

The Hidden Cost of Rest: Mandatory Breaks and Women's Working Hours *

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October 2026

Abstract

Women around the world work fewer hours than men. We propose a novel reason for low hours in Germany related to mandatory rest breaks. Mandatory breaks add kinks to budget constraints if workers do not value breaks at work equally to leisure at home. Such kinks can affect optimal hours worked. To study the effect empirically, we exploit a 1994 reform in Germany that moved the point at which women are required to take a break from 4.5 hours to 6 hours of continuous work. Our empirical strategy uses Mikrozensus data to compare the hours worked by women before and after the reform with those of men and with a control group of women that was not affected by the reform. We find that, on average, working hours decreased for women affected by the reform, driven primarily by married women. We reconcile these findings with a theoretical framework in which the direction of the hours response depends on a worker's starting point on the budget constraint before the reform and the shape of her indifference curve. Married women respond more because they tend to start at lower hours and have a more elastic labor supply. This is, to our knowledge, the first paper to examine the labor supply implications of mandatory rest break regulation.

*We thank Jannik Link and Hannah Geyer for excellent research assistance. We thank the audience at the Mannheim Workshop in Gender and Family Economics and Matthias Doepke for helpful comments. We gratefully acknowledge financial support from the German Research Foundation (through the CRC-TR-224 project A3 and the Gottfried Wilhelm Leibniz-Prize TE966/2-1). Coskun: FAU Erlangen-Nuremberg, Institute for Employment Research (IAB) (email: sena.coskun@fau.de), Tertilt and Yin: Department of Economics, University of Mannheim (email: tertilt@uni-mannheim.de, yiwyin@mail.uni-mannheim.de).

1 Introduction

Married women around the world work fewer hours than men. While participation rates of women have been catching up over time, much of female employment is part-time. This is especially true for women with children. Germany is a prime example of a country with a high fraction of women working part-time. Large child penalties have been documented for Germany, driven largely by a reduction in hours after childbirth (Kleven, Landaís, Posch, et al. 2019; Adda, Dustmann, and Stevens 2017). Many explanations have been proposed, including tax law (Bick and Fuchs-Schündeln 2017; Tazhitdinova 2022), childcare constraints (Bauernschuster and Schlotter 2015), and social norms (Boelmann, Raute, and Schönberg 2025). In this paper, we propose a novel institutional reason for the low hours of married women, related to break regulation. We hypothesize that mandatory rest breaks affect optimal hours worked, shortening in some cases the length of the workday. We test this hypothesis using a 1994 reform in Germany.

A mandated rest break differs from a maximum hours restriction in an important respect: it does not limit how many hours an employee may work, but it does increase the amount of time an employee must be present at the workplace to complete a given number of paid working hours in a given day. To the extent people do not view rest at work as a perfect substitute for rest at home, workers may not always appreciate a mandated break. Instead, it increases the length of time required to be on site. Especially workers with inflexible other commitments, such as picking up a child from school or daycare at a specific time, will be affected by the mandated break.¹ Despite rest break requirements being a common feature of working time law across many countries, their consequences for labor supply have, to our knowledge, not been studied.

In this paper, we first show in a theoretical framework how mandated breaks can affect labor supply theoretically. A key ingredient in the model is the distinction between hours at work and paid hours. A mandated break introduces a wedge between the two concepts, leading to kinks in the budget constraint. Depending on the wage rate and preferences, it may be optimal to choose hours at a kink. When a new rest break is introduced, or a given rest break is changed, it may be optimal to decrease hours. We show in a theoretical set-up under what conditions such a scenario can occur.

We exploit a 1994 reform in Germany to test the hypothesis. The 1994 reform of German

¹When considering working an extra hour in a given day, if this hour falls into the “rest break zone,” it can de-facto mean they are being only paid half for that last hour (as the other half is the mandated 30-minute break). In such a situation, the person may prefer not to add the extra hour and instead have an even longer break at home, at the cost of somewhat lower earnings.

working time law changed break requirements specifically for women. Before the reform, women were required to take a first break after 4.5 hours, while after the reform the first break was required only after 6 hours, making it equal to those of men. Using Mikrozensus data, we adopt a difference-in-differences design, comparing the working hours of women affected by the 1994 reform the most with two alternative control groups. The first control group is men, who did not experience the abolishment of the break at 4.5 hours and were therefore not affected by the reform. The second control group is based on occupations that were exempt from the law. We find that, on average, working hours decreased for women affected by the reform by approximately 0.91 hours for actual hours and 0.62 hours for usual hours, using men as the control group, with a similar result using the second control group. This decrease is driven primarily by married women.

The result that hours worked *decrease* in response to a relaxation of the break law may seem puzzling at first. We show that it can be reconciled with theory as follows. First, we show that for workers whose optimal hours before the reform were above six, depending on the shape of the indifference curve, it may be optimal to reduce hours after the reform. This is theoretically more likely when labor supply is very elastic, which is typically the case for mothers with school-age children. We do indeed find that responses are much larger for married women than for single women, consistent with theory. Second, we document that the 1994 reform also went along with increased enforcement. If indeed the original 4.5-hour break was de-facto ignored by those workers who found it inconvenient but the new break after 6 hours is enforced, then this can also lead to a reduction of hours worked.

A prominent macroeconomic literature analyzes the large difference in aggregate working hours between Europe and the United States, pointing to the central role of taxes, social security systems, and the marketization of home production (Prescott 2004; Rogerson 2006; Rogerson and Wallenius 2009). In related work, Karabarbounis (2014) demonstrates that accounting for home production is essential for explaining cross-country differences in market hours and labor supply responses to taxation.² In Germany, this hours gap is particularly acute among secondary earners: a substantial literature documents low working hours among married women in Germany relative to other countries, focusing on the role of joint taxation and mini-jobs (Bick and Fuchs-Schündeln 2017; Bick and Fuchs-Schündeln 2018; Tazhitdinova 2022). Beyond income taxes and mini-jobs, family-related transfers and child benefits further distort secondary-earner labor supply: Hanusch (2019) shows that child benefits interact with joint taxation to substantially reduce

²See also Birinci, Karabarbounis, and See (2026) on the role of government health benefits in explaining the hours gap between the US and Europe.

mothers' market hours. This literature has largely focused on tax and transfer policy as the institutional driver of married women's hours, leaving open whether other features of labor market regulation, such as mandatory rest breaks within the working day, also shape married women's hours choices. Beyond tax disincentives, maternal labor supply in West Germany has historically also been shaped by social norms that place a high value on maternal childcare (Boelmann, Raute, and Schönberg 2025). Corroborating this, Iftikhar (2025) shows that conservative cultural norms regarding maternal care induce persistent reductions in mothers' working hours even after children reach school age. A third constraint is the limited availability of public childcare: Bauernschuster and Schlotter (2015) show that the expansion of kindergarten places in Germany significantly increased maternal labor supply. In an environment where married women already face tight non-market obligations and predominantly select into short-hour schedules, regulatory frictions within the working day, such as compulsory rest breaks, can have pronounced consequences for their hours choices.

A separate literature studies the impact of labor regulation on labor supply, considering several types of regulation but not mandated breaks specifically. Some papers study maximum hours laws in particular, analyzing their effect on employment. Hunt (1999) exploits cross-industry variation in standard hours reductions bargained by German unions, and finds that this reduced employment, while hourly wages rose enough to offset the decline in actual hours worked. Crépon and Kramarz (2002) study a mandatory reduction of the French workweek, and find that workers previously employed longer hours were more likely to lose their jobs than workers already working fewer hours. Similarly, Estevão and Sá (2008) examine the French transition from a 39- to a 35-hour workweek, finding that the mandated cut constrained worker choices, leading to increased second-job holding and transitions to unregulated firms, without generating aggregate employment gains. Carry et al. (2026) also investigate the same maximum hours restrictions in France and finds no aggregate effect on employment arguing that this is due to the simultaneous introduction of employer payroll tax cuts. Carry (2026) analyzes a legal minimum on hours worked per week also in France and finds that it has negative employment effects specifically for women. Wasserman (2023) also finds that hours regulation can affect women in particular. The paper finds that caps on medical residents' work hours increased women's entry into specialties that previously demanded long hours. Finally, there is a historical literature studying the effects of "protective labor regulation" introduced in many countries in the early 20th Century. These laws include maximum hours laws, nighttime bans, minimum wage requirements, seating and weight laws that often applied only to women (Landes 1980; Goldin 1988; Haddad and Kattan 2026; Zveglic

and Rodgers 2003). The findings on how these laws affect labor supply are mixed depending on type of law, country studied, and whether the extensive or intensive margin of labor supply is studied.³

Another related literature shows that women's labor supply adjusts to children primarily through work schedules and occupation choice rather than through participation alone. Goldin (2014) shows that in many high-skill occupations earnings are a convex function of hours, so women unable to commit to long or inflexible schedules face a disproportionate penalty, which pushes them toward occupations that allow flexibility rather than high-wage occupations that require long hours. Goldin and Katz (2016) show that pharmacy achieved near gender parity once hours became close to linear in pay. Beyond the number of hours, their timing matters: Cubas, Juhn, and Silos (2023) show that jobs reward working at the same time as others, and mothers' limited ability to do so explains part of the gender wage gap. Moreover, Erosa et al. (2022) and Jang and Yum (2022) show that when human capital accumulation and experience premia are convex in hours, institutional constraints that compress daily schedules can generate large, compounding reductions in women's long-term career progression and earnings. Kleven, Landais, and Sogaard (2019) show that the child penalty in earnings runs through participation, hours, and wages, underscoring hours as one of the key margins through which women absorb the time requirements of children. Domestic care and childcare burdens fall disproportionately on women, making their market work hours highly sensitive to scheduling rigidities and presence hours (Alon, Doepke, et al. 2022). Because women anticipate career and motherhood penalties, they systematically adjust along both intensive hours margins and career choices to maintain compatibility with anticipated child-rearing demands (Coskun, Dalgic, and Özdemir 2026). Mandatory rest breaks represent an institutional factor that affects this precise balancing act.

Finally, our paper connects to the macroeconomic literature on female labor supply, but shifts the lens from the extensive to the intensive margin. While a prominent literature studies the secular rise in female labor force participation driven by declines in the gender wage gap (Jones, Manuelli, and McGrattan 2015), home production technology (Greenwood, Seshadri, and Yorukoglu 2005), cultural learning (Fernández 2013), and local information transmission (Fogli and Veldkamp 2011), the core friction in modern Germany is no longer whether women work, but how few hours they supply once employed. Mandatory rest breaks provide a novel institutional explanation for why maternal hours remain depressed even as employment participation continues to rise.

³Doepke et al. (2025) provide a political economy perspective on the introduction of protective labor legislation.

The rest of the paper is structured as follows. Section 2 describes the regulation of breaks before and after the 1994 Reform. Section 3 illustrates theoretically how mandated rest breaks can affect hours worked. Section 4 explains the data and empirical strategy, while Section 5 describes our result. Section 6 concludes.

2 Institutional Background

We first describe how and for whom the reform changed mandated breaks and then argue that enforcement also became stricter at the time of the reform.

2.1 Break Requirements Before and After the 1994 Reform

Rest breaks for workers in West Germany were regulated first under the *Arbeitszeitordnung* (AZO) of 1938, and then, from 1994 onward, under the *Arbeitszeitgesetz* (ArbZG). We describe the break requirements under each regime in turn, before discussing what the 1994 reform changed.

Under the old law, § 18 AZO set out a separate break regime for women that did not apply to men, summarized in Table 1. Only interruptions of at least 15 minutes counted as a rest break under § 18(2) AZO, and this 15-minute minimum block was the binding constraint on how a break could be divided across a shift. For women, no work period longer than 4.5 hours in a row was permitted without a break, so for total shifts lasting between 4.5 and 6 hours, a 20-minute break had to be taken no later than the 4.5-hour mark of continuous work.⁴ For longer shifts, the break requirement for women increased with shift length and became divisible into multiple 15-minute blocks: 30 minutes for shifts of 6 to 8 hours, 45 minutes for shifts of 8 to 9 hours, and 60 minutes for shifts over 9 hours. For men, by contrast, § 18 AZO did not apply, and work of up to 6 hours in a row was permitted before any break was required, with a 30-minute break required for shifts of 6 to 8 hours, matching the corresponding break requirement for women over that same shift range.

Under the new law, § 4 ArbZG replaced this regime with a single, gender-neutral break requirement. The core change was the abolishment of the 20-minute break previously required for women at 4.5 hours under the old law, so that under the new law, employees could not be employed for more than 6 hours in a row without a break, rather than 4.5 hours for women under the old rule. The 15-minute minimum block for a valid break

⁴This 20-minute break could not be split, since a division such as 15 plus 5 minutes would leave a 5-minute remainder that did not qualify as a rest break under the 15-minute minimum block. The 20 minutes therefore had to be taken as a single block.

continued to apply. Under the new regime, shifts of more than 6 and up to 9 hours required 30 minutes, splittable into two 15-minute blocks, and shifts over 9 hours required 45 minutes in total. Table 1 summarizes the break requirements under both regimes by shift length.

Both the 1938 law and the 1994 law applied to employees in companies and administrations of all kinds, but with exemptions for certain groups of workers, and the scope of these exemptions differed across the two regimes, summarized in Table 3. We will describe how we classify workers into these groups using the Mikrozensus in Section 4.1.

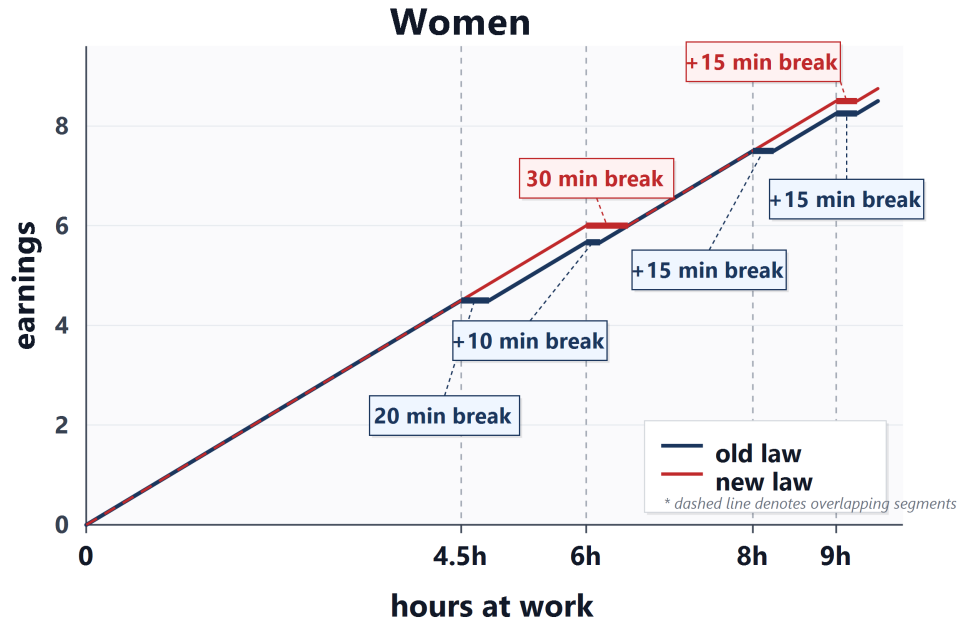
The main change introduced by the 1994 reform is the shift in break timing for women. Under the old law, women were required to take a 20-minute break no later than 4.5 hours into a shift. Under the new law, this requirement was removed, and no break is required at all until 6 hours of continuous work. Once a shift exceeds 6 hours, the new law requires a break of 30 minutes, which can be split into two blocks of 15 minutes each. This is the specific change in the timing and structure of the break requirement that we will exploit in our empirical analysis.

Table 1: Comparison of break minimums by shift length

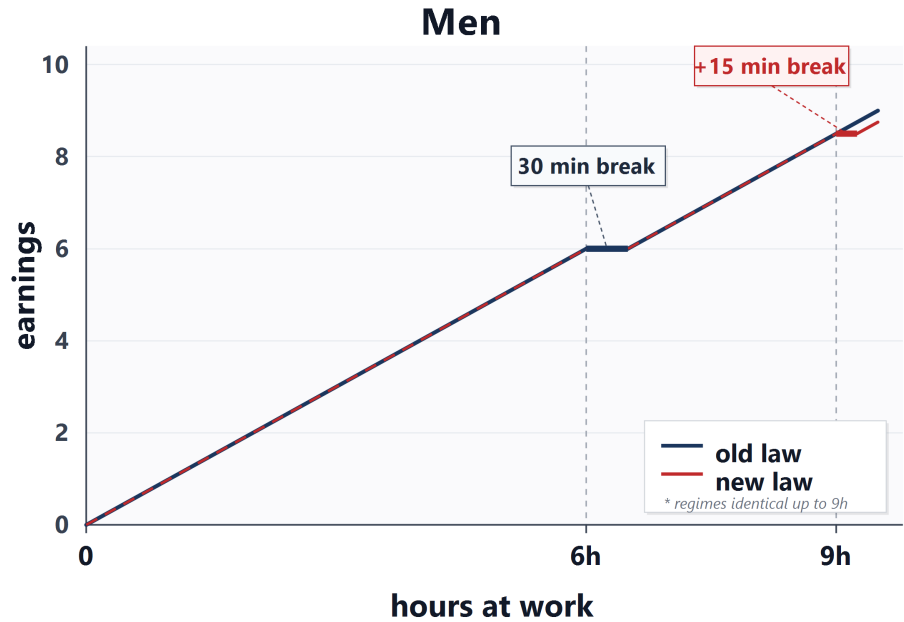
Regime	>4.5-6 h	>6-8 h	>8-9 h	>9 h	First break no later than
AZO pre-1994, women, §18	20 min	30 min	45 min	60 min	4.5 h
ArbZG post-1994, all employees, §4	none	30 min	30 min	45 min	6 h

Notes: Under the ArbZG, the 6-8 and 8-9 hour columns form a single slot, more than 6 up to 9 hours, requiring 30 minutes; they are shown separately only to align with the AZO slots. All values are minimums. Source: Greiner et al. (2025) and Denecke, Neumann, and Biebl (1991).

Figure 1: Break rule by hours worked, before and after the 1994 reform



(a) Women



(b) Men

Notes: The horizontal axis shows hours at work and the vertical axis shows earnings, holding the wage rate fixed. Break lengths are labeled at each threshold. The old law is shown in blue, the new law in red.

Figure 1 illustrates how these break rules translate into the relationship between hours

worked and earnings more visually, separately for women and men, holding the wage rate fixed. For women, shown in panel (a), the old law required a 20 minute break at 4.5 hours, a break that disappears entirely under the new law, which instead requires no break until 6 hours, followed by a 30 minute break, splittable into two 15 minute blocks. For men, shown in panel (b), the break requirement is essentially unchanged by the reform, since men faced a 6 hour threshold with a 30 minute break under both the old and new law, with only a minor change in how the break is split at longer shift lengths. These figures illustrate the mechanical structure of the break rule itself; Section 3 below formally introduces the budget constraint and indifference curves needed to analyze how a worker's hours choice responds to this change.

2.2 Enforcement Before and After the 1994 Reform

We next describe how the break requirements set out in the previous subsection were enforced, both before and after the 1994 reform. The reform substantially tightened the sanctions attached to break violations, while the documentation and inspection framework remained largely in place.

On penalties, the new law is considerably stricter. Under the new law, a break violation is listed as its own explicit offense, covering three separate scenarios: no break granted at all, a break shorter than the required minimum duration, and a break not granted at the required time. The new law additionally introduces a criminal offense for willful or persistent violations that endanger a worker's health, a qualification with no counterpart under the old law. The maximum fine for a break violation increased sixfold from 5,000 Deutsche Mark under the old law to 30,000 Deutsche Mark under the new law.

The six-hour threshold introduced by the new law traces directly to Article 4 of the EU Working Time Directive (Council Directive 93/104/EC) of 23 November 1993, which requires member states to mandate a rest break for any working day longer than six hours, while leaving the specific duration and terms of the break to national legislation or collective agreement. The new law, enacted on 6 June 1994, transposed this directive well ahead of its 23 November 1996 implementation deadline.⁵ The specific break durations set out in the new law, by contrast, have no counterpart in the directive and reflect a German legislative choice.

Other dimensions of enforcement changed less. On documentation, neither law required employers to record when breaks were actually taken. Under the old law, employers were

⁵See BT-Drs. 12/5888.

required only to post the statute itself and the planned working-time and break schedule, with individual records required only in specific deviation cases. Under the new law, employers were likewise required only to post the statute, and individual records were required only for hours worked beyond eight hours per day, not for breaks. On inspection powers, both laws assigned supervision to state-level authorities whose officials could enter and inspect workplaces.

Table 2: Summary of enforcement changes under the 1994 reform

Dimension	Old law	New law	Stricter?
Penalty, break violation	Blanket clause	Explicit offense	Yes
Maximum fine	5,000 DM	30,000 DM	Yes
Criminal offense	Yes, if willful or endangering workers' health	Yes, if willful or endangering workers' health or persistently repeated	Yes
Documentation of breaks	Not required	Not required	No change
Inspection powers	State trade inspectorate	State authority, consolidated	No change

3 Theoretical framework

In this model, we illustrate how a worker chooses *daily* hours of work given a mandatory rest break after a certain number of hours, denoted by $\underline{h}$. We distinguish hours at work, h , from paid hours, $\tilde{h}$. The break introduces a wedge between the two. We assume that the rest break does not enter leisure either and is simply lost for the worker. This assumption is motivated by the idea that a rest break at work cannot be used for most typical leisure activities such as sports, hobbies, and time with children.⁶

The worker chooses hours at work, h , to maximize utility $u(c, \ell)$, defined over consumption, c , and leisure at home, ℓ , where utility is increasing in both arguments and quasi-concave. Total time is normalized to one, so leisure at home is $\ell = 1 - h$. Let w denote the wage rate, assumed fixed throughout.

⁶We model the stark case where such rest at work is simply wasted time from the worker's perspective. Clearly this is a stark assumption, and it could be relaxed by assuming that rest at work is valued but not the same way as leisure. Likely different workers will have different views on this, e.g. by type of hobbies or presence of children. We plan to exploit such heterogeneity empirically in the future.

We assume the worker faces a mandated rest break of length Δ that begins after working $\underline{h}$ hours continuously. Thus, a worker working fewer than $\underline{h}$ hours is not affected at all. During the break, the worker remains at the workplace, so hours at work continue to accumulate, but paid hours do not. Paid hours are thus a function of hours at work as follows.

$$\tilde{h} = \begin{cases} h & \text{if } h \leq \underline{h} \\ \underline{h} & \text{if } \underline{h} < h \leq \underline{h} + \Delta \\ h - \Delta & \text{if } h > \underline{h} + \Delta. \end{cases}$$

The worker's problem can then be summarized as follows

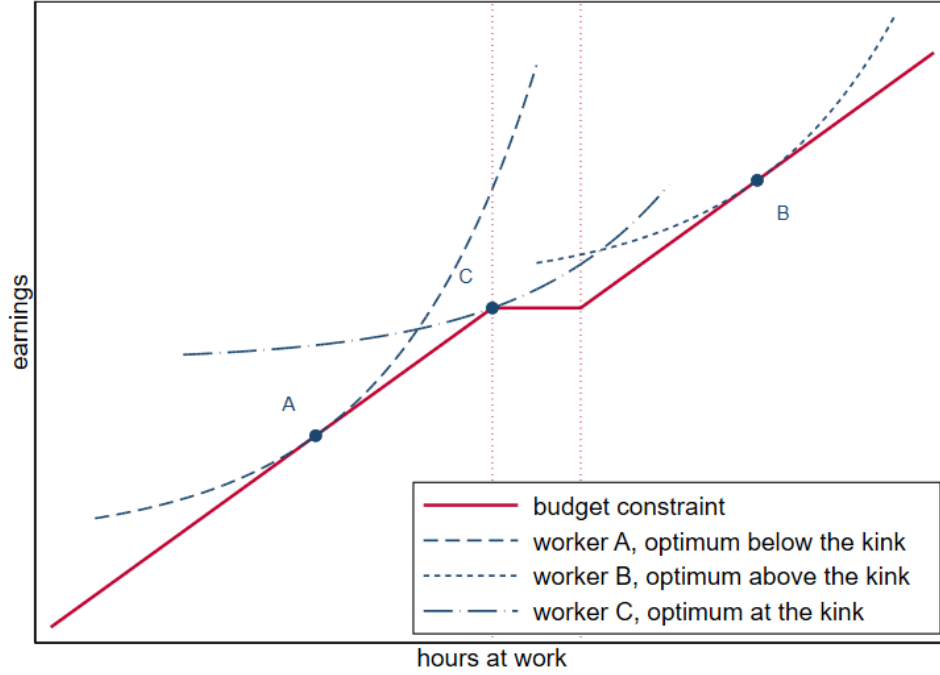
$$\begin{aligned} \max_h \quad & u(c, \ell) \\ \text{s.t.} \quad & \ell = 1 - h \\ & c = \begin{cases} wh & \text{if } h \leq \underline{h} \\ w\underline{h} & \text{if } \underline{h} < h \leq \underline{h} + \Delta \\ w(h - \Delta) & \text{if } h > \underline{h} + \Delta \end{cases} \end{aligned}$$

During the break, the budget line is flat, since the worker gives up leisure at home without any gain in earnings and hence consumption. Once the break ends, earnings rise in hours at the same wage rate w as before the break.

The mandated break introduces a kink in the budget constraint, as illustrated in Figure 2. Depending on preferences, the worker's optimal hours can then be found at the point of tangency of the indifference curves and the budget constraint, either above or below the kink, or precisely at the kink. We illustrate this in Figure 2.

We are now interested in a reform that changes the location of the break threshold $\underline{h}$. Does such a reform change optimal hours worked, and if so, in which direction? The direction of the response depends on where the worker's optimal hours at the workplace were located before the reform, and on the shape of the worker's indifference curves. Depending on these factors, a reform can increase or decrease paid hours, or leave them unchanged. We illustrate this using Figures 3, 4, and 5.

Figure 2: Optimal hours and the kink



Notes: The horizontal axis shows hours at work and the vertical axis shows earnings. The red line is the budget constraint, which is flat over the unpaid break and creates a kink at the point where the break starts. The blue lines are indifference curves of three workers with different preferences, so their indifference curves can cross. Worker A chooses hours at the tangency below the kink, worker B chooses hours at the tangency above the kink after the break, and worker C chooses hours exactly at the kink.

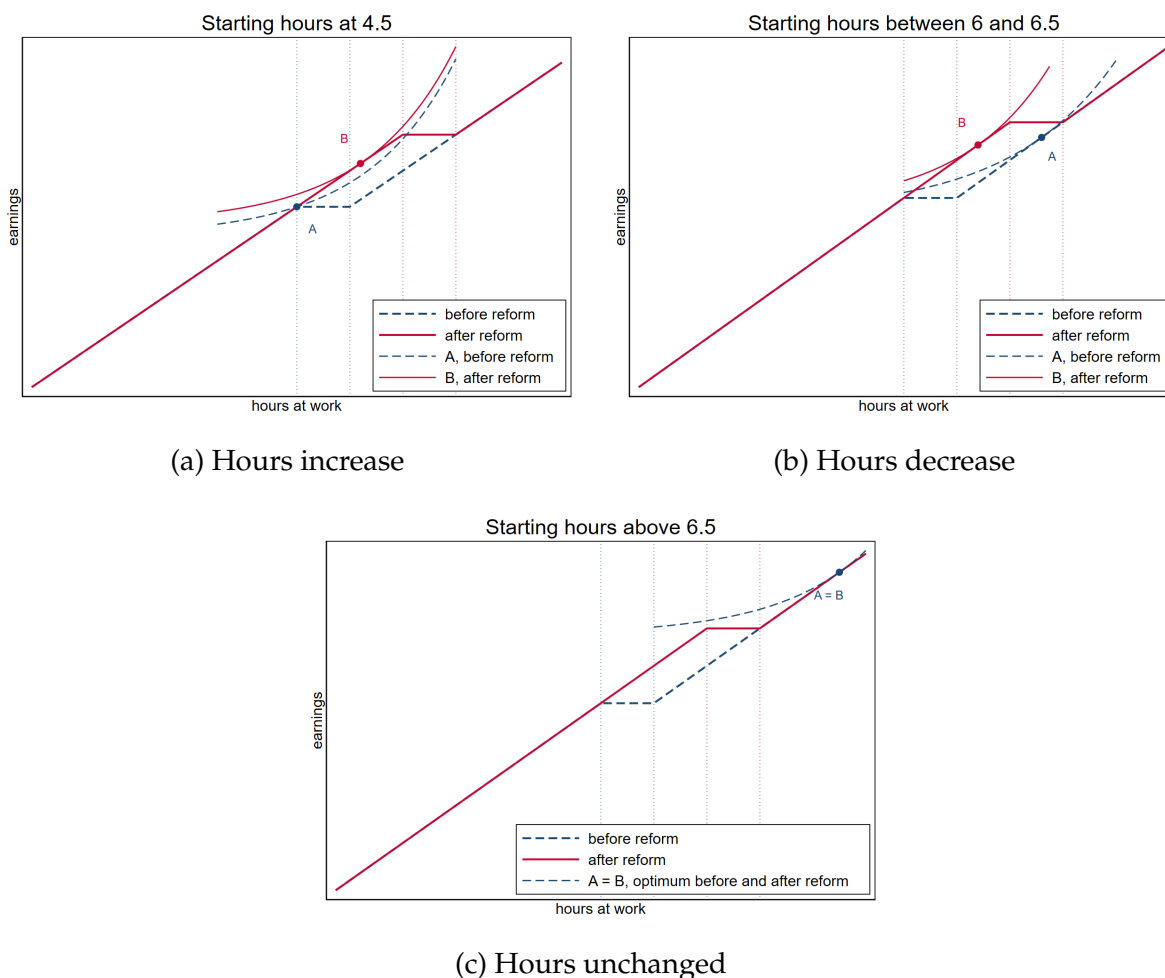
3.1 Heterogeneity by the pre-reform working hours

Figure 3 varies the location of the worker's pre-reform optimum relative to the break. The dashed line is the budget constraint before the reform and the solid line is the budget constraint after the reform, with *A* denoting the pre-reform optimum and *B* the post-reform optimum.

In panel (a) of Figure 3, the worker's pre-reform optimum *A* sits at the old 4.5-hour threshold. Working beyond it would have meant an unpaid break, so she chooses to work hours at the kink instead. Once the reform moves the threshold to 6 hours, she can stay longer without incurring a mandated unpaid break. In this example, given her preferences, she finds it optimal to increase hours to a new tangency *B* before the new threshold. Hours at the workplace, paid hours, and earnings all rise. In panel (b) of Figure 3, the pre-reform optimum *A* lies between 6 and 6.5 hours at the workplace, so under the old law the break has already been deducted. Under the new law the break only starts at 6 hours, so the

worker can avoid it by reducing hours at the workplace to the new threshold. At the same time, she now earns more at every level of hours at the workplace in this range, while the return to an additional hour is unchanged. If leisure is a normal good, these higher earnings raise her demand for leisure and push her hours at the workplace further down, below the new threshold to a new tangency B , so that paid hours and earnings fall as well. In panel (c) of Figure 3, the pre-reform optimum lies beyond 6.5 hours at the workplace, where the old and new budget constraints coincide. The reform does not change the worker's relevant choice set, so A and B coincide and neither hours at the workplace nor paid hours are affected.

Figure 3: Hours response by starting point



Notes: The horizontal axis shows hours worked and the vertical axis shows earnings. Indifference curves are held constant across all three panels. The figure shows that the optimal hours worked after the reform depends on the worker's starting point, that is, her optimal hours worked before the reform, holding preferences constant.

3.2 Heterogeneity by preferences

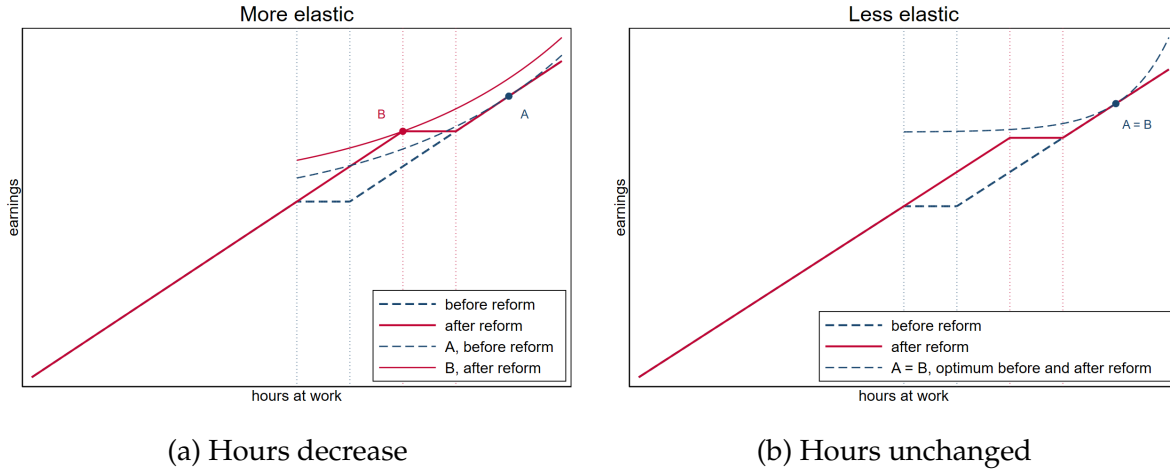
Figure 4 instead fixes the pre-reform starting point and varies the shape of indifference curves across workers, to isolate the role of preferences. The shape of a worker's indifference curve reflects how willing she is to substitute leisure for earnings, capturing how much additional compensation she requires to forfeit an hour of leisure. As shown by Wiswall and Zafar (2018), female workers, particularly those anticipating or managing domestic care obligations, exhibit a strong, systematic preference for workplace flexibility and part-time availability over pure earnings maximization and women display significantly higher substitution elasticities (Blundell, Bozio, and Laroque 2011). In our framework, this translates to systematic differences in indifference curve curvature across demographic groups: a steeper indifference curve to the left of A is more characteristic of workers with a higher labor supply elasticity and a higher valuation of time outside work, such as married women. These workers are willing to give up more earnings to spend one hour less at the workplace, so small changes in the return or time requirements of work induce larger changes in hours at the workplace and paid hours.

In panel (a) of Figure 4, a worker with a relatively elastic labor supply, such as a married woman, responds to the relocated break by reducing hours, moving from A to a new optimum B at the new threshold. Before the reform, her indifference curve is tangent to the budget constraint at a point beyond both the old and the new break. She incurs the cost of the mandated break because not incurring it would lead to very low hours and accordingly low earnings, which she does not find optimal. After the reform, her options have changed. She can now stay up to 6 hours at the workplace without facing the mandated break. In this example, the optimal choice after the reform is exactly at the kink. Since her indifference curve is relatively steep, she values the time saved at the workplace more than the earnings she gives up, and she moves to the new threshold at B . Hours at the workplace, paid hours, and earnings all fall. The reason is that paid hours fall by very little relative to hours at work because she no longer incurs spends the break at work. In panel (b) of Figure 4, a worker with a less elastic labor supply, such as a single woman, starts at the same point A . Since her indifference curve is flatter, she prefers to keep her earnings and stays at A , so neither hours at the workplace nor paid hours change.

3.3 The Role of Enforcement

One possibility is that the 1994 reform that we study not only changed the timing of the mandated break, but also went along with stricter enforcement. Indeed, we documented

Figure 4: Hours response by preferences

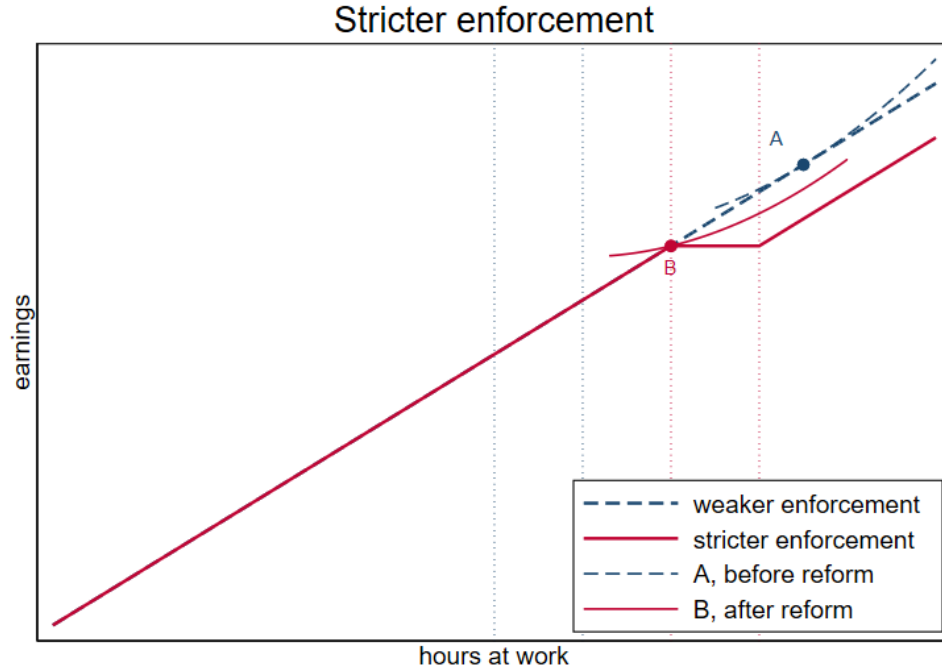


Notes: The horizontal axis shows hours worked and the vertical axis shows earnings. The starting point (optimal hours worked before the reform) is held constant across both panels. The figure shows that the optimal hours worked after the reform depends on the shape of the worker's indifference curve, that is, her marginal rate of substitution between consumption and hours, holding the starting point constant.

in Section 2.2 how various elements of enforcement tightened after 1994, such as severer punishments for employers. We now illustrate the stark case of a move from no enforcement to strict enforcement in the model.

Suppose that prior to the reform, the mandated break only existed on paper. Employees who wanted to take a break probably did, but if the employee found it inconvenient, then assume the employer did not force them as he faced no controls and no punishment. If so, then the pre-reform budget constraint does not have a kink, it is a regular straight line instead. This scenario is illustrated with a dashed line in Figure 5. In the figure, the indifference curve is tangent to the dashed budget constraint at point A. The reform in this interpretation does not move the break but instead introduces the mandated break and thus leads to the kinked budget constraint (the solid line in the figure). If her optimal hours worked prior to the reform are beyond the newly introduced kink but not too far, then it is likely that she prefers to move to the kink after the reform. In this scenario, hours at the workplace, paid hours, and earnings all fall, but paid hours fall by less than hours at the workplace. The reason that reducing hours becomes optimal is that the woman wins half an hour or leisure at the cost of only slightly reduced earnings. This scenario is most likely for workers working only slightly above the new threshold. On the other hand, men and single women working full-time prior to the reform should largely be unaffected as moving to the new kink would reduce their earnings substantially.

Figure 5: Hours response by enforcement



Notes: The horizontal axis shows hours at work and the vertical axis shows earnings. Under weaker enforcement the break is not taken, so the budget line has no flat segment. Under stricter enforcement the unpaid break applies once the threshold is reached, so the budget line is flat over the break. The figure shows that stricter enforcement can move the worker from A to the threshold B, lowering both hours at work and paid hours.

4 Data and Empirical Strategy

4.1 The Data

We use the German Mikrozensus, an annual household survey covering roughly one percent of the German population, conducted by the Federal Statistical Office. The Mikrozensus is a mandatory, large-scale cross-sectional survey that collects detailed information on employment status, hours worked, occupation, and demographic characteristics.

We restrict the sample to West Germany, since the break mandate we study did not apply to East Germany until 1994, and there is no pre-reform period for East Germany. Furthermore, as documented by Boelmann, Raute, and Schönberg (2025), East and West Germany followed dramatically divergent cultural and institutional norms regarding maternal labor supply around reunification: while East German mothers traditionally returned quickly to full-time employment, West German mothers exhibited a pronounced norm

of prolonged leave or short part-time work. Excluding East Germany ensures that our estimates are not confounded by the ongoing post-reunification structural and cultural convergence in female hours. We further restrict the sample to individuals aged 25 to 54, since pension reforms during this period could otherwise affect the labor market behavior of older workers. We drop individuals reporting more than 80 hours of work per week in the descriptive sample and focus on individuals who report hours less than 45 in the main analysis, as majority of women work less than 45 (Figure 8). See Appendix 7.1 for more details.

As discussed in Section 2, the reform changed rest breaks for men and women differently. It also allowed for many exemptions. In particular, if taking a break leads to a dangerous situation, then there is no break requirement. There are many other exemptions, for example in shipping and aviation, but also for chief executives and certain types of care work. Further, since the law applies only to regular workers, civil servants and self-employed are exempt by design. We list all exemptions under either law in Table A4.

To use the exemptions to construct a control group of workers not affected by the reform, we need to map exemptions into occupations. This is far from trivial, since the law describes situations in which no mandatory break needs to be taken rather than occupations for which the law does not apply. We tried to map exemptions into occupations by classifying occupations as exempt if a given reason for an exemption was likely to apply in that occupation regularly. We did this for all 3-digit occupations in the ISCO-88 classification. Appendix Table A5 contains the mapping. For each occupation, we list which exemptions (if any) apply.

To further complicate the analysis, note that the 1994 law added new exemptions that did not exist under the old 1938 law. It further removed certain exemptions. Thus, we further map occupations into groups A through F, depending on whether there never was an exemption (B), there always was an exemption (A), there was a new exemption (C), or an exemption existed only under the old law (D). We put teaching and nursing occupations into their own group (E) for reasons we will describe below. Finally, even though there is no explicit exemption, the law simply does not apply to the self-employed and to civil servants (F). These groups are summarized in Table 3. Using the information on exemptions from Table A4 together with the grouping in Table 3, we can then classify each occupation into one of the groups A through F. This is done in the last column of Table A5. This grouping is important since only occupations that were exempt before and after the reform constitute a clean control group. These are our groups A, E and F. For completeness, we briefly describe all groups now, give examples of occupations, and

calculate their respective share among all workers.

Group A consists of workers to whom neither law applies, such as chief representatives, senior executives, and head physicians, whose working time is not regulated by either regime. Group B consists of the majority of employees in companies and administrations, to whom both the old and new law apply, making this the group directly affected by the change in rest break requirements between the two regimes. Group C consists of workers performing work that cannot be postponed, to whom the old law applied but the new law does not, such as police inspectors and detectives. Group D consists of occupations for which the opposite pattern holds: the old law did not apply, but the new law does, mostly agricultural workers. We put all teaching- and nursing-related occupations into Group E. The 1994 law explicitly mentions that when work cannot be postponed because of the *treatment, care, and support of persons*, then no rest break is required. This would likely apply when taking care of children, the elderly or sick people because they cannot be left alone. This specific exemption is not mentioned in the old law. Yet, it seems highly unlikely that rest breaks were taken in these situations prior to 1994. Clearly one cannot leave a baby alone or not even an entire school class. We thus find it more likely that the old law was simply not enforced in these situations. We thus argue that the occupations in Group E also constitute a useful control group. Finally, Group F consists of self-employed and civil servants for whom the law never applied. Since Groups A, E and F are unaffected or only partly affected by the change in rest break regulation across both regimes, we treat them as control groups in parts of our empirical analysis, while Group B forms our main treatment group. See Table A1 for descriptive statistics on the relative sizes of these groups.

Group	Law 1938	Law 1994	Example
A	Not apply	Not apply	chief represent., senior executives, head physicians
B	Apply	Apply	most employees in companies and administrations
C	Apply	Not apply	police inspectors and detectives
D	Not apply	Apply	agricultural workers
E	Part. not apply	Part. not apply	teachers and nurses
F*	Not apply	Not apply	self-employed and civil servants

Table 3: Group definitions under the 1938 and 1994 laws

Notes: This table describes examples for Groups A to E. Different rest time requirements could possibly apply if the above laws do not apply. * We include all self-employed and civil servants in a separate group F as worker protection laws do not apply to them.

Table 4 shows the distribution of workers across these groups, pooling the 1989, 1991, 1993, 1995, 1996, and 1997 waves of the Mikrozensus. The majority of workers, both women and men, fall into Group B, our main treatment group. Civil servants and the self-employed, who are not subject to either version of the law, together make up around 17% of the pooled sample, and serve as additional comparison groups in parts of our analysis. Group C and Group D are considerably smaller, together accounting for less than 3% of the sample. Women are somewhat more likely than men to fall into the Control group (E) and less likely to be self-employed or civil servants. The differences in occupational distribution across genders documented in Table 4 mirror broader structural patterns where women disproportionately concentrate in service-oriented or high-amenity sectors (Alon, Coskun, and Olmstead-Rumsey 2025). Also shown by Adda, Dustmann, and Stevens (2017), women systematically sort into occupations that trade off dynamic wage growth for schedule predictability, lower hours penalties, and flatter career trajectories compatible with child-rearing. Because occupations like teaching and nursing have intrinsic physical oversight duties (e.g., student and patient care) that preclude rigid mid-shift departures, their working hours are governed by distinct logistical realities relative to standard office or administration workers.

	All	Women	Men
Control group (A)	1.32%	0.97%	1.56%
Control group (E)	4.49%	9.08%	2.95%
Civil servant	8.05%	6.04%	9.48%
Self-employed	9.32%	6.11%	11.59%
Group B	72.14%	75.48%	69.78%
Group C	0.60%	0.18%	0.89%
Group D	2.34%	2.10%	2.50%

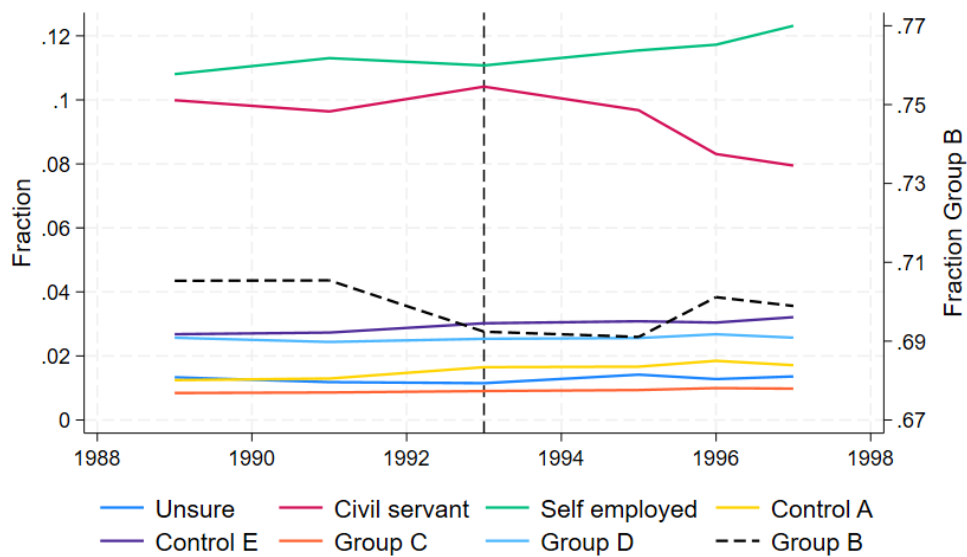
Table 4: Group distribution pooled 1989-1997

Notes: Mikrozensus 1989, 1991, 1993, 1995, 1996, and 1997, pooled average. Sample restricted to West Germany, population age 25 to 54, working less than 80 hours per week. The percentages do not add up to 100% because we did not classify workers in mining and the armed forces as it is unclear whether they are exempted or not. This is a small group that contains less than 1% of the workforce and hardly any women.

Figures 6 and 7 plot the evolution of these group shares separately by gender over the sample period, with the dashed vertical line marking 1993, the year before the reform took effect. For men, shown in Figure 6, the shares of self-employed and civil servant

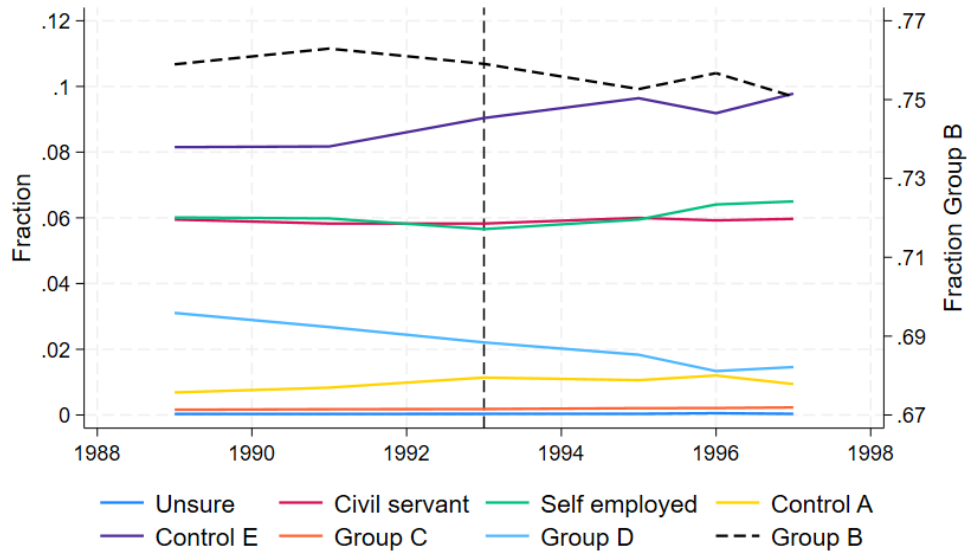
workers are noticeably larger than the shares in Group A, Group E, Group C, and Group D combined, and all shares appear reasonably stable in the years leading up to the reform. For women, shown in Figure 7, Group E accounts for a substantially larger share than it does for men, consistent with the higher concentration of women in teaching and nursing occupations, while the shares of self-employed and civil servant workers are correspondingly smaller. In both figures, the share in Group B, plotted on the right axis, is relatively flat prior to the reform, which supports the parallel pre-trends assumption underlying our identification strategy.

Figure 6: Group size over time, men



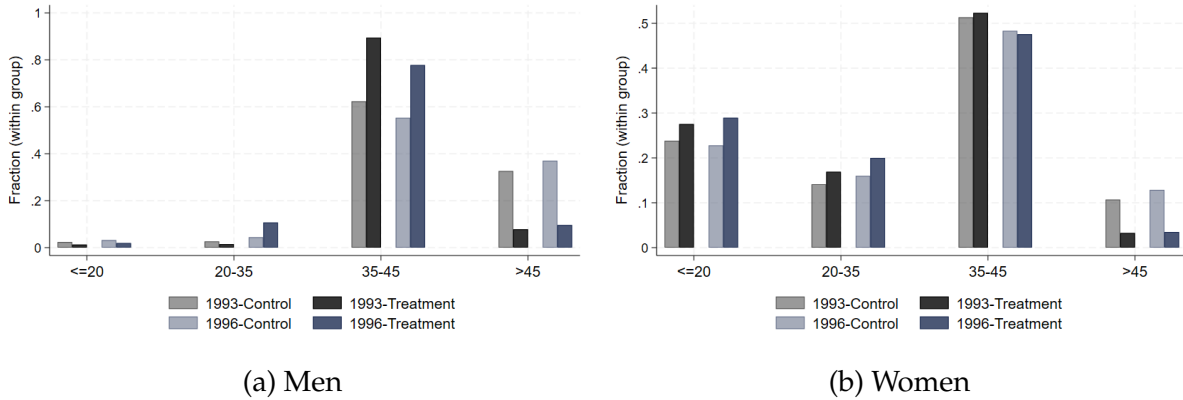
Notes: Mikrozensus 1989, 1991, 1993, 1995, 1996, and 1997. Sample restricted to West Germany, men age 25 to 54, working less than 80 hours per week. The vertical dashed line marks 1993, the year before the reform took effect.

Figure 7: Group size over time, women



Notes: Mikrozensus 1989, 1991, 1993, 1995, 1996, and 1997. Sample restricted to West Germany, women age 25 to 54, working less than 80 hours per week. The vertical dashed line marks 1993, the year before the reform took effect.

Figure 8: Distribution of weekly hours worked, treatment vs control, 1993 and 1996



Notes: The horizontal axis shows weekly hours worked, grouped into four bins. The vertical axis shows the fraction of workers in each bin. Treatment and control groups are shown for 1993 and 1996.

In Figure 8, panel (a) and panel (b) report the distribution of weekly working hours across four bins, for men and women respectively, comparing treated and control workers in 1993 and 1996, where fractions sum to one within each group. In panel (a), the male distribution is heavily concentrated in the 35 to 45 hour bin in both years, though this concentration is substantially higher for treated men than for control men. Control men,

by contrast, are much more likely to work long hours exceeding 45 hours per week, reflecting the high representation of self-employed workers and civil servants in the control group. In panel (b), both treated and control women also peak in the 35 to 45 hour bin, which accounts for approximately half of workers in each group. Unlike men, women exhibit substantial sorting into part-time work: roughly 45 to 50 percent of treated women work 35 hours or less per week, with treated women displaying slightly higher shares than control women in both the 20 hours or less bin and the 20 to 35 hour bin. Working long hours above 45 hours is rare among treated women, compared to control women. Because the break law reform alters break entitlements within typical daily schedules and because the overwhelming majority of treated workers, especially women, work under 45 hours a week, our regression analysis described below restricts the sample to individuals working below 45 hours a week, focusing on the policy-relevant margin targeted by the reform.

4.2 Empirical Strategy

We estimate the effect of the change in rest break regulation using a difference-in-differences design. Our main analysis focuses on female working hours, since the largest change introduced by the reform is the abolishment of the 20-minute break previously required until 4.5 hours of work for women, and the movement of the break to a different hours threshold. We focus on women in Group B, the workers to whom both the old and new law applied. These are the workers whose break was moved to a new threshold. We use two complementary sets of control groups. The first consists of Group A, Group E and Group F, occupations largely unaffected by the change in break requirements. The second consists of men, who did not experience the treatment of having their break moved from 4.5 hours to a different threshold.

Our baseline specification exploits repeated cross sections rather than a panel, since the Mikrozensus samples different individuals in each wave. We estimate a difference-in-differences specification separately for each year in our sample,

$$Y_{iot} = \beta_0 \text{treated} + \sum_{\tau \neq 1993} \beta_{\tau} \text{treated}_o \times \text{year}_{\tau} + \delta_t + \epsilon_{iot} \quad (1)$$

$$Y_{iot} = \beta_0 \text{female} + \sum_{\tau \neq 1993} \beta_{\tau} \text{female} \times \text{year}_{\tau} + \delta_t + \epsilon_{iot} \quad (2)$$

where Y_{iot} is the outcome of interest for individual i in occupation group o in year t ; work-

ing hours. We estimate this specification for women. The variable treated_o is an indicator equal to one for occupations subject to a change in rest break requirements under the new law, and zero for the two types of control groups described above. year_τ is a dummy for year τ and δ_t is a year fixed effect. The coefficients of interest, β_τ , capture the difference in the outcome between treated and control occupations in year τ , relative to their difference in 1993. The variable female is equal to 1 for women in the treatment group, and 0 for men. We test the effect on men via Equation 1, using only men in Group A, Group E and Group F as the control group. Given the direction of the treatment not being similar to the other cases and the small sizes of Group C and D, we exclude them in the analysis and only use Group B as the treatment.

This design relies on the assumption that, absent the reform, treated and control occupations would have followed parallel trends in the outcome of interest. Under this design, this assumption requires the pre-reform coefficients, β_τ for $\tau < 1993$, to be close to zero, indicating no differential trend between treated and control occupations before the reform. This assumption would be violated if other policy changes or economic shocks around 1994 affected treated and control occupations differentially, rather than the change in rest break regulation itself. We will discuss the pre-trend assumption when we present the empirical results below.

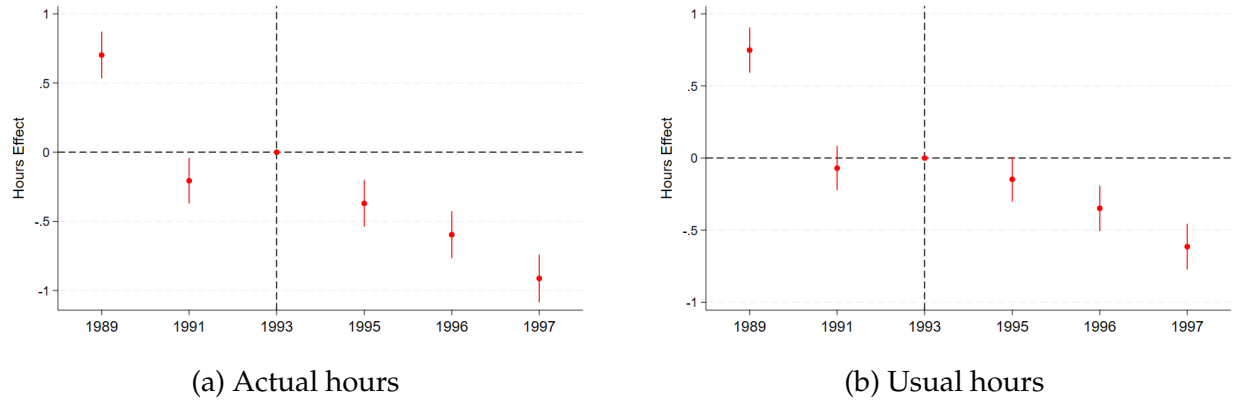
5 Main Results

In this section, we present difference-in-differences estimates of the reform’s effect on women’s working hours, using two complementary control groups, men and Group A, E and F. We also show, from Figures 11 to 12, how married women respond differently than unmarried women. Figures 9 through 12 present difference-in-differences estimates of the effect of the reform on working hours, using Equation 1 and 2, with 1993 normalized to zero. All regression results are reported in Table A3 and A2.

Women relative to men. Figure 9 plots the estimated effect on actual and usual working hours for women in Group B, using men as the control group, since men did not experience the abolishment of the 20-minute break at 4.5 hours and were therefore much less affected by the 1994 reform. Both measures show a similar pattern: female working hours decline steadily after 1993, reaching a reduction of approximately 0.91 hours for actual hours and 0.62 hours for usual hours by 1997. The pre-reform coefficients are close to zero in 1991, supporting the parallel trends assumption in the years immediately preceding the reform. The 1989 coefficient, however, shows a positive deviation from

zero. Since German reunification took place in October 1990, one possible explanation is that the labor market disruption surrounding reunification affected treated and control occupations differently in the years just before 1990, which could show up as a positive pre-trend in our 1989 estimate even though it predates the reform itself and is unrelated to the change in rest break regulation.

Figure 9: The effect on working hours for women, control group men



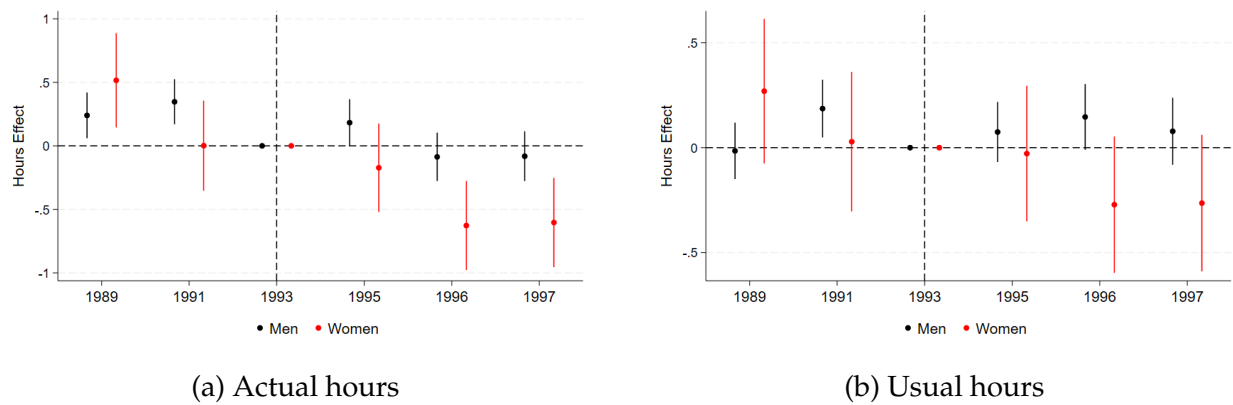
Notes: Difference-in-differences estimates from Equation 2, using men as the control group. Outcome is actual hours worked (panel a) and usual hours worked per week (panel b), women in Group B. The vertical dashed line marks 1993, the reference year.

Women and men relative to Group A, E and F. Figure 10 plots the estimated effect on actual and usual hours worked for men and women, using Group A and Group E as the control group. We use these two groups as controls since they were not covered by both the old and new law in Group A, and additionally, occupations such as nursing and teaching staff in Group E face practical obligations, such as being unable to leave patients or students unattended, that make it difficult to take the mandated break in reality even where the law formally applies. The pre-reform coefficients for women are close to zero in 1991.

Men show no significant deviation from zero throughout the sample period. This is expected, since the change to the break threshold for men occurs after 8 hours of work, a threshold that is largely irrelevant for most workers, as described in Section 2. Women show a decrease in actual working hours beginning after the reform, though the estimates are noisy in the years immediately following 1993, and the effect becomes statistically significant only from 1996, reaching a reduction of approximately 0.60 hours by 1997. The effect on usual hours shows a similar downward pattern by 1996 and 1997, though the estimates are noisier, with a decline of approximately 0.26 hours. This gradual, lagged

emergence of the hours reduction is consistent with the presence of optimization frictions and adjustment costs (Chetty et al. 2011): due to preset employment contracts, rigid workplace shift templates, and informational delays, workers cannot adjust their hours immediately following a statutory change, leading empirical labor supply responses to materialize with a lag. These results are largely consistent with the results using men as the control group. Taken together, on aggregate, considering all women across different hour ranges, working hours decreased as a result of the reform moving the break to a later threshold.

Figure 10: The effect on working hours, by gender, control group A, E and F



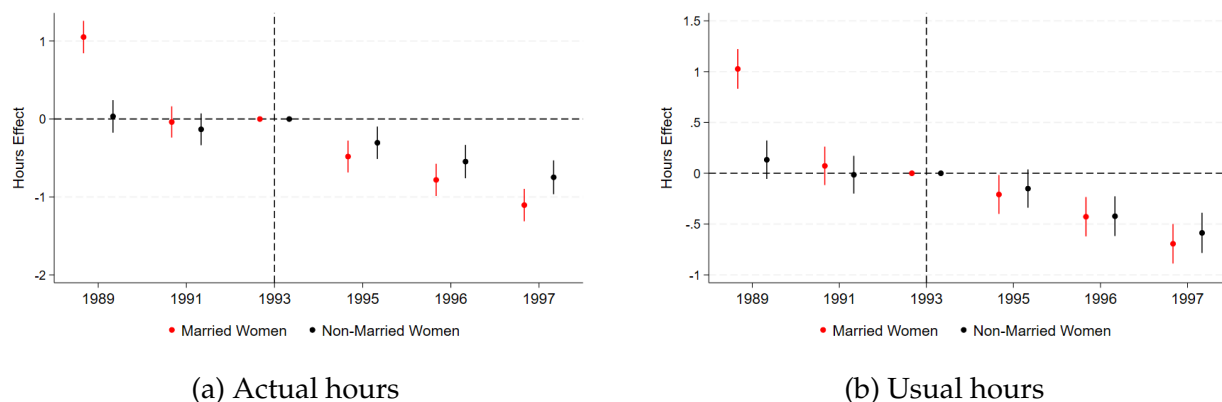
Notes: Difference-in-differences estimates from Equation 1, using Group A, E and F as the control group. Outcome is actual hours worked (panel a) and usual hours worked per week (panel b), men and women. The vertical dashed line marks 1993, the reference year.

Married versus non-married women. Figure 11 and Figure 12 split the specification by marital status, using men and Group A, E and F, respectively, as the control group, for both actual and usual hours as outcomes. Across both control groups and both hours measures, married women show a substantially larger and more precisely estimated decline in working hours than non-married women. This asymmetry aligns closely with models of collective and family labor supply (e.g., (Blundell, Pistaferri, and Saporta-Eksten 2016)), where married women often act as secondary earners within a joint household budget constraint. Because the presence of spousal income provides an insurance buffer against earnings losses, married women possess significantly higher wage and hours elasticities. When the cost of workplace presence shifts or schedule thresholds become more restrictive, married women can more readily afford to reduce their hours or bunch at shorter schedules compared to single women, who bear sole responsibility for household consumption. During the period under study, married women in West

Germany operated primarily as secondary earners with high sensitivity to outside family time, contrasting with newer dual-earner regimes where female income plays an essential household insurance role (Coskun and Dalgic 2024).

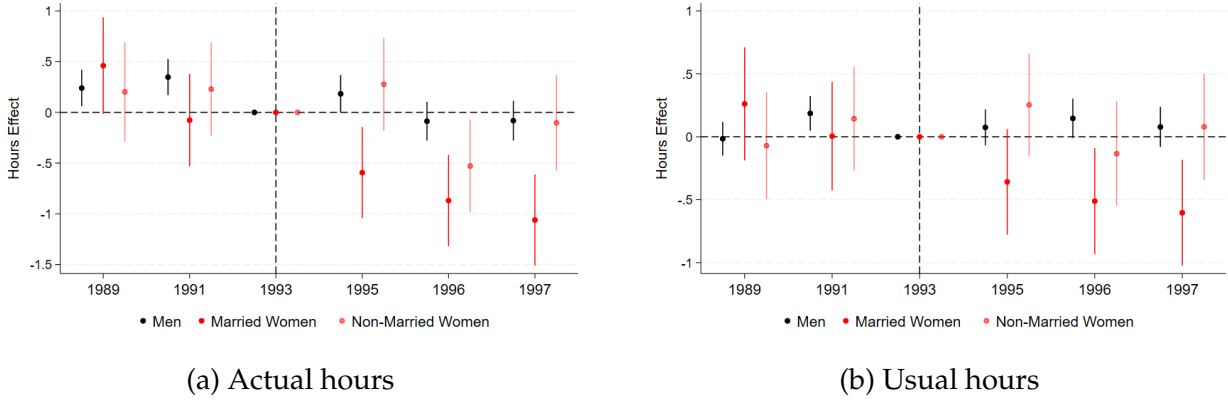
Using men as the control group, married women's actual hours decline by approximately 1.11 hours by 1997, compared to a smaller decline of approximately 0.75 hours for non-married women, and the usual hours specification shows a comparable gap, with married women declining by approximately 0.69 hours against 0.59 hours for non-married women. Using Group A, E and F as the control group, married women's actual hours decline becomes statistically significant from 1995 onward, reaching approximately 1.06 hours by 1997, and their usual hours decline of approximately 0.60 hours reaches significance by 1996. Non-married women, by contrast, show point estimates that are also negative from 1995 onward under this control group, but remain small in magnitude and imprecisely estimated in every post-reform year for both hours measures. Taken together, the consistently larger and more precisely estimated decline for married women, across both control groups and both hours measures, points to married women driving most of the aggregate reduction in working hours documented above.

Figure 11: The effect on working hours for women by marital status, control group men



Notes: Difference-in-differences estimates from Equation 2, using men as the control group. Outcome is actual hours worked (panel a) and usual hours worked per week (panel b), married and non-married women in Group B. The vertical dashed line marks 1993, the reference year.

Figure 12: The effect on working hours for women by marital status, control group A, E and F



Notes: Difference-in-differences estimates from Equation 1, using Group A, E and F as the control group. Outcome is actual hours worked (panel a) and usual hours worked per week (panel b), married and non-married women in Group B. The vertical dashed line marks 1993, the reference year.

The decline in women's working hours documented above is consistent with two complementary channels. The first is the mechanical and preference-driven channel described in the theory section: since the reform relaxed the break requirement for shifts between 4.5 and 6 hours, a group of workers, those whose pre-reform hours choice placed them just past the old break or whose preferences make them relatively unwilling to substitute leisure for earnings, respond by reducing their hours and bunching at the new break threshold. This channel operates purely through the change in the shape of the budget constraint, holding compliance with the law fixed.

The second channel operates through enforcement rather than through the budget constraint directly. As discussed in Table 2, the 1994 reform strengthened the penalties for break violations. First, it introduced an explicit statutory offense for break violations. Second, it extended the criminal offense to persistently repeated violations, whereas under the old law it covered only willful violations or violations endangering worker health. Third, it raised the maximum fine from 5,000 to 30,000 Deutsche Mark. If compliance with the break requirement was imperfect under the old law, for instance, if some employers allowed or required women to work through the 4.5 hour break in practice, then stricter enforcement after 1994 could induce greater compliance with the new 6 hour threshold specifically, independent of any change in worker preferences. This would show up empirically as a reduction in hours worked for workers who previously worked through the old break and now stop earlier to comply with the new, more strictly enforced rule.

These two channels are observationally similar in our setting, since both predict a reduction in hours worked for women in Group B relative to the control groups after 1994, and our empirical design does not separately identify their relative contribution.

6 Conclusion

This paper studies how a mandatory rest break rule affects female working hours. We exploit a 1994 reform to German working time law that moved the mandatory break threshold for women from 4.5 hours to 6 hours of continuous work, removing the break requirement for shifts between 4.5 and 6 hours.

We find that, on average, working hours decreased for women affected by the reform, by approximately 0.9 hours using men as the control group and by approximately 0.6 hours using Group A and Control group E as the control group. This decrease is driven primarily by married women, whose hours fall by more than those of non-married women across both control groups and both usual and actual working hours measures.

We reconcile these findings with a theoretical framework in which the direction of the working hours response depends on two factors: a worker's starting point on the budget constraint before the reform, and the shape of her indifference curve. Depending on where a worker's pre-reform hours choice falls relative to the old and new break thresholds, and on how willing she is to substitute leisure for earnings, the same relocation of the break can lead to an increase, a decrease, or no change in hours worked. Our theoretical framework can explain the empirical decline we document, and the larger response of married women comes from their lower hours before the reform and their more elastic labor supply. Stricter enforcement of the break requirement after the reform is a potential complementary channel that our design does not separately identify.

Thus, a mandated break may lead to a reduction in hours worked to avoid "leisure at the workplace" which for some workers is not a close substitute of leisure at home. We find this effect is particularly relevant for married women and believe that especially women with children do value time at home much more than leisure at the workplace, so that they are more willing to sacrifice some extra earnings to avoid the rest break.

To our knowledge, this paper is the first to study the labor supply consequences of mandatory rest break regulation. While such rules are typically designed to protect worker health and safety, our findings suggest that they can also shape workers' working hour choices, a margin that has received little attention.

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7 Appendix

7.1 Data Description: The German Mikrozensus and Occupational Harmonization

The German Mikrozensus. Our empirical analysis is based on repeated cross-sections from the German Microcensus (*Mikrozensus*), conducted by the Federal Statistical Office of Germany (*Statistisches Bundesamt*). The Mikrozensus is an annual, nationally representative household survey sampling approximately 1% of the German population (around 370,000 households and 800,000 individuals annually). A crucial institutional advantage of the Mikrozensus over voluntary household panels (such as the German Socio-Economic Panel, SOEP) is that participation is legally mandated under the Microcensus Act (*Mikrozensusgesetz*). Consequently, response rates consistently exceed 95%, virtually eliminating unit non-response bias and attrition that frequently compromise voluntary panel surveys in labor supply studies.

The survey gathers comprehensive, standardized information on labor force participation, employment status, actual and contractual working hours, occupational titles, and rich household and family demographics. Interviews are primarily conducted during a fixed reference week in spring (typically April or May), providing consistent seasonal comparability across survey waves. We utilize the waves 1989, 1991, 1993, 1995, 1996, and 1997. This window provides a balanced pre-reform baseline (1989–1993, with 1993 serving as the immediate reference year) and post-reform observation periods (1995–1997) surrounding the enactment of the Working Time Act (*Arbeitszeitgesetz*, ArbZG) in June 1994.

Sample Selection and Restrictions. We apply four standard sample restrictions to isolate the workers directly margin-sensitive to the 1994 reform:

1. **West Germany only:** We restrict our analysis exclusively to the federal states (*Bundesländer*) of the former West Germany. Prior to reunification in October 1990, East Germany was governed by the labor code of the German Democratic Republic (*Arbeitsgesetzbuch der DDR*), so no pre-reform baseline under the 1938 *Arbeitszeitordnung* (AZO) exists for East German workers. In addition, as documented by Boelmann, Raute, and Schönberg (2025), East and West German mothers operated under sharply divergent cultural and institutional norms regarding maternal employment; excluding East Germany prevents our estimates from being confounded by the post-reunification structural and cultural convergence of female hours.

2. **Prime-age workers (aged 25–54):** We restrict the age window to individuals aged 25 to 54. This excludes younger individuals who are enrolled in higher education, vocational apprenticeships, or military/civil service, as well as older workers whose intensive-margin labor supply decisions were influenced by statutory pension and early retirement reforms during the 1990s.
3. **Working hours thresholds:** In the descriptive sample, we exclude individuals reporting extreme hours exceeding 80 hours per week. In the main regression specifications, following standard practice in intensive-margin labor supply estimation, we focus on individuals reporting weekly working hours below 45 hours. As shown in Figure 8, the vast majority of employed women work under 45 hours, and the statutory break reform alters incentives specifically within within-day shift lengths up to 8–9 hours, making the sub-45 hours population the policy-relevant margin.
4. **Employment status:** The survey records detailed employment status, allowing us to distinguish private and public-sector wage and salary earners (*Angestellte* and *Arbeiter*) from civil servants (*Beamte*) and the self-employed (*Selbstständige*). Because civil servants and self-employed individuals are legally exempt from the statutory working-time legislation under both the 1938 and 1994 regimes, they form a natural unaffected comparison group (Group F).

Working Hours Measures. The Mikrozensus provides two distinct measures of intensive-margin labor supply:

- **Actual hours worked (*tatsächliche Arbeitszeit*):** Total hours actually worked during the survey reference week, including paid or unpaid overtime and subtracting temporary absences due to sick leave, public holidays, or vacation. This measure captures short-run, high-frequency shifts in hours and presence.
- **Usual hours worked (*gewöhnliche / normalerweise geleistete Arbeitszeit*):** The regular weekly working time agreed upon in employment contracts or collectively bargained tariffs, inclusive of regular, recurring overtime. This measure captures medium-to-long-run contractual adjustments and formal shift rearrangements.

Occupational Harmonization and Crosswalk: KldB to ISCO-88. To operationalize the statutory exemptions outlined in the 1938 AZO and the 1994 ArbZG (detailed in Table 3 and Appendix Table A4), each surveyed worker must be mapped into their respective

regulatory treatment or control status. Doing so requires harmonizing occupational classifications across time and linking legal exemption clauses to standardized occupational codes.

In the German Mikrozensus, occupations were originally recorded using the German Classification of Occupations (*Klassifikation der Berufe*, KldB). Over our sample period (1989–1997), the Mikrozensus transitioned between different national classifications, moving from the KldB 1988 (used in earlier waves) to the KldB 1992 (introduced following European statistical standardization). Later, international occupational comparisons and the structural assignment of tasks are standardly indexed to the International Standard Classification of Occupations 1988 (ISCO-88).

To bridge these classifications and ensure consistent longitudinal definitions, we utilize the harmonized crosswalk system developed by Gerhardt and Kappes (2025) (`kldbrecode`, `RePEc:boc:bocode:s459442`). The module implements many-to-one and one-to-one probabilistic crosswalk tables using the Stata `crosswalk` architecture (Jann 2019). The KldB 1988 codes from the 1989 and 1991 Mikrozensus waves and the KldB 1992 codes from the 1993–1997 waves are systematically recoded into 3-digit ISCO-88 minor groups using the crosswalk tables in Gerhardt and Kappes (2025). This crosswalk methodology ensures that occupational classifications remain time-consistent across the pre- and post-reform waves, independent of the statistical revisions in German national occupational coding during the 1990s.

Table A1: Descriptive Sample Statistics

	All		Women				Men			
	Full Sample		Control		Treated		Control		Treated	
Usual Weekly Hours	37.31	(11.41)	34.35	(13.73)	31.02	(11.76)	45.56	(12.51)	39.64	(6.53)
Actual Weekly Hours	36.44	(14.60)	32.60	(16.81)	29.29	(14.19)	45.37	(15.74)	39.38	(10.85)
Married	0.69	(0.46)	0.64	(0.48)	0.68	(0.47)	0.73	(0.45)	0.69	(0.46)
Self-Employed	0.09	(0.29)	0.28	(0.45)	0.00	(0.00)	0.44	(0.50)	0.00	(0.00)
Civil Servant (Beamte)	0.08	(0.27)	0.27	(0.44)	0.00	(0.00)	0.36	(0.48)	0.00	(0.00)
Hours ≤ 20	0.12	(0.33)	0.23	(0.42)	0.28	(0.45)	0.03	(0.16)	0.02	(0.12)
Hours 21 - 35	0.10	(0.30)	0.15	(0.36)	0.18	(0.39)	0.03	(0.18)	0.05	(0.22)
Hours 36 - 45	0.67	(0.47)	0.49	(0.50)	0.51	(0.50)	0.59	(0.49)	0.85	(0.36)
Hours > 45	0.12	(0.32)	0.12	(0.33)	0.04	(0.19)	0.35	(0.48)	0.09	(0.28)
Female	0.41	(0.49)								
Treated Group	0.75	(0.43)								
Observations	600,617		54,064		192,671		93,883		255,582	

Notes: Weighted means with standard deviations in parentheses.

7.2 Regression Tables

Table A2: Regression Results (Usual Hours)

<i>Dependent variable: Hours worked</i>							
	Control Men			Control A+E+F			
	Women	Married Women	Non-married Women	Men	Women	Married Women	Non-married Women
Treated	-7.975*** (0.000)	-10.538*** (0.000)	-2.660*** (0.000)	0.190*** (0.000)	-0.926*** (0.000)	-1.047*** (0.000)	0.084 (0.559)
Treated x 1989	0.748*** (0.000)	1.027*** (0.000)	0.133 (0.168)	-0.015 (0.822)	0.269 (0.126)	0.261 (0.254)	-0.070 (0.747)
Treated x 1991	-0.070 (0.371)	0.073 (0.452)	-0.015 (0.876)	0.186** (0.008)	0.028 (0.867)	0.005 (0.983)	0.143 (0.496)
Treated x 1995	-0.147 (0.062)	-0.209* (0.033)	-0.151 (0.116)	0.075 (0.307)	-0.028 (0.865)	-0.358 (0.094)	0.253 (0.222)
Treated x 1996	-0.349*** (0.000)	-0.428*** (0.000)	-0.423*** (0.000)	0.146 (0.067)	-0.271 (0.101)	-0.511* (0.017)	-0.134 (0.527)
Treated x 1997	-0.615*** (0.000)	-0.694*** (0.000)	-0.587*** (0.000)	0.078 (0.338)	-0.264 (0.111)	-0.603** (0.005)	0.079 (0.712)
N	591645	517770	439462	347191	285942	190864	95078
R2	0.226	0.334	0.050	0.007	0.005	0.007	0.005

Table A3: Regression Results (Actual Hours)

<i>Dependent variable: Hours worked</i>							
	Control Men			Control A+E+F			
	Women	Married Women	Non-married Women	Men	Women	Married Women	Non-married Women
Treated	-8.064*** (0.000)	-10.750*** (0.000)	-2.570*** (0.000)	0.648*** (0.000)	-0.557*** (0.000)	-0.727*** (0.000)	0.529** (0.001)
Treated x 1989	0.702*** (0.000)	1.051*** (0.000)	0.033 (0.754)	0.240** (0.009)	0.516** (0.006)	0.461 (0.058)	0.202 (0.419)
Treated x 1991	-0.206* (0.014)	-0.038 (0.707)	-0.133 (0.201)	0.347*** (0.000)	0.001 (0.995)	-0.077 (0.740)	0.229 (0.328)
Treated x 1995	-0.370*** (0.000)	-0.482*** (0.000)	-0.305** (0.004)	0.183 (0.053)	-0.173 (0.332)	-0.594** (0.009)	0.277 (0.234)
Treated x 1996	-0.596*** (0.000)	-0.781*** (0.000)	-0.547*** (0.000)	-0.087 (0.373)	-0.627*** (0.000)	-0.869*** (0.000)	-0.529* (0.023)
Treated x 1997	-0.913*** (0.000)	-1.105*** (0.000)	-0.748*** (0.000)	-0.082 (0.414)	-0.604*** (0.001)	-1.061*** (0.000)	-0.103 (0.667)
N	533496	464917	394304	308971	260793	173398	87395
R2	0.218	0.326	0.041	0.008	0.005	0.008	0.005

7.3 Relevant Legal Text in German

This appendix reproduces the provisions referred to in Section 2.

Arbeitszeitordnung (AZO)

Arbeitszeitordnung of 30 April 1938 (RGBl. I p. 447), version in force until 30 June 1994, as reproduced in Denecke and Neumann (1991).

§ 1 Geltungsbereich

(1) Die Arbeitszeitordnung gilt für die Gefolgschaftsmitglieder über achtzehn Jahre in Betrieben und Verwaltungen aller Art, auch wenn sie nicht mit der Absicht der Gewinnerzielung betrieben werden.

Ausgenommen sind

1. die Landwirtschaft einschließlich des Gartenbaues, des Weinbaues und der Imkerei, die Forstwirtschaft, die Jagd, die Tierzucht und die land- und forstwirtschaftlichen Nebenbetriebe gewerblicher Art, letztere jedoch nur, wenn sie nur für eigenen Bedarf arbeiten,
2. die Fischerei, die Seeschifffahrt und die Luftfahrt, ausschließlich der zugehörigen Land- und Bodenbetriebe.

(2) Die Arbeitszeitordnung gilt nicht für

1. Generalbevollmächtigte und die im Handelsregister und Genossenschaftsregister eingetragenen Vertreter eines Unternehmens,
2. sonstige Angestellte in leitender Stellung, die Vorgesetzte von mindestens zwanzig Gefolgschaftsmitgliedern sind *oder deren Jahresarbeitsverdienst die im Versicherungsgesetz für Angestellte für die Versicherungspflicht jeweils bestimmte Höchstgrenze übersteigt;*⁷
3. pharmazeutisch vorgebildete Gefolgschaftsmitglieder in Apotheken.

(3) Für Bäckereien und Konditoreien gilt das Gesetz über die Arbeitszeit in Bäckereien und Konditoreien vom 29. Juni 1936 (RGBl. I S. 521), abgeändert durch das Gesetz über Kinderarbeit und über die Arbeitszeit der Jugendlichen (Jugendschutzgesetz) vom 30. April 1938 (RGBl. I S. 437). Für das Pflegepersonal und die ihm gleichgestellten Gefolgschaftsmitglieder

⁷Gegenstandslos durch Finanzänderungsgesetz v. 21. 12. 1967 (BGBl. I S. 1259).

in Krankenpflegeanstalten gilt die Verordnung über die Arbeitszeit in Krankenpflegeanstalten vom 13. Februar 1924 (RGBl. I S. 66, 154).

§ 12 Arbeitsfreie Zeiten und Ruhepausen (Abs. 2)

[...]

(2) Den männlichen Gefolgschaftsmitgliedern sind bei einer Arbeitszeit von mehr als sechs Stunden mindestens eine halbstündige Ruhepause oder zwei viertelstündige Ruhepausen zu gewähren, in denen eine Beschäftigung im Betriebe nicht gestattet ist. Für den Aufenthalt während der Pausen sind nach Möglichkeit besondere Aufenthaltsräume oder freie Plätze bereitzustellen. Bei Arbeiten, die einen ununterbrochenen Fortgang erfordern, sind die in Wechselschichten beschäftigten Gefolgschaftsmitglieder ausgenommen; jedoch müssen ihnen Kurzpausen von angemessener Dauer gewährt werden. Die Vorschriften des § 20 Abs. 3 über eine andere Regelung durch das Gewerbeaufsichtsamt finden entsprechende Anwendung.

§ 13 Sonderregelung für öffentliche Betriebe und Verwaltungen (Abs. 2)

[...]

(2) Für Angestellte, die von Körperschaften des öffentlichen Rechts gemeinsam mit Beamten beschäftigt werden, gelten mangels abweichender Einzelabrede, *Dienstordnung* oder *Tarifordnung* die für Beamte gültigen Dienstvorschriften über die Arbeitszeit auch ohne ausdrückliche Übertragung nach Abs. 1.

§ 14 Außergewöhnliche Fälle

(1) Die Vorschriften der §§ 3 bis 13 über Dauer der Arbeitszeit, arbeitsfreie Zeiten und Ruhepausen finden keine Anwendung auf vorübergehende Arbeiten in Notfällen und in außergewöhnlichen Fällen, die unabhängig vom Willen der Betroffenen eintreten und deren Folgen nicht auf andere Weise zu beseitigen sind, besonders wenn Rohstoffe oder Lebensmittel zu verderben oder Arbeitserzeugnisse zu mißlingen drohen.

(2) Dasselbe gilt, wenn eine verhältnismäßig geringe Zahl von Gefolgschaftsmitgliedern an einzelnen Tagen mit Arbeiten beschäftigt wird, deren Nichterledigung das Ergebnis der Arbeit gefährden oder einen unverhältnismäßigen wirtschaftlichen Schaden zur Folge haben würde und wenn dem Betriebsführer andere Vorkehrungen nicht zugemutet werden können.

§ 18 Ruhepausen (Abs. 1 and Abs. 2)

(1) Den weiblichen Gefolgschaftsmitgliedern müssen bei einer Arbeitszeit von mehr als viereinhalb Stunden eine oder mehrere im voraus feststehende Ruhepausen von angemessener Dauer innerhalb der Arbeitszeit gewährt werden. Die Ruhepausen müssen mindestens betragen bei mehr als viereinhalb bis zu sechs Stunden Arbeitszeit zwanzig Minuten, bei mehr als sechs bis zu acht Stunden eine halbe Stunde, bei mehr als acht bis zu neun Stunden dreiviertel Stunden und bei mehr als neun Stunden eine Stunde. Bei mehr als acht bis zu achteinhalb Stunden Arbeitszeit dürfen die Ruhepausen auf eine halbe Stunde verkürzt werden, wenn die Verlängerung der Arbeitszeit über acht Stunden dazu dient, durch andere Verteilung der Arbeitszeit einen Frühschluß vor Sonn- und Feiertagen herbeizuführen. Länger als viereinhalb Stunden hintereinander dürfen weibliche Gefolgschaftsmitglieder nicht ohne Ruhepause beschäftigt werden.

(2) Als Ruhepausen gelten nur Arbeitsunterbrechungen von mindestens einer Viertelstunde.

[...]

§ 24 Aushänge und Verzeichnisse (Abs. 1)

(1) Der Betriebsführer ist verpflichtet:

1. einen Abdruck der Arbeitszeitordnung an geeigneter Stelle im Betriebe zur Einsichtnahme auszulegen;
2. einen Aushang über Beginn und Ende der regelmäßigen täglichen Arbeitszeit und der Ruhepausen an sichtbarer Stelle im Betriebe anzubringen;
3. einen Nachweis über die andere Verteilung der Arbeitszeit nach § 4, über die Vor- und Abschlußarbeiten nach § 5, über die Arbeitszeitverlängerung an dreißig Tagen nach § 6 und über die Arbeiten in außergewöhnlichen Fällen nach § 14 zu führen und darin Lage und Dauer der Arbeitszeit und ihre Verteilung auf die Gefolgschaftsmitglieder unverzüglich anzugeben; den beteiligten Gefolgschaftsmitgliedern ist auf Verlangen Einsicht in den Nachweis zu gewähren.

[...]

§ 25 Straf- und Bußgeldvorschriften (Abs. 1 Nr. 5 and Nr. 8, Abs. 3-5)

(1) Ordnungswidrig handelt, wer vorsätzlich oder fahrlässig

[...]

5. einer Vorschrift des § 12 Abs. 1 Satz 1, 2, Abs. 2 Satz 1, 3, des § 18 Abs. 1 bis 3 Satz 1, 3 oder des § 19 Abs. 1, 2 Satz 1, 2, Abs. 3 über arbeitsfreie Zeiten und Ruhepausen,

[...]

8. einer Vorschrift des § 24 über Aushänge und Verzeichnisse

[...]

(3) Die Ordnungswidrigkeit nach Absatz 1 Nr. 1 bis 6 und Absatz 2 kann mit einer Geldbuße bis zu fünftausend Deutsche Mark, die Ordnungswidrigkeit nach Absatz 1 Nr. 7 und 8 mit einer Geldbuße bis zu tausend Deutsche Mark geahndet werden.

(4) Wer vorsätzlich eine der in Absatz 1 Nr. 1 bis 6 oder Absatz 2 bezeichneten Handlungen begeht und dadurch Arbeitnehmer in ihrer Arbeitskraft oder Gesundheit gefährdet, wird mit Freiheitsstrafe bis zu einem Jahr oder mit Geldstrafe bestraft.

(5) Wer in den Fällen des Absatzes 4 die Gefahr fahrlässig verursacht, wird mit Freiheitsstrafe bis zu sechs Monaten oder mit Geldstrafe bis zu einhundertachtzig Tagessätzen bestraft.

§ 27 Arbeitsaufsicht und Behördenzuständigkeit (Abs. 1 and Abs. 3)

(1) Die Aufsicht über die Ausführung der Vorschriften der Arbeitszeitordnung und der auf Grund der Arbeitszeitordnung erlassenen Bestimmungen obliegt den Gewerbeaufsichtsämtern. Gewerbeaufsichtsamt im Sinne der Arbeitszeitordnung ist die örtlich zuständige Dienststelle der Gewerbeaufsicht.

[...]

(3) Auf die Befugnisse und Obliegenheiten der Aufsichtsbehörden finden die Vorschriften der Gewerbeordnung § 139b Anwendung.

[...]

Arbeitszeitgesetz (ArbZG)

Arbeitszeitgesetz of 6 June 1994, enacted as Article 1 of the Arbeitszeitrechtsgesetz (BGBl. I p. 1170), original version.

§ 3 Arbeitszeit der Arbeitnehmer

Die werktägliche Arbeitszeit der Arbeitnehmer darf acht Stunden nicht überschreiten. Sie kann auf bis zu zehn Stunden nur verlängert werden, wenn innerhalb von sechs Kalendermonaten oder innerhalb von 24 Wochen im Durchschnitt acht Stunden werktäglich nicht überschritten werden.

§ 4 Ruhepausen

Die Arbeit ist durch im voraus feststehende Ruhepausen von mindestens 30 Minuten bei einer Arbeitszeit von mehr als sechs bis zu neun Stunden und 45 Minuten bei einer Arbeitszeit von mehr als neun Stunden insgesamt zu unterbrechen. Die Ruhepausen nach Satz 1 können in Zeitabschnitte von jeweils mindestens 15 Minuten aufgeteilt werden. Länger als sechs Stunden hintereinander dürfen Arbeitnehmer nicht ohne Ruhepause beschäftigt werden.

§ 14 Außergewöhnliche Fälle

(1) Von den §§ 3 bis 5, 6 Abs. 2, §§ 7, 9 bis 11 darf abgewichen werden bei vorübergehenden Arbeiten in Notfällen und in außergewöhnlichen Fällen, die unabhängig vom Willen der Betroffenen eintreten und deren Folgen nicht auf andere Weise zu beseitigen sind, besonders wenn Rohstoffe oder Lebensmittel zu verderben oder Arbeitsergebnisse zu mißlingen drohen.

(2) Von den §§ 3 bis 5, 6 Abs. 2, §§ 7, 11 Abs. 1 bis 3 und § 12 darf ferner abgewichen werden,

1. wenn eine verhältnismäßig geringe Zahl von Arbeitnehmern vorübergehend mit Arbeiten beschäftigt wird, deren Nichterledigung das Ergebnis der Arbeiten gefährden oder einen unverhältnismäßigen Schaden zur Folge haben würden,
2. bei Forschung und Lehre, bei unaufschiebbaren Vor- und Abschlußarbeiten sowie bei unaufschiebbaren Arbeiten zur Behandlung, Pflege und Betreuung von Personen oder zur Behandlung und Pflege von Tieren an einzelnen Tagen, wenn dem Arbeitgeber andere Vorkehrungen nicht zugemutet werden können.

§ 16 Aushang und Arbeitszeitchronologie

(1) Der Arbeitgeber ist verpflichtet, einen Abdruck dieses Gesetzes, der auf Grund dieses Gesetzes erlassenen, für den Betrieb geltenden Rechtsverordnungen und der für den Betrieb geltenden Tarifverträge und Betriebsvereinbarungen im Sinne des § 7 Abs. 1 bis 3 und des § 12 an geeigneter Stelle im Betrieb zur Einsichtnahme auszulegen oder auszuhängen.

(2) Der Arbeitgeber ist verpflichtet, die über die werktägliche Arbeitszeit des § 3 Satz 1 hinausgehende Arbeitszeit der Arbeitnehmer aufzuzeichnen. Die Aufzeichnungen sind mindestens zwei Jahre aufzubewahren.

§ 17 Aufsichtsbehörde (Abs. 1 and Abs. 5)

(1) Die Einhaltung dieses Gesetzes und der auf Grund dieses Gesetzes erlassenen Rechtsverordnungen wird von den nach Landesrecht zuständigen Behörden (Aufsichtsbehörden) überwacht.

[...]

(5) Die Beauftragten der Aufsichtsbehörde sind berechtigt, die Arbeitsstätten während der Betriebs- und Arbeitszeit zu betreten und zu besichtigen; außerhalb dieser Zeit oder wenn sich die Arbeitsstätten in einer Wohnung befinden, dürfen sie ohne Einverständnis des Inhabers nur zur Verhütung von dringenden Gefahren für die öffentliche Sicherheit und Ordnung betreten und besichtigt werden. Der Arbeitgeber hat das Betreten und Besichtigen der Arbeitsstätten zu gestatten. Das Grundrecht der Unverletzlichkeit der Wohnung (Artikel 13 des Grundgesetzes) wird insoweit eingeschränkt.

§ 18 Nichtanwendung des Gesetzes

(1) Dieses Gesetz ist nicht anzuwenden auf

1. leitende Angestellte im Sinne des § 5 Abs. 3 des Betriebsverfassungsgesetzes sowie Chefärzte,
2. Leiter von öffentlichen Dienststellen und deren Vertreter sowie Arbeitnehmer im öffentlichen Dienst, die zu selbständigen Entscheidungen in Personalangelegenheiten befugt sind,
3. Arbeitnehmer, die in häuslicher Gemeinschaft mit den ihnen anvertrauten Personen zusammenleben und sie eigenverantwortlich erziehen, pflegen oder betreuen,

4. den liturgischen Bereich der Kirchen und der Religionsgemeinschaften.

(2) Für die Beschäftigung von Personen unter 18 Jahren gilt anstelle dieses Gesetzes das Jugendarbeitsschutzgesetz.

(3) Für die Beschäftigung von Arbeitnehmern auf Kauffahrteischiffen als Besatzungsmitglieder im Sinne des § 3 des Seemannsgesetzes gilt anstelle dieses Gesetzes das Seemannsgesetz.

(4) Für die Beschäftigung von Arbeitnehmern in Bäckereien und Konditoreien gilt anstelle dieses Gesetzes das Gesetz über die Arbeitszeit in Bäckereien und Konditoreien.

§ 22 Bußgeldvorschriften (Abs. 1 Nr. 2 and Abs. 2)

(1) Ordnungswidrig handelt, wer als Arbeitgeber vorsätzlich oder fahrlässig
[...]

2. entgegen § 4 Ruhepausen nicht, nicht mit der vorgeschriebenen Mindestdauer oder nicht rechtzeitig gewährt,
[...]

(2) Die Ordnungswidrigkeit kann in den Fällen des Absatzes 1 Nr. 1 bis 7, 9 und 10 mit einer Geldbuße bis zu 30 000 Deutsche Mark, in den Fällen des Absatzes 1 Nr. 8 mit einer Geldbuße bis zu 5 000 Deutsche Mark geahndet werden.

§ 23 Strafvorschriften

(1) Wer eine der in § 22 Abs. 1 Nr. 1 bis 3, 5 bis 7 bezeichneten Handlungen

1. vorsätzlich begeht und dadurch Gesundheit oder Arbeitskraft eines Arbeitnehmers gefährdet oder
2. beharrlich wiederholt,

wird mit Freiheitsstrafe bis zu einem Jahr oder mit Geldstrafe bestraft.

(2) Wer in den Fällen des Absatzes 1 Nr. 1 die Gefahr fahrlässig verursacht, wird mit Freiheitsstrafe bis zu sechs Monaten oder mit Geldstrafe bis zu 180 Tagessätzen bestraft.

Richtlinie 93/104/EG

Council Directive 93/104/EC of 23 November 1993 concerning certain aspects of the organisation of working time (OJ L 307, 13.12.1993, p. 18), original version, as published on EUR-Lex (CELEX 31993L0104).

Art. 4 Ruhepause

Die Mitgliedstaaten treffen die erforderlichen Maßnahmen, damit jedem Arbeitnehmer bei einer täglichen Arbeitszeit von mehr als sechs Stunden eine Ruhepause gewährt wird; die Einzelheiten, insbesondere Dauer und Voraussetzung für die Gewährung dieser Ruhepause, werden in Tarifverträgen oder Vereinbarungen zwischen den Sozialpartnern oder in Ermangelung solcher Übereinkünfte in den innerstaatlichen Rechtsvorschriften festgelegt.

7.3.1 Exemptions from the rest-break rules

Table A4: Who does the law not apply to, and why? Exemptions from the statutory rest-break rules for women under the AZO (1938) and the ArbZG (1994)

No.	Groups/Exemptions	Old law (AZO)	New law (ArbZG)
1	Employees in all companies and administrations of all kinds	Apply	Apply
2	Persons under 18 years of age	Not apply (§ 1(1) AZO; § 15 JSchG 1938)	Not apply (§ 18(2) ArbZG; § 11(1) JArbSchG 1976)
3	Agriculture, including horticulture, viticulture, beekeeping, forestry, hunting, animal husbandry, agricultural and forestry ancillary businesses of a commercial nature (the latter only if they work for their own use)	Not apply (§ 1(1) no. 1 AZO)	Apply
4	Animal husbandry not related to agriculture	Apply	Apply
5	Fishing: Deep-sea, coastal and inland fisheries	Not apply (§ 1(1) no. 2 AZO)	Apply
6	Fishing: Agricultural and soil holdings for fishing	Apply	Apply
7	Shipping: Ocean and coastal shipping $\hat{=}$ crew members on merchant ships (see row 9)	Not apply (§ 1(1) no. 2 AZO)	Not apply (§ 18(3) ArbZG)
8	Shipping: Inland navigation and rafting	Apply	Apply
9	Shipping: Crew members on merchant ships $\hat{=}$ ocean and coastal shipping (see row 7)	Not apply (§ 1(1) no. 2 AZO)	Not apply (§ 18(3) ArbZG)
10	Aviation: Employees as crew members of aircraft	Not apply (§ 1(1) no. 2 AZO)	Apply
11	Aviation: Employees in associated land and soil enterprises	Apply	Apply

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No.	Groups/Exemptions	Old law (AZO)	New law (ArbZG)
12	Driver	Apply (modified: no. 50 AusfVO)	Apply (modified: § 6(1) FPersV)
13	Employees in bakeries and confectioneries	Not apply (§ 1(3) AZO; § 13(1) BäckArbZG)	Not apply (§ 18(4) ArbZG)
14	Chief representative	Not apply (§ 1(2) no. 1 AZO)	Not apply (§ 18(1) no. 1 ArbZG; § 5(3) no. 2 BetrVG)
15	Representatives of a company registered in the Commercial or Cooperative Register	Not apply (§ 1(2) no. 1 AZO)	Not apply (Roggendorff 1994, § 2 para. 54)
16	Senior executives	Not apply (§ 1(2) no. 2 AZO)	Not apply (§ 18(1) no. 1 ArbZG)
17	Pharmaceutical-trained employees in pharmacies	Not apply (§ 1(2) no. 3 AZO)	Apply
18	Homeworker	Not apply (Hueck/Nipperdey/Denecke 1950, § 1 para. 9)	Not apply (Roggendorff 1994, § 2 para. 54)
19	Nursing staff in nursing homes	Not apply (§ 1(3) AZO)	Apply
20	Other persons employed in nursing establishments who are not nursing staff	Apply (for-profit) / Not apply (non-profit; § 2 KrAZO)	Apply
21	Other treatment and care staff	Apply	Apply
22	Head physicians	Not apply (Meisel/Hiersemann 1970, § 1 para. 56)	Not apply (§ 18(1) no. 1 ArbZG)
23	Salaried doctors	Not apply (Meisel/Hiersemann 1970, § 1 para. 61)	Apply
24	Heads of public services and their representatives	Not apply (§ 1(2) no. 2 AZO)	Not apply (§ 18(1) no. 2 ArbZG)
25	Employees in the public sector who are authorised to make independent decisions in personnel matters	Apply (other employees) / Not apply (senior executives; § 1(2) AZO)	Not apply (§ 18(1) no. 2 ArbZG)

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No.	Groups/Exemptions	Old law (AZO)	New law (ArbZG)
26	Employees who live in the same household as the persons entrusted to them and who educate, care for or care for them on their own responsibility	Not apply (Hueck/Nipperdey/Denecke 1950, § 1 para. 19)	Not apply (§ 18(1) no. 3 ArbZG)
27	Employees working in the liturgical sphere of churches and religious communities	Not apply (Hueck/Nipperdey/Denecke 1950, § 1 para. 11)	Not apply (§ 18(1) no. 4 ArbZG)
28	Employees working in churches and religious communities except the liturgical sphere	Apply	Apply
29	Federal civil servants	Not apply (Hueck/Nipperdey/Denecke 1950, § 1 para. 11; § 8 AZV 1990)	Not apply (§ 8 AZV 1990)
30	State civil servants	Not apply (Hueck/Nipperdey/Denecke 1950, § 1 para. 11)	Not apply (state regulations)
31	Employees in the public service at the federal and state level (companies and administration)	Apply	Apply
32	Employees in the public service of municipalities and associations of municipalities (administration only)	Apply	Apply
33	Employees in the public sector at municipalities and associations of municipalities (companies only)	Apply	Apply
34	Employees in public corporations	Apply (modified: § 13(2) AZO)	Apply
35	Employees employed in alternating shifts for work requiring uninterrupted progress	Apply	Apply

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No.	Groups/Exemptions	Old law (AZO)	New law (ArbZG)
36	Deviating regulation of rest breaks for important reasons by the trade office	Apply (modified: § 12(2) s. 3, § 20(3) AZO; nos. 17, 25 AusfVO)	Apply
37	Temporary work in emergencies that occur independently of the will of the person concerned and the consequences of which cannot be eliminated in any other way	Not apply (§ 14(1), § 21 AZO)	Not apply (§ 14(1) ArbZG)
38	Temporary work in exceptional cases that occur independently of the will of the persons concerned and the consequences of which cannot be eliminated in any other way	Apply	Not apply (§ 14(1) ArbZG)
39	Work the non-completion of which endangers the result of the work (prerequisites: a relatively small number of employees are employed with this work on individual days and the employer cannot be expected to take other precautions)	Apply	Not apply (§ 14(2) no. 1 ArbZG)
40	Work the non-completion of which would result in disproportionately high damage (prerequisites: a relatively small number of employees are employed with this work on individual days and the employer cannot be expected to take other precautions)	Apply	Not apply (§ 14(2) no. 1 ArbZG)
41	Work in research and apprenticeship that cannot be postponed (prerequisite: the employer cannot be expected to make other arrangements)	Apply	Not apply (§ 14(2) no. 2 ArbZG)

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No.	Groups/Exemptions	Old law (AZO)	New law (ArbZG)
42	Preparatory and final work that cannot be postponed (prerequisite: the employer cannot be expected to make other arrangements)	Apply	Not apply (§ 14(2) no. 2 ArbZG)
43	Work that cannot be postponed for the treatment, care and support of persons or for the treatment and care of animals on individual days (prerequisite: the employer cannot be expected to make other arrangements)	No mention in old law, but clearly young, old, and sick people cannot be left alone. Thus, most likely the law de-facto did not apply.	Not apply (§ 14(2) no. 2 ArbZG)

Notes: Women only. Apply = the AZO (§ 18(1): 20/30/45/60 minutes) or the ArbZG (§ 4: 30/45 minutes) applies to the group. Not apply = the Act does not apply to the group. Parentheses give the legal basis as cited in the legal mapping; the provision or commentary excluding the group; “modified:” a provision altering the standard break schedule although the Act applies. Old law = AZO as in force before 1 July 1994; New law = ArbZG from 1 July 1994.

7.4 Mapping occupations into break regulation groups.

Table A5: Mapping occupations into exemptions and groups

ISCO-88	Occupation	Mapping	Group
111	Legislators and senior government officials	24, 25, 31, 32	A
114	Senior officials of special-interest organisations	14, 15, 16, 34	A
121	Directors and chief executives	14, 15, 16	A
122	Production and operations managers	1, 16	A
123	Other specialist managers	1, 16	A
131	Managers of small enterprises	1, 16	A
211	Physicists, chemists and related professionals	1, 31	B
212	Mathematicians, statisticians and related professionals	1, 31	B
213	Computing professionals	1, 31	B
214	Architects, engineers and related professionals	1, 31	B
221	Life science professionals	1, 31, 39, 40, 41	A
222	Health professionals (except nursing)	1, 17, 22, 23, 37, 38, 39, 43	E
223	Nursing and midwifery professionals	19, 20, 21, 31, 39, 40, 43	E
231	College, university and higher education teaching professionals	31, 43	E
232	Secondary education teaching professionals	1, 31, 43	E
233	Primary and pre-primary education teaching professionals	1, 31, 43	E
234	Special education teaching professionals	1, 31, 43	E
235	Other teaching professionals	1, 31, 43	E
241	Business professionals	1	B
242	Legal professionals	1, 31, 32, 33	B
243	Archivists, librarians and related information professionals	1, 31	B
244	Social science and related professionals	1, 31	B
245	Writers and creative or performing artists	1	B

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Table A5 continued

ISCO-88	Occupation	Mapping	Group
246	Religious professionals	27, 28	A
247	Public service administrative professionals	31, 32, 33	B
311	Physical and engineering science technicians	1	B
312	Computer associate professionals	1	B
313	Optical and electronic equipment operators	1	B
314	Ship and aircraft controllers and technicians	7, 8, 9, 10, 11	E
315	Safety and quality inspectors	1	B
321	Life science technicians and related associate professional	1	B
322	Health associate professionals (except nursing)	1	B
323	Nursing and midwifery associate professionals	19, 20, 21, 43	E
331	Primary education teaching associate professionals	1, 43	E
332	Pre-primary education teaching associate professionals	1, 43	E
333	Special education teaching associate professionals	1, 43	E
334	Other teaching associate professionals	1, 43	E
341	Finance and sales associate professionals	1	B
342	Business services agents and trade brokers	1	B
343	Administrative associate professionals	1	B
344	Customs, tax and related government associate professionals	31, 32, 33	B
345	Police inspectors and detectives	39	C
346	Social work associate professionals	1, 21, 43	E
347	Artistic, entertainment and sports associate professionals	1	B
348	Religious associate professionals	27, 28	A
411	Secretaries and keyboard-operating clerks	1	B

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Table A5 continued

ISCO-88	Occupation	Mapping	Group
412	Numerical clerks	1	B
413	Material-recording and transport clerks	1	B
414	Library, mail and related clerks	1	B
419	Other office clerks	1	B
421	Cashiers, tellers and related clerks	1	B
422	Client information clerks	1	B
511	Travel attendants and related workers	1, 10, 11	D
512	Housekeeping and restaurant services workers	1	B
513	Personal care and related workers	1, 21, 26, 35, 43	A
514	Other personal services workers	1	B
516	Protective services workers	1, 31, 32, 33	B
521	Fashion and other models	1	B
522	Shop, stall and market salespersons and demonstrators	1	B
611	Market gardeners and crop growers	3	D
612	Animal producers and related workers	3, 4	D
613	Crop and animal producers	3, 4	D
614	Forestry and related workers	3	D
615	Fishery workers, hunters and trappers	3, 4, 5, 6	D
711	Miners, shotfirers, stone cutters and carvers	1, 46	?
712	Building frame and related trades workers	1	B
713	Building finishers and related trades workers	1	B
714	Painters, building structure cleaners and related trades workers	1	B
721	Metal moulders, welders, sheet-metal workers, structural-metal preparers, and related trades workers	1	B
721	Underwater workers		
722	Blacksmiths, tool-makers and related trades workers	1	B

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Table A5 continued

ISCO-88	Occupation	Mapping	Group
723	Machinery mechanics and fitters	1, 11	B
724	Electrical and electronic equipment mechanics and fitters	1	B
731	Precision workers in metal and related materials	1	B
732	Potters, glass-makers and related trades workers	1	B
733	Handicraft workers in wood, textile, leather and related materials	1	B
734	Craft printing and related trades workers	1	B
741	Food processing and related trades workers	1, 13	C
742	Wood treaters, cabinet-makers and related trades workers	1	B
743	Textile, garment and related trades workers	1	B
744	Pelt, leather and shoemaking trades workers	1	B
811	Mining and mineral-processing-plant operators	1, 46	?
812	Metal-processing plant operators	1	B
813	Glass, ceramics and related plant operators	1	B
814	Wood-processing- and papermaking-plant operators	1	B
815	Chemical-processing-plant operators	1	B
816	Power-production and related plant operators	1, 35, 40, 43	E
817	Industrial robot operators	1	B
821	Metal- and mineral-products machine operators	1	B
822	Chemical-products machine operators	1	B
823	Rubber- and plastic-products machine operators	1	B
824	Wood-products machine operators	1	B

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Table A5 continued

ISCO-88	Occupation	Mapping	Group
825	Printing-, binding- and paper-products machine operators	1	B
826	Textile-, fur- and leather-products machine operators	1	B
827	Food and related products machine operators	1	B
828	Assemblers	1	B
829	Other machine operators not elsewhere classified	1	B
831	Locomotive engine drivers and related workers	1	B
832	Motor vehicle drivers	12	B
833	Agricultural and other mobile plant operators	1, 3	D
834	Ships' deck crews and related workers	5, 7, 8, 9	A
911	Street vendors and related workers	1	B
912	Shoe cleaning and other street services elementary occupations	1	B
913	Domestic and related helpers, cleaners and launderers	1	B
914	Building caretakers, window and related cleaners	1	B
915	Messengers, porters, doorkeepers and related workers	1	B
916	Garbage collectors and related labourers	1, 33	B
921	Agricultural, fishery and related labourers	3, 4, 5, 6	D
931	Mining and construction labourers	1, 46	?
932	Manufacturing labourers	1	B
933	Transport labourers and freight handlers	1	B

Notes. Groups are defined by whether the rest break regulation is applied to an occupation under the regime before 1994 and under the regime from 1994 onwards. Group A is not applied in either regime, group B is applied in both regimes, group C is applied before 1994 but not afterwards, and group D is not applied before 1994 but applied afterwards. Group E consists of teaching and nursing staff and other occupations whose care duties make it difficult to take breaks, so that they are only partly affected by the change in rest break regulation across both regimes. In case of multiple codes in the mapping, for example, occupation 122 with a mapping of 1 and 16, an occupation is considered as not applied as long as one of the groups implies a chance to be exempted. We assume that any occupation could include regular employees, who correspond to code 1. A question mark indicates that the mapping is unsure because of special occupations such as the military, for which we are not sure about the application of the break rule.