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Article

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ORIGINAL ARTICLE

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Minijobs as stepping stones to regular employment: overall trends and the role of Midijob reforms

Matthias Collischon¹, Anna Herget² and Regina T. Riphahn^{2*} 

Abstract

Minijobs are subsidized small jobs below a fixed earnings threshold. Since a reform in 2003, they are viewed as stepping stones to the first labor market. However, the Minijob subsidy generates a 'Minijob trap' that causes vast bunching at the Minijob earnings threshold. Therefore, Midijobs were designed to reduce this bunching and to eliminate the 'Minijob trap'. Midijobs are employments that earn between the Minijob earnings threshold and the Midijob earnings threshold. In this range, Midijobs subsidize social insurance contributions on a sliding scale. This paper describes time trends in the propensity to leave Minijobs for regular employment and studies the role of Midijobs for transitions out of Minijobs. We find a strong increase in transitions from Minijobs to regular employment over time. However, there is no convincing evidence that Midijobs are connected to this development. Instead, behavioral changes and aggregate developments such as the business cycle and a booming labor market may have contributed to this development.

Keywords Minijob, Midijob, Small jobs, Payroll tax subsidy, Bunching, Kink, Notch, Decomposition

JEL Classification J38, H31, J21

1 Introduction

Minijobs and Midijobs are labor market instruments that subsidize the earnings of millions of German workers. At the end of 2022, 3.5 million individuals benefitted from Midijobs and an additional 7.5 million Minijobs were subsidized (BA 2023). We know little about these vast programs.

Minijobs are small jobs characterized by an earnings threshold (currently 538 Euro per month): for employees, Minijob earnings are free from income taxes and social insurance contributions. This leads to the 'Minijob trap,'

i.e., disincentives to extend the labor supply beyond the Minijob earnings limit. The distribution of gross earnings shows substantial bunching at the Minijob earnings threshold, i.e., evidence of the trap (Gudgeon and Trenkle 2023; Herget and Riphahn 2023; Tazhitdinova 2020). Therefore, Midijobs were introduced in 2003 to reduce the Minijob trap and to incentivize transitions from Minijobs to regular employment. Midijobs subsidize social insurance contributions on a sliding scale starting at the Minijob earnings threshold. Originally, Midijobs covered the earnings range from the Minijob threshold up to 800 Euro per month. Since 2003, the upper earnings limit of Midijobs has been expanded in four reforms to currently 2000 Euro per month (see Table 1). Even though the Midijob program is relatively generous, its effectiveness has hardly been studied.

In this paper, we address this gap: we investigate the relevance of Midijobs for individuals' propensity to leave Minijob employment for regular, i.e., higher-paying

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Table 1 Monthly earnings range of Mini- and Midijobs

Reform date (date of law change)	Minijobs	Midijobs
Apr 1, 1999 (Mar 24, 1999)	0–325 Euro	–
Apr 1, 2003 (Dec 23, 2002)	0–400 Euro	400.01–800 Euro
Jan 1, 2013 (Dec 5, 2012)	0–450 Euro	450.01–850 Euro
July 1, 2019 (Nov 8, 2018)	0–450 Euro	450.01–1300 Euro
Oct 1, 2022 (June 28, 2022)	0–520 Euro	520.01–1600 Euro
Jan 1, 2023 (Oct 7, 2022)	0–520 Euro	520.01–2000 Euro
Jan 1, 2024 (Nov 16, 2023)	0–538 Euro	538.01–2000 Euro

Source: Own illustration

employment. We consider the entire period since the Midijob introduction in 2003 and include reforms that altered the Midijob upper earnings limit to investigate whether the incentives provided by the Midijob design helped to overcome the Minijob trap. We follow the bunching literature and investigate whether there are changes in the earnings distribution after the Midijob reforms and also study changes in transition probabilities over time.

Only a few contributions have studied whether Mini- and Midijobs fulfilled lawmakers' hopes of becoming stepping stones into regular employment. For the early years after 2003, Fertig and Kluve (2006) and Fertig et al. (2005) provided ex-post evidence and concluded that it is unlikely that Minijobs act as a stepping stone. Lietzmann et al. (2017) studied Minijob employment of welfare recipients and found that Minijobs improved employment outcomes only under special circumstances.

Recently, Tazhitdinova (2020) and Gudgeon and Trenkle (2023) offered new evidence on Minijobs. Tazhitdinova (2020) studies the bunching of workers in response to the Minijob trap. She finds that labor supply hardly responds when the Minijob threshold increases and discusses the role of firm preferences. Gudgeon and Trenkle (2023) focus on labor supply adjustments over time after changes in Minijob earnings thresholds. They confirm substantial delays in adjustments and also emphasize demand-side mechanisms as determinants of such frictions. Neither of the two studies discusses the propensity of Minijobbers to leave the subsidized Minijob employment.

Herget and Riphahn (2023) study the causal effect of the introduction of Midijobs in 2003 for the Minijob trap. A regression discontinuity design and a

difference-in-differences estimation yield only a small positive overall effect on transitions out of Minijobs. Midijobs are effective only for a narrow group of male and not married Minijobbers. The paper focuses on the 2003 reform. Afterwards, the institutional setting was adjusted several times including a small adjustment of the Midijob earnings ceiling in 2013 and a substantial expansion in 2019 (see Table 1). Here, we use these developments and offer a longer-run perspective. We investigate transitions from Minijobs over the last two decades to learn about the relevance of Midijobs and their reforms.

This paper offers three main contributions to the literature. First, numerous countries (e.g., Austria, Italy, the U.K., and Australia) offer subsidies for small jobs and encounter challenges in phasing out payroll tax subsidies. The German Midijob program provides a relevant case study to inform labor market policy in other countries. Second, we derive hypotheses regarding the response to institutional reforms which jointly consider incentives implied by household-level income tax regulation, social insurance contributions, and the heterogeneous reforms of the Minijob and Midijob subsidies. This provides an integrated perspective on the institutional ramifications affecting small jobs. Third, in contrast to prior studies on transitions from Minijob employment, we describe the entire period since their first implementation in 2003. Instead of focusing on the causal impact of a specific reform, we offer a variety of perspectives and describe developments covering different subgroups. This offers comprehensive evidence of the development of transition patterns over recent decades.

Our main findings are as follows: the distribution of gross monthly earnings does not respond quickly to changes in bunching incentives. We evaluate the distribution of low-income earners across earnings groups but find no responses in bunching patterns to Midijob reforms. The average annual transition rate from Minijob to regular employment about doubled in our sample between 2003 and 2020. It varies substantially across demographic groups but does not appear to respond to institutional reforms. We compare trends in transitions to regular employment for those affected (Minijobbers) and not affected (the unemployed) by reforms and find no clear evidence supporting the effectiveness of Midijob reforms. Overall, we do not find clear support for the hypothesis that Midijobs facilitate transitions from Minijobs to regular unsubsidized employment and reduce the Minijob trap. This result is most likely connected to the income tax regime, particularly for secondary earners in marriages. While generally, Minijob earnings remain below the personal exemption amount and therefore are tax-free, the tax splitting regime for married couples imposes potentially high marginal taxes on secondary

earners. For them, this renders an expansion of labor supply beyond the Minijob earnings threshold unattractive.

The remainder of the paper is structured as follows. Section 2 offers more institutional detail on Mini- and Midijobs since 2003. Section 3 looks into reform effects based on the distribution of gross earnings. We analyze transition dynamics in Sect. 4. Here, we describe the development of annual and biannual transition rates from Minijob employment over time and present results from a difference-in-differences-like analysis. Section 5 concludes.

2 Institutional background

Since the early days of the German social insurance system (1893) there have been measures to limit the bureaucratic burden for small jobs (BMAS 2018, p.110). Regulations for small or short-term jobs were modified over time with varying objectives, e.g., to raise social insurance contributions or to provide incentives for regular employment. In this paper, we investigate whether these labor market reforms modified individuals' likelihood to change to higher-paying employment. The 2003 reform occurred as part of a broader labor market reform package (Hartz reforms) and introduced the labels of "Minijobs" and "Midijobs".¹ The intention of the 2003 reform was (a) to reduce illicit moonlighting by making legal small jobs more attractive and (b) to offer stepping-stone employment opportunities for the unemployed and opportunities for upward mobility for those in marginal employment (Eichhorst et al. 2012).

The Minijob program stipulates that earnings below the Minijob earnings threshold (in 2003: 400 Euro per month) are exempt from otherwise mandatory social insurance contributions and income taxes. Instead, Minijob employers pay a fixed rate of currently 30 percent of gross earnings to social insurance and tax authorities (Collischon et al. 2021). When monthly earnings exceed the Minijob earnings ceiling, workers become liable for income taxes and social insurance contributions on their total earnings. This situation generates a Minijob trap that imposes a disincentive to expand labor supply beyond the Minijob earnings ceiling. In 2003, Midijobs were introduced to attenuate this notch (and kink) in workers' net earnings schedule.

The magnitude of the notch or Minijob trap varies depending on the individual income tax situation. In principle, all workers benefit from a personal income tax exemption which fully covers Minijob earnings. Therefore, when earnings exceed the Minijob earnings ceiling

they are subject to social insurance contributions only, which are at about 20 percent for the worker. This situation is depicted in Fig. 1a where the grey line shows the net earnings schedule without Midijobs and the dashed red line shows the net earnings schedule with Midijob subsidies.

In contrast, the notch or Minijob trap can be substantially higher for individuals who do not benefit from the personal income tax exemption. They become liable for income tax payments in addition to social insurance contributions once earnings exceed the Minijob earnings ceiling. This is the case for secondary earners in married couples. Germany has a progressive income tax system with a tax-splitting rule for married couples based on their joint income. In this situation, the income of the second earner is taxed at the marginal tax rate of the first earner which can be as high as 40 percent and comes on top of the social insurance contributions. The grey line in Fig. 1b presents the Minijob trap for an individual assuming a tax rate of 30 percent. Gross earnings would have to rise substantially to achieve the net earnings level of the Minijob regime.

The Midijob program subsidizes employees' social insurance contributions within the 'Midijob earnings range': starting at the Minijob earnings ceiling (in 2003: 400 Euro per month) and ending at the Midijob earnings ceiling (in 2003: 800 Euro per month), employee social insurance contributions are subsidized on a sliding scale. Average contribution rates started at 4 percent (at monthly earnings of 400 Euro) and increased with gross earnings to reach the unsubsidized level of about 20 percent at the Midijob earnings ceiling of 800 Euro in 2003.² Midijob employees pay regular income taxes on their full earnings. Until 2022, Midijob employers paid regular social insurance contribution rates of about 20 percent of gross earnings.

The Midijob program was reformed four times (see Table 1): as of January 1, 2013, the earnings limits for Mini- and Midijobs were increased from 400 and 800 to 450 and 850 Euro per month, respectively³; on July 1, 2019, the earnings ceiling for Midijobs was raised from 850 to 1300 Euro per month,⁴ on October 1, 2022, it

¹ The relevant legislation (*Zweites Gesetz für Moderne Dienstleistungen am Arbeitsmarkt, Hartz II*) was passed on December 23, 2002 as an early element of a bundle of labor market reforms.

² In addition to introducing Midijobs, the reforms implemented on April 1, 2003 raised the monthly Minijob earnings ceiling from 325 to 400 Euro, abolished a limit of 15 working hours per week for Minijobs, and increased employer contribution rates from 22 to 25 percent of Minijob earnings.

³ After this reform, social insurance contribution rates for Midijobs commenced at about 10 percent for monthly earnings starting at 451 Euro and increased to about 20 percent at monthly earnings of 850 Euro.

⁴ The reform was part of a pension reform. It also stipulated that subsidized contributions are considered full contributions with respect to the accrual of individual pension claims.

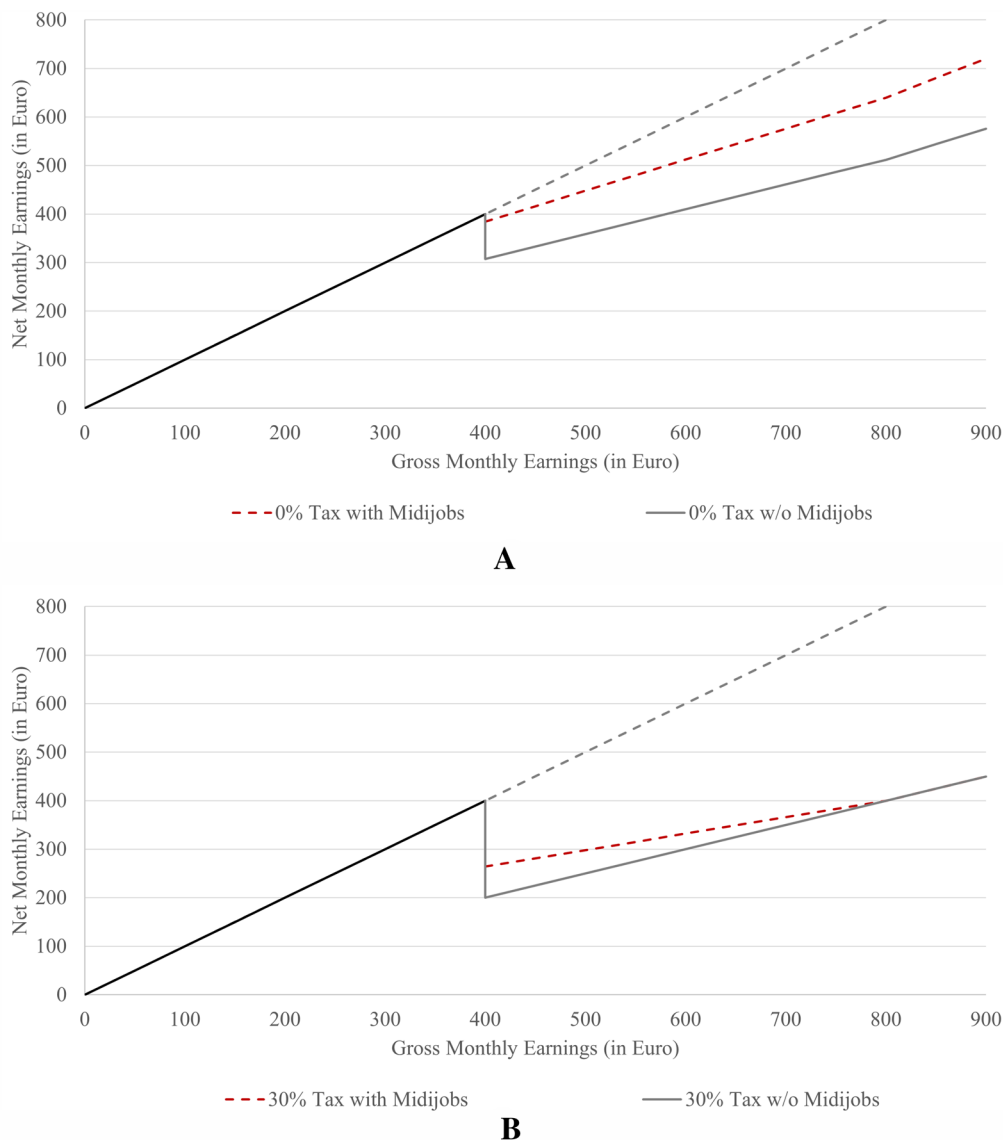


Fig. 1 **a** Net earnings with and without Midijob subsidy (2003)—0 percent income tax. **b** Net earnings with and without Midijob subsidy (2003)—30 percent income tax. The graphs sketch net monthly earnings (y-axis) following the development of monthly gross earnings (x-axis). Up to gross earnings of 400 Euro per month, Minijobs eliminate any difference between gross and net earnings. Beyond the Minijob earnings threshold, the grey straight (dashed red) line indicates the situation before (after) the introduction of Midijobs. In **a** we assume an income tax rate of 0 and in **b** of 30 percent. Source: Own illustration

increased to 1600 Euro and on January 1, 2023, to 2000 Euro. In 2023, additionally, employee social insurance contributions were set to start from zero at the Minijob threshold and to increase linearly to the regular level of about 20 percent at gross earnings of 2000 Euro per month. Also, since 2023 employers pay elevated social insurance contributions even beyond Minijob earnings thresholds; these contributions decline to regular levels of about 20 percent when gross earnings reach the Midijob earnings limit.

Minijobs and Midijobs have been used intensely. At the end of 2022, 4.3 and 3.5 million individuals held these jobs as their main employment (in a labor force of about 45 million), respectively (BA 2023).⁵ Utilization patterns of Mini- and Midijobs are characterized by Herget and Riphahn (2022), Oschmiansky and Berthold (2020), and Tazhitdinova (2020): generally, females and workers with low formal education have a relatively high propensity

⁵ An additional 3.3 million individuals held Minijobs as secondary employment.

to work in Minijobs. Typically, Minijobs pay low hourly wages. Typical employers of Minijobbers are in the hospitality industry (bars, restaurants), cleaning and building services, or retail. Minijob employment is concentrated in small establishments (0–9 employees) which account for 15 percent of regular employment but 36 percent of Minijobs (Collischon et al. 2021). Minijobs are often informal with limited duration, no written contracts, irregular work hours, and on-call employment (Bruckmeier et al. 2018). Bachmann et al. (2012) asked Minijobbers why they use a Minijob (with multiple answers possible); almost 60 percent sought additional earnings, 15 percent were interested in work experience, 14 percent indicated that they could not find a different job, and 14 percent were motivated by the possibility to work flexible hours.

Midijobs are typically part-time positions. About 62 percent of all Midijobs are held by females. Herget and Riphahn (2023) show that about 27 percent of Midijobs were initiated after breaks in labor market careers. About 25 percent of all Midijobs were started after a prior regular, unsubsidized employment mostly due to a reduction of monthly earnings with a given employer. Only about 18 percent of all Midijobbers were previously employed in a Minijob. 46 (61) percent of female (male) Midijobbers are younger than 35 and 44 (29) percent are aged 35–54, so the age distribution differs by gender.

The analyses in this paper focus on whether Minijobs are a trap or allow for transitions into regular employment ('stepping stone') and the role of Midijobs. In our administrative data over the full period 1999–2020, about 15 (25) percent of Minijobs end with a transition to regular employment within a 12 (24) months period. These transitions are more likely for young workers below age 30 and for male than for female Minijobbers.

3 Static analysis—distribution of monthly gross earnings over time

3.1 Setting and hypotheses

We are interested in the relevance of Midijobs for individuals' decision to leave Minijobs for regular, i.e., higher-paying employment. In this section, we follow the bunching literature and focus on the distribution of gross earnings among low-income earners to determine whether the choice of earnings changes after the modification of incentives after Midijob reforms.⁶ Since our data do not cover the most recent outcomes, we focus on three early events: on April 1, 2003 Midijobs were introduced and covered the monthly earnings range of

400 to 800 Euro. On January 1, 2013, Mini- and Midijob thresholds were increased such that Midijobs covered the 450 to 850 Euro monthly earnings range. Finally, the reform of July 1, 2019 increased the upper Midijob earnings limit from 850 to 1300 Euro. Figure 2a depicts the schematic impact of the 2013 reform on the net earnings schedule for individuals without and with income tax liability. Figure 2b similarly characterizes the impact of the 2019 reform. Both graphs show clearly that for individuals subject to income taxes earnings in the range immediately exceeding the Minijob earnings range are strictly dominated by Minijobs. Therefore, we expect any worker observed in this earnings range to not be subject to income taxes.

We derive hypotheses on behavioral responses to Midijob reforms based on the change in the marginal income tax plus the social insurance contribution burden generated by each reform along the gross earnings distribution. Given the joint taxation of married couples in Germany, we separately consider the situation for single individuals and individuals in married couples. Figure 6 depicts the total marginal burden from income taxes plus social insurance contributions for single individuals before and after each of the reforms. In the three panels, the dark (blue) line reflects the situation before, and the light (orange) line the situation after the reform holding the income tax regime constant. The 2003 reform shifted the Minijob earnings limit from 325 to 400 Euros. Since Midijobs subsidize social insurance contributions on a sliding scale where contribution rates increase with earnings, the marginal burden with Midijobs is higher than without Midijobs. Individual income taxes fall due starting at earnings of about 600 Euro per month. At the Midijob earnings limit the marginal burden declines again. Figure 6a illustrates the introduction of Midijobs in 2003. Figures 6b and c show the effect of changing earnings thresholds in 2013 and 2019, always applying the income tax regimes of the reform years.

Figure 7 similarly depicts the total marginal burden for married individuals.⁷ For given spousal earnings the marginal income tax rate which falls due once earnings exceed the Minijob earnings threshold is constant over a wide earnings range. The three panels of Fig. 7 show the effects of the Midijob reforms. Table 2 verbally characterizes the reform-induced changes in net earnings and the total marginal burden for single and married individuals along the earnings distribution. Based on these considerations, we derive two hypotheses for the distribution patterns of gross earnings.

⁶ The inspection of the earnings distribution is a common approach in the bunching literature. Gudgeon and Trenkle (2023, e.g., Fig. 2), Tazhitdinova (2020, e.g., Fig. 1), Saez (2010, e.g., Fig. 3), Kleven and Waseem (2013, Figure IX) and Schächtele (2020, e.g., Fig. 3) offer such evidence.

⁷ In deriving the marginal tax rate for married individuals, we follow Gudgeon and Trenkle (2023, Appendix C) and assume that the spouse earns 41,000 Euro per year, which represents an average figure for the considered time period.

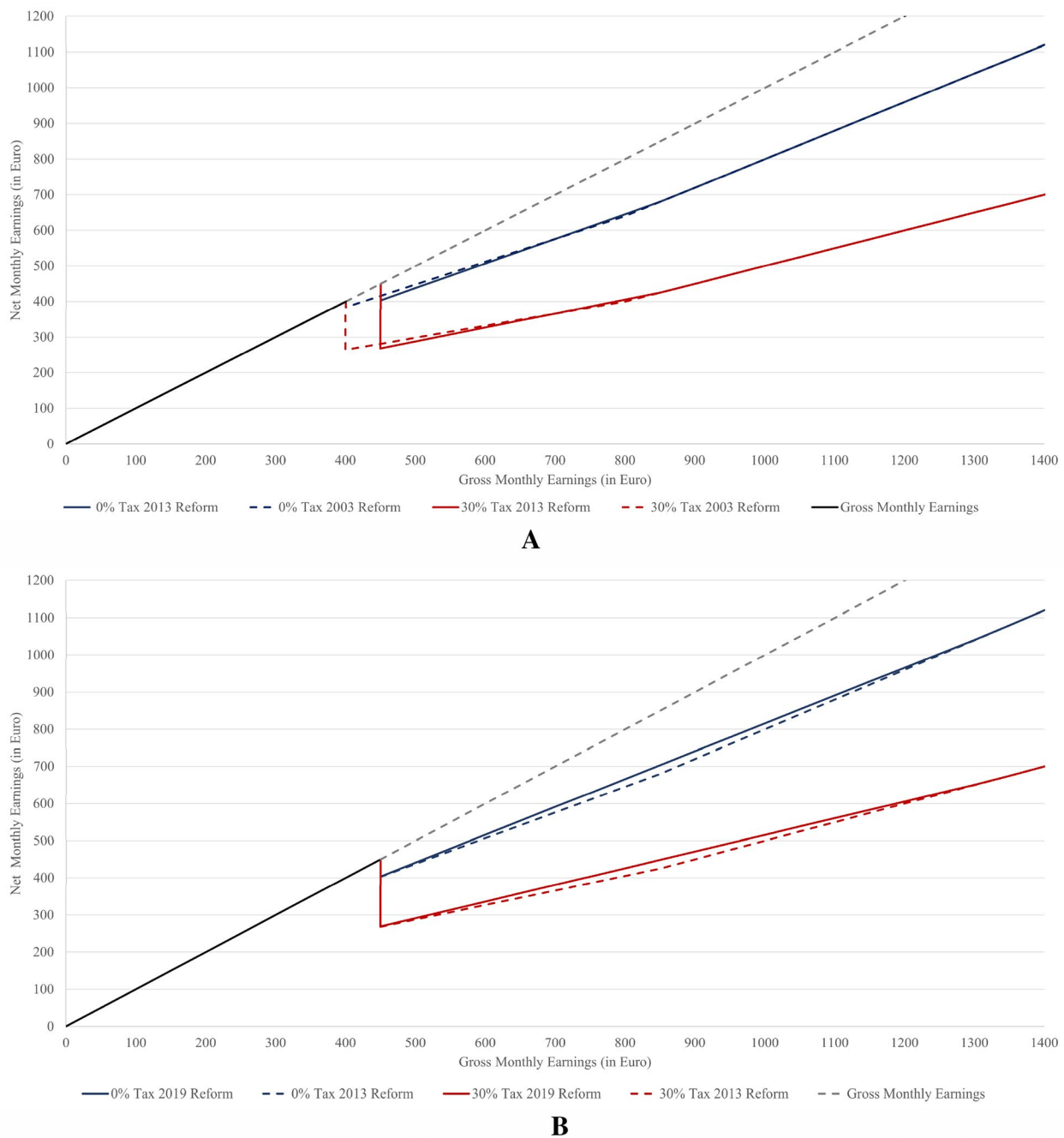


Fig. 2 **a** Midijob reform 2013. **b** Midijob reform 2019. The graph sketches net monthly earnings as a function of gross monthly earnings. Up to gross earnings of 400 (later 450) Euro per month, gross and net earnings are identical. The blue lines refer to a scenario without income tax liability, the red lines depict the net earnings schedules with 30 percent income tax liability. **a** compares the situation after the 2003 reform (dashed lines) with the situation after the 2013 reform (straight lines). **b** compares the situation after the 2013 reform (dashed lines) with the situation after the 2019 reform (straight lines). Source: Own illustration

First, we expect an increased attractiveness of employment particularly in those gross earnings ranges for which after a reform both the net earnings increase and the marginal burden from income taxes and social insurance contributions declines. This holds for the earnings

range 325–400 after 2003, 400–800 after 2013, and 450–850 after 2019 when the reforms increased the earnings thresholds. We expect that the concentration of employees in these earnings ranges increases after the respective reforms (H-stat-1).

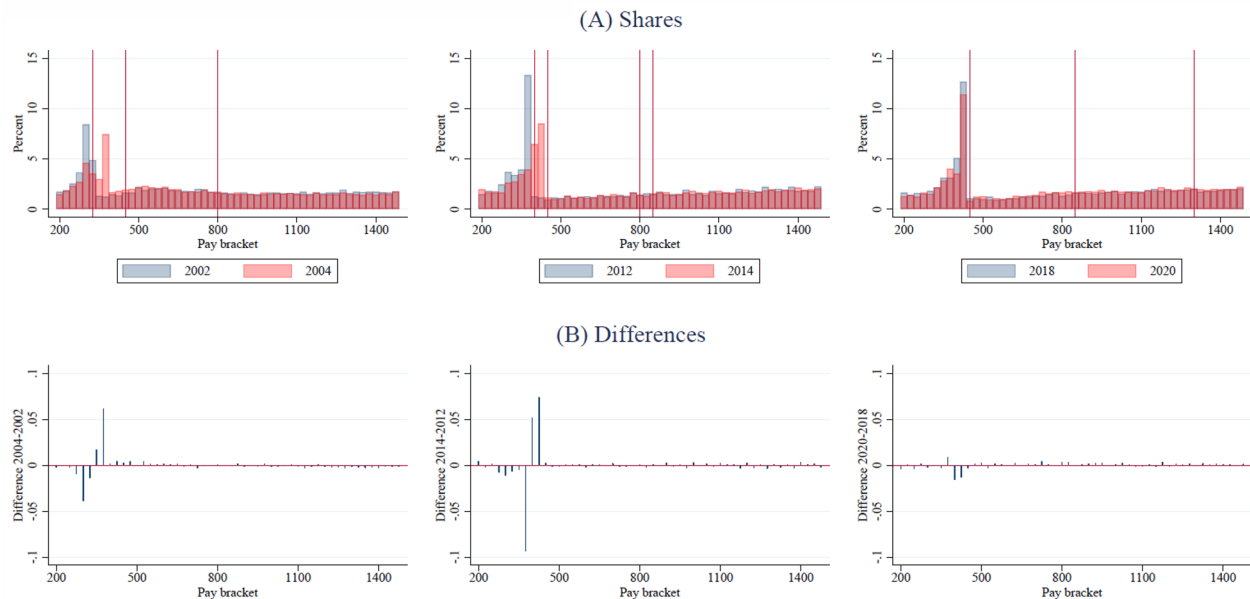


Fig. 3 Distribution of gross earnings around three reforms. The graphs in row **A** depict the distribution of gross earnings in 25 Euro earnings bins on August 1 in the year before and the year after each of the three reforms. The histogram presents the share of workers in certain pay brackets among all employments earning below 1,500 Euro. The graphs in row **B** show the difference between the two distributions. Vertical lines indicate the pre- and post-reform earnings limit of Mini- and Midijobs. Source: IEB and own calculations

Second, at the upper Midijob earnings range (i.e., at 800, 850, and 1300 Euro) an increase in earnings reduces the marginal burden and thereby produces nonconvex kinks in the budget constraint. In theory, this should cause holes in the static distribution of gross earnings around these kinks.⁸ When the reforms shift the upper earnings range limit upwards (i.e., from 800 to 850 in 2013 and from 850 to 1300 in 2019) the hole in the distribution should follow this upward movement and move to higher gross earnings amounts (H-stat-2).⁹

3.2 Data and analysis

To test these hypotheses and to describe the earnings distribution, we use a special sample from the Integrated Employment Biographies (IEBs V 16.01.00): we randomly sample 2 percent of all individuals who had an employment spell between 1999 and 2021. The data encompass all workers covered by the German social security system; for all but civil servants and the self-employed, the data include full information on employment biographies and unemployment benefit receipt. We can use daily information on the duration of employment spells

and the intensity of employment (differentiating Mini-job, Midijobs, as well as part-time and full-time employment). The data are ideally suited for our analysis which requires fine-grained information to identify employment within the shifting thresholds of Mini- and Midijobs. The data further contain information on education, age, unemployment benefit receipt, and gender. Furthermore, we can calculate labor market experience and tenure at a given establishment. We consider individuals in the 20–65 age range in our analyses.

In our static analyses, we investigate the share of workers in specific pay bins and inspect how these shares shift over time around the 2003, 2013, and 2019 reforms. For our analyses, we restrict our sample to the years before and after the reforms, i.e., 2002, 2004, 2012, 2014, 2018, and 2020. In all cases, we collect our data as of August 1. We then split the sample into 25 Euro bins of monthly pay for individuals earning less than 1,500 Euro.¹⁰ Table 3 shows descriptive statistics for the analyzed years.

As we are interested in the shift in the distribution of gross earnings around reform dates, we show two graphs for each of the three reforms: one graph (Fig. 3a) presents overlapping histograms of the earnings distribution in the year before and the year after the relevant reform. The second graph (below, Fig. 3b) shows the difference between the two annual distributions. Figure 3 presents

⁸ Kleven (2016, p. 441) points out that no research ever found any evidence of holes around nonconvex kink points.

⁹ For discussion of similar rationales see Gudgeon and Trenkle (2023), Tazhitdinova (2020), Schächtele (2020). If the beneficiaries of the Minijob subsidies, i.e., the marginal bunchers, originally are located at gross earnings beyond the Midijob earnings range the shape of the post-2003 budget set in the Midijob earnings range should not be very influential.

¹⁰ We approximate average monthly earnings by multiplying daily earnings by 30.4375.

the patterns around the 2003 reform in the left column (comparing 2002 and 2004), around the 2013 reform in the middle column (comparing 2012 and 2014), and around the 2019 reform in the right column (comparing 2018 and 2020). We confirm substantial bunching of employments at the Minijob earnings limits. Also, in each case, we find confirmation for the expected change in the employment frequency in the Minijob earnings range (H-stat-1). However, we do not find evidence for the second hypothesis (H-stat-2). There is neither a hole in the distribution before the reforms nor a clear shift in the earnings distribution at the upper end of the Midijob earnings range after the reforms. In fact, Fig. 3b shows that there is almost no difference between the two annual pre- and post-reform histograms beyond the Minijob earnings threshold.

To determine the robustness of these results we additionally inspected the differences in the earnings distributions allowing for only one or three (instead of two) years between the considered pre- and post-reform years (see Fig. 8 in the Appendix for the 2019 reform). The differences in the gross earnings distribution are slightly larger when we compare the situations over a longer period but the nature of the results remains unchanged. We additionally inspected the results separately for males and females but did not find relevant differences.

In sum, we find substantial bunching around the Minijob earnings limit. We confirm the findings in the literature which show that workers slowly—if at all—adjust to shifts in the Minijob earnings limit over time. Gudgeon and Trenkle (2023) argue that this delay in adjustment is connected to labor demand where only rapidly growing firms adjust hours demands quickly to changing circumstances. We do not find evidence that the decline in the marginal burden on gross earnings at the Midijob earnings ceiling generates a hole in the gross earnings distribution nor that it shifts over time. This agrees with the prior literature (see Kleven 2016). The comparison of gross earnings distributions over time does not offer evidence of strong employment responses to Midijob reforms.

4 Dynamic analysis—transition rates over time and underlying patterns

4.1 Data for the dynamic analysis

To learn about the impact of Midijobs on individuals' decision to leave a Minijob for regular, i.e., higher-paying employment we now investigate the development of such job transitions directly. In this section, we describe the development of annual and biannual transition rates from Minijob to regular employment over time (Sect. 4.2) and compare the development of transition rates for individuals affected and unaffected by reforms (Sect. 4.3).

Again, we use IEB data where our sample now comprises all individuals who held a Minijob as of August 1 in the period between 1999 and 2020 and who are not registered as unemployed and do not receive UB1 or UB2 benefits. We consider individuals in the 20–65 age range. We focus on the propensity to transition from a Minijob to regular, i.e., higher-paying employment above the Minijob earnings threshold. We consider a transition if the Minijobber of year t is observed in regular non-Minijob employment on August 1 of year $t+1$ (annual transition) or year $t+2$ (biannual transition). Column 1 in Appendix Table 4 shows descriptive statistics for our sample of 398,714 Minijobbers as observed on August 1 in the considered years. They are on average 43 years old and predominantly female (78 percent). On average, 14 and 22 percent of these individuals transition to a regular job within 12 and 24 months, respectively.

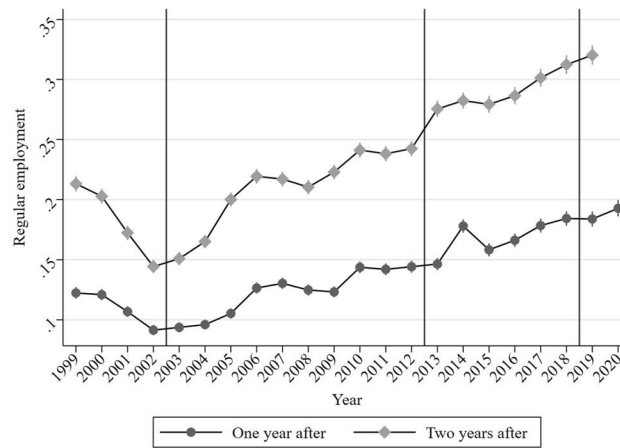
4.2 Development of transitions from minijobs over time

Figure 4 presents the development of annual and biannual transition rates out of Minijobs. For the full sample, Panel A unsurprisingly shows that biannual transition rates are higher than annual transition rates. However, both follow similar developments over time. Between 1999 and 2002 we observe a decline in transition rates. Between 2003 and 2006 transition rates return to prior levels. The increase then stopped possibly due to the slump in the business cycle after the 2008 financial crisis. Afterwards, the secular increase in transitions continued.

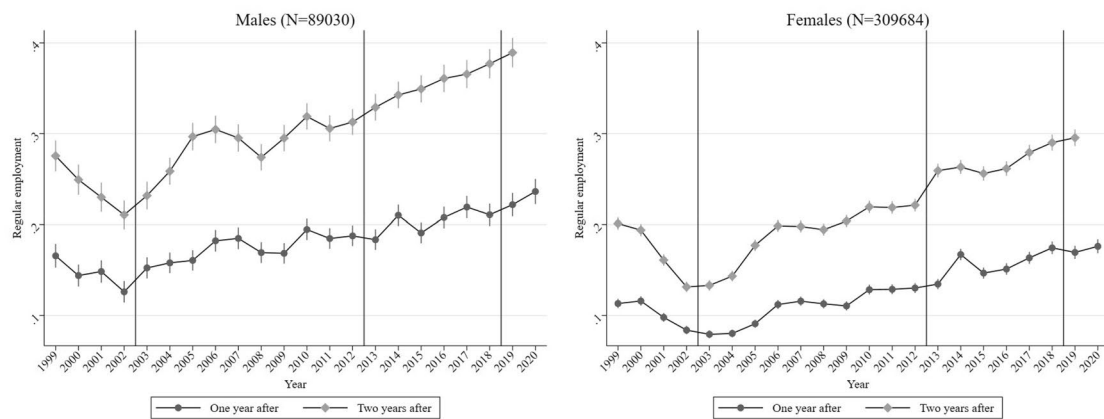
Earnings limits of Mini- and Midijobs were increased by 50 Euro each on January 1, 2013. Since this is a rather small adjustment it is not surprising that we do not observe a response in transition rates from Minijobs in 2013 or the year before. The one-time increase in annual transitions for Minijobs in 2014 might be connected to the introduction of general minimum wages in 2015 which is known to have caused a decline in Minijob employment and possibly involved a one-time increase in transitions to regular jobs (e.g., Caliendo et al. 2018). Subsequent years show a smooth continued rise in transition rates. As of July 1, 2019, Midijobs earnings thresholds increased from 850 to 1300 Euros. Panel A does not indicate a change in transition rates out of Minijobs around that time. Overall, annual (biannual) transition rates almost doubled between 2003 and 2020 from about 10 to 20 (15 to 32) percent.

We also investigated heterogeneities in the level and development of transition rates. Panel B shows that while the overall trends are similar, males have much higher transition probabilities to higher-paying jobs than females. Panel C shows that transition rates are higher among the young (below age 30, 20 percent of the sample) and lower among old Minijobbers (above age 50,

Panel A Full sample



Panel B Male and female subsamples



Panel C Young and old subsamples

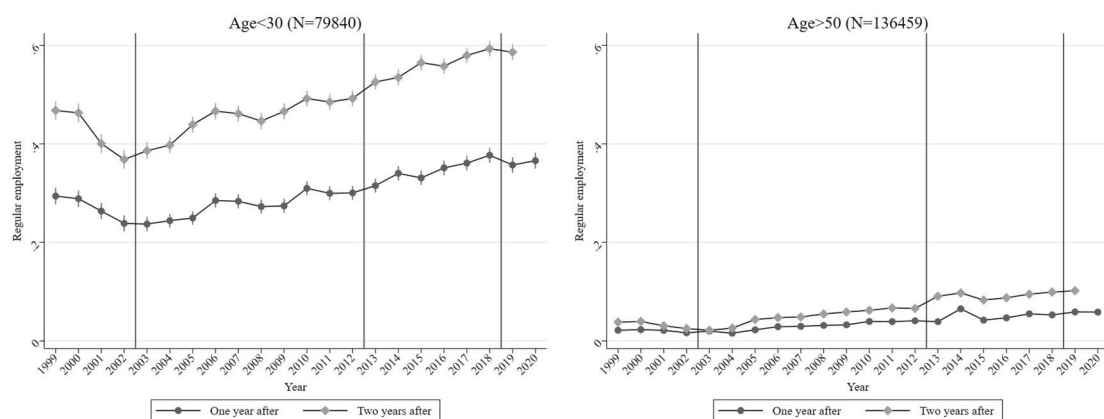


Fig. 4 Transition rates from Minijobs to higher-paying employment (1999–2021). **A** Full sample. **B** Male and female subsamples. **C** Young and old subsamples. The x-axes depict the starting year of transitions. Since our data end in 2021, we depict two-year transitions starting in 2019, only. The vertical lines represent the reforms that in each year take effect before our measurements as of August 1. The y-axes describes the average transition probability in a given year. Source: IEB and own calculations

34.2 percent of the sample). In sum and at first glance, the development of transitions from Minijob to regular employment does not seem to change after the Midijob reforms.

4.3 Transition developments among those affected and unaffected by reforms

It seems plausible that the trends in transitions from Minijob to regular employment may have been affected by the business cycle and general time trends. These developments might obfuscate the effects of Midijob reforms. To account for such patterns this section compares the development of transitions from Minijobs to higher-paying, non-Minijob, regular employment for two groups: those affected and unaffected by the reforms that intended to reduce the Minijob trap. While regular Minijobbers were affected by the reforms ("treated") unemployed individuals receiving UB I who also might pick up a regular job to leave unemployment were not ("controls"). For unemployed individuals changes in the regulations of Midijobs are less relevant. Therefore, while the unemployed may not be a perfect control group comparing the development of the two groups' transition rates allows us to account for general labor market developments and the upswing in the business cycle that affected both groups.

The 2003, 2013, and 2019 reforms modified incentives for Minijobbers to transition from Minijob employment to higher-paying jobs (see Table 1). Based on these reforms we derive three hypotheses regarding transition behaviors. First, the introduction of Midijobs in 2003 increased net earnings from working additional hours beyond the Minijob earnings threshold. This may have reduced the Minijob trap. At the same time, the Minijob earnings threshold was raised from 325 to 400 Euro per month which may have reduced the propensity to leave Minijob employment. We hypothesize that if the Midijob effect dominates, the overall propensity to increase labor supply at the intensive margin beyond the Minijob earnings limit increased, and transition rates from Minijob to higher-paying employment rose (H-dyn-1). Second, the 2013 increase in the Minijob earnings range rendered Minijobs slightly more attractive. This might reduce the propensity to exit from Minijobs to regular employment for workers at the Minijob earnings limit (H-dyn-2). Third, the 2019 extension of the earnings range of subsidized Midijob earnings may have rendered Midijob employment more attractive. Therefore, we expect increased transition rates to Midijob employment after the subsidy was extended in 2019 (H-dyn-3).

To determine the empirical support for these hypotheses, we compare the change in transition rates over time for Minijobbers who were directly affected and targeted by the reforms and for recipients of unemployment benefits (UB

I) who were not. We consider unemployment benefit recipients (with and without additional earnings) as a comparison group. Those unemployment benefit recipients who earn incomes in addition are subject to strict regulations: once their earnings reach a given limit, additional earnings are deducted from their unemployment benefits.¹¹ Thus, unemployment benefit recipients may work in a Minijob but due to earnings restrictions, they do not benefit from shifts in the Minijob or Midijob earnings threshold. Therefore, they constitute a suitable comparison group for regular Minijobbers who are not registered as unemployed.¹²

To compare the development of transition rates for the two groups we estimate a linear regression model where the outcome of interest is the transition to regular higher-paying employment. Again, we rely on administrative data taken from the IEBs. For this analysis, we compare in each calendar year ($s=1999, 2000, \dots, 2020$) the probability of a transition to regular employment in year $t+1$ (transit_{it}) for individuals (i) working in a Minijob in year t ($\text{mini}_{it}=1$) without being unemployed to the transition probability of those receiving unemployment benefits (UB I) in year t ($\text{mini}_{it}=0$). We account for calendar year fixed effects (θ_s). The coefficients β_s provide the annual difference in transition rates for Minijobbers and the unemployed which may respond to the reforms of interest:

$$\text{transit}_{it} = \beta_s (\text{mini}_{it} * I(\text{year}_t = s)) + \theta_t + \varepsilon_{it} \quad (1)$$

Table 4 in the Appendix offers descriptive statistics for the full sample and separately for treatment and control group observations in columns (1) and (2). Individuals on UB I are on average younger than Minijobbers, and far more likely to be male. Panel A of Appendix Fig. 9 describes the annual transition rates for the two groups of individuals over time. The transition probabilities are substantially higher among the unemployed. Time trends in transitions seem to be parallel with a decline between 1999 and 2003 and slight increases for both groups afterwards. For the unemployed we see an upward jump at the end of the financial crises (higher transitions from 2009 to 2010 than before), for Minijobbers there is a smaller

¹¹ Those on regular unemployment benefits (UB I) can earn up to 165 Euro per month without benefit reductions. Those on means-tested welfare, i.e., unemployment benefit II (UB II) can keep the first 100 Euro of earned income without deductions. Out of the next 900 Euro earned they can keep 20 percent and out of the next 200 Euro they can keep 10 percent. This sums up to no more than a 300 Euro net addition to their benefit if they earn 1,200 Euro gross. If they are employed in a Minijob they can keep 170 Euro per month. While our sample may comprise UB II recipients we select based on UB I receipt; some UB I recipients may benefit from the means tested UB II, in addition to UB I.

¹² Initially, we planned to consider only those individuals in the comparison group who received unemployment benefit I and at the same time held a Minijob. However, this group was very small ($N=998$) and the estimations were imprecise. Now, UB I recipients are considered who receive UB I independent of whether they additionally earn an income.

jump in 2014 (higher transitions from 2014 to 2015 than before) which coincides with the introduction of mandatory minimum wages.

The coefficients β_s as presented in Eq. (1) are estimated net of time trend effects and thus account for general labor market developments that affect entries to regular employment from all origins.¹³ Panel A in Fig. 5 shows the difference in developments over time for the two considered groups. The sizeable negative coefficients reflect that on average the unemployed have a much higher propensity to transition to regular employment than Minijobbers. The developments over time show that the (negative) difference in transition rates increased between 1999 and 2003 and then declined strongly after 2003. This agrees with the first hypothesis (H-dyn-1), i.e., rising transitions from Minijobs after the 2003 reform. However, after 2008 the relative increase in transitions out of Minijobs drops substantially. Compared to transitions out of unemployment, transitions out of Minijobs subsequently remain at lower levels. We observe no strong adjustments in transition rates out of Minijobs after the 2013 and 2019 reforms. H-dyn-2 does not match the results while the insignificant and very small increase in 2020 agrees with our third hypothesis (H-dyn-3). Eventually, relative transition rates in 2020 are not much higher than in 1999, before the reforms. This suggests that over time transition rates out of Minijob employment did not reach persistently higher levels once overall developments are accounted for. The increase in transition rates that we observe in Fig. 4 may be due to general labor market trends that similarly improved exit rates from unemployment.

Panel B of Fig. 5 depicts the estimation results separately by gender. Before the 2003 reform, we find that the relative transition rates from Minijobs were higher for females than males. For both genders, relative transition rates from Minijobs increased in 2003. Figure 4 shows that transitions from Minijobs increased over time for both groups. Nevertheless, for females transitions out of unemployment increased by more such that by the end of our observation window the relative transition rates from Minijobs were even lower than before the introduction of Midijobs in 2003. In contrast, the smaller male sample shows a sustained increase in relative transitions from Minijobs compared to unemployment over time. Overall, there is no evidence that the reforms boosted the stepping stone character of Minijobs or eliminated the Minijob trap.

5 Conclusions

The German labor market is characterized by a generous set of subsidies for low incomes. More than 17 per cent of the labor force takes advantage of employment relationships that benefit from subsidies to income tax payments and social insurance contributions via Minijobs and Midijobs. The subsidies inherent in the Minijob scheme generate a 'Minijob trap' where several hundred thousand workers bunch at the Minijob earnings threshold. This has recently garnered international research attention: Tazhitdinova (2020) used the large and salient notch at the Minijob earnings threshold to study earnings elasticities. Gudgeon and Trenkle (2023) investigated the speed at which workers' earnings respond to changes in the Minijob threshold. Both studies point to the important role of labor demand in understanding adjustment patterns in the low-income segment of the German labor market. They confirm Chetty et al. (2011) and emphasize that firms might find it costly to create low-earning non Minijob employments.

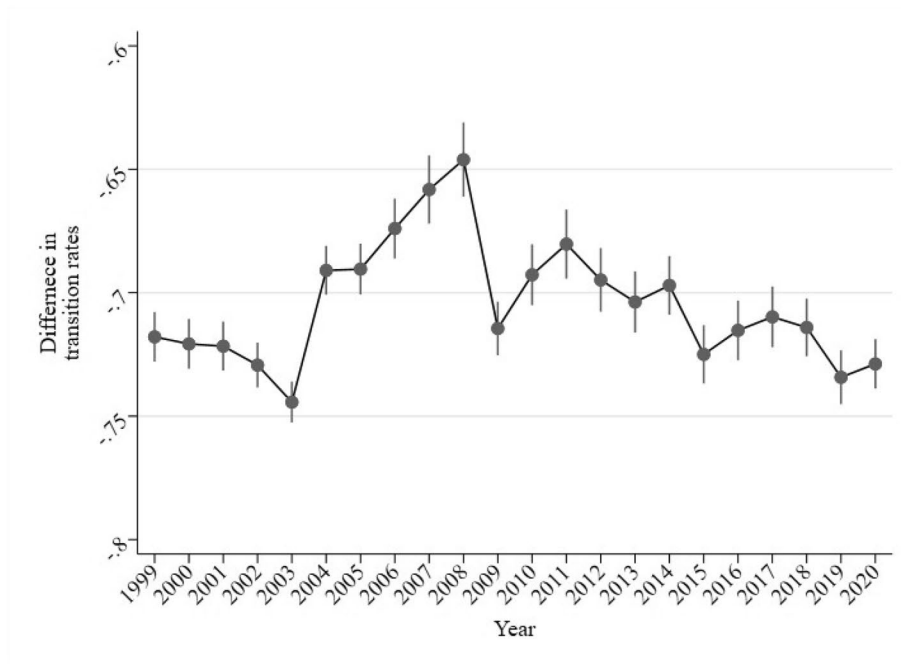
In contrast, our paper focuses on the institutional response to the Minijob trap. In 2003, Midijobs were introduced to attenuate the disincentives to expand labor supply beyond the Minijob earnings threshold. Midijobs subsidize social insurance contributions in an earnings range above the Minijob threshold. Originally covering earnings of up to 800 Euro per month, the Midijob subsidy has been extended in several steps to monthly earnings reaching 2000 Euro since 2023. We study whether the Minijob trap declined after the introduction of Midijobs and their reforms. Our static analysis finds no response of the earnings distribution to Midijob reforms. Our dynamic analysis yields that transitions out of Minijobs to regular employment increased in 2003. However, they did not respond to subsequent institutional reforms. Overall, Midijob subsidies hardly eliminated 'Minijob traps'. These traps continue to characterize the low-income German labor market.

So, why were Midijobs not more successful? We believe that the mechanism behind the remaining 'Minijob trap' is related to income tax regulations (see also Blömer and Consiglio 2022, Blömer et al. 2021, or Herget and Riphahn 2023). Once, gross earnings exceed the Minijob earnings threshold for some workers not only social insurance contributions but also income taxes fall due on total earnings. Midijobs do not address the tax-induced notch in the net earnings schedule. Therefore, for a large group of Minijobbers it is financially unattractive to leave Minijobs.

For a policy to address the Minijob trap it is crucial to avoid or reduce the notch in the net earnings schedule at the Minijob earnings threshold. One way to reach this objective is to abolish the income tax exemption of

¹³ As a robustness check Figure 10 in the appendix presents the estimation results shown in Fig. 5 after controlling for characteristics of the two observation groups.

Panel A Full sample



Panel B Estimation by gender

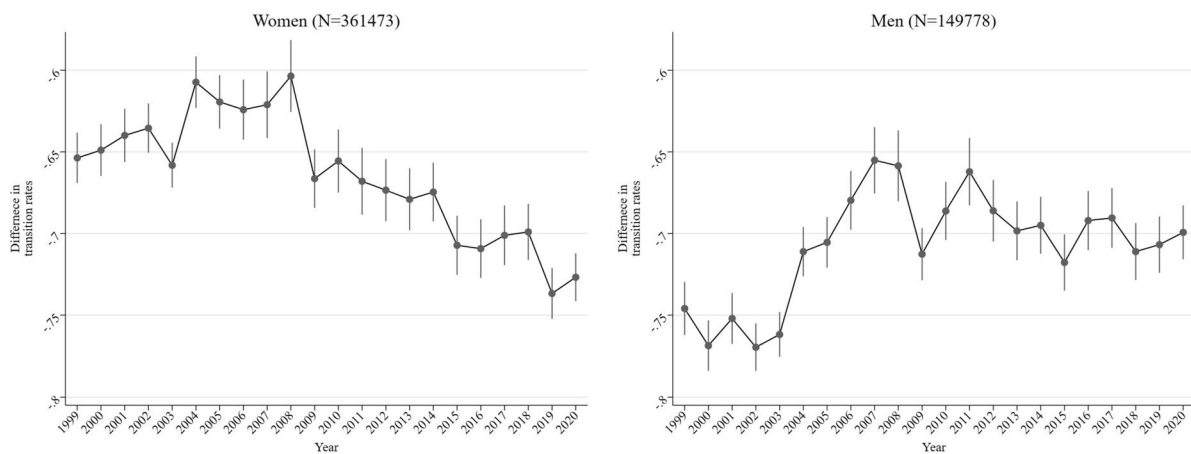


Fig. 5 Difference in transitions to regular employment for Minijobbers and unemployed individuals. **A** Full sample. **B** Estimation by gender. The y-axis reflects the estimated difference in transition rates for the two groups conditional on calendar year fixed effects. The x-axes depict the starting year of transitions. The vertical dashes represent the 95 percent confidence intervals. Source: IEB and own calculations

Minijobs. For non-married individuals, this would be inconsequential because total annual Minijob earnings remain below the personal exemption. For secondary earners in married couples, the reform would abolish the trap. An alternative reform would be to expand the Midijob subsidy to cover income tax obligations in addition to social insurance contributions. A third

option is to allow the sliding scale of Midijob subsidies to start already at the first earned Euro instead of at the Minijob earnings threshold. Each reform would affect labor supply both at the intensive and the extensive margin. A simulation of their potential effects is beyond the scope of this paper.

Appendix

See Figs. 6, 7, 8, 9 and 10 and Tables 2, 3 and 4.

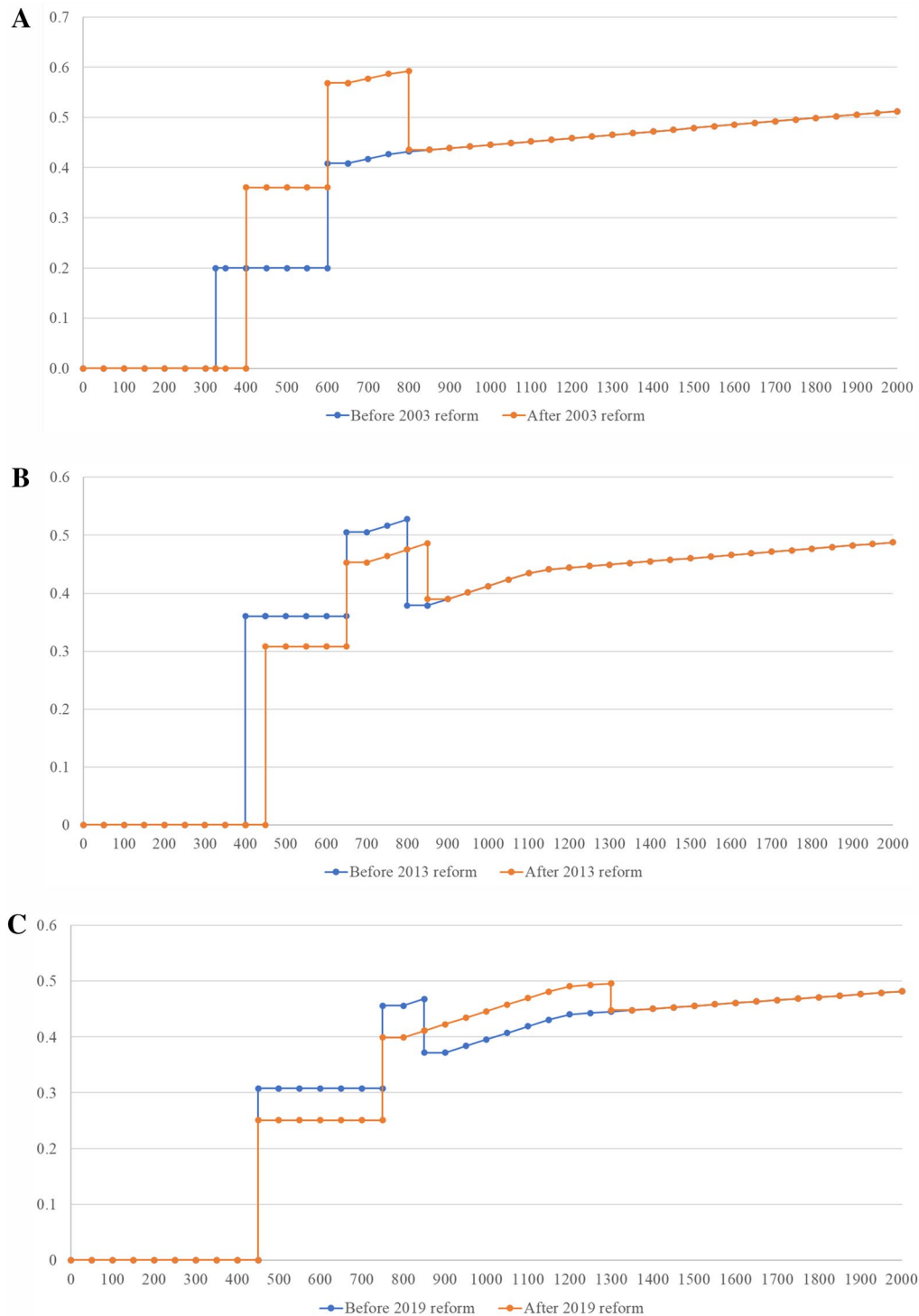


Fig. 6 Marginal tax and social insurance contribution burden before and after reforms for single individuals. **a** Reform of April 1, 2003. **b** Reform of January 1, 2013. **c** Reform of July 1, 2019. **a** uses the income tax schedule of 2003 with and without Midijob regulations, **b** uses the income tax schedule of 2013 with and without the 2013 reform of Midijobs and **c** applies the income tax schedule of 2019 with and without the 2019 reform of Midijobs. The x-axis shows gross monthly earnings in Euro. The y-axis shows the joint marginal burden of income tax and social insurance contributions at a given amount of gross earnings in percent (measured 0 to 1). Source: Own illustration

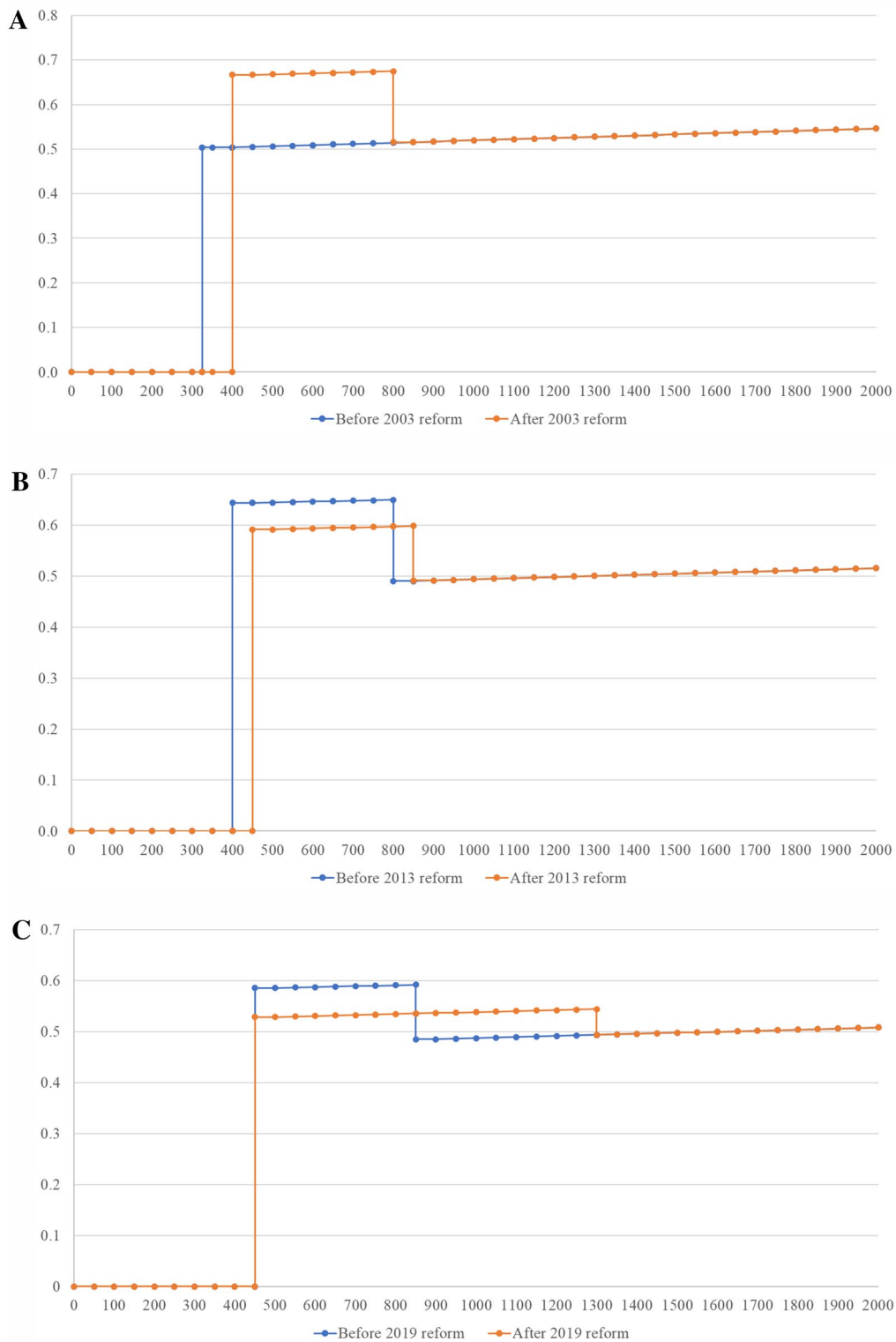


Fig. 7 Marginal tax and social insurance contribution burden before and after reforms for married individuals. **a** Reform of April 1, 2003. **b** Reform of January 1, 2013. **c** Reform of July 1, 2019. See Notes to Figure 6. The partner income is fixed to annual earnings of 41,000 Euro (see Gudgeon and Trenkle 2023). The y-axes are in percent (measured 0 to 1). Source: Own illustration

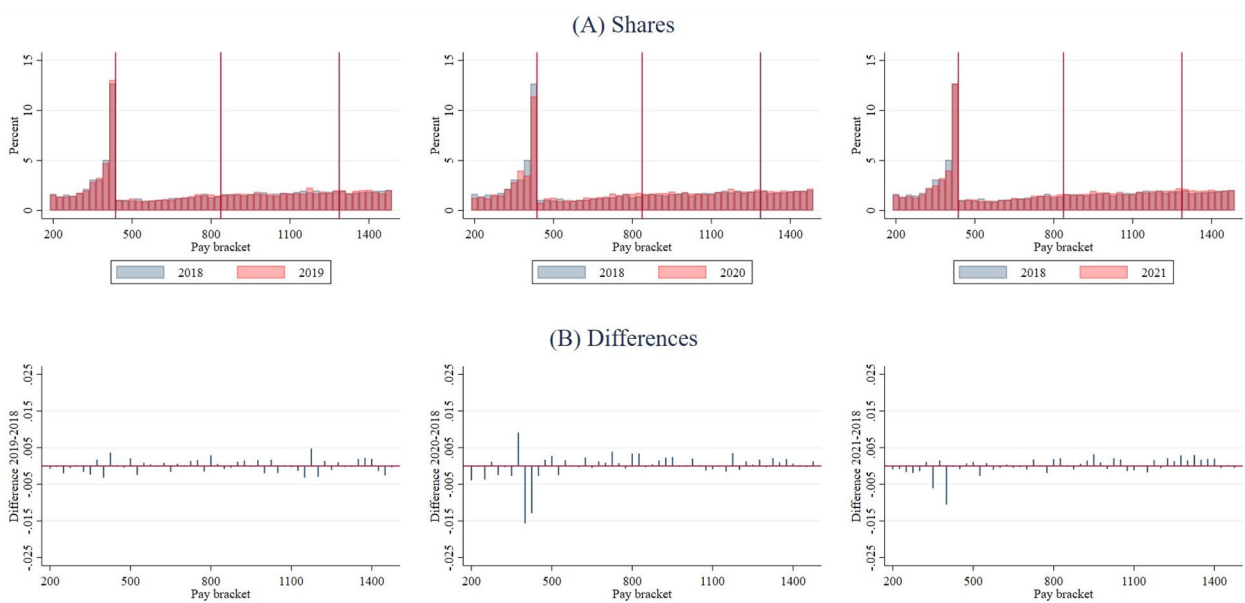


Fig. 8 Distribution of gross earnings around the 2019 reform with alternative observation windows. The top row depicts the distribution of gross earnings in 25 Euro earnings bins on August 1 in the year before the reform (2018) and three different post-reform years. The panel left compares 2018 to the year of the reform (2019), the middle panel compares 2018 and 2020 as in Fig. 3, one year after the reform, and the panel on the right compares 2018 to the situation in 2021, i.e., two years after the reform. The bottom row shows the difference between the two distributions. Vertical lines indicate the pre- and post-reform earnings limit of Minijob- and Midijobs (850 and 1300). Source: IEB and own calculations

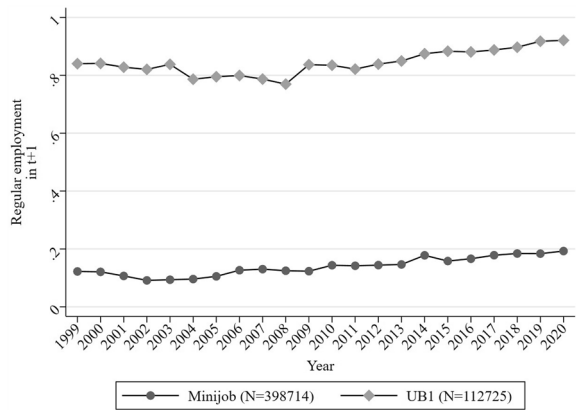
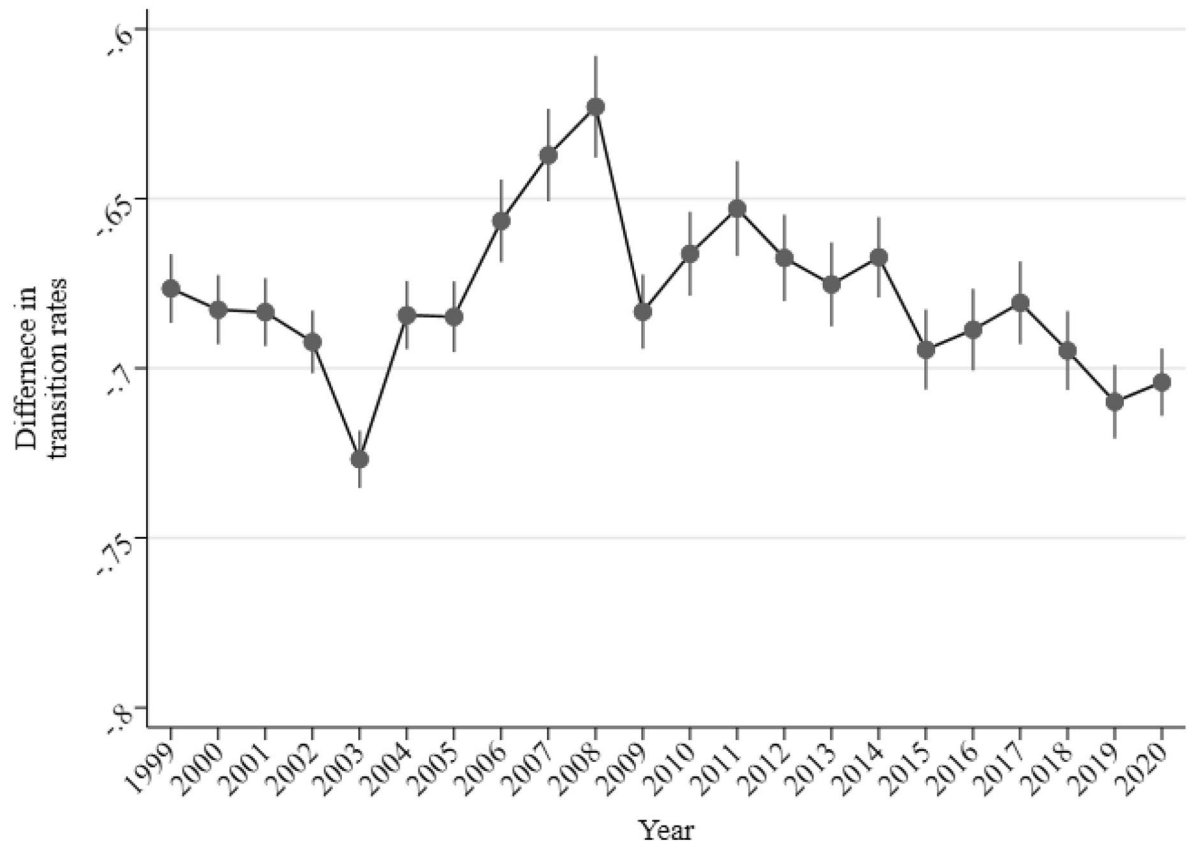


Fig. 9 Transitions to regular employment from Minijobs and UB1. The x-axis depicts the starting year of transitions. The y-axis describes the two groups' average probability of a transition to regular employment in the next year

Panel A Full sample



Panel B Estimation by gender

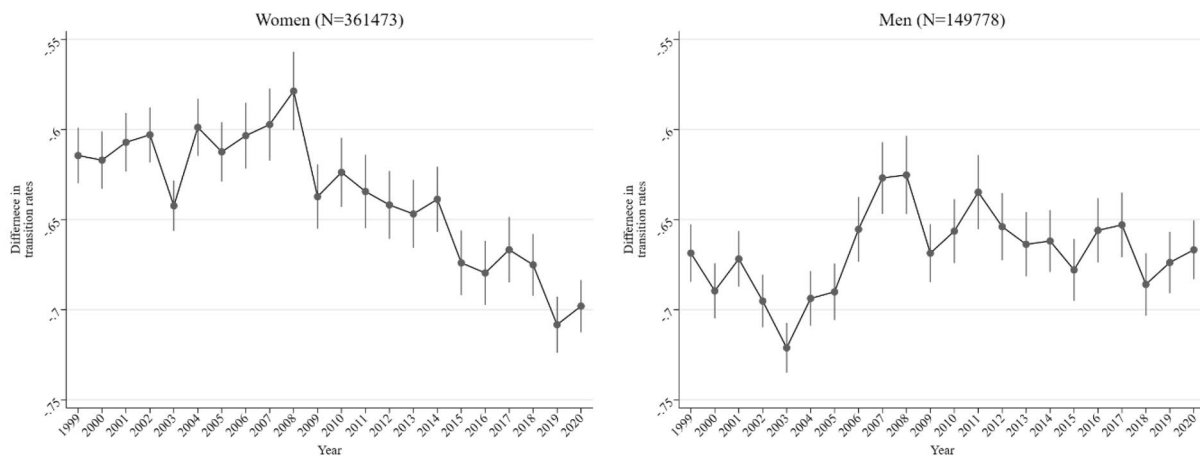


Fig. 10 Difference in transitions to regular employment for Minijobbers and unemployed individuals—Controlling for individual characteristics. **A** Full sample. **B** Estimation by gender. See Figure 4. The differences are estimated conditional on education, German citizenship, age, age squared, and experience as additional explanatory variables in Eq. (1)

Table 2 Development of net earnings and marginal burden for singles and married individuals—derivation of hypotheses

Gross Earnings	Singles		Married individuals		Attractivity of earnings range
	Net earnings	Marginal burden	Net earnings	Marginal burden	
Reform 2003					
0-325.00	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
325.01-400	Increase	Decline	Increase	Decline	Up
400.01-800	Increase	Increase	Increase	Increase	Unclear
800.01-...	Unchanged	Unchanged(*)	Unchanged	Unchanged(*)	Unchanged
Reform 2013					
0-400.00	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
400.01-450	Increase	Decline	Increase	Decline	Up
450.01-800	Increase	Decline	Increase	Decline	Up
800.01-850	Increase	Increase	Increase	Increase	Unclear
850.01-...	Unchanged	Unchanged(*)	Unchanged	Unchanged(*)	Unchanged
Reform 2019					
0-450.00	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
450.01-850	Increase	Decline	Increase	Decline	Up
850.01-1300	Increase	Increase	Increase	Increase	Unclear
1300.01-...	Unchanged	Unchanged(*)	Unchanged	Unchanged(*)	Unchanged

Source: Own illustration

(*) Concave gap

Table 3 Descriptive statistics for the static analysis (Sect. 3)

	(1) 2002	(2) 2004	(3) 2012	(4) 2014	(5) 2018	(6) 2020
Regular job w/o Midijob (0/1)	0.81	0.75	0.61	0.59	0.58	0.42
Midijob (0/1)	0.00	0.06	0.12	0.13	0.13	0.33
Minijob (0/1)	0.19	0.20	0.27	0.28	0.29	0.26
Unemploy. Benefits I (0/1)	0.13	0.14	0.08	0.08	0.07	0.12
Unemploy. Benefits II (0/1)	0.00	0.00	0.09	0.09	0.09	0.09
Daily pay	25.56	24.92	26.24	26.20	26.65	27.29
Experience (years)	23.01	23.26	20.87	19.76	17.00	15.48
Tenure (years)	2.44	2.57	3.12	3.14	3.08	3.00
Age	39.52	40.03	40.39	40.86	41.05	40.82
Migrant (0/1)	0.09	0.10	0.13	0.15	0.20	0.22
Female (0/1)	0.66	0.63	0.68	0.68	0.68	0.66
Tertiary education (0/1)	0.11	0.11	0.13	0.14	0.13	0.11
Observations	90,078	98,460	77,581	75,020	65,271	61,371

The sample contains all individuals earning a labor income below 1500 Euro per month on August 1 of the respective years. This includes those in Mini- and Midijobs, as well as those receiving unemployment benefits I and II who are simultaneously employed. The shares in rows 1–5 can add up to more than 100 percent if individuals receive unemployment benefits and are employed

Source: IEB and own calculations.

Table 4 Descriptive statistics dynamic and DiD-analysis (Sects. 4.1 and 4.3)

	(1)		(2)	
	Minijob in t		UB1 in t	
	Mean	SD	Mean	SD
Minijob (0/1)	1.00	0.00	0.01	0.09
Unemployment Benefits I (0/1)	0.00	0.00	1.00	0.00
Daily pay	10.09	3.62	26.37	15.06
Experience (years)	20.48	9.67	22.94	9.18
Tenure (years)	2.65	3.40	0.43	0.80
Age	43.26	13.20	40.42	12.84
Migrant (0/1)	0.10	0.31	0.11	0.31
Female (0/1)	0.78	0.42	0.46	0.50
Tertiary education (0/1)	0.15	0.35	0.15	0.35
Regular job in 12 months (0/1)	0.14	0.34	–	–
Regular job in 24 months (0/1)	0.22	0.41	–	–
(N = 323,029)				
Observations	398,714		113,723	

In column (1) we consider all individuals who on August 1 of any year between 1999 and 2020 hold a Minijob, are in the age range of 25–65, and are not registered as unemployed (i.e., they do not receive UB1 or UB2 benefits). Annual transitions to a regular job (“in 12 months”) are observed for starting years 1999–2020 and biannual transitions to a regular job (“in 24 months”) are observed for starting years 1999–2019). In column (2) we consider all individuals who on August 1 of any year between 1999 and 2020 are registered unemployed and receive unemployment benefits 1 (UB I); we excluded those who receive UBII simultaneously.

Source: IEB and own calculations.

Source: IEB and own calculations.

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Availability of data and materials

No materials were used for this research. Our data are proprietary and cannot be shared by the authors as restrictions apply to the availability of these data. We will be happy to make programming files available and refer readers to the source of our data.

Declarations

Competing interests

None of the authors have any competing interests.

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