NBER WORKING PAPER SERIES

SHOULD FRIDAY BE THE NEW SATURDAY? HOURS WORKED AND HOURS WANTED

Gregor Jarosch
Laura Pilossoph
Anthony Swaminathan

Working Paper 33577
http://www.nber.org/papers/w33577

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
March 2025

We are particularly thankful to Alex Bick for helping field our survey and for sharing data. Thanks also to David Berger, Luigi Bocola, Cosmin Ilut, Patrick Kehoe, Simon Mongey, Tommaso Porzio, Robert Shimer, and Chris Tonetti for useful conversations. Thanks to Zhangchi Ma and Mariya Pominova for excellent research assistance. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

Should Friday be the New Saturday? Hours Worked and Hours Wanted
Gregor Jarosch, Laura Pilossoph, and Anthony Swaminathan
NBER Working Paper No. 33577
March 2025
JEL No. E0, H0, J0

ABSTRACT

This paper investigates self-reported wedges between how much people work and how much they want to work, at their current wage. More than two-thirds of full-time workers in German survey data are overworked—actual hours exceed desired hours. We combine this evidence with a simple model of labor supply to assess the welfare consequences of tighter weekly hours limits via willingness-to-pay calculations. According to counterfactuals, the optimal length of the workweek in Germany is 37 hours. Introducing such a cap would raise welfare by .8-1.6% of GDP. The gains from a shortened workweek are largest for workers who are married, female, white collar, middle aged, and high income. An extended analysis integrates a non-constant wage-hours relationship, falling capital returns, and a shrinking tax base.

Gregor Jarosch
Department of Economics
Duke University
240 Social Sciences Building
Durham, NC 27708
and NBER
gregorjarosch@gmail.com

Laura Pilossoph
Department of Economics
Duke University
Social Sciences Building
Durham, NC 27708
and NBER
pilossoph@gmail.com

Anthony Swaminathan
Department of Economics
Duke University
213 Social Sciences Building
Durham, NC 27708
anthony.swaminathan@duke.edu

1 Introduction

How much one would like to work is a question central to most people's lives. Yet, ultimately, few workers can freely choose their hours. Instead, jobs usually come with implicitly or explicitly required working hours that are not entirely at the worker's discretion. The typical hours requirement is shaped by various regulatory constraints and customs such as the 5-day workweek, the 8-hour workday, public holidays, mandatory vacation days, sick and parental leave, etc. These restrictions have changed historically and differ around the world, but remain ubiquitous.[1]

This jointly raises two questions. First, are workers *on* their labor supply curve, working their desired hours, and if not, are they systematically *off* it? Second, what is the role of hours constraints in creating or correcting wedges between desired and actual work hours?

We speak to these questions via micro data from multiple surveys, the primary one being the German Socioeconomic Panel (SOEP). These surveys have information on *desired work hours*, which are elicited (broadly) as follows. Survey respondents are asked how much they would want to work in a hypothetical where they can choose their own working hours, with income changing according to the number of hours. We interpret these questions as one where the worker is asked to report her "*h-star*" in a simple, static labor supply problem, assuming a linear budget constraint, with her current wage as the slope.

Our main SOEP sample covers the period between 1985 and 2021. While we report some results for the entire time series, we present key cross-sectional results for full-time workers in 2019. We find that more than two-thirds of the sample are *overworked* in the sense that they report desired hours strictly below actual hours. Mean and median excess hours are approximately 5 per week. This pattern is pervasive in the German labor market and has held steady over time. While the propensity to report overwork has risen over the last two decades, from 60% in the early 2000s to 75% in 2021, the average hours gap has been fairly stable, with both desired and actual hours not displaying a clear, long-run trend.

We complement the descriptive analysis for Germany with results for the UK using the British Household Panel Survey (BHPS) and the United States using CPS supplements for 1985 and 2001, along with a survey we designed and implemented in April 2024 as part of the Real-Time Population Survey (RTP, Bick and Blandin (2023)). The UK results closely align with the patterns in Germany, while the US sharply differs, featuring a much larger

[1] See Gomes (2021) ("*Friday is the New Saturday*") for a historical account.

fraction of workers wishing to increase hours, in line with Lachowska et al. (2023).

The literature offers explanations for overwork in equilibrium. Most famously, Akerlof (1976) shows that adverse selection can lead to a rat race, causing inefficiently high hours.[2] In this paper, we neither investigate nor take a stance on the origins of the wedges we document. Instead, we directly turn to gauging their welfare cost. To do so, we combine the survey data with a simple model of labor supply à la MaCurdy (1981). The model allows us to convert the observed and counterfactual wedges into dollars via simple willingness to pay (WTP) calculations. This, in turn, allows us to aggregate and compare the welfare effects of the observed hours wedges across individuals. WTP calculations suggest sizable welfare losses of 28.2 euros per worker per week (or 1.9% of GDP). We show how these losses vary across observables, finding the largest losses for female, middle-aged, married, and college-educated workers.

We then turn to our main counterfactual exercise, which evaluates the welfare impact of a shorter workweek. In particular, we gradually tighten the weekly hours cap in Germany, starting from an initial cap of 48 hours per week. We consider several different assumptions on how such a policy would affect hours worked across the hours distribution. Introducing hours caps brings some individuals closer to their labor supply curves, but drives others further off. The estimated preferences allow us to assign values at the individual level to the resulting (changes in) hours wedges, and to assess the aggregate and distributional consequences of a shortened workweek.

According to this exercise, the optimal length of the workweek in Germany is approximately 37 hours, which is stable across the various scenarios we consider. This is roughly 4–5 hours less than the median weekly hours usually worked by full-time workers in Germany. The optimal policy yields welfare gains of 12.5–23.5 euros per worker per week (or .8-1.6% of GDP). The size of the welfare gains depends in particular on whether the policy has bite for those workers that currently report working very high hours. While 37 hours is the optimal length of the workweek from our utilitarian welfare perspective, even a 4-day, 32-hour workweek yields positive gains. Notably, the length of the optimal workweek in Germany that results from these calculations does not display much of a time trend since the mid-1980s.

While all groups gain from the optimal policy, the welfare gains are particularly pronounced for women, whose WTP for a 37-hour workweek is 45% higher than that of men, and college-educated workers, whose gains are almost twice that of vocational workers.

[2] Landers et al. (1996) confirms this empirically using surveys that document overwork at law firms. Glover (2012) builds a quantitative macro model based on the same idea. Rebitzer and Taylor (1995) offer yet another theory of overwork in a model of efficiency wages.

Married workers and workers with children gain slightly more than unmarried and childless workers. Overall, policies that shorten the workweek tend to be regressive, benefiting high-income, high-hours workers in particular.

A final section extensively addresses two considerations related to the resource feasibility of the counterfactual allocations we consider. First, we ask whether firms would actually be willing to hire workers at the counterfactual hours we consider at an unchanged wage rate. For an answer, we follow Bick et al. (2022) and investigate the empirical relationship between hours and wages in the cross-section in our data. We then apply the resulting schedule to calculate the surplus or shortfall we should expect relative to the constant wage–hours benchmark. Similar to Bick et al. (2022), we find a declining relationship between hours and wages across much of the relevant part of the support. This implies that our calculations based on a constant wage-hours relationship understate the gains from a shortened workweek. The gains are larger yet if workers sort positively on hours in the cross-section.

Second, we offer a way of integrating into the analysis losses from reducing working hours that are arguably "external" to the survey respondents. Specifically, we allow for both the income earned by capital owners and the tax base to contract when aggregate hours fall. To do this, we work with a simple CES production function and calculate the total income reduction associated with the change in total effective hours implied by a shortened workweek.

Under these two extensions, maximum welfare is obtained at 36 hours, with net gains of 3.88% of GDP. These large gains, however, primarily reflect that the cross-sectional exercise à la Bick et al. (2022) suggests significant productivity gains from reducing hours. A more conservative alternative shuts this down and consequently predicts net welfare losses, albeit small, at any hours cap below 43. The takeaway is that a shorter workweek at constant wages delivers sizable welfare gains to workers in Germany. Whether these are offset, from an economy-wide perspective, by a smaller tax base and lower returns to capital depends on whether labor productivity rises as hours fall.

Related Work

Hours Mismatch A small literature examines mismatch between hours worked and hours wanted. Labanca and Pozzoli (2022, 2023) provide evidence for significant constraints pushing workers off their labor supply curve. Lachowska et al. (2023) identify hours mismatch in the United States by ranking firms according to workers' revealed preferences (Sorkin (2018)) and combining this with firm-hours fixed effects. This yields an estimated average marginal rate of substitution between hours and earnings that suggests US workers are *underworked*. Our approach differs by directly eliciting hours wedges via survey questions about desired versus actual hours—also detecting underwork in the US—while focusing on the aggregate and distributional welfare implications of a shorter workweek in Germany. Bloemen (2008) examines job acceptance decisions when desired and offered hours differ, estimating a framework using survey data on desired hours similar to ours. Kahn and Lang (1991) utilize survey questions on desired hours in Canada to estimate labor supply elasticities, demonstrating that using actual hours may bias estimates due to hours constraints.

Four-Day Workweek and Hours Regulation Despite the prominence of workweek regulation in public discourse, research in economics on the role and optimal level of hours caps remains surprisingly limited.[3] Joly et al. (2024) provides a recent cross-country overview of four-day workweek implementations, while Campbell (2024) offers a comprehensive review of the academic literature. Empirical work includes Fishback et al. (2024), who study hours caps during the Great Depression as a form of work sharing during economic downturns, and Lepinteur (2019), who examine the effect of shorter workweeks in Portugal and France on worker well-being. At the firm level, Kelly et al. (2022) and others provide evidence from trials of reduced work time with unchanged pay. Carry (2022) studies minimum work time requirements while our focus is on hours limits.

Macro Perspectives on Labor Supply Our work connects to the mature literature on labor supply in macroeconomics. Bick et al. (2022) recently examined US hours in the cross-section, highlighting a significant concentration around 40 hours—an approach we follow when exploring the wage-hours relationship in Germany. Several papers consider workweek restrictions specifically: Prescott et al. (2009) analyzes their impact on hours worked, while we assess these counterfactual allocations using information on desired hours. Eden (2021) investigates the optimal workweek length when a tradeoff exists between skill accumulation and decreasing returns, and Osuna and Rios-Rull (2003) explore implementation strategies for shorter workweeks.

Wedges Finally, our paper relates to the extensive literature on labor wedges in macroeconomics (Chari et al., 2007; Galí et al., 2007; Shimer, 2009a; Karabarbounis, 2014; Berger

[3]For a recent opinion piece in The Atlantic that laments the lack of research on this topic, see Kelley (2024). In the public press, the discussion on a four-day workweek and shorter hours generally is in full swing. In August 2024, the WSJ titles about Germany: "A Nation of Workaholics Has a New Fixation: Working Less" `https://www.wsj.com/lifestyle/workaholics-work-less-germany-aa9c5a09`.

et al., 2023). In a similar spirit, we also study wedges without taking a stance on their origin, but the wedges here are self-reported in micro data rather than revealed by (violations of) first-order conditions in macro data.

2 Descriptive Analysis

We work with the SOEP for our main analysis. The SOEP is a rich representative annual household panel administered by the Institute for Economic Research (DIW). We present additional evidence for the UK in Appendix C.1 using the BHPS. Appendix C.2 reports results for the US, based on a new survey we designed as part of the RTP (Bick and Blandin, 2023) and CPS supplements for 1985 and 2001. We briefly discuss the UK and US results at the end of this section.

2.1 Sample Restrictions

We restrict the sample to full-time workers who are between 18 and 65 years old and report both actual and desired hours worked.[4] We exclude self-employed workers. We trim actual weekly hours, desired weekly hours, and net monthly labor income at the 1st and 99th percentiles. Appendix Table A.1 shows how the sample evolves at each step of the selection process.

Table 1 reports summary statistics for our full-time worker sample and, as a benchmark, the same sample without dropping part-time workers. Our final pooled full-time sample contains 224,951 observations. For 2019 alone, we have 8,388 observations. Throughout the analysis, we weight these observations by the cross-sectional weights given in the SOEP.

2.2 Desired Hours in the SOEP

Since 1985, the SOEP has asked the following question:

"If you could choose your own working hours, taking into account that your income would change according to the number of hours: How many hours would you want to work?"

[4]Full-time workers are workers that self-report their employment status as "Voll erwerbstaetig," or employed full-time. We drop part-time workers since we are ultimately interested in the impact of a shorter workweek, which would not affect most part-time workers.

	Full-time and Part-time		Full-time Only	
	(1)	(2)	(3)	(4)
	2019	Pooled Sample	2019	Pooled Sample
male	0.53	0.57	0.66	0.68
age	43.67	41.66	43.32	41.21
married	0.52	0.57	0.48	0.55
child in household	0.41	0.56	0.36	0.55
has college degree	0.13	0.08	0.14	0.08
has vocational degree	0.68	0.74	0.70	0.75
german citizen	0.88	0.82	0.89	0.81
public sector	0.27	0.28	0.26	0.27
part-time	0.26	0.19	0.00	0.00
multiple jobs	.	0.04	.	0.03
salaried	0.69	0.69	0.71	0.71
net monthly labor income	1928.86	1769.63	2200.27	1967.10
hourly wage	11.45	10.50	11.93	10.83
Observations	12016	289930	8388	224951

Table 1: Summary Statistics: German SOEP

Notes: Summary statistics for the 2019 sample (Columns 1 and 3) and the pooled sample (Columns 2 and 4, 1985–2021) with all workers included (Columns 1 and 2) and only full-time workers (Columns 3 and 4). Values represent weighted sample means. "Multiple jobs" is missing for 2019 because the question was not fielded in that year. Income and wages are denominated in 2015 euros. We construct the hourly wage by dividing net monthly labor income by 4.33 times usual hours worked per week.

It requests an answer in "hours per week."[5] We will henceforth refer to this variable as *desired hours*.

Importantly, this formulation emphasizes that earnings "would change according to the number of hours." The phrasing thus rules out "work-less-make-the-same" scenarios that are frequently mentioned in discussions on a shorter workweek.[6]

An important question is which exact wage–hours schedule workers envision when responding to this question, as the phrasing arguably leaves room for different interpretations. The most natural reading strikes us as one of a linear budget set, where earnings move in proportion to hours, keeping the wage unchanged at its current level. This is the intended interpretation in the two other datasets we study in the Appendix—namely, our own survey and the BHPS—which are more unambiguously phrased. We work throughout under the premise that workers answer the survey assuming a linear budget set but return to this issue below.

A second, related question is whether the wage–hours schedule assumed is actually feasible. That is, would employers be willing to hire workers at the hypothesized wages and new hours? We return to this when we study welfare and counterfactuals, as it is immaterial to the descriptive analysis in the next section. There, we explore the implications of an alternative wage–hours relationship, informed by the cross-sectional relationship in our data (Bick et al., 2022).

2.3 Desired and Actual Hours Worked

We begin by studying a single cross-section and later examine aggregate trends over time. Our data run until 2021, but we focus on the year 2019 to avoid issues with the COVID pandemic.

To measure how much an individual works we use the variable *actual hours* throughout. It elicits usual hours worked on the job and we henceforth refer to it as either usual or actual hours. The red line in Figure 1 plots the distribution of usual hours worked in our sample of full-time workers. Very few workers work less than 35 hours, with a large mass working exactly 40 hours per week (approximately 30%). Only approximately one-fifth of workers usually work more than 45 hours, and less than one-tenth work more than 50.

[5] The question wording above relies on the DIW's English version of the questionnaire. Google translates the original German question as "*If you could choose the length of your working hours yourself, taking into account that your earnings would change depending on how many hours you worked, how many hours a week would you prefer to work?*"

[6] Importantly, respondents do not need to know their hourly pay to meaningfully respond to this question. They just need to understand that their weekly/monthly/annual pay would move in proportion with the hours reduction they entertain.

We can directly contrast this with desired hours, elicited as described above. The blue line in Figure 1 plots the distribution of desired hours. We see a substantial shift to the left relative to actual hours. The mean for actual hours is 42.74, while the mean for desired hours is 37.48. While over half the sample works strictly more than 40 hours per week, only one in ten workers expresses a desire to do so.

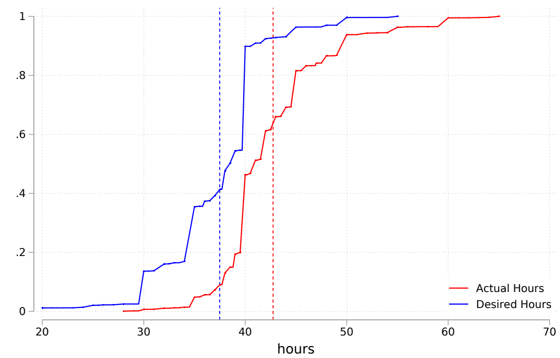


Figure 1: Weekly Hours Worked and Desired in Germany

Notes: CDF of usual hours worked (red) and desired hours (blue) for our main sample in the 2019 SOEP data. Vertical lines indicate means of 42.74 for actual hours and 37.48 for desired hours.

We next construct the wedge between desired and actual hours (the "hours gap") at the individual level and plot its cross-sectional distribution in Figure 2. More than two-thirds of our sample report wanting to work less than they usually do. We will henceforth refer to this group as *overworked*. Nearly one-quarter of the sample has an hours gap of zero, while a remarkably small group of workers, less than one in ten, is *underworked* and wishes to increase their hours. The median (mean) gap is -4.0 (-5.16) hours per week.

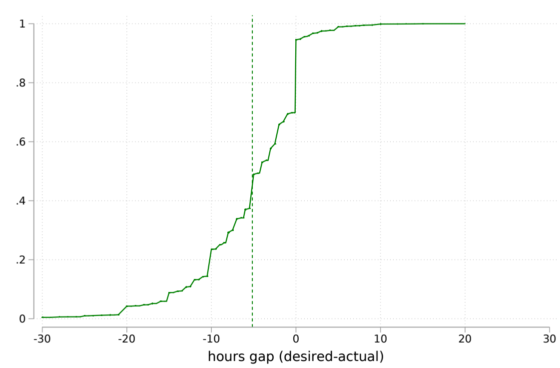


Figure 2: Hours Gaps in Germany

Notes: CDF of the gap between desired and actual hours ("the hours gap") for our main sample in the 2019 SOEP data. The vertical line indicates a mean of -5.16.

Heterogeneity across Groups Overwork is pervasive and not limited to certain groups of the population. Figure 3 plots group means for the hours gap for different groups. Across the board, the mean hours gap is well below zero (the same holds for the median). Furthermore, while the average hours gap differs across the different groups, the variation is surprisingly small compared with the mean across all groups. At the same time, the patterns largely align with what one might expect. Women are more overworked than men, consistent with many of the observations in Goldin (2024); middle-aged workers are the most overworked; white-collar workers are more overworked than blue-collar workers; and married workers are more overworked than unmarried workers. The one perhaps surprising pattern is that workers with children in the household report gaps similar to those of workers without.

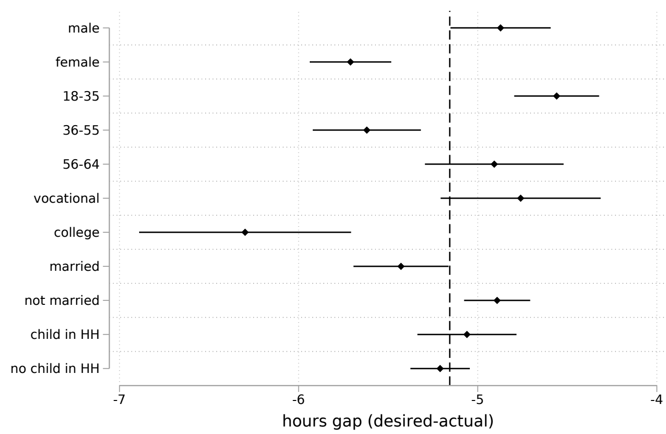
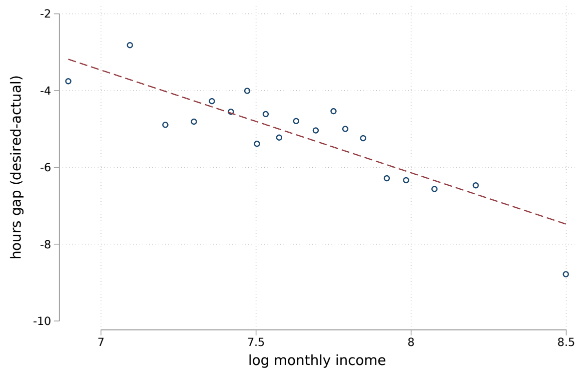


Figure 3: Average Hours Gaps for Different Demographic Groups

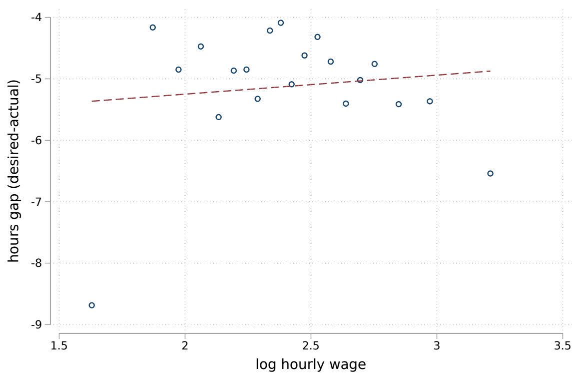
Notes: Group means of the gap between desired and actual hours for our main sample in the 2019 SOEP data. Vertical dashed line indicates overall mean of -5.16 hours per week.

We next turn to heterogeneity by income. Figure 4a offers a binscatter of the mean hours gap against net monthly labor income. High-income workers are more overworked. Notably, the variation in hours gaps across income is far larger than the variation across other observables depicted in the previous figure. In particular, those with incomes around 5000 euros per month report a weekly hours gap of more than 8 hours, while those with an income of 1000 euros per month report a gap of some 3–4 hours.

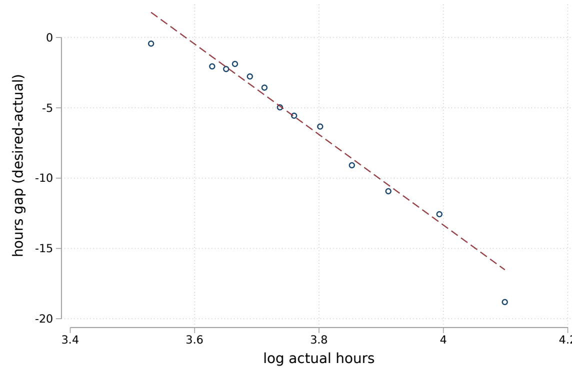
Given the strong relationship between labor income and overwork, it is natural to split income into hours and wages. Figures 4b and 4c show how the hours gap changes across the hourly wage distribution and the hours distribution, respectively. The relationship between income and overwork is clearly driven by hours. High-hours workers have very large hours gaps, with those working 50 hours or more reporting gaps above 10 hours. In



(a)



(b)



(c)

Figure 4: Hours Gap in Germany by Hourly Wage and Hours per Week

Notes: Panel a plots the hours gap for quantiles of the log net monthly labor income distribution for our main sample in the 2019 SOEP data. Panels b and c plot the same object for quantiles of the log hourly wage and log usual hours distributions, respectively.

turn, the relationship between wage and the hours gap is essentially flat across most of the wage distribution. We report the residualized version of these figures in the Appendix (Figure A.1), observing similar patterns but a more positive impact of the wage.

Table 2 shows how the propensity to report overwork and the hours gap vary with observable characteristics in a kitchen sink regression. Men are 12% less likely to report being overworked. Overwork increases with educational attainment and tends to increase with age. Perhaps unsurprisingly, but in line with the simple descriptives above, actual hours worked strongly affects overwork status with a positive but much weaker impact of wages.

	2019		Pooled Sample	
	(1) Overworked	(2) Inverted Hours Gap	(3) Overworked	(4) Inverted Hours Gap
Male	-0.119***	-1.726***	-0.148***	-2.440***
	(-8.51)	(-11.97)	(-52.84)	(-70.78)
36-55	0.0225	0.671***	-0.00648*	0.370***
	(1.48)	(4.29)	(-2.28)	(10.58)
56-64	0.00157	0.533**	-0.0302***	0.510***
	(0.08)	(2.59)	(-6.96)	(9.54)
Vocational Degree	0.0968***	0.535**	0.0881***	0.463***
	(5.56)	(2.97)	(26.30)	(11.20)
College Degree	0.126***	0.879***	0.114***	0.719***
	(5.14)	(3.48)	(20.42)	(10.46)
Married	-0.00854	0.201	0.0144***	0.402***
	(-0.59)	(1.34)	(5.11)	(11.53)
Child in HH	0.0178	-0.149	-0.0169***	-0.0445
	(1.20)	(-0.98)	(-5.25)	(-1.12)
Log Hourly Wage	0.0891***	0.522**	0.112***	0.575***
	(4.69)	(2.67)	(30.76)	(12.80)
Log Actual Hours	1.377***	33.57***	1.019***	26.81***
	(25.38)	(59.03)	(128.55)	(273.27)
N	4946	4879	134615	133368

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2: Overwork and Hours Gaps Regressions

Notes: Columns (1) and (3) report coefficients from a linear probability model of a dummy for overwork on various worker characteristics. Columns (2) and (4) report coefficients from a regression of the inverted hours gap (actual-desired hours) on worker characteristics. Columns (1) and (2) include only the 2019 sample, while Columns (3) and (4) include the entire pooled sample with year fixed effects.

2.4 Desired and Actual Hours Over Time

The SOEP contains the information that we have studied thus far dating back to 1985, so this section asks whether there are any clear time trends in the data. Figure 5 plots both actual (usual) weekly hours along with desired hours as measured previously.

Notably, there is no clear time trend in hours worked for full-time workers over these (almost) four decades (Boppart and Krusell, 2020). Hours rise until the early 2000s and then start falling, with a noticeable drop-off post-COVID. This is why we later calibrate preferences such that income and substitution effects cancel.

Desired hours follow a similar pattern. Perhaps surprisingly, the hours gap has held fairly steady and, if anything, expanded over time, with an average gap of 4–5 hours.

A similar picture emerges if we group workers into three groups: the overworked, the underworked, and those who are where they want to be (defined as those with an absolute hours gap weakly less than one hour). Figure 6 plots the results. There is a mild trend in the propensity to report overwork, with the share rising from some 60% in the late 1980s to approximately 75% in 2021. The fraction of underworked individuals has fallen fairly steadily, albeit little, since the mid 1990s.

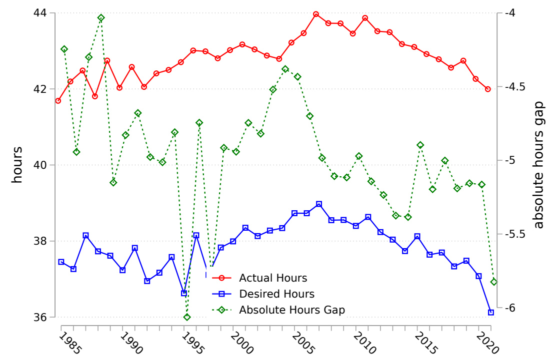


Figure 5: Actual Hours, Desired Hours, and the Hours Gap over Time

Notes: Mean actual (red) and desired (blue) weekly hours and the mean hours gap (green) in Germany from 1985–2021.

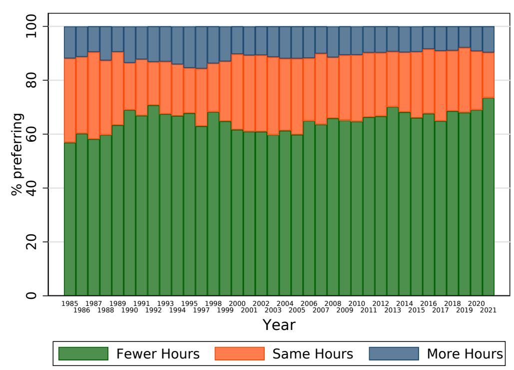


Figure 6: Overwork and Underwork over Time

Notes: Fraction of German full-time workers desiring more hours (hours gap ≥ 1), fewer hours (hours gap ≤ -1), and the same amount of hours (hours gap $< |1|$) over time.

2.5 Other Datasets

Appendix B discusses reasons that we suspect explain why evidence from the German "Mikrozensus" differs starkly from these patterns. Appendix C.1 reports results from the British BHPS, including the exact phrasing of the question we build on there. An important difference is that this question is categorical rather than continuously eliciting desired hours. The key results look similar in the cross-section and over time (compare Figures 6 and C.1) to what we find in the SOEP.

Appendix C.2 reports results for the US from a survey we fielded along with the RTP (Bick and Blandin, 2023). We complement these with some observations from CPS supplements from 1985 and 2001. In short, our US results are strikingly different from the patterns in Germany and the UK and instead align with Lachowska et al. (2023) who find that US workers seek higher hours. This is clearly important, particularly for work investigating the origins of over- or underwork. It is also in line with the body of work that documents sharp differences for all things "labor supply" between the US and Europe (Prescott, 2004; Alesina et al., 2005). An investigation of these differences is beyond the scope of this paper, and we focus on Germany in the remainder.

3 Welfare

The previous section documents wedges between self-reported desired and actual hours worked. This section combines these observations with a simple, static model of labor supply à la MaCurdy (1981). This allows us to translate these wedges into a dollar equivalent via basic WTP calculations. Consequently, we can measure both the aggregate damage and distributional impact of the documented wedges. The same strategy allows us to assess the implications of counterfactual allocations, in the aggregate and the cross-section.

Preferences and Budget Set Denote individual hours worked by h and consumption by c. We work with a version of MaCurdy (1981) preferences,

$$U_i(c,h) = \frac{1}{1+\eta}c^{1+\eta} - \frac{\beta_i}{1+\gamma}h^{1+\gamma}, \tag{1}$$

allowing for heterogeneity across individuals i in the distaste for work, β_i.

Denote desired hours as h_i^* and the individual's current wage as w_i. Following our interpretation of the survey evidence above, desired hours maximize static utility subject to a linear budget constraint,

$$h_i^* = \arg\max_h U_i(c,h) \text{ s.t. } c = w_i h, \tag{2}$$

with the worker taking the wage w_i as given. Since desired hours h_i^* may not equal actual hours worked h_i, the corresponding desired consumption c_i^* may *not* equal actual consumption, except in the case where $h_i^* = h_i$.

The first-order condition yields

$$\log h_i^* = \frac{1+\eta}{\gamma-\eta}\log w_i - \frac{1}{\gamma-\eta}\log\beta_i \tag{3}$$

It immediately follows that, given values η and γ, we can fit an individual's labor supply curve through her reported desired hours via the appropriate choice of β_i. Since our main analysis only uses a single cross-section (for 2019), it is simple to connect the data on desired hours and wages with this static model.

In Appendix E.2, we repeat the welfare analysis with a fully dynamic, complete-markets version of this framework à la Keane and Rogerson (2012). The Appendix also shows how we introduce measurement error to connect the dynamic model with the full panel data we have available.

Calibration We set $\eta = -1$ (log preferences over consumption) to obtain a zero Marshallian (or uncompensated) labor supply elasticity. In other words, income and substitution effects cancel. This is motivated by the aforementioned observation that we see no clear time trend in both desired and actual hours in Germany among full-time workers since the 1980s. It thus follows that any cross-sectional variation in desired hours fully loads on preferences, with no role for wages.

It is straightforward to verify via the Slutsky equation that $\gamma - \eta$ equals the inverse of the Hicksian (or compensated) labor supply elasticity when non-labor income is small (see Appendix D). We thus set $\gamma = 2$ (Chetty et al., 2011) and offer robustness checks below.

Appendix Figure A.2 visualizes what results from fitting (3) given this calibration. It plots the distribution of the implied individual marginal rates of substitution relative to the after-tax real wage. In line with the overwork phenomenon previously documented, the average implied marginal rate of substitution is well above 1, with a mean of 1.55. The Appendix briefly relates this to the large macroeconomic literature on the labor wedge.

Willingness to Pay (WTP) We denote individual i's WTP to work some counterfactual hours $\tilde{h}_i$ by $\sigma_i(\tilde{h}_i)$ where σ_i depends on an individual's leisure preference β_i, her wage w_i, and her actual hours h_i, which we suppress for brevity. It satisfies

$$U_i\left(w_i\tilde{h}_i - \sigma_i\left(\tilde{h}_i\right), \tilde{h}_i\right) = U_i\left(w_i h_i, h_i\right). \tag{4}$$

Of course, the WTP may well be negative. Aggregating across $i = 1, ..., N$ individuals, we have that the total (utilitarian) welfare gains (or losses) from some counterfactual hours allocation $\tilde{\mathbf{h}} = \{\tilde{h}_i\}_{i \in N}$ are

$$W\left(\tilde{\mathbf{h}}\right) = \sum_i^N \sigma_i\left(\tilde{h}_i\right)/N. \tag{5}$$

Discussion of Linear Budget Set Assumption The problem in (2) posits a linear budget set. This raises two related questions. First, is this what workers actually have in mind when answering the hypothetical, given how the survey questions are phrased? Second, even if they do, is this actually feasible in the sense that firms would be willing to hire them at that pay?

We tackle the second question in Section 6. There, we follow Bick et al. (2022) and investigate the empirical relationship between hours and wages in Germany. We then contrast the empirical wage–hours schedule with the assumed linear budget set to calculate an aggregate surplus or shortfall relative to our baseline as described in detail below. Regarding the first question, we maintain throughout that workers interpret the survey question as hypothesizing a linear budget set. This appears to be the most natural reading of the phrasing across the datasets we consider. In principle, however, one could also replace the linear budget constraint in (2) with that measured in Section 6 and proceed from there. While we do not expect that the results would change substantially, it also strikes us as far-fetched that this would indeed be what the survey respondents have in mind, both in light of the phrasing of the questions and the informational requirements.

4 Welfare Cost of Observed Wedges

Before computing the potential gains attained by any policy, we can assess the costs associated with the wedges in the current allocation by computing each individual's WTP to move from the observed to the desired allocation. This also constitutes an upper bound on the welfare gains that can be obtained with any policy such as an hours constraint and is hence a useful benchmark.

Figure 7 plots, for the 2019 SOEP data, the cross-sectional distribution of $\sigma\left(h_i^*\right)$, that is, the WTP to move to one's desired hours given the estimated preferences (1). All values are expressed in *weekly* 2015 euros. As we would expect from the distribution of the hours wedges reported above, approximately one-quarter of the workforce is exactly on their labor supply curve, with their WTP equal to zero. Another quarter is sufficiently close such that the median weekly WTP is only approximately 7.9 euros. However, the mean of approximately 28.2 euros far exceeds this since there is a sizable group of workers that is considerably over- (or under-)worked. Contrasting these values with the average net weekly labor income of 510 euros in our sample suggests room for substantive welfare gains from policies aimed at reducing wedges between desired and actual hours worked.

Figure 8 examines how WTP correlates with observable group characteristics. The qualitative patterns align with the distribution of the hours wedges reported in Section

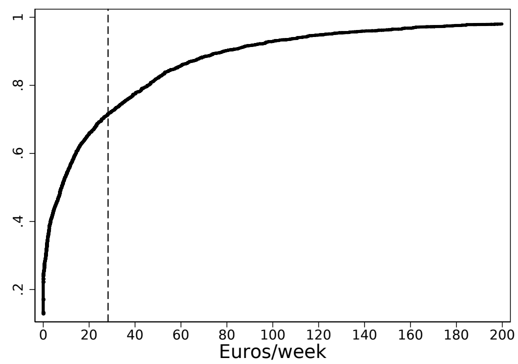


Figure 7: Distribution of WTP to Work Desired Instead of Actual Hours

Notes: Distribution of $\sigma\left(h_i^*\right)$, defined in (5), in 2019. Values expressed in weekly 2015 euros. The vertical line indicates a mean of 28.2.

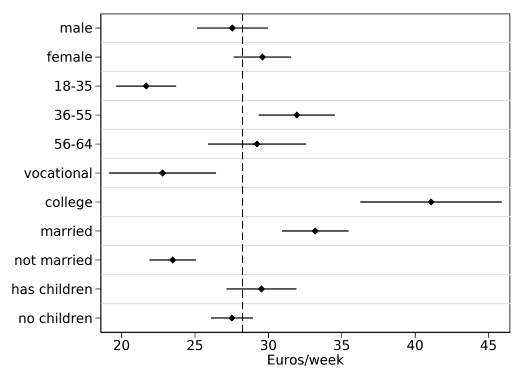


Figure 8: WTP to Work Desired Instead of Actual Hours by Observables

Notes: Group means of $\sigma\left(h_i^*\right)$, defined in (5), in 2019. Values expressed in weekly 2015 euros. The vertical line indicates a mean of 28.2.

2. One noteworthy observation is that well-off groups, such as college-educated workers, are willing to pay substantively more to undo their wedges. This might reflect differences in the individual-level wedges underlying these aggregates, but it also reflects differences in pay. In either case, it foreshadows the finding below that shortening the length of the workweek turns out to be a regressive policy.

5 Counterfactuals: A Shorter Workweek

This section conducts several exercises meant to capture policies to cap hours worked in the German labor market. To do so, we assume an initial hours constraint of 48 hours per week, the current weekly hours cap in Germany (see the discussion around Figure 1).[7] We then tighten this constraint to model a shorter workweek and construct a corresponding hours allocation across individuals. We aggregate the effects using the WTP approach described in the previous section. The next section discusses the details of these two steps.

Constructing Counterfactual Hours We consider scenarios where the length of the workweek falls from 48 to some number $\bar{h} \in \{47, 46.., 31, 30\}$. We then need to take a stance on the resulting change in hours at the individual level. Denote the counterfactual hours worked under different hours caps by $\tilde{h}_i\left(\bar{h}\right)$ and the full vector by $\tilde{\mathbf{h}}_{\bar{h}}$.

To construct these, it is natural to distinguish among three groups of workers. The first has current hours below any newly implemented constraint. For this group, the most natural assumption is that hours are unaffected, as the constraint is not binding.

The second group features hours between the new and the old constraints, that is, between 48 and a candidate $\bar{h}$. For this group, the new constraint binds, and so we assume that they work $\bar{h}$ hours. This is the only place where the assumption of an initial hours cap of 48 hours matters, since it determines who is in this second group versus the third group, which we describe next.

The third group has usual hours above the initial constraint, $h_i > 48$. While the counterfactual hours for the first two groups appear mostly uncontroversial, it is not a priori clear to what extent a shorter workweek would affect the hours of those who do not currently seem to be bound by any existing constraint. The impact of tighter hours caps on this last group ultimately depends on the behavior of policymakers and regulators, and the quantitative exercises therefore consider three different cases, ranked in decreasing order of strictness.

Case 1. The new constraint strictly binds for all workers currently working higher hours, so everyone in this group works $\bar{h}$ under the new cap.

Case 2. Individuals i in the group that currently works strictly above 48 hours work counterfactual hours $h_i - (48 - \bar{h})$ under a new hours cap $\bar{h}$. The underlying idea is, loosely speaking, that these workers now also take "Friday afternoon" off but still work on the weekends as before.

[7] Germany currently limits daily hours worked to 8 and weekly hours worked to 48. See https://www.gesetze-im-internet.de/arbzg/.

Case 3. Individuals in the group that currently works strictly above 48 hours are unaffected. The underlying idea is that if they are not bound by an existing cap, they will also be unaffected by a tightening of any such cap.[8]

5.1 Total Welfare Gains

Figure 9 plots $W\left(\tilde{\mathbf{h}}_{\bar{h}}\right)$, defined in (5), for 2019 for the three different cases above. All three cases tell a similar story. Reducing the hours cap from its current level yields aggregate welfare gains that peak around 37 hours per week. According to these results, the optimal length of the workweek in Germany is approximately 37 hours. When the cap tightens further, this reverts, but even a 4-day, 32-hour workweek still yields positive, albeit small, welfare gains compared with the current policy. Around the optimal length of the workweek of approximately 37 hours, aggregate hours fall between 3 and 6 hours, depending on the strictness of the policy.

The optimal policy yields welfare gains of up to 23.5 euros per worker and week, which, back-of-the-envelope, equals some 1.6% of GDP. Even in the most conservative case, where the policy has no effect on those currently working above 48 hours, the optimal policy generates over 12.5 euros per worker per week.[9] The previous section found a total welfare cost of hours wedges of 28.2 euros per worker and week (which constitutes an upper bound on the welfare gains of any policy). This suggests that shortening the workweek, despite its bluntness, is highly effective at mitigating the damage from hours mismatch.

Finally, it is interesting to ask whether these patterns have changed over time or held steady. For an answer, we repeat the exercise just described for every year in our sample. The optimal length of the workweek according to this exercise is remarkably stable throughout the four decades covered by our data, for all three cases. The hours cap that attains the maximal utilitarian welfare gains never exceeds 39 hours and never falls below 36.

Robustness

The Appendix offers robustness checks for this exercise. Section E.1 entertains alternative calibrations for the labor supply elasticity. While the optimal length of the workweek is

[8] In 2000–2002, France implemented a policy that tightened the hours cap from 39 to 35 hours per week (a policy referred to as Aubry I and II). The distribution of hours pre- and post-reform points to Case 3 as the relevant case—see Table 2 in Estevão and Sa (2006).

[9] The discrete jump in welfare for Case 1 at 48 hours relative to Cases 2–3 reflects that this case assumes a strictly binding constraint for all workers, which does not hold empirically at the current cap of 48 hours.

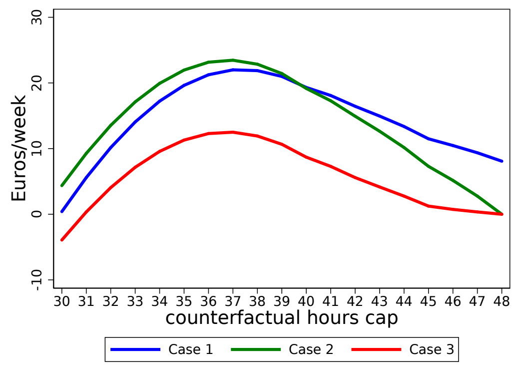


Figure 9: Average Willingness to Pay for A Shorter Workweek

Notes: Mean willingness to pay (in 2015 euros per week) in 2019 for a workweek capped between $\bar{h} = 30$ and $\bar{h} = 48$ hours. See main text for definition of cases.

unchanged, the welfare gains rise (shrink) by 25% (60%) when labor supply is less (more) elastic, corresponding to bounds on the intensive Hicksian elasticity reported in Chetty (2012). This is intuitive, as inelastic individuals place a higher value on being closer to their desired allocation.

Appendix Section E.2 introduces and estimates the aforementioned dynamic model. Figure E.2 shows how the main results change relative to the static framework. The main message is similar, but the dynamic model yields welfare gains that are approximately 20% lower for the optimal policy, which is 36 hours, one hour tighter than in the static model. Importantly, the static model generates large wealth effects from variation in hours because changes in hours are essentially permanent. Our implementation of the dynamic formulation presents the opposite extreme, with small wealth effects because variation in hours is short-lived by assumption. It is reassuring that both of these extremes send the same quantitative message.

Finally, Appendix E.3 considers the mean *absolute* hours wedge for various policies. This is effectively an equal-weighted alternative to the calculations based on (5), which are weighted by preferences and income. Under this metric, the optimal length of the workweek is between 38 and 40 hours, reducing the mean absolute gap between desired and actual hours by approximately 2 hours.

5.2 Distributional Consequences

The results in the previous section represented *aggregated* WTP measures. Of course, these mask heterogeneity in the population in terms of the desirability of a tighter hours cap. To explore this heterogeneity, Figures 10 and 11 present the WTP across observables. We

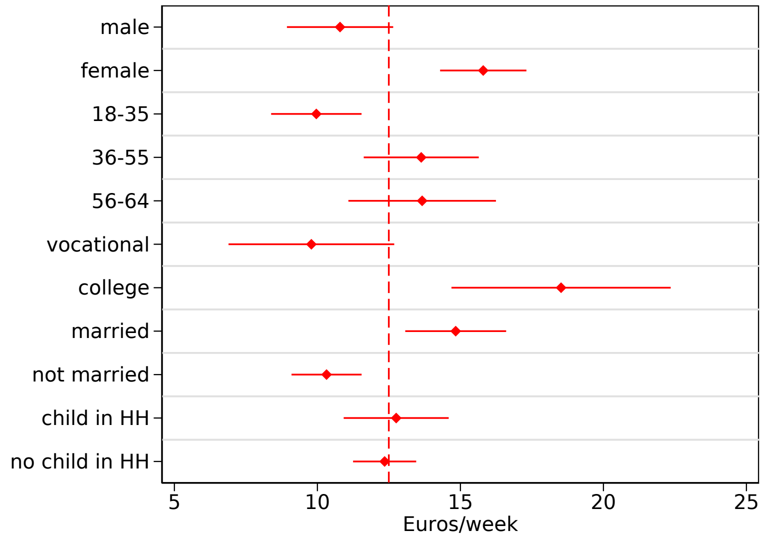
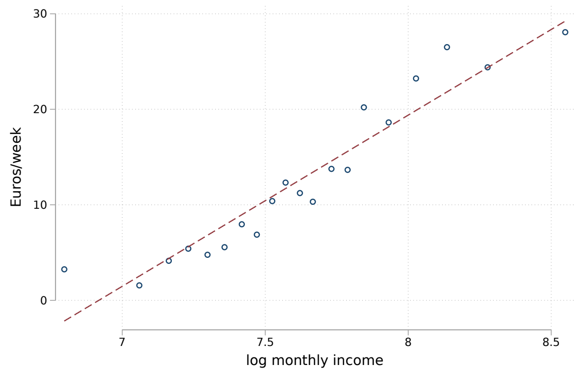


Figure 10: Willingness to Pay for A Shorter Workweek at Optimum (Case 3)

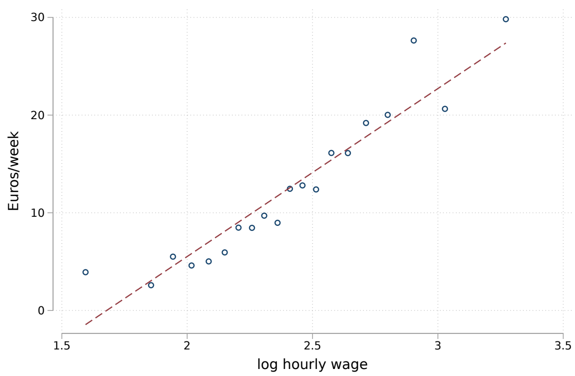
Notes: Group means of willingness to pay (in 2015 euros per week) for the optimal workweek for Case 3 in 2019 (37 hours). The vertical line indicates a mean of 12.5.

focus on the conservative Case 3, but the results look very similar for the other two cases.

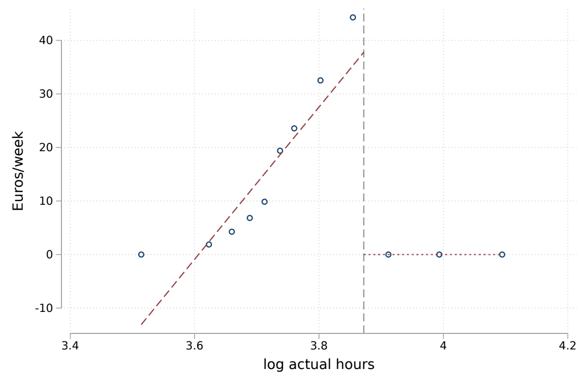
Figure 10 reports the average WTP for various demographic groups. The gains are more pronounced for women, whose welfare gains from a 37-hour workweek are 45% higher than those of men. Similarly, the gains to college workers are almost twice those of vocational workers. Married workers gain relatively more than singles, as do middle-aged and older workers compared with the young. Households with and without children derive very similar gains.



(a)



(b)



(c)

Figure 11: WTP Heterogeneity by Income, Wage, and Hours (Case 3)

Notes: Panel a plots mean willingness to pay (in 2015 euros per week) for the optimal workweek for Case 3 in 2019 (37 hours) for quantiles of the log net monthly labor income distribution. Panels b and c plot the same object for quantiles of the log hourly wage and log actual hours distributions, respectively.

Figure 11 shows how the gains vary with net (log) monthly labor income. The gains are increasing in income, as the analysis of the hours wedges above suggested. We again decompose this into the separate roles of wage and hours, noting that workers currently working above 48 hours are unaffected by assumption (Case 3). We find a strongly positive role for both wages and hours.

Overall, this section shows that policies that shorten the workweek have a regressive flavor. While almost all groups benefit, the gains are particularly pronounced among highly educated workers with high incomes and wages.

6 Feasibility

We have implicitly treated the counterfactual allocations considered thus far as feasible in two different ways. First, we assumed that firms were willing to employ each worker in our data at the same wage rate but with counterfactual (reduced) hours. Second, we assumed away additional considerations that might be policy-relevant from a resource perspective. In particular, income earned by capital and transfers funded by taxes on labor income are likely to fall when aggregate hours fall. This section extends the analysis to integrate these considerations.

6.1 Hours and Wages

We follow Bick et al. (2022) in investigating the cross-sectional relationship between hours and wages in our data. The idea is then to apply the corresponding cross-sectional wage–hours relationship to the individual hours changes under a particular policy. Loosely speaking, if productivity rises as workers work reduced hours, then there are gains we have yet to account for. The opposite is the case if productivity falls or if a fraction of the workweek is spent on unproductive, fixed-cost-type activities.[10] We first turn to measurement and then discuss in detail how we adjust the counterfactuals.

6.1.1 Hours and Wages in the SOEP

Bick et al. (2022) find an inverse U-shaped relationship between hours and wages in the cross-section in the United States. Wages increase in hours, peak at 50 hours per week, and then start declining. We begin by replicating their main exercise exactly in our dataset. We then adapt the exercise to our setting.

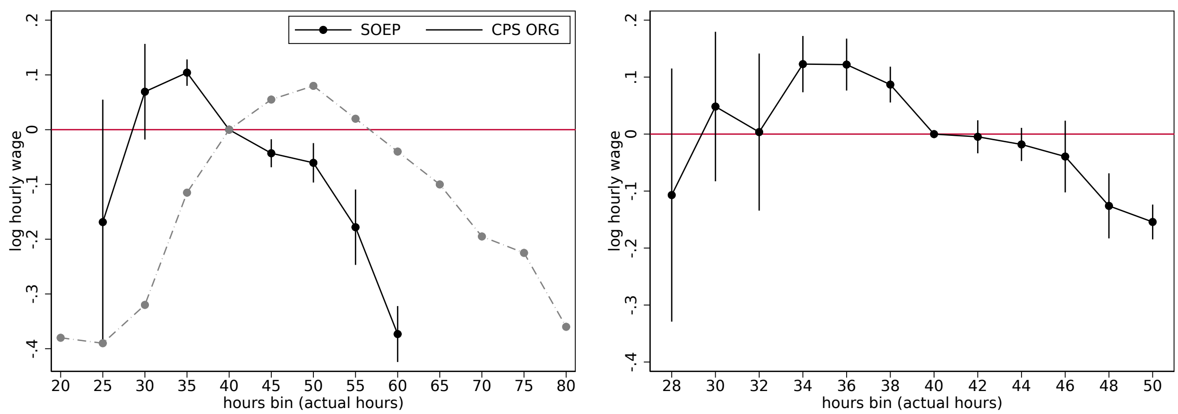
First, we partition the range of weekly hours in the SOEP data for 2019 into bins, represented by the set H. We define a set of individual hours dummies $\mathbb{1}_{ih}$ that equal 1 if individual i's actual hours lie in bin $h \in H$. Then, we run the following regression:

$$log\left(w_i\right) = \alpha + \sum \zeta_h \mathbb{1}_{ih} + \eta X_i + \epsilon_i \tag{6}$$

where X is a vector of controls. To replicate the analysis in Bick et al. (2022), we partition workers into the following 8 bins: $\{0-29, 30-34, ..., 55-59, 60-99\}$.[11] We use the

[10] See Hornstein and Prescott (1993) for such an argument and Prescott et al. (2009) for a related discussion.

[11] We use fewer bins covering the tails than Bick et al. (2022) because the distribution of hours in our sample is much more compressed, partially due to the full-time worker restriction.



(a) (b)

Figure 12: The Wage–Hours Schedule

Notes: Difference in log wages at different hours (relative to 40 hours), based on (6). Panel a plots the replication of the main exercise from Bick et al. (2022) in the SOEP data, which uses five-hour bins and identical controls to that paper. It also plots the results from Bick et al. (2022), eyeballed off their paper. Panel b plots the version of that analysis adapted for our purposes, using two-hour bins centered on the part of the hours support central to our analysis.

same vector of controls X, to the extent that they are available in our data. These include a quadratic in age, education dummies, marital status, sector of employment, and union membership. As shown in Figure 12a, this exercise produces an inverse U shape in the wage–hours relation similar to that found in Bick et al. (2022). However, the schedule in the SOEP data is shifted significantly to the left, with the maximum being reached in the 35-hour bin as opposed to the 50-hour bin in the US data.

Our counterfactual policies vary in increments of one hour. To adapt the Bick et al. (2022) analysis to our setting, we use finer two-hour bins and focus on the section of the hours support where the policies we consider actually change hours, hence 12 bins: $\{0-29, 30-31, ..., 48-49, 50-99\}$.[12] As depicted in Figure 12b, this leaves the key patterns quantitatively unchanged. Hourly wages reach a maximum between 34 and 36 hours and monotonically decrease thereafter. Of course, the key observation is that the majority of the hours changes induced through the policies that appeared optimal in the analysis above fall into the decreasing portion of the wage–hours schedule.

Discussion of Sorting and Bias The cross-sectional wage–hours relationship as constructed in the previous section might partially reflect the sorting of unobserved worker types into different hours. In fact, Bick et al. (2022) emphasize this and combine their es-

[12]For consistency, we also use the same vector of controls X used above as opposed to those used in the replication, but the results are not sensitive to the change in controls.

timates with a structural model of labor supply to construct an underlying within-person wage–hours function, which is the relevant object for our exercise. They find positive sorting—as one might expect—with high unobserved (productivity) types sorting into high hours. Crucially, this means that the true within-person wage–hours function is tilted downwards relative to the cross-sectional schedule in Figure (see Bick et al. (2022) Figure 6B). The reason is that the cross-sectional schedule picks up that the unobserved worker (productivity) type improves as hours increase.

Specifically, suppose that, in some counterfactual, a worker reduces hours from 46 to 36. Ignoring sorting, Figure 12b suggests that her wage should rise by approximately 15%. This is exactly how we proceed in the next subsection. The previous paragraph argues that 15% is a lower bound because, as workers are sorted positively in the cross-section, the within-person rise in wages from reducing hours from 46 to 36 should be even higher.

6.1.2 Using the Wage–Hours Schedule to Assess Feasibility

To begin with, observe that, in parts where the wage–hours schedule is decreasing in hours, a counterfactual allocation that lowers hours at the same pay, however exactly implemented, is feasible from a resource perspective. In fact, there is a surplus accruing to the employer that could be taxed. In turn, reducing hours at the same pay in parts of the hours–wages schedule where it is increasing in hours might not be feasible, and hence there is a shortfall. Firms might need to be subsidized, or the worker would need to accept a wage cut to remain employed at reduced hours. To account for how these considerations affect our headline welfare results, we proceed as follows.

Slightly abusing notation, let $w(h)$ denote the wage–hours schedule. Individually, the surplus or shortfall between counterfactual and feasible is $\tilde{h}_i \left(w\left(\tilde{h}_i\right) - w\left(h_i\right)\right)$. To assess the aggregate effect of these considerations, we sum over workers,

$$S(\tilde{\mathbf{h}}) = \sum_i \tilde{h}_i \left(w\left(\tilde{h}_i\right) - w\left(h_i\right)\right) \approx \sum_i \tilde{h}_i w_i \left[\log\left(w\left(\tilde{h}_i\right)\right) - \log\left(w\left(h_i\right)\right)\right]. \tag{7}$$

The term in squared brackets can be read directly off the wage–hours schedule reported in Figure 12b.

In Figure 13, we report our results. Specifically, we report the total surplus or shortfall $S(\tilde{\mathbf{h}}_{\bar{h}})$ according to (7), again expressed in weekly euros per worker, associated with a range of weekly hours caps. The counterfactual hours vector $\tilde{\mathbf{h}}_{\bar{h}}$ associated with an hours cap $\bar{h}$ is constructed as before; see Section 5.

Qualitatively, the figure shows an additional surplus for moderate hours caps that

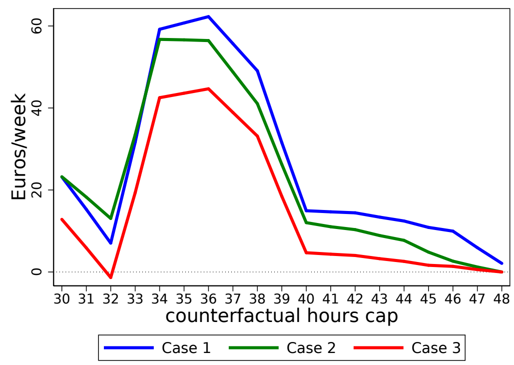


Figure 13: Surplus/Shortfall when Applying Empirical Wage–Hours Schedule

Notes: Average surplus/shortfall (in 2015 euros per week) computed according to (7) in 2019 for a workweek capped between 30 and 48 hours.

peaks at 34–36 hours. For tighter hours caps, this is undone, turning into a shortfall for tight hours caps around 32 hours for the conservative case. This pattern is not surprising in light of the inverse U shape of the empirical wage–hours schedule constructed in the previous subsection. A moderate weekly hours cap of 37 hours reduces hours exclusively in the region where the wage–hours schedule is declining, hence yielding surplus according to this analysis. As the hours cap tightens, hours are increasingly shifted into the increasing region of the wage–hours schedule, reversing the gains.

Quantitatively, recall from Figure 9 that the optimal hours cap of approximately 37 hours under a constant wage–hours relationship yields gains of between 12 and 23 euros per worker per week. The additional surplus generated under the empirical wage–hours schedule in Figure 13 is thus very substantial, despite the calculations being conservative in the presence of positive sorting on hours.

6.2 Macro Losses

An important observation is that when total hours worked fall, total income falls by more than what is internalized by the survey respondents studied above. In particular, two aspects stand out. First, when capital lies idle because all workers "head into the weekend" at an earlier time, then the average product of capital declines as long as capital and labor are not perfect substitutes. Second, some of the output that has thus far been produced on "Friday afternoon" was being transferred to others, via taxes and social security contributions, which are pay-as-you-go in Germany and most other places; the survey respondents explicitly discuss their desired hours in relation to *net* wages.

We therefore turn to a simple aggregate CES production function to provide a back-of-the-envelope calculation of the overall output reduction that would result from the counterfactual hours we considered above. The idea is then to net out from this overall output reduction the part that has already been accounted for in the welfare calculations in Section 5.1, namely a reduction in after-tax labor earnings proportional to the individual hours reduction. The resulting quantity then constitutes the not-yet-accounted-for losses, and so we subtract it from the aggregate welfare gains computed above.

To implement this, assume that aggregate output is given by

$$Y = \left(\alpha K^{\rho} + (1-\alpha) L^{\rho}\right)^{\frac{1}{\rho}}. \tag{8}$$

where L is total effective labor, and workers are perfect substitutes with different efficiency units of human capital. Denote, as before, by $\tilde{h}_i\left(\bar{h}\right)$ individual i's counterfactual hours associated with a particular hours cap $\bar{h}$. Denote by $\tilde{L}$ and $\tilde{Y}$ the aggregates corresponding to some counterfactual allocation.

Furthermore, assume that capital K is in perfectly inelastic supply and capital markets are frictionless, with capital being paid its marginal product. From the latter, it follows that

$$\alpha \left(\frac{K}{Y}\right)^{\rho-1} = r$$

and so the capital share of income is given by $\alpha_K \equiv \frac{rK}{Y} = \alpha\left(\frac{K}{Y}\right)^{\rho}$. Dividing the production function through by Y, we have that $1 = \alpha\left(\frac{K}{Y}\right)^{\rho} + (1-\alpha)\left(\frac{L}{Y}\right)^{\rho}$. This equation holds independently of whether labor is paid its marginal product or not, and at all times. Therefore,

$$1 = \alpha\left(\frac{K}{Y}\right)^{\rho} + (1-\alpha)\left(\frac{L}{Y}\right)^{\rho} = \alpha\left(\frac{K}{\tilde{Y}}\right)^{\rho} + (1-\alpha)\left(\frac{\tilde{L}}{\tilde{Y}}\right)^{\rho} \tag{9}$$

where we use that $\tilde{K} = K$ by assumption.

Next, define $s_Y \equiv \frac{\tilde{Y}}{Y}$ and the change in *effective* labor, $s_L \equiv \frac{\tilde{L}}{L} = \frac{\sum_i \tilde{w}_i\left(\tilde{h}_i\left(\bar{h}\right)\right)\tilde{h}_i\left(\bar{h}\right)}{\sum_i w_i h_i}$. We emphasize that the numerator allows for the wage and hence the amount of efficiency units entering the labor aggregate L to move with counterfactual hours. When we construct that counterfactual wage associated with counterfactual hours, $\tilde{w}_i\left(\tilde{h}_i\left(\bar{h}\right)\right)$, we proceed exactly as in the previous subsection, employing the empirical relationship between hours and wages obtained via (6). Importantly, proceeding like this means that the considerations from the previous subsection—labor productivity changing as hours change—are already fully accounted for.

Next, the total percent reduction in GDP associated with some change in total hours can be written as[13]

$$\frac{\Delta Y}{Y} = s_Y - 1 = \left(s_L^\rho + \alpha_K[1 - s_L^\rho]\right)^{\frac{1}{\rho}} - 1. \tag{10}$$

Part of the output losses associated with a shorter weekend are already already internalized in the WTP calculations above. The reason is that workers, when we calculate their WTP, perceive a proportional reduction in income. Denote total net labor earnings by Ω. The welfare calculations in Section 5.1 assume that the change in Ω is proportional to the (weighted) hours change, $\Delta\Omega = (1 - \hat{s}_L)\Omega$, with $\hat{s}_L \equiv \frac{\sum_i w_i \tilde{h}_i(\bar{h})}{\sum_i w_i h_i}$. Define the gross labor share of income as α_L and the share of gross labor income paid in taxes as τ. Then, the part of the output losses $\frac{\Delta Y}{Y}$ already accounted for in the WTP calculations above is

$$\frac{\Delta\Omega}{Y} = (1 - \hat{s}_L)(1 - \tau)\alpha_L. \tag{11}$$

The idea is then to calculate this object and add it to (10) to obtain the net losses not included in the WTP calculations above. The overall impact is then calculated by combining these additional losses with the net welfare gains perceived by workers as reported in Figure 9.

To do so, we take $\hat{s}_L$ directly from our counterfactual exercises for each case, for the various hours caps. We compute s_L equivalently but under the adjustment following Bick et al. (2022), calculated via (7). We set $\tau = .4$,[14] $\alpha_K = 1/3$ (Karabarbounis and Neiman, 2013), and $\rho = -1$ (Antràs, 2004). We multiply the gains (in 2015 euros) per worker per week according to (5) as reported above by 52, and divide by real GDP/worker in Germany in 2019, which is approximately 78,000 (2015) euros (World Bank, 2025).

The results are in Figure 14. The dashed line gives the average WTP in Case 3, according to (5), the same as in Figure 9, but here expressed relative to GDP. The long-dashed line gives the total gross output loss according to (10). This part is negative but perhaps not as much as one would expect—the reason being the large productivity increases from shorter hours (see Figure 13). The short-dashed "correction term" represents (11). The solid line pulls it all together into the total net welfare effect.

The maximum, according to this, is obtained at 36 hours, and the total gains are now substantially larger at 3.88% of GDP. The primary driver of this result is the sizable productivity gain implied by the empirical wage–hours schedule.

[13] See Appendix F for a derivation.

[14] OECD (2024) reports a total "tax wedge" in Germany in 2023 of 47.9% for singles and 33.1% for families.

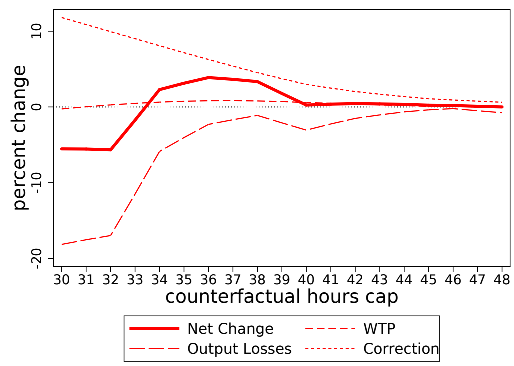


Figure 14: Net Change in Welfare (Case 3)

Notes: Aggregate change in welfare (solid) as a percent of GDP in 2019 for a workweek capped between 30 and 48 hours for Case 3. Decomposed into WTP (dash), output losses (long dash), and a correction term (short dash) as computed via (5), (10), and (11) respectively.

A More Conservative Version

To wrap up, we juxtapose this with a more conservative view. The macro calculations thus far imported the productivity gains implied by the results in the previous subsection, where the downward-sloping wage–hours schedule in the 35–40 hours range implied fairly strong increases in worker productivity in the relevant range. A more conservative view posits instead that the change in total effective labor is proportional to the change in hours, $s_L = \hat{s}_L = \frac{\sum_i w_i \tilde{h}_i(\bar{h})}{\sum_i w_i h_i}$, with all other calculations unaltered.

In this case, the macro considerations we entertain here must unambiguously worsen the impact of the policy. They are just adding losses borne by capital owners and transfer recipients to the equation. The results of doing so are shown in Figure 15. The big difference compared with the previous figure is that the aggregate output losses according to (10) (long dashed) are now far larger, as the aggregate labor input $\tilde{L}$ contracts much more substantially, in particular in the 36–38 hours range. It follows that the overall net welfare change is strictly worse than when viewed just through the WTP calculations. In fact, the policy yields aggregate welfare losses below an hours cap of 43 hours.

We caution that this is conservative not just because we fix productivity but also because we are still in Case 3, not giving the policy a chance to affect workers with very high hours, and because we have assumed that capital is in perfectly inelastic supply. With that said, our main takeaway from the exercise is as follows. The survey-based WTP exercise suggests sizable gains to German workers from tighter hours caps. However, whether these losses constitute a net aggregate gain from a broader, economy-wide perspective or come at the loss of capital owners and transfer recipients depends on whether worker-

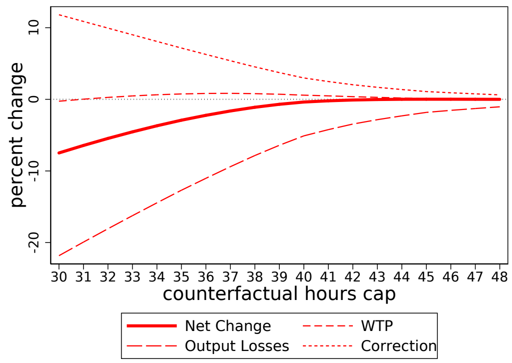


Figure 15: Net Change in Welfare (Case 3) with Proportional Labor Input Changes

Notes: Same as Figure 14 but with $s_L = \hat{s}_L = \frac{\sum_i w_i \tilde{h}_i(\bar{h})}{\sum_i w_i h_i}$.

level productivity rises.

7 Conclusions

This paper explores wedges between how much people work and how much they wish to work—at the same hourly pay rate. In German and UK survey data, workers are systematically overworked, desiring to reduce hours at the same pay. Viewed through a simple model of labor supply, these wedges cause sizable damage and imply sizable gains from policies that shorten the workweek.

We view this approach as a simple, transparent, and easily implementable way of assessing hours constraints—policies that have existed across the globe in various shapes and forms for centuries and are often debated and changed but have, thus far, rarely been studied by economists.

References

Akerlof, George, "The Economics of Caste and of the Rat Race and Other Woeful Tales," *The Quarterly Journal of Economics*, 1976, *90* (4), 599–617.

Alesina, Alberto, Edward Glaeser, and Bruce Sacerdote, "Work and Leisure in the United States and Europe: Why So Different?," *NBER Macroeconomics Annual*, 2005, *20*, 1–64.

Antràs, Pol, “Is the U.S. Aggregate Production Function Cobb-Douglas? New Estimates of the Elasticity of Substitution,” *The B.E. Journal of Macroeconomics*, April 2004, *4* (1), 1–36.

Berger, David, Luigi Bocola, and Alessandro Dovis, “Imperfect risk sharing and the business cycle,” *The Quarterly Journal of Economics*, 2023, *138* (3), 1765–1815.

Bick, Alexander, Adam Blandin, and Richard Rogerson, “Hours and Wages*,” *The Quarterly Journal of Economics*, January 2022, *137* (3), 1901–1962.

_ **and** _ , “Employer reallocation during the COVID-19 pandemic: Validation and application of a do-it-yourself CPS,” *Review of Economic Dynamics*, 2023, *49*, 58–76.

Bloemen, Hans G., “Job Search, Hours Restrictions, and Desired Hours of Work,” *Journal of Labor Economics*, 2008, *26* (1), 137–179.

Boppart, Timo and Per Krusell, “Labor supply in the past, present, and future: a balanced-growth perspective,” *Journal of Political Economy*, 2020, *128* (1), 118–157.

Campbell, Timothy T., “The four-day work week: a chronological, systematic review of the academic literature,” *Management Review Quarterly*, September 2024, *74* (3), 1791–1807.

Carry, Pauline, “The effects of the legal minimum working time on workers, firms and the labor market,” 2022.

Chari, V. V., Patrick J. Kehoe, and Ellen R. McGrattan, “Business Cycle Accounting,” *Econometrica*, May 2007, *75* (3), 781–836.

Chetty, Raj, “Bounds on Elasticities with Optimization Frictions: A Synthesis of Micro and Macro Evidence on Labor Supply,” *Econometrica*, 2012, *80* (3), 969–1018.

_ **, Adam Guren, Day Manoli, and Andrea Weber**, “Are Micro and Macro Labor Supply Elasticities Consistent? A Review of Evidence on the Intensive and Extensive Margins,” *American Economic Review*, May 2011, *101* (3), 471–75.

Eden, Maya, “Time-Inseparable Labor Productivity and the Workweek,” *The Scandinavian Journal of Economics*, 2021, *123* (3), 940–965.

Estevão, Marcello M. and Filipa G Sa, “Are the French Happy with the 35-Hour Workweek?,” 2006.

Fishback, Price, Chris Vickers, and Nicolas L. Ziebarth, "Labor Market Effects of Workweek Restrictions: Evidence from the Great Depression," *American Economic Journal: Macroeconomics*, October 2024, *16* (4), 77–113.

Galí, Jordi, Mark Gertler, and J. David López-Salido, "Markups, Gaps, and the Welfare Costs of Business Fluctuations," *The Review of Economics and Statistics*, November 2007, *89* (1), 44–59.

Glover, Andrew, "A Quantitative Rat Race Theory of Labor Market Dynamics," 2012.

Goldin, Claudia, "Nobel Lecture: An Evolving Economic Force," *American Economic Review*, 2024, *114*, 1515–39.

Gomes, Pedro, *Friday is the new Saturday: How a four-day working week will save the economy*, The History Press, 2021.

Hornstein, Andreas and Edward C Prescott, "The firm and the plant in general equilibrium theory," in "General equilibrium, growth, and trade," Elsevier, 1993, pp. 393–410.

Joly, Josephine, Luke Hurst, David Walsh, and Giulia Carbonaro, "Which countries are embracing a 4-day workweek and how is it going?," *Euronews*, February 2024.

Kahn, Shulamit and Kevin Lang, "The Effect of Hours Constraints on Labor Supply Estimates," *The Review of Economics and Statistics*, 1991, *73* (4), 605–611.

Karabarbounis, Loukas, "The Labor Wedge: MRS vs. MPN," *Review of Economic Dynamics*, April 2014, *17* (2), 206–223.

_ **and Brent Neiman**, "The Global Decline of the Labor Share*," *The Quarterly Journal of Economics*, October 2013, *129* (1), 61–103.

Keane, Michael and Richard Rogerson, "Micro and Macro Labor Supply Elasticities: A Reassessment of Conventional Wisdom," *Journal of Economic Literature*, June 2012, *50* (2), 464–76.

Kelley, Lora, "Is the Shorter Workweek All It Promises to Be?," *The Atlantic*, March 2024.

Kelly, Orla, Juliet Schor, Wen Fan, Tatiana Bezdenezhnykh, Guolin Gu, and Niamh Bridson Hubbard, "The Four Day Week: Assessing global trials of reduced work time with no reduction in pay: Evidence from Ireland," Technical Report, University College Dublin November 2022.

Labanca, Claudio and Dario Pozzoli, "Constraints on Hours within the Firm," *Journal of Labor Economics*, 2022, *40* (2), 473–503.

_ **and** _ , "Hours Constraints and Wage Differentials across Firms," *Journal of Human Resources*, 2023.

Lachowska, Marta, Alexandre Mas, Raffaele Saggio, and Stephen A Woodbury, "Work Hours Mismatch," Working Paper 31205, National Bureau of Economic Research May 2023.

Landers, Renée M., James B. Rebitzer, and Lowell J. Taylor, "Rat Race Redux: Adverse Selection in the Determination of Work Hours in Law Firms," *The American Economic Review*, 1996, *86* (3), 329–348.

Lepinteur, Anthony, "The shorter workweek and worker wellbeing: Evidence from Portugal and France," *Labour Economics*, June 2019, *58*, 204—220.

MaCurdy, Thomas E., "An Empirical Model of Labor Supply in a Life-Cycle Setting," *Journal of Political Economy*, 1981, *89* (6), 1059–1085.

OECD, "Brochure: Taxing Wages 2024: Tax and Gender through the Lens of the Second Earner," Technical Report, OECD Publishing, Paris April 2024.

Osuna, Victoria and José-Victor Rios-Rull, "Implementing the 35 hour workweek by means of overtime taxation," *Review of Economic Dynamics*, 2003, *6* (1), 179–206.

Prescott, Edward C., "Why do Americans work so much more than Europeans?," *Quarterly Review*, 2004, *28* (Jul), 2–13.

_ **, Richard Rogerson, and Johanna Wallenius**, "Lifetime aggregate labor supply with endogenous workweek length," *Review of Economic Dynamics*, 2009, *12* (1), 23–36.

Rebitzer, James B. and Lowell J. Taylor, "Efficiency Wages and Employment Rents: The Employer-Size Wage Effect in the Job Market for Lawyers," *Journal of Labor Economics*, 1995, *13* (4), 678–708.

Shimer, Robert, "Convergence in Macroeconomics: The Labor Wedge," *American Economic Journal: Macroeconomics*, January 2009, *1* (1), 280–97.

_ , "Convergence in Macroeconomics: The Labor Wedge," *American Economic Journal: Macroeconomics*, 2009, *1* (1), 280–297.

Sorkin, Isaac, "Ranking firms using revealed preference," *The quarterly journal of economics*, 2018, *133* (3), 1331–1393.

World Bank, "GDP per person employed (constant 2021 PPP $) - Germany," https://data.worldbank.org/indicator/SL.GDP.PCAP.EM.KD?locations=DE 2025.

XING, "XING Arbeitsmarktreport 2024," https://new-work.se/NWSE/Presse/2024/Arbeitsmarktreport%202024%20DE/Pressematerial%20Arbeitsmarktreport%202024%20Deutschland.zip 2024.

APPENDIX

A Additional Material for SOEP

A.1 Data and Descriptives

Selection	N (2019)	N (Pooled Sample)
Original Sample	28398	724542
Working Age	22994	593210
Full-Time	10517	288794
Not Self-Employed	8708	258676
Reports Actual Hours	8526	250445
Reports Desired Hours	8388	224951

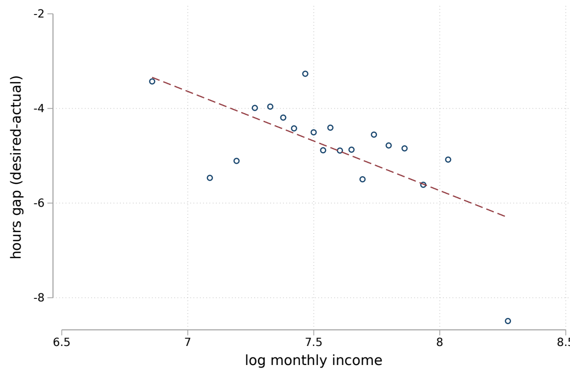
Table A.1: SOEP Sample Selection

Notes: This table presents the evolution of the pooled sample and 2019 sample between each step in the sample selection.

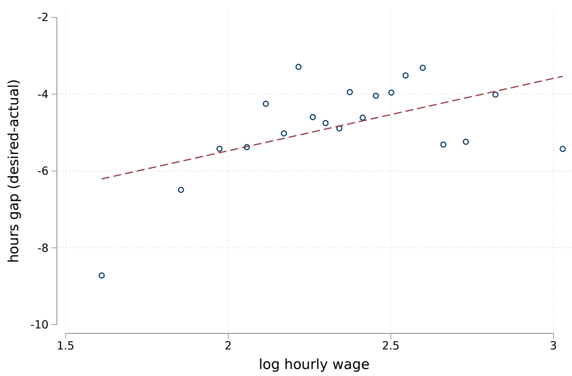
A.2 Estimation

Figure A.2 plots the distribution of the marginal rate of substitution (MRS) between consumption and leisure relative to the after-tax real wage reported in the data. Of course, the two are equated under desired hours by construction. Consistent with the large incidence of overwork, our empirical strategy gives a mean of 1.55, a large mass at 1, and little mass below.

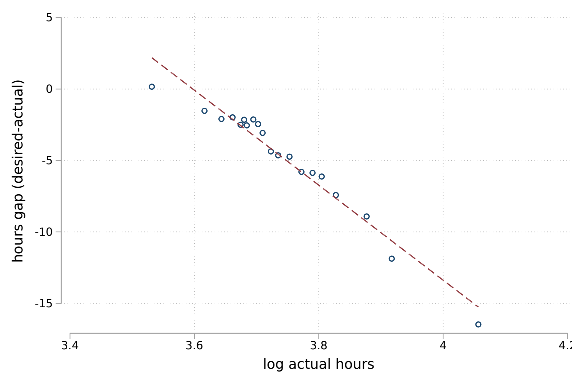
This is related to a longstanding literature in macroeconomics that measures the labor wedge (Shimer, 2009b), defined as the gap between the marginal product of labor (MPN) and the MRS between leisure and consumption. A subset of this literature decomposes the total wedge into a wedge coming from the firm's side (because the MPN is not equal to the real wage) and a wedge coming from the workers' side (because the tax-adjusted MRS is not equal to the real wage paid by the firm; see Galí et al. (2007) or Karabarbounis (2014)). In Figure A.2 we report the direct counterpart to this worker-side wedge. Karabarbounis (2014) finds that the worker-side wedge seems to be relatively more important in explaining movements in the labor wedge at business-cycle frequencies. While we are not focused on cyclical movements in the worker wedge, our exercise clearly delivers an aggregate, worker-side wedge that could be studied at business-cycle frequencies using a more direct, complementary measurement approach to the labor wedge based on survey data.



(a)



(b)



(c)

Figure A.1: Hours Gap in Germany by Wages and Hours (Residualized)

Notes: Panel a plots the hours gap for quantiles of the log net monthly labor income distribution for our main sample in the SOEP data in 2019. Panels b and c plot the same object for quantiles of the log hourly wage and log usual hours distributions, respectively, residualized using age, sex, education, marital status, and child status. See Figure 4 for the unresidualized counterparts.

B German "Mikrozensus" Data

The German "Mikrozensus" has been asking a similar question to that forming the basis for our analysis in the SOEP for many years. In particular, it asks the following:

"Would you like to reduce your normal weekly working hours with correspondingly lower earnings?".[15] Then, in the next question, it elicits desired hours, conditional on answering "yes" to the previous question. It separately asks, in the same format, whether an individual would like to increase her hours.

[15]This is from the English version of the questionnaire. Google translates the German version of the question identically. For the questionnaires, both English and German versions, see https://www.forschungsdatenzentrum.de/sites/default/files/mz_2019_on-site_eu.pdf.

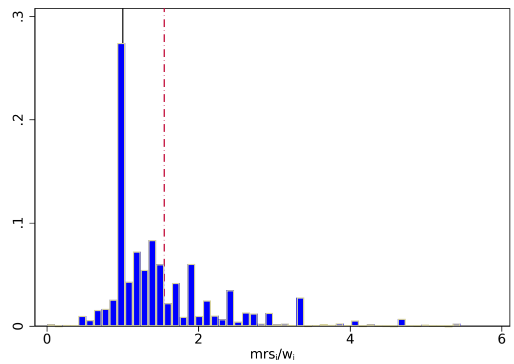


Figure A.2: Individual Labor Wedges

Notes: Estimated distribution of labor wedges, defined as the MRS relative to the post-tax wage w_i. The MRS is calculated using our baseline calibrated γ and η, along with the β_i backed out to fit (3). The underlying distribution is censored above at the 97.5 percentile. The vertical line indicates a mean of 1.55.

We do not have access to the relevant part of the micro-data.[16] The data provider offers tabulations for both questions.[17] According to these tabulations, approximately 90% of workers respond with "no" to both questions in most years, with approximately 5% each expressing a desire to increase or decrease hours.

These patterns are quite different from those observed in the SOEP.[18] They also differ sharply from what we document in the BHPS and in US data where a large fraction of workers reports a desire to either decrease or increase their hours (see Appendix C). The Mikrozensus is a long-standing, high-quality survey, so we assume that these discrepancies are "real".

We suspect that subtle differences in the phrasing of the question explain the patterns. The SOEP, the BHPS, and our US survey all emphasize the hypothetical nature of the question. The SOEP states "If you could choose [...], the BHPS phrasing is "assuming that you would be paid the same amount per hour [...]," and our US survey question begins "Suppose you could [...]" making the hypothetical nature of the question explicit.

In turn, we suspect that the respondents interpret the Mikrozensus question as asking whether they are, in actuality, making active efforts to adjust their hours in either direction. In practice, most people cannot freely adjust their hours (Labanca and Pozzoli (2022, 2023)). The absence of an "Imagine this were possible" preamble would then naturally lead far more people to simply state "no".

[16] We have access to the EU LFS micro-data that, for Germany, are based on the "Mikrozensus". However, the relevant data are amiss for all years, for reasons unknown to us.

[17] https://www.forschungsdatenzentrum.de/sites/default/files/mz_2019_suf_dhb.pdf

[18] A July 2024 survey of 2,000 employed workers in Germany finds that 50% would like to reduce hours, with 34% of workers willing to accept earnings reductions for additional vacation days (XING (2024)). We lack access to the micro-data, and these facts do not exactly compare to the ones we have documented. Orders-of-magnitude-wise they are, however, they are far closer to the patterns we have shown than those in the Mikrozensus.

What then is the "right" question with respect to our research objective? We think it is the hypothetical as it elicits what is desirable in the scenario relevant to the policy debate on a shorter workweek, not what is individually feasible within current workplace constraints.

C Evidence on Desired vs. Actual Hours in the UK and the US

C.1 UK Surveys

BHPS

The British Household Panel Survey (BHPS) is a representative annual household panel administered by the Institute for Social and Economic Research and designed to mimic the US PSID. The survey covers the years 1991–2008, after which it transformed into the UK Household Longitudinal Study (UKLS). The BHPS asked the following question: *"Thinking about the hours you work, assuming that you would be paid the same amount per hour would you prefer to"*

1. *Work fewer hours than you do now*
2. *Work more hours than you do now*
3. *Or carry on working the same number of hours?*
4. *Don't know/can't say*

This question explicitly emphasizes the hypothetical proportionality of earnings to hours. However, unlike the SOEP, the question does not admit continuous answers on the precise number of hours desired. Data from 2009 and beyond are not available because this question was discontinued in the UKLS.

Sample selection for the BHPS proceeds exactly as with SOEP. Table C.1 reports how the sample construction affects its size. Table C.2 presents summary statistics for relevant observables in the weighted pooled sample. Due to differences in the questionnaires, certain variables present in SOEP are not available in the BHPS and vice-versa.

Results for the UK

Figure C.1 plots over- and underwork in the UK over time. As in Germany, few workers in the UK report a desire for higher hours. In turn, a sizable but smaller group of workers (35–40%) is overworked. A larger fraction reports desired hours aligned with actual hours, which may have to do with the categorical (rather than continuous) nature of the question. As in Germany, the overwork patterns are very stable over time.

Selection	N (2008)	N (Pooled Sample)
Original Sample	14419	238996
Working Age	10954	185958
Full-Time	6218	105294
Not Self-Employed	5520	92981
Reports Actual Hours	5520	92981
Reports Overwork	5104	87827

Table C.1: BHPS Sample Selection

Notes: This table presents the evolution of the BHPS sample between each step in the sample selection. See Table A.1 for the SOEP counterpart.

	(1) 2008	(2) Pooled Sample
male	0.61	0.62
age	39.40	37.56
married	0.49	0.54
has children	0.30	0.31
has college degree	0.66	0.48
public sector	0.30	0.27
union workplace	0.49	0.43
union member	0.29	0.28
net monthly labor income	1740.83	1542.93
hourly wage	10.60	9.34
Observations	1730	43994

Table C.2: BHPS Summary Statistics

Notes: Summary statistics for the 2008 sample (Column 1) and the pooled sample (Column 2) in the BHPS data. Values represent weighted sample means. Income and wages are denominated in 2015 pounds. We construct hourly wage by dividing net monthly labor income by 4.33 times usual hours worked per week. See Table 1 for the SOEP counterpart.

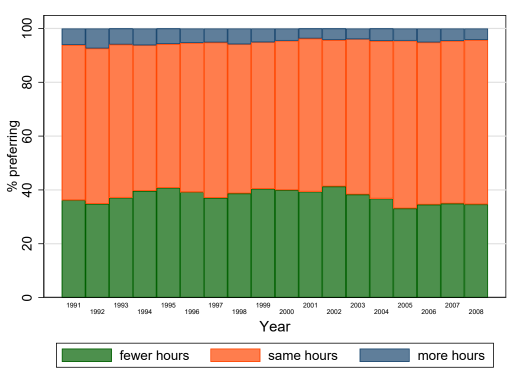


Figure C.1: Overwork and Underwork over Time in the UK

Notes: Fraction of British full-time workers desiring more hours, fewer hours, and the same amount of hours over time. Based on the categorical BHPS question reported in Appendix C.1. See Figure 6 for the SOEP counterpart.

Figure C.2 shows, for 2008, how the propensity to report overwork differs across groups. While there is some heterogeneity across groups, overwork is pervasive, with no group reporting a rate less than 25%. Figure C.3a shows how this proportion varies by income, while Figures C.3c and C.3e decompose income into hourly wage and hours per week. As in the German data, there is substantial heterogeneity in the rate of overwork by income, although this effect is driven more equally by the hourly wage and hours worked. Figures C.3b, C.3d, and C.3f present residualized versions (with respect to worker characteristics) of these figures. In the residualized version, the patterns are largely the same except that the importance of hours worked increases while that of hourly wage declines, as in the German data. Table C.3 reports the results of a linear probability model of the propensity to report overwork by various worker characteristics. Coefficient estimates generally match those in the German data in both sign and significance.

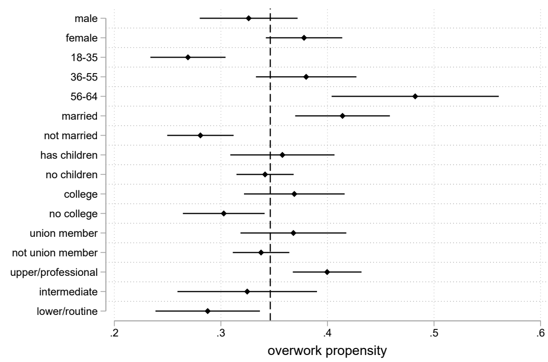


Figure C.2: Overwork Propensity in the UK by Group

Notes: Group rates of overwork for the 2008 BHPS sample. The vertical line indicates a mean of 34.6%. See Figure 3 for the SOEP counterpart.

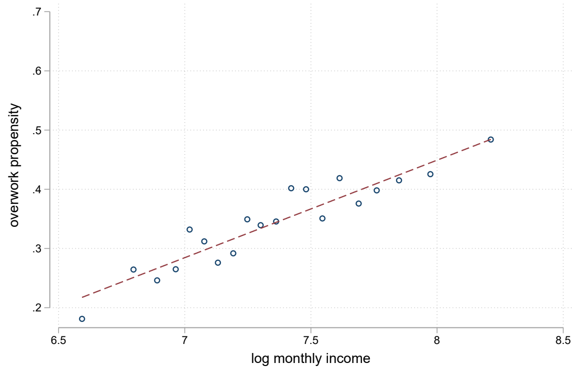
C.2 US Surveys

CPS Work Schedule Supplement

The Current Population Survey (CPS) is a monthly survey of US households conducted by the United States Census Bureau for the Bureau of Labor Statistics. While the standard monthly CPS does not ask about desired work hours or overwork, the 1985 and 2001 CPS Work Schedule Supplements contain a categorical question about about desired hours at the same hourly pay similar to that of the BHPS:

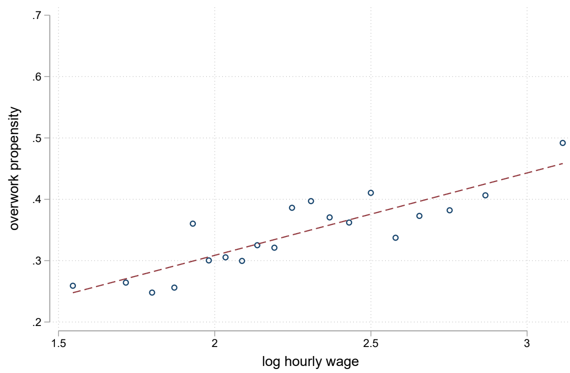
"If you had a choice, would you prefer to work:"

1. *The same number of hours and earn the same money?*
2. *Fewer hours at the same rate of pay and earn less money?*

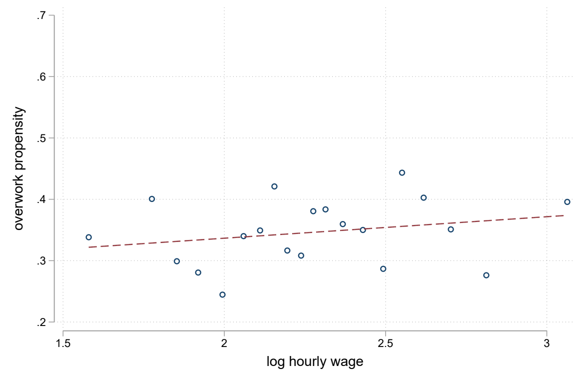


(a)

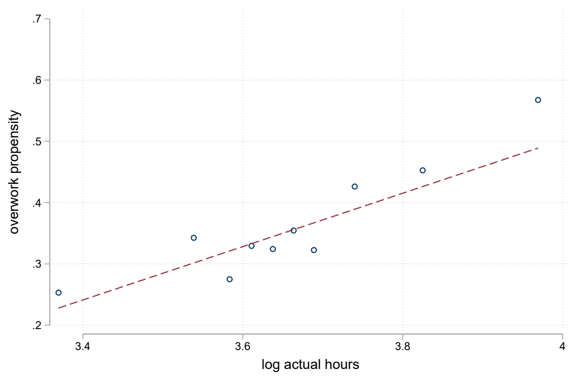
(b)



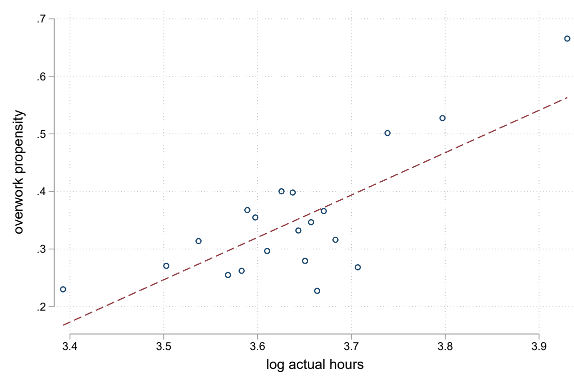
(c)



(d)



(e)



(f)

Figure C.3: Overwork Propensity in the UK by Income, Wage, and Hours

Notes: Panel a plots the overwork propensity for quantiles of the log monthly income distribution for the 2008 BHPS sample. Panels c and e plot the same object for quantiles of the log hourly wage distribution and of the log actual hours distribution, respectively. Panels b, d, and f present the same figures residualized using age, sex, education, marital status, and child status. See Figures 4 and A.1 for the SOEP counterparts.

	2008	Pooled Sample
	(1)	(2)
	Overworked	Overworked
Male	-0.133***	-0.139***
	(-5.37)	(-27.22)
36-55	0.0627*	0.101***
	(2.35)	(19.23)
56-64	0.172***	0.124***
	(3.98)	(13.08)
College Degree	0.0486	0.0156**
	(1.92)	(3.13)
Married	0.0904***	0.0564***
	(3.35)	(10.21)
Child in HH	-0.0132	0.01000
	(-0.48)	(1.80)
Log Hourly Wage	0.0793*	0.135***
	(2.52)	(20.77)
Log Actual Hours	0.741***	0.701***
	(7.23)	(34.90)
N	1672	42481

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.3: UK Overwork Regressions

Notes: Coefficients from a linear probability model of a dummy for overwork on various worker characteristics. Column (1) includes only the 2008 sample, while Column (2) includes the entire pooled sample with year fixed effects. See Table 2 for the SOEP counterpart.

3. *More hours at the same rate of pay and earn more money?*

As in the SOEP, the hypothetical emphasizes the dependence of earnings on hours, even if it does not explicitly stipulate proportionality. The question, like that in the BHPS, is categorical rather than continuous.

Sample selection for the CPS proceeds exactly as with the SOEP. Table C.4 shows the evolution of the sample size as we impose the sample selection restrictions, both for the CPS and the RTP, which we introduce below. Table C.5 presents summary statistics for relevant observable characteristics in each year.

Selection	N (CPS 1985)	N (CPS 2001)	N (RTP)
Original Sample	151511	118323	4332
Working Age	92077	72339	4229
Full-Time	54079	42243	2902
Not Self-Employed	47748	38096	2535
Reports Actual Hours	11634	35992	2534
Reports Desired Hours/Overwork	8490	30097	1434

Table C.4: US Sample Selection

Notes: This table presents the evolution of the CPS and RTP samples between each step in the sample selection. See Table A.1 for the SOEP counterpart.

	(1) CPS (1985)	(2) CPS (2001)	(3) RTP (2024)
male	0.48	0.49	0.49
age	33.95	35.69	40.72
married	0.45	0.43	0.41
has children	0.31	0.31	0.32
has college degree	0.05	0.18	0.42
public sector	0.07	0.07	0.20
gross monthly labor income	2818.94	3525.63	4814.57
gross hourly wage	16.65	19.20	26.91
Observations	151511	118004	1434

Table C.5: US Summary Statistics

Notes: Summary statistics for the 1985 and 2001 CPS samples and the 2024 RTP sample. Income and wages are denominated in 2015 dollars. We construct gross hourly wage by dividing gross monthly labor income by 4.33 times usual hours worked per week. See Table 1 for the SOEP counterpart.

RTP

In April 2024, we fielded our own survey questions as part of the Real Time Population Survey (Bick and Blandin, 2023), or RTP, to see what kinds of patterns would emerge regarding over- or under-work in the United States. In particular, we added several questions on desired hours worked, starting with the following:

"You indicated that you usually work X hours every week on your (main) job. Suppose you could change your weekly hours on this job freely, and your weekly earnings would change accordingly. Would you like to work more or fewer hours than you usually work on your current job? In answering this question, assume that your weekly earnings would change proportionately with your hours. This means that if you choose to increase your weekly hours by X%, your weekly earnings would increase by X%; if you choose to decrease your weekly hours by X%, your weekly earnings would decrease by X%. In other words, your hourly pay would remain the same."

1. *Yes, I would like to work MORE hours on my job than I do usually*

2. *Yes, I would like to work FEWER hours on my job than I do usually*

3. *No, I want to continue to work as many hours on my current job as I do usually*

The wording of this question is similar in spirit to the UK BHPS survey, except that we stipulate the proportionality of income via examples.

As a follow-up to this question, we then ask about desired hours, the wording of which is conditional on the response to the question above:

(If MORE hours) How many extra hours per week, in addition to those you usually work, would you like to work on your job, again taking into account that your earnings would change proportionately?

• *Hours per week slider: 0-30 hours [at 30 hours "or more" is displayed]*

(If FEWER hours) How many fewer hours per week would you like to work on your job, subtracting from your current hours, again taking into account that your earnings would change proportionately?

• *Hours per week slider: 0-30 hours [at 30 hours per week "or more" is displayed]*

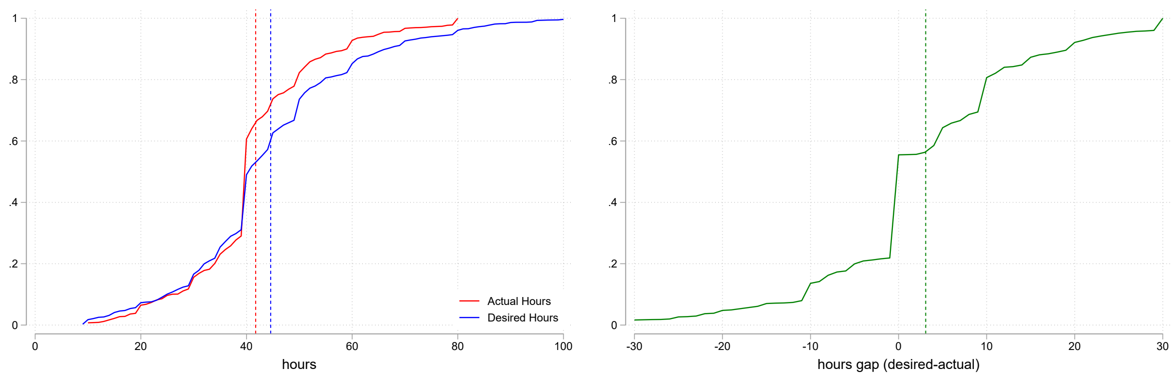
Note that instead of filling in their desired change in hours, we provide a slider which is to be placed at the desired change in hours per week.

Sample selection for the RTP proceeds exactly as with SOEP, except that, based on inspecting the answers, we trimmed gross monthly labor income at the 10th and 90th percentiles. See Tables C.4 and C.5.

Results for the US

Figure C.4a plots the usual weekly hours worked and desired hours for the RTP sample. Hours worked average to 41.74 hours per week, almost the same as in Germany. However, unlike in Germany or the UK, the average US respondent desires to work more hours, with a mean reported desired weekly hours of 44.58. Figure C.4b plots the distribution of the wedge between desired and usual weekly hours. Over 40% of the RTP sample reports **underwork**, while only slightly more than 20% report overwork.

Figure C.5 combines the RTP, with respondents now broken into three groups, with the earlier CPS evidence. There is some movement over time that might reflect differences in survey design.



(a) (b)

Figure C.4: Weekly Hours Worked and Desired and the Hours Gap in the US

Notes: Panel a plots the CDF of usual hours worked (red, mean 42.74) and desired hours (blue, mean 44.58) in the RTP (2024). Panel b plots the CDF of the gap between desired and actual hours in the same data (mean of 3.08). See Figures 1 and 2 for the SOEP counterparts.

What is most striking, however, is that US workers, in all three surveys, are far more likely to report underwork than overwork, relative to what we observed in the European surveys. This suggests that it is unlikely that any tightening of hours constraints in the US would be welfare improving.

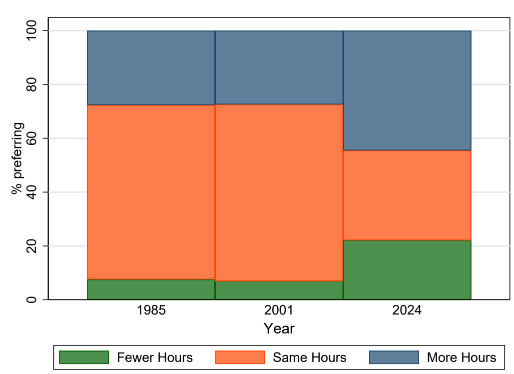


Figure C.5: Overwork and Underwork over Time in the US

Notes: Fraction of US full-time workers desiring more hours, fewer hours, and the same amount of hours over time. Based on the categorical CPS question from 1985 and 2001 and the RTP hours gap measure for 2024 reported in Appendix C.2. See Figure 6 for the SOEP counterpart.

D Hicksian Labor Supply Elasticity

Take the maximization problem associated with our static labor supply problem subject to a generalized linear budget constraint, $c = wh + y$, where y is non-labor income, potentially zero. Combining the two first-order conditions gives $w = \beta_i h^{\gamma}(wh+y)^{-\eta}$. Taking logs gives $\log w = \log B_i + \gamma \log h - \eta \log(wh+y)$. Totally differentiating with respect to $\log(w)$ gives:

$$\begin{aligned}
\frac{\partial \log(w)}{\partial \log(w)} &= \frac{\partial \log(B_i)}{\partial \log(w)} + \gamma \frac{\partial \log(h)}{\partial \log(w)} - \eta \left(\frac{\partial \log(wh+y)}{\partial \log(w)} + \frac{\partial \log(wh+y)}{\partial \log(h)} \frac{\partial \log(h)}{\partial \log(w)} \right) \\
\implies 1 &= \gamma \frac{\partial \log(h)}{\partial \log(w)} - \eta \frac{wh}{wh+y} \left(1 + \frac{\partial \log(h)}{\partial \log(w)} \right) \\
\implies \frac{\partial \log(h)}{\partial \log(w)} &= \frac{1 + \eta \frac{wh}{wh+y}}{\gamma - \eta \frac{wh}{wh+y}} = K^M \text{ (Marshallian Elasticity)}
\end{aligned}$$

Totally differentiating with respect to $\log(y)$ gives:

$$\begin{aligned}
\frac{\partial \log(w)}{\partial \log(y)} &= \frac{\partial \log(B_i)}{\partial \log(y)} + \gamma \frac{\partial \log(h)}{\partial \log(y)} - \eta \left(\frac{\partial \log(wh+y)}{\partial \log(y)} + \frac{\partial \log(wh+y)}{\partial \log(h)} \frac{\partial \log(h)}{\partial \log(y)} \right) \\
\implies 0 &= \gamma \frac{\partial \log(h)}{\partial \log(y)} - \eta \frac{1}{wh+y} \left(y + wh \frac{\partial \log(h)}{\partial \log(y)} \right) \\
\implies \frac{\partial \log(h)}{\partial \log(y)} &= \frac{\eta \frac{y}{wh+y}}{\gamma - \eta \frac{wh}{wh+y}}
\end{aligned}$$

By the Slutsky Equation, we have:

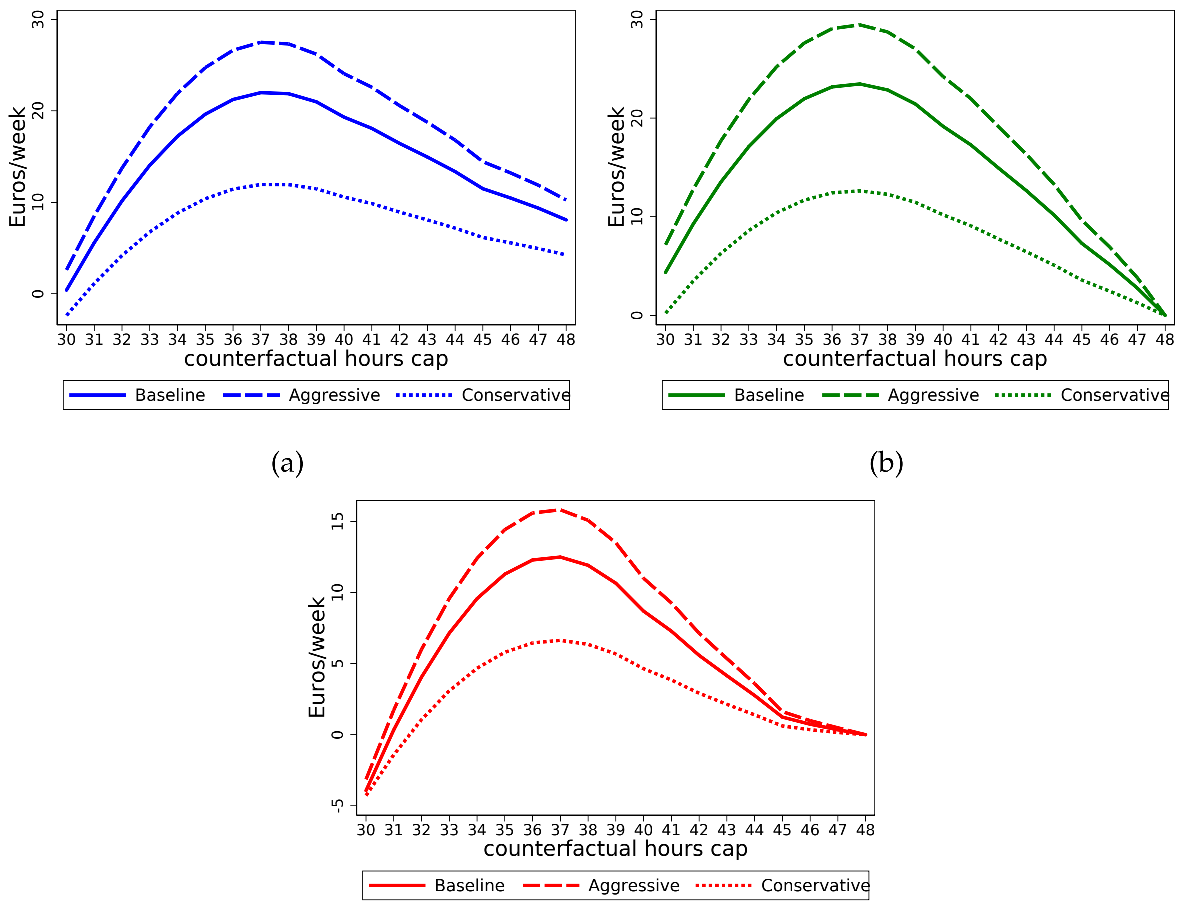
$$\begin{aligned}
K^M - \frac{wh}{y} \frac{\partial \log(h)}{\partial \log(y)} &= K^H \\
\implies \frac{1 + \eta \frac{wh}{wh+y}}{\gamma - \eta \frac{wh}{wh+y}} - \frac{wh}{y} \frac{\eta \frac{y}{wh+y}}{\gamma - \eta \frac{wh}{wh+y}} &= K^H \\
\implies \frac{1}{\gamma - \eta \frac{wh}{wh+y}} &= K^H \text{ (Hicksian Elasticity)}
\end{aligned}$$

Evaluate at $y \to 0$ to obtain the result.

E Robustness for Counterfactuals

E.1 Alternative γ Calibrations

Figure E.1 shows, for each of the three cases we consider, how γ affects our baseline results. Baseline, aggressive, and conservative correspond to $\gamma = \{2, 2.57, .85\}$, respectively. These values correspond to the preferred point estimate and bounds for the intensive Hicksian elasticity proposed in Chetty (2012) ($\{0.33, 0.28, 0.54\}$), respectively. The welfare gains are increasing in γ in the range of hours caps we consider. This is intuitive, as the less elastic labor supply is, the costlier the wedge. The optimal length of the workweek is largely unchanged. The welfare gains from the optimal policy are roughly 60% lower under the conservative calibration and 25% higher under an aggressive calibration compared to baseline.



(a) (b) (c)

Figure E.1: Willingness to Pay under Alternative Calibrations

Notes: Panels a, b, and c plot the mean willingness to pay (in 2015 euros per week) in 2019 for a workweek capped between 30 and 48 hours under alternative calibrations for cases 1, 2, and 3 respectively. Baseline, aggressive, and conservative correspond to $\gamma = \{2, 2.57, .85\}$.

E.2 Dynamic Model

Let the lifetime value of an individual be given by

$$\sum_{t=0}^{\infty} \rho^t \Big(\frac{1}{1+\eta} c_{it}^{1+\eta} - \frac{\beta_i}{1+\gamma} h_{it}^{1+\gamma} \Big), \tag{12}$$

the dynamic counterpart to (1). We assume that markets are complete and there is a single, lifetime budget constraint that equates the present value of income to the present value of consumption. Denote the multiplier on that constraint by λ_i. See Keane and Rogerson (2012) for a similar baseline and multiple extensions of this.

Consider an individual's planned sequence of actual work hours, a plan that might reflect unmodeled restrictions and constraints on hours. Then, consider a temporary, one-period change from planned hours h_{it} to some counterfactual hours $\tilde{h}_{it}$ at time t. It is straightforward to show that the utility change associated with this is first-order approximated by

$$\sigma_{it}(\tilde{h}_{it}) \approx -\frac{\beta_i}{\lambda_i} \tilde{h}_{it}^{\gamma} \left(h_{it} - \tilde{h}_{it} \right) + w_{it} \left(h_{it} - \tilde{h}_{it} \right). \tag{13}$$

The first piece gives the direct utility impact of changing hours, while the second piece gives the change in income. Importantly, this calculation holds λ_i fixed, that is, it assumes that there are no lifetime wealth effects.[19] This is accurate if the period is short or the wedges are small. Our static model heavily emphasizes a wealth effect because any hypothetical change in hours is effectively permanent (there is only one period). The dynamic formulation here importantly takes the other extreme position, in that it considers a short-lived deviation that does not move lifetime labor earnings.

Measurement

To use (13) for the welfare analysis, we need to know $\frac{\beta_i}{\lambda_i}$. Turning to the first-order condition for optimal hours, again assuming that time-t earnings are linear in hours at the current wage, gives

$$\log h_{it}^{*} = \frac{1}{\gamma} \log \frac{\lambda_i}{\beta_i} + \frac{1}{\gamma} \log w_{it}. \tag{14}$$

It follows that $\frac{\beta_i}{\lambda_i}$ can be obtained from information on wages and desired hours. If we only used a single cross-section, this would exactly identify $\frac{\beta_i}{\lambda_i}$. However, the dynamic model allows us to use the full panel, and so this equation will not hold for each person in the survey panel data period-by-period. We therefore assume that desired hours are measured with noise. Specifically,

[19] This is why the curvature η does not appear here, as opposed to the static model.

we assume that reported log desired hours are given by $\log h_{it}^{*,R} = \log h_{it}^{*} + \varepsilon_{it}$

$$\gamma \log h_{it}^{*,R} - \log w_{it} = \log\left(\frac{\lambda_i}{\beta_i}\right) + \gamma \varepsilon_{it}$$

Assume that the measurement error is classical, $\varepsilon_{it} \sim N\left(0, \sigma_{\varepsilon}^2\right)$ and i.i.d. over time. We obtain an estimate for $\log\left(\frac{\lambda_i}{\beta_i}\right)$ from a regression of $\gamma \log h_{it}^{*,R} - \log w_{it}$ on individual fixed effects. Plug this into (14) to obtain true desired hours h_{it}^{*} in period t given the reported wage w_{it}. Then, obtain the WTP for any counterfactual hours $\tilde{h}_{it}$ (which could of course be exactly equal to desired hours h_{it}^{*}) from (13).

Results

Figure E.2 presents the results for the dynamic model. Panel a plots the CDF of the true hours gap, constructed using the true desired hours h_{it}^{*}, alongside the reported hours gap, which are measured with error by assumption. The true hours gap closely approximates the reported hours gap, although by construction it smooths out the bunching present in the actual data. Panel b plots the distribution of willingness to pay for desired hours in the dynamic and static models. Mean WTP for desired hours in the dynamic model is approximately 25% larger than in the static model. Last, Panel c plots the WTP for counterfactual hours caps for the dynamic and static models. Compared to the static model, the dynamic model generates a smoother pattern as we tighten the hours cap, with slightly higher WTP at lower hours caps and slightly lower WTP everywhere else. At the dynamic optimum of 36 hours, WTP is roughly 5 to 20% lower depending on the case.

E.3 Linear Aggregation

To linearly aggregate the *absolute* hours wedge, resulting from some hours cap $\bar{h}$, compute

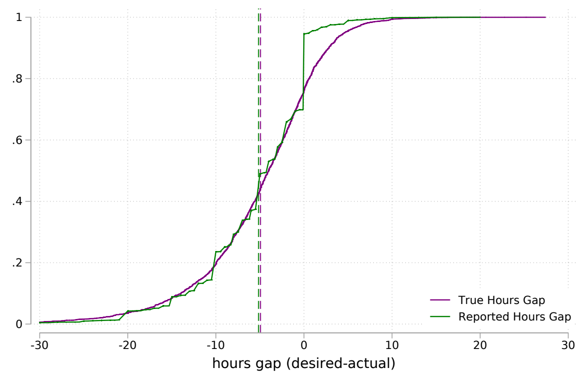
$$\Delta\left(\bar{h}\right) = \frac{1}{N}\sum_i |\tilde{h}_i\left(\bar{h}\right) - h_i^{*}|.$$

Figure E.3 plots the results.

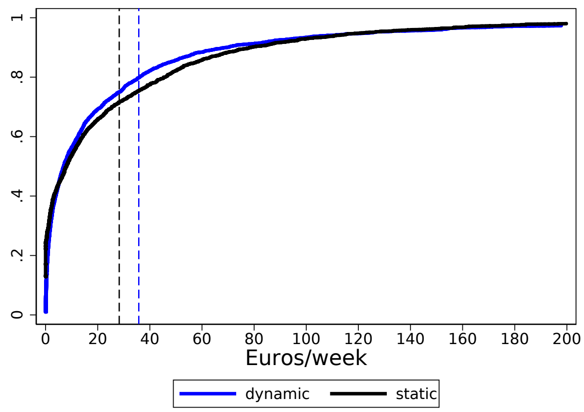
F Derivation of Equation (10)

Start from the production function before any counterfactual change in hours:

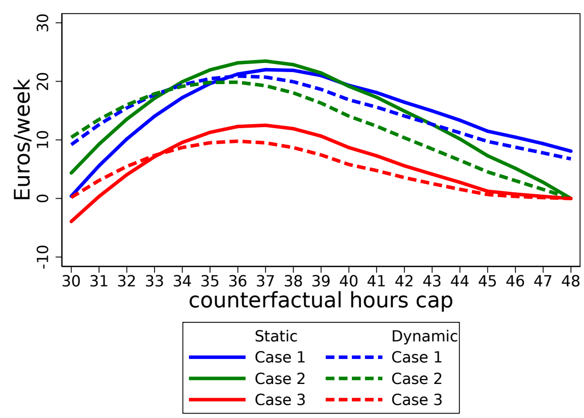
$$Y = \left(\alpha K^{\rho} + (1-\alpha) L^{\rho}\right)^{\frac{1}{\rho}}.$$



(a)



(b)



(c)

Figure E.2: Willingness-to-Pay in the Dynamic Model

Notes: Panel a plots the CDF of the reported (green, mean -5.16) and true (purple, mean -4.94) hours gap for our main sample in the SOEP data in 2019. Panel b plots (in 2015 euros per week) the distribution of $\sigma\left(h_i^*\right)$, defined in Equations (5) and (13), for the static (black, mean 28.2) and dynamic (blue, mean 35.8) models. Panel c plots mean WTP for a workweek capped between 30 and 48 hours under the static (solid) and dynamic (dashed) models.

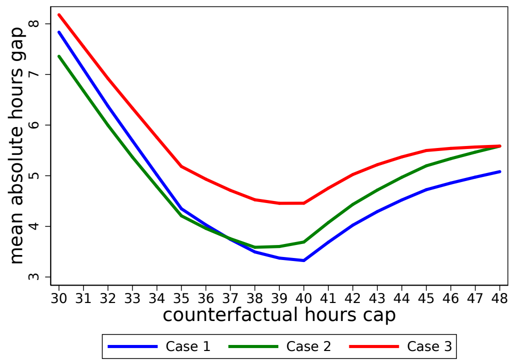


Figure E.3: Absolute Hours Gap

Notes: Mean absolute hours gap for varying hours caps.

Then, $\frac{\tilde{Y}}{Y} = s_Y$ is equal to:

$$\left(\frac{\alpha K^\rho + (1-\alpha)\tilde{L}^\rho}{Y^\rho}\right)^{\frac{1}{\rho}} = \Bigg(\underbrace{\alpha\left(\frac{K}{Y}\right)^\rho}_{\alpha_K} + (1-\alpha)\left(\frac{\tilde{L}}{Y}\right)^\rho\Bigg)^{\frac{1}{\rho}}.$$

Now, substitute for $\tilde{L}$ with $\tilde{L} = s_L L$:

$$\left(\alpha_K + (1-\alpha)\left(\frac{s_L L}{Y}\right)^\rho\right)^{\frac{1}{\rho}} = \left(\alpha_K + s_L^\rho(1-\alpha)\left(\frac{L}{Y}\right)^\rho\right)^{\frac{1}{\rho}}.$$

From (9),

$$(1-\alpha)\left(\frac{L}{Y}\right)^\rho = 1 - \alpha_K,$$

therefore,

$$s_Y = \left(\alpha_K + (1-\alpha)\left(\frac{s_L L}{Y}\right)^\rho\right)^{\frac{1}{\rho}} = \left(\alpha_K\left(1 - s_L^\rho\right) + s_L^\rho\right)^{\frac{1}{\rho}}.$$