	-0.841
Tenure (in years)	5	13	14.071	33	8.303	6.975	-0.581
Married (=1)	6	0.5	0.548	36	0.611	0.494	0.222
Fulltime (=1)	6	0.5	0.548	36	0.389	0.494	-0.222
Urban Density (>=1500 per km2)	6	0.333	0.516	36	0.472	0.506	0.274
Age (in years)	6	45.333	9.092	36	42.528	7.331	-0.370

Notes: Individual characteristics are provided as of Year = (-2). This is to avoid time of displacement which occurs between Year = (-1) and Year = (0).

Therefore, it is plausible that the negative effect on reservation wage is not due to being less skilled or possessing less experience (Mortensen, 1970). Rather, it may be due to their reduced ability to attract job offers or because their self-employment was a necessity to mitigate unemployment effects after exhausting benefits, leading to a decrease in reservation wage. This aligns with Von Greiff (2009), who noted that individuals entering self-employment post-displacement tend to have a lower reservation wage than other displaced persons with access to wage-employment. As they lack other options, their reservation wage initially decreases, prompting them to enter self-employment, as an interim means of income (Balkin, 1989). However, this finding contradicts the hypothesis of this study, which assumed that their reservation wages would increase after entering self-employment due to different temporal dimensions. Apparently, for this cohort, even after self-employment, there remains a preference to return to wage employment.

The reservation wage variable indicates the difficulty the Displaced*Post*Self-employment cohort faces in returning to wage employment. Bruce and Schutze (2004) could not determine whether individuals in their sample remained in self-employment out of self-selection from wage employment or due to an inability to return to wage-employment. The results in this paper indicate a negative effect on the reservation wage, suggesting that these individuals are willing but unable to return to wage employment, as evidenced by their decreased reservation wage. If they were unwilling, their reservation wage would have increased on average, indicating self-selection out of returning to wage employment. In addition three of the six who entered self-employment post displacement indicated that they were looking for other employment during their self-employment, whereas only one indicated that they were not searching for other employment, as per the remaining two there was no response (see Appendix B). Although this study focuses on self-employment post-displacement, a different

context compared to Bruce and Schutze's (2004) research on general self-employment spells, it still provides insight into the complexities of self-employment dynamics.

Conclusion

In this research, we aimed to understand the impact of self-employment after job loss on post-unemployment labour market outcomes, specifically focusing on hourly wages, hours worked, employment, and monthly reservation wages. The study brings novelty by examining self-employment labour market outcomes in the current context and addressing the difficulty of returning to wage employment as posed by Bruce and Schutze (2004), with a focus on reservation wages.

To achieve this, we conducted two difference-in-differences analyses. The first assesses workers displaced due to firm bankruptcy or reorganization in the Netherlands between 2011-2018. The second evaluates workers who enter self-employment post-displacement, comparing them to both non-displaced individuals and displaced individuals who do not enter self-employment.

Consistent with previous literature, we find that displaced workers experience a 43.6 percent decrease in hourly wage compared to non-displaced workers, an 8.9% reduction in hours worked, and a 32.5 percentage point loss in wage employment over five years. Additionally, their reservation wages increased by 10.7% after displacement.

In the second difference-in-differences analysis, which examines the effect of post-displacement self-employment on labour market outcomes, the results partially reject the first hypothesis that hourly wages and employability increase. The effect on hourly wages is insignificant, thus we cannot reject the hypothesis definitively. However, the employability of this group decreases by an average of 6.9 percentage points compared to non-self-employed displaced workers and non-displaced workers, significant at the 5% level. Hours worked decreased by 11%, significant at the 10% level, suggesting increased flexibility among self-employed individuals.

The second hypothesis, which expects an increase in reservation wages, is also rejected. Instead, the reservation wage of the self-employed workers who enter self-employment decreases by 14.2%. This decrease aligns with previous findings that suggest necessity-driven self-employment results in lower reservation wages as individuals enter self-employment to mitigate unemployment temporarily (Balkin, 1989; De Vries, 2019; Von Greiff, 2009).

The decrease in the reservation wage of displaced workers who enter self-employment suggests that some of these workers are stuck in self-employment, having entered it out of necessity due to a lack of other options. This is supported by the dataset (see Appendix B), where some individuals indicate that they view their self-employment as an interim solution, and face more difficulty re-entering wage-employment. This addresses Bruce and Schutze's (2004) inquiry, suggesting that these individuals are unable, rather than unwilling, to return to wage employment.

Given the labour shortage in specific sectors in the Netherlands, policies could target self-employed displaced workers in these sectors to assist their re-entry into wage employment (De Nederlandsche Bank, 2024). Rather than broadly targeting the entire self-employed population, policies could focus on those pushed into self-employment who are willing but unable to return to wage employment. Retraining programs could replenish the skills these individuals have lost, especially since many displaced workers change sectors post-displacement, negatively affecting their skills (Deelen et al., 2018). Additionally, addressing the negative perception of necessity-drive self-employment among employers is crucial (Martinez-Cañas et al., 2023). Subsidies for retraining and upskilling could incentivize employers to hire these workers, similar to the SLIM subsidy, which could be adjusted to support hiring self-employed individuals post-displacement. (Cieślik & Stel, 2023; Netherlands Enterprise Agency, n.d.).

A significant challenge faced is finding a sample that meets the requirements, resulting in a relatively small sample size. The LISS dataset includes many displaced individuals, but two major issues complicate the data selection: most displaced workers are over 55 and close to retirement, and ensuring a three-year observation period before displacement is difficult due to missing data. This small sample size weakens the external validity of the study, limiting the ability to make general conclusions.

The study provides interesting insights into the effects of post-displacement self-employment but is limited by the inability to separate the effects of platform use from non-platform use among the self-employed. Isolating this effect would offer more detailed insights into how self-employment using platforms impacts labour market outcomes. To solve this, future studies could include a variable indicating platform use to better understand its influence.

Future research should explore the use of dynamic difference-in-differences to compare wages and reservation wages over time, providing a more precise measurement of changes throughout the years after entering self-employment. Additionally, a larger sample of displaced individuals would allow for interaction with different characteristics such as gender, age, and education, to understand what drives individuals into self-employment post-displacement compared to the rest of the displaced population. This could test assumptions about entrepreneurial ability and its role in post-displacement self-employment (Von Greiff, 2009). Ideally, this would involve an exogenous shock to ensure the randomness of entry into self-employment, providing more robust insights into the factors influencing this transition.

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Appendix

Appendix A

Appendix A. Sectors of employment among displaced individuals before and after displacement.

	Pre-Displacement		**Post-Displacement**	
Sector	N	Switched	N	Entrants
Agriculture, forestry, fishery, hunting	0	-	0	-
Mining	0	-	0	-
Industrial production	7	5	2	0
Utilities production, distribution and/ or trade	0	-	0	-
Construction	3	3	1	1
Retail trade	3	2	3	2
Catering	1	0	5	4
Transport, storage and communication	0	-	0	-
Financial	7	5	4	2
Business services	1	1	0	-
Government services, public admin., and mandatory social insurances	2	1	5	4
Education	1	0	2	1
Healthcare and welfare	8	3	7	3
Environmental services, culture, recreation and other services	1	1	0	-
Take care of the Household	-	-	4	4
Other	8	5	8	5
Total	42	26	42	26

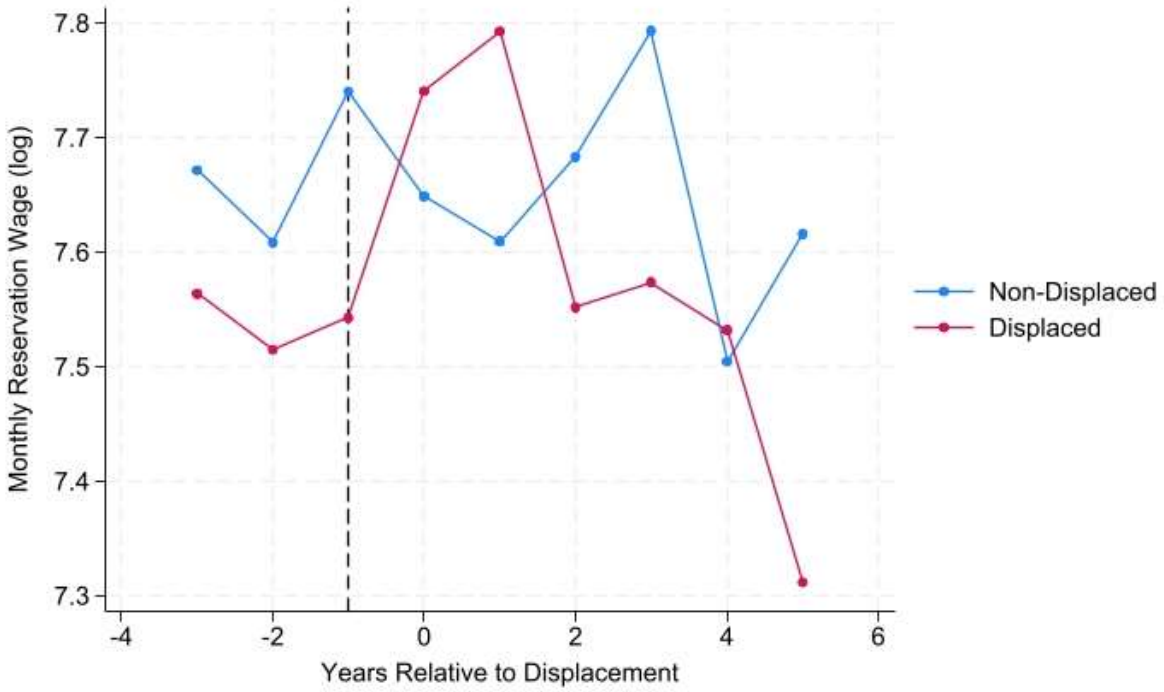
Appendix B

Appendix B. Are you currently looking for work?	
	N
Yes I am currently seeking work.	3
No I am not seeking work.	1
No Response	2
Total	6

Note: This only contains the individuals who enter self-employment post displacement.

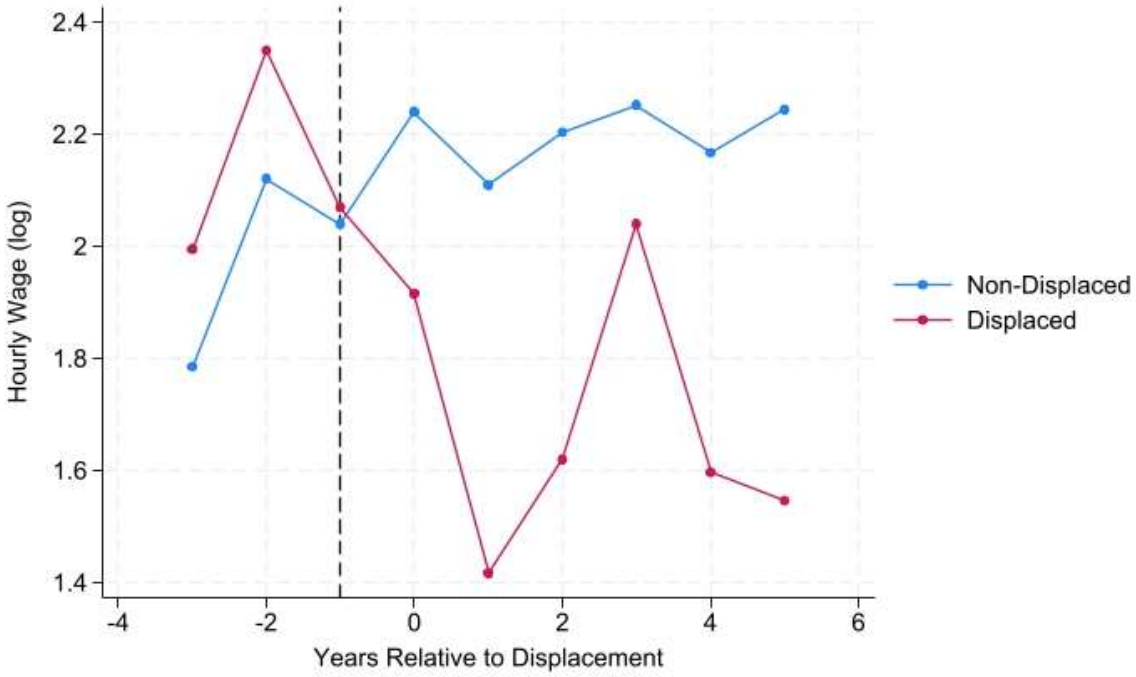
Appendix C

Monthly Reservation Wage (Eq. 1)



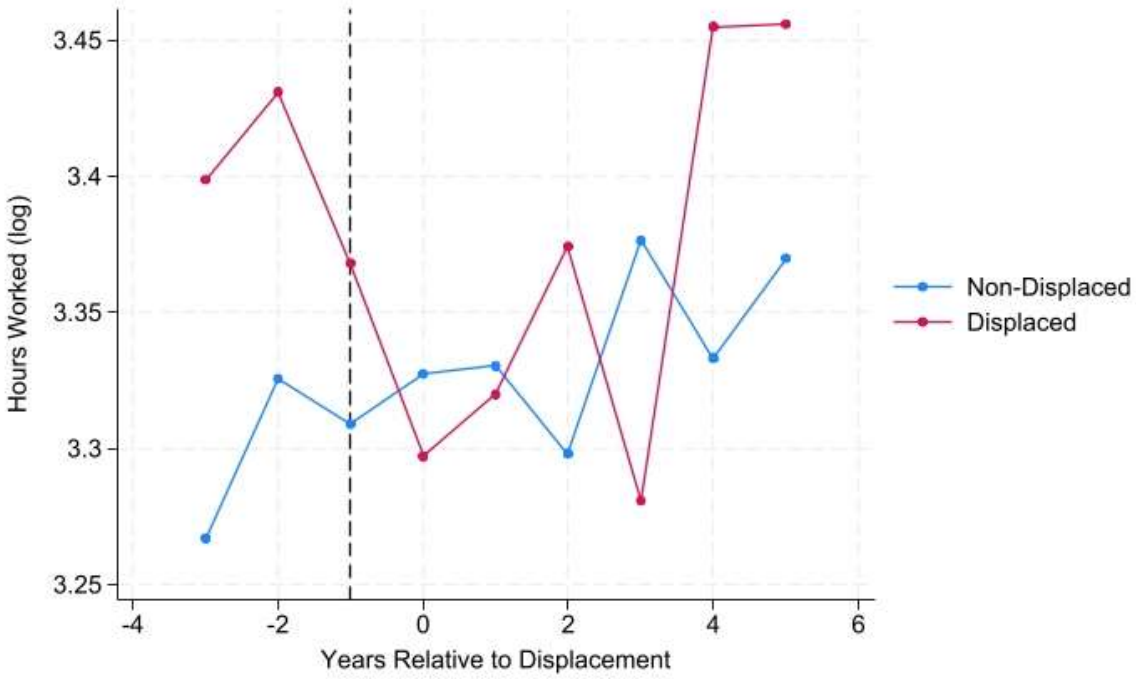
Appendix D

Hourly Wage (Eq. 1)



Appendix E

Hours Worked (Eq. 1)



Appendix F

Employment (Eq. 1)