Online Appendix of:
Wages and the Value of Nonemployment

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A Additional Tables

Table A.1: Take-Up of Unemployment Insurance among Nonemployment Spells

	Prop. of NE Spells	No. Spells
All Spells	0.491	2984601
2 Years or Shorter	0.508	2640962
2 Days or Longer	0.532	2754233
14 Days or Longer	0.633	2240664
28 Days or Longer	0.662	2012286
Between 28 Days and 2 Years	0.724	1668647
Men	0.491	1523085
Women	0.491	1461516
Blue Collar	0.518	1538079
White Collar	0.551	1011599
Excluding Ages 50-54	0.488	2814545
Employed At Least 2 Years	0.502	2011459
Spells between 28 Days and 2 Years		
Male	0.756	825336
Male Under 50	0.755	772648
Female	0.692	843311
Female Under 50	0.692	793565
Blue Collar	0.788	832004
White Collar	0.761	614514
Excluding Ages 50-54	0.723	1566213
Employed At Least 2 Years	0.732	1143459

Note: This table plots the share of workers who take up unemployment insurance after the end of an employment spell. The sample is restricted to prime-age workers (25-54) whose employment spell prior to nonemployment lasted at least one year and who were not recalled by their previous employer. We also drop workers who immediately transition from employment into other types of spells, e.g., maternity leave or disability. The sample period ranges from 1972 to 2000. To illustrate, the table indicates that 63.8% of nonemployment spells of 14 days or longer led to take-up of unemployment insurance.

Table A.2: Validation Exercise: Difference-in-Differences Regression Design

	1-Year Realized RR Effects			2-Year Realized RR Effects		
	(1)	(2)	(3)	(1)	(2)	(3)
Placebo: 3 Yr Lag	0.152	0.148	0.153	-0.005	-0.009	-0.022
	(.029)	(.028)	(.028)	(.025)	(.024)	(.026)
Placebo: 2 Yr Lag	0.097	0.095	0.105			
	(.01)	(.01)	(.009)			
Treatment Year	**0.808**	**0.800**	**0.807**	**0.526**	**0.515**	**0.529**
	(.015)	**(.015)**	**(.013)**	**(.024)**	**(.023)**	**(.021)**
Base-Year Average	2.255	2.255	2.255	3.111	3.111	3.111
Pre-p F-test p-val	0.000	0.000	0.000	0.825	0.702	0.399
R^2	0.798	0.807	0.853	0.629	0.654	0.773
N (1000s)	7202	7198	6354	5179	5176	4563
Mincerian Ctrls		X	X		X	X
4-Digit Ind.-Occ. FEs		X	X		X	X
Firm-Year FEs			X			X

Note: These results pool four reforms to the replacement rate schedule in Austria, and are based on specification (34). Standard errors based on two-way clustering at the individual and earnings percentile level are in parentheses. The null hypothesis of the F-test is that the coefficients of interest are all equal to 0 in the pre-period. The Mincerian controls include time-varying polynomials of experience, tenure, and age; time-varying gender indicators, and a control for being REBP eligible. The industry-occupation controls are time-varying fixed effects for each four-digit industry interacted with an indicator for a blue vs. white-collar occupation.

Table A.3: Wage Effects at **One-Year Horizon** with Shifts in Gross UI Benefits

	1-Year Earnings Effects					
	(1)	(2)	(3)	(4)	(5)	(6)
Placebo: 3 Yr Lag	.011	-.003	.009	.008	.013	.016
	(.011)	(.01)	(.011)	(.01)	(.009)	(.009)
Placebo: 2 Yr Lag	0	-.01	-.006	-.007	.011	.007
	(.009)	(.01)	(.01)	(.01)	(.009)	(.009)
Treatment Year	**-.003**	**-.001**	**-.014**	**-.011**	**0**	**-.002**
	(.01)	**(.011)**	**(.01)**	**(.01)**	**(.009)**	**(.009)**
Base-Year Average	7.304	7.304	7.304	7.304	7.304	7.304
Pre-p F-test p-val	0.486	0.555	0.412	0.386	0.334	0.190
R^2	.048	.067	.076	.094	.257	.281
N (1000s)	7139	7139	7138	7138	6299	6298
Mincerian Ctrls		X		X		X
4-Digit Ind.-Occ. FEs			X	X		X
Firm-Year FEs					X	X

Note: The table reports results of a robustness check for the specifications reported in Table 2. The specifications reported here take into account that UI benefits are untaxed in Austria. To take non-taxation into account, we translate the UI benefit shift, *db* from specification (33), into a change in (hypothetical) gross benefits by scaling up the actual benefit shift by an individual's average net-of-tax rate so that both the benefit and the wage change are in gross units. To calculate individuals' net-of-tax rate, we rely on a tax calculator for Austria provided by Andrea Weber and David Card, which provides information on tax schedules from 2000 onwards. We extrapolate it into previous years by assigning each earnings percentile before 2000 the same net of tax rate as in the 2000 distribution. For further information on the specification see notes for Table 2.

Table A.4: Wage Effects at **Two-Year Horizon** with Shifts in Gross UI Benefits

	2-Year Earnings Effects					
	(1)	(2)	(3)	(4)	(5)	(6)
Placebo: 3 Yr Lag	-.001	-.014	0	0	-.002	.004
	(.014)	(.013)	(.016)	(.015)	(.014)	(.014)
Treatment Year	**-.002**	**.007**	**-.017**	**-.013**	**-.012**	**-.017**
	(.02)	**(.02)**	**(.02)**	**(.02)**	**(.017)**	**(.017)**
Base-Year Average	14.364	14.364	14.364	14.364	14.364	14.364
Pre-p F-test p-val	0.934	0.286	0.976	0.982	0.886	0.772
R^2	.103	.125	.14	.16	.305	.332
N (1000s)	5039	5039	5038	5038	4434	4433
Mincerian Ctrls		X		X		X
4-Digit Ind.-Occ. FEs			X	X		X
Firm-Year FEs					X	X

Note: See notes for Table A.3.

B Additional Figures

Description of Figures A.1-A.4 Figures A.1-A.4 present additional non-parametric results for the 2001, 1989, 1985, and 1976 replacement rate reforms. The left column in each set of figures contains results for one-year earnings changes and the right column contains results for two-year earnings changes.

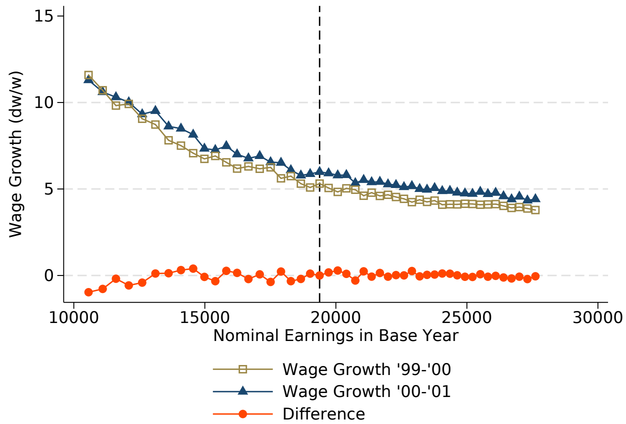
Panels (a) and (b) plot the average wage growth for the treatment year (navy scatter points) and the pre-period year (olive scatter points) over the earnings distribution. Their difference (orange scatter points) is the same earnings growth difference that is plotted in figures 4- 7. The navy and olive scatter point allow us to better assess the (lack of) pre-trends in earnings growth by comparing the earnings growth gradient in the treatment and control time periods. The difference (red scatter points) between average wage growth in the treatment and the pre-period year is normalized to be zero at the dashed vertical line.

Panels (c) and (d) plot the average of our predicted replacement rate change (the green line) and the average of the actual replacement rate change (the red line) over the earnings distribution. The predicted replacement rate change is calculated using the *predicted* earnings in the replacement rate reform year. See Section 4.1 for more details about this prediction process. The actual replacement rate change is the average of the replacement rate changes each individual actually experiences. In 1989, the two-year change (1988 to 1990) also captures a follow-up reform in 1990. Our interpretation of two-year wage effects in 1989 therefore largely captures delayed responses to the 1989 reform. Our two-year results are robust to excluding 1989. For 2001, since UI benefits are determined by lagged earnings, the predicted and actual replacement rate changes are identical for one year outcomes.

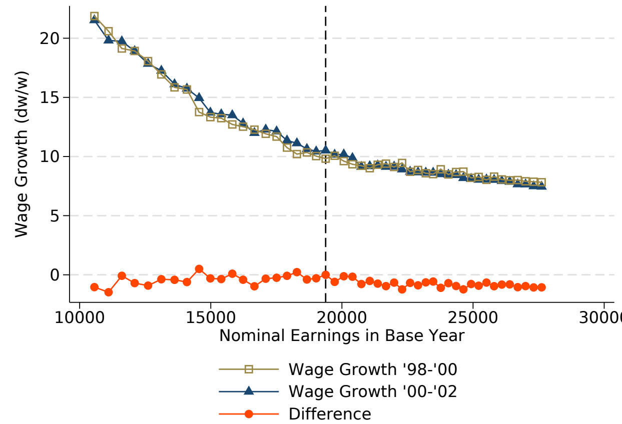
Panels (e) and (f) further assess the parallel trends assumption underlying our identification strategy. Here, we estimate the effects of placebo reforms at the same earnings percentile ranges, but we lag both the reform period and the pre-period by by two years. This placebo exercise thus assesses whether the earnings percentiles affected by the reform experienced higher or lower wage growth compared to other earnings percentiles in periods before the reform was enacted. The results presented in these panels are the same as in panels (a) and (b) except all years are lagged by one or two to estimate the effect the placebo effects. For 1976, we cannot run this placebo check because we do not have enough years of pre-period social security records; these two panels are therefore missing for 1976.

Figure A.1: Additional Results: 2001 Reform

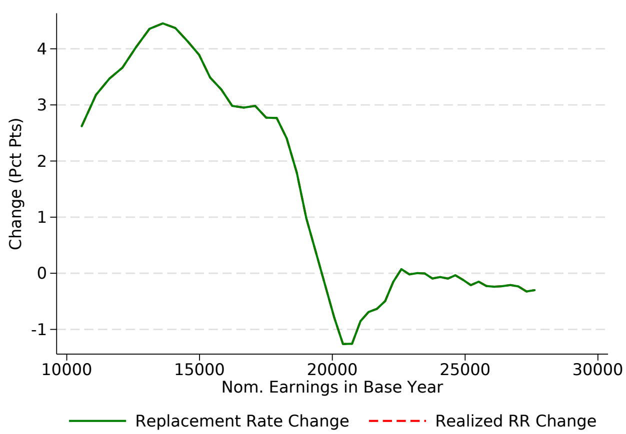
(a) Wage Growth: 2000-2001 vs. 1999-2000; 1 Yr



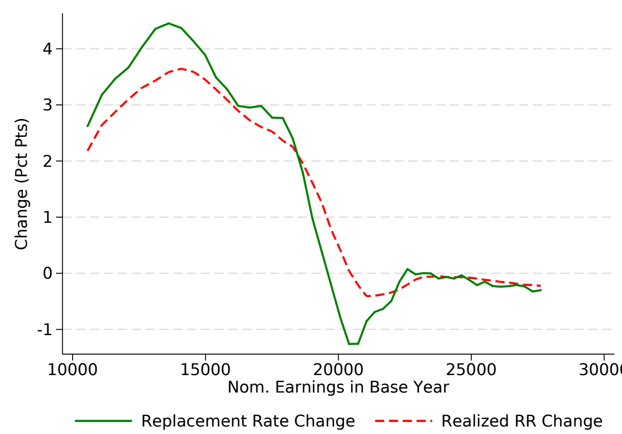
(b) Wage Growth: 2000-2 vs. 1998-2000; 2 Yr



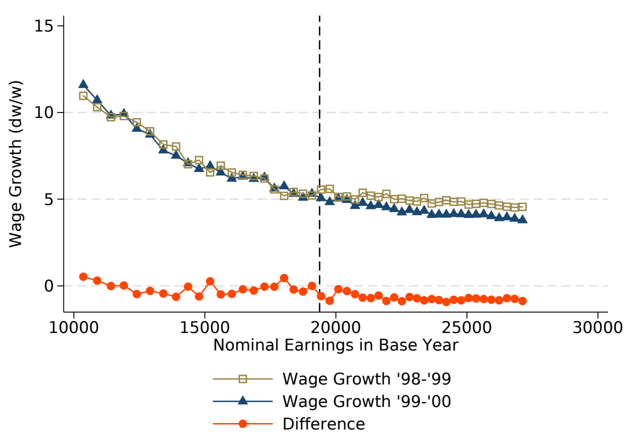
(c) Realized vs. Predicted Benefit Change; 1 Yr



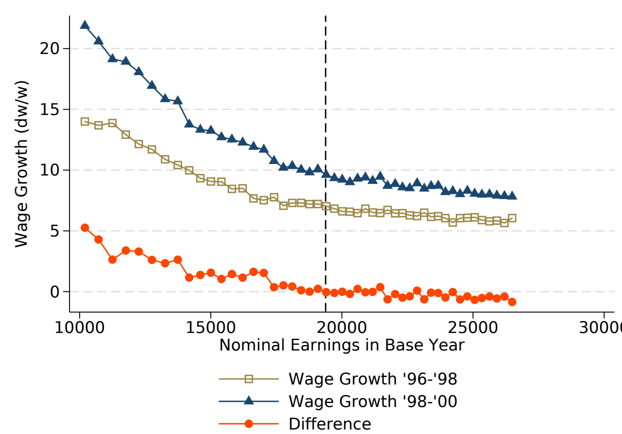
(d) Realized vs. Predicted Benefit Change; 2 Yr



(e) Placebo 2000: 1998-9 vs. 1999-2000; 1Yr

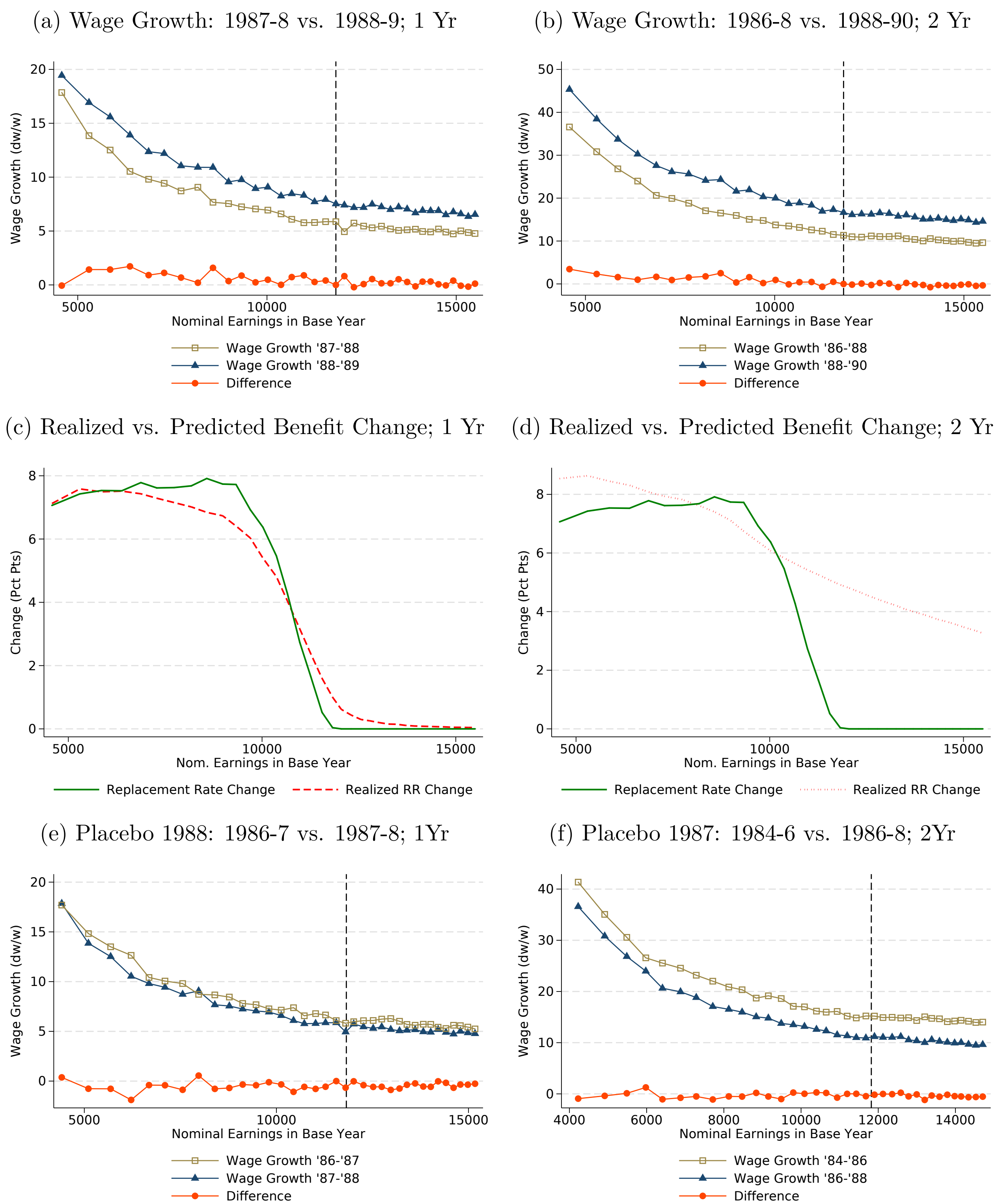


(f) Placebo 1999: 1996-8 vs. 1998-2000; 2 Yr



Note: The figure plots additional results related to the analysis in Figure 4. We provide a description at the beginning of this Appendix Section (B).

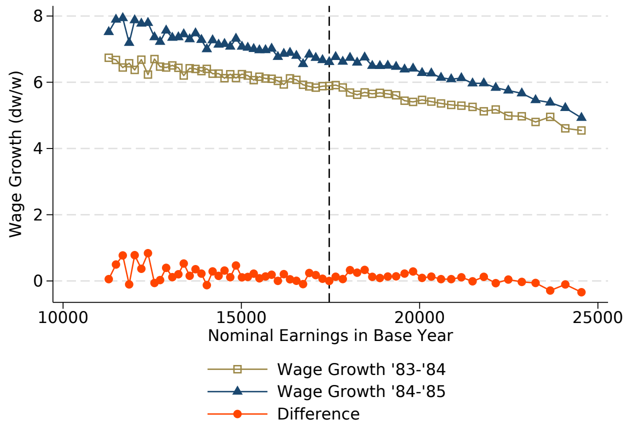
Figure A.2: Additional Results: 1989 Reform



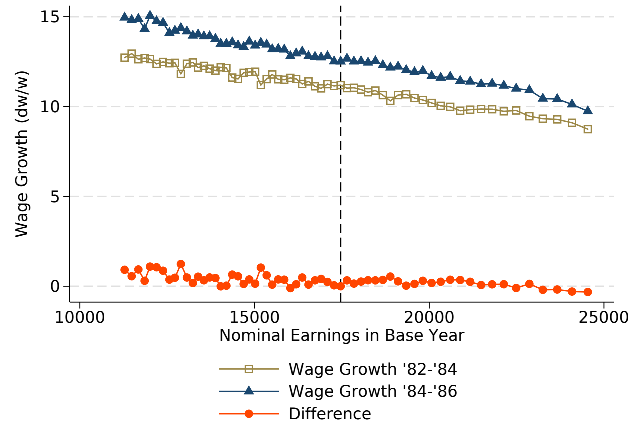
Note: The figure plots additional results related to the analysis in Figure 5. We provide a description at the beginning of this Appendix Section (B).

Figure A.3: Additional Results: 1985 Reform

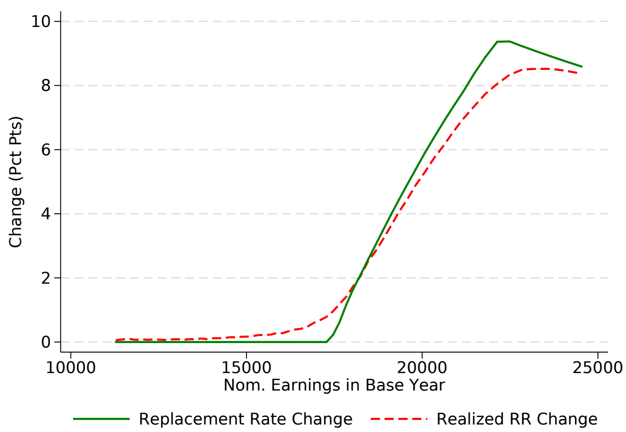
(a) Wage Growth: 1983-4 vs. 1984-5; 1 Yr



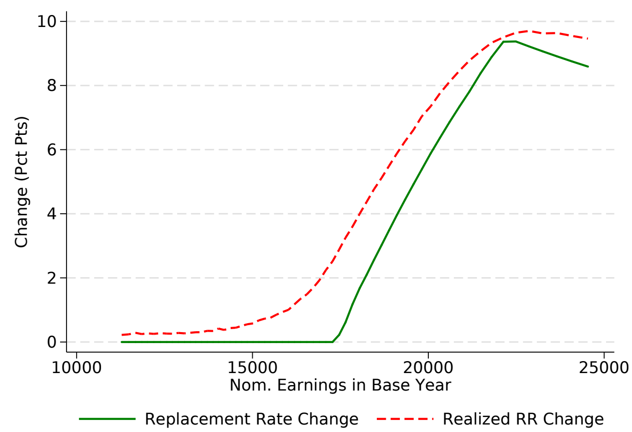
(b) Wage Growth: 1982-4 vs. 1984-6; 2 Yr



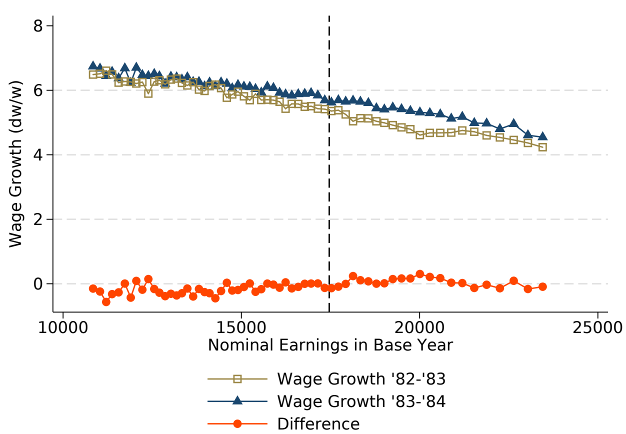
(c) Realized vs. Predicted Benefit Change; 1 Yr



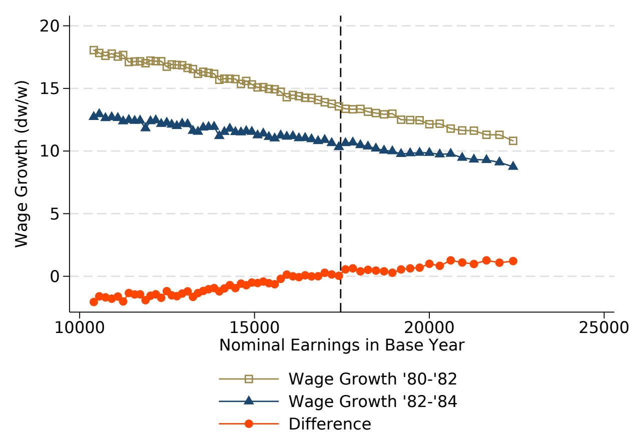
(d) Realized vs. Predicted Benefit Change; 2 Yr



(e) Placebo 1984: 1982-3 vs. 1983-4; 1Yr



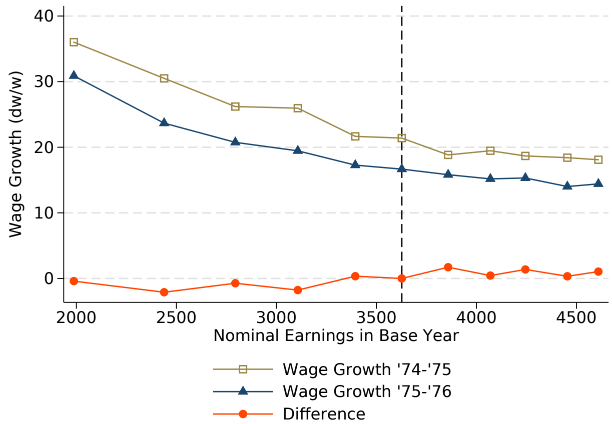
(f) Placebo 1983: 1980-2 vs. 1982-4; 2Yr



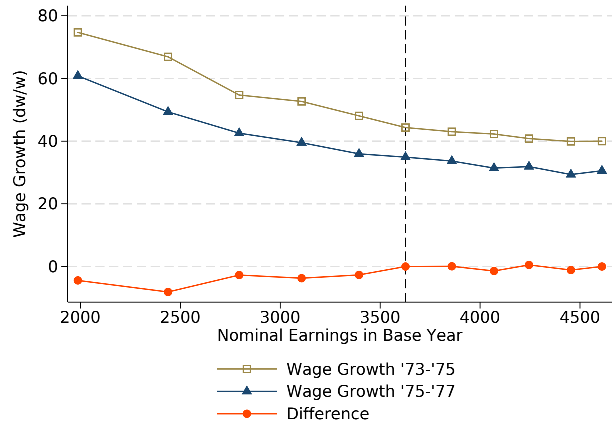
Note: The figure plots additional results related to the analysis in Figure 6. We provide a description at the beginning of this Appendix Section (B).

Figure A.4: Additional Results: 1976 Reform

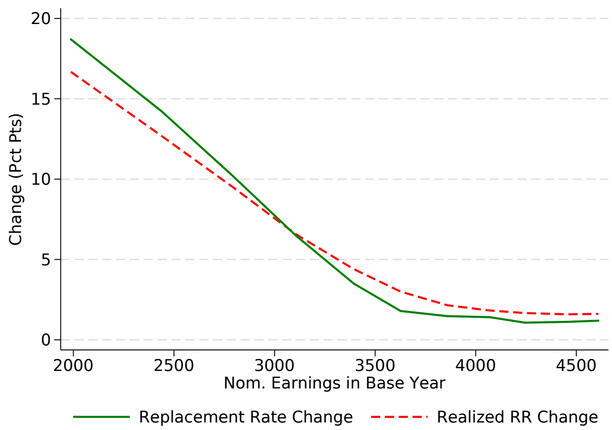
(a) Wage Growth: 1974-5 vs. 1975-6; 1 Yr



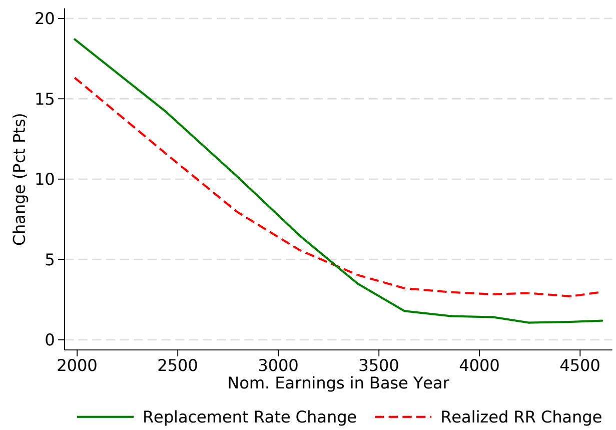
(b) Wage Growth: 1973-5 vs. 1975-7; 2 Yr



(c) Realized vs. Predicted Benefit Change; 1 Yr

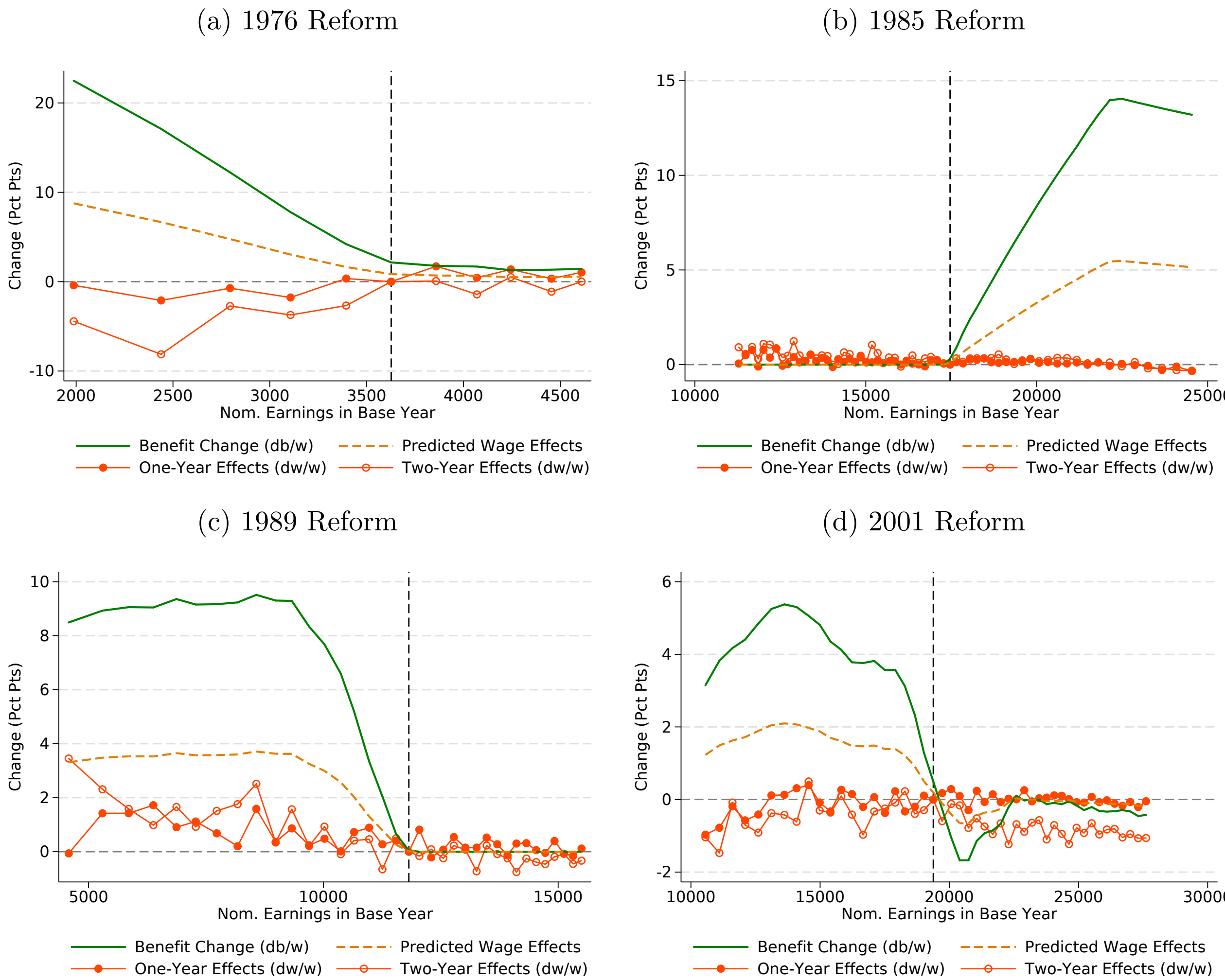


(d) Realized vs. Predicted Benefit Change; 2 Yr



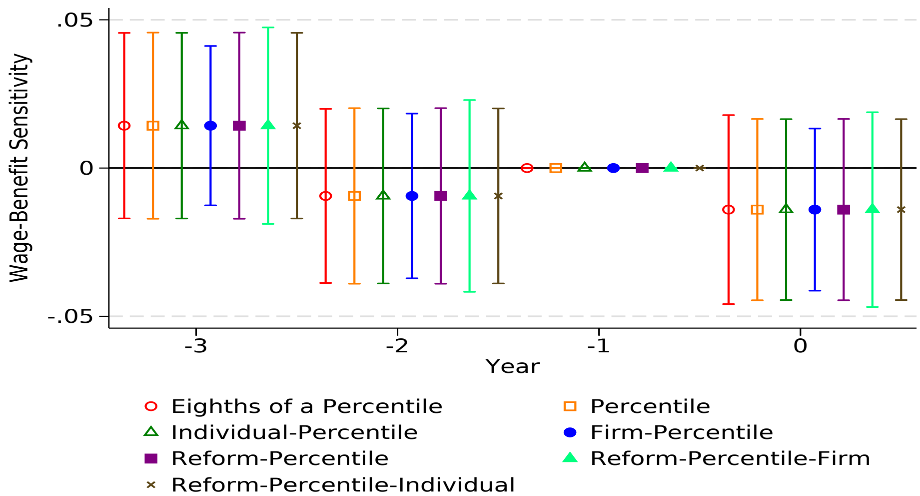
Note: The figure plots additional results related to the analysis in Figure 7. We provide a description at the beginning of this Appendix Section (B).

Figure A.5: Overview of Non-Parametric Results with Gross UI Benefit Changes



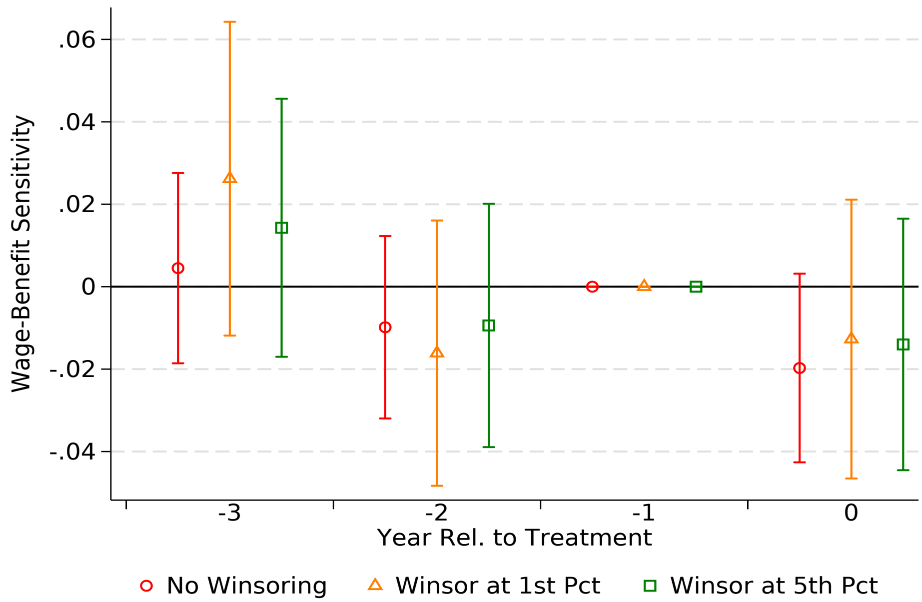
Note: The figure plots robustness checks for the results reported in Figures 4 through 7. The specifications reported here take into account that UI benefits are untaxed in Austria. To take non-taxation into account, we translate the UI benefit shift, db/w reported in the solid green line above, into a change in (hypothetical) gross benefits, db_{Gross}/w, by scaling up the actual benefit shift by an individual's average net-of-tax rate so that both the benefit and the wage change ardu e in gross units. To calculate individuals' net-of-tax rate, we rely on a tax calculator for Austria provided by Andrea Weber and David Card, which provides information on tax schedules from 2000 onwards. We extrapolate it into previous years by assigning each earnings percentile before 2000 the same net of tax rate as in the 2000 distribution. See notes for Figures 4 through 7 for additional information.

Figure A.6: Robustness Check: Different Levels of Clustering



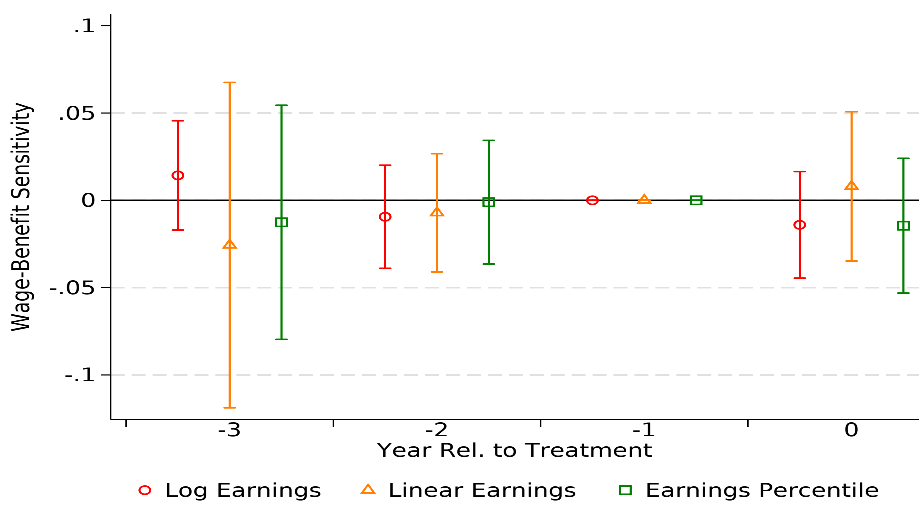
Note: The figure plots estimated δ_0 coefficients and associated confidence intervals based on the difference-in-differences specification in (33). It estimates specification (4) reported in Tables 2 but changes the level of clustering used to calculate the standard errors. We calculate clustering based on: (1) the eighths of a percentile level, (2) percentile level, (3) two-way clustering at the individual and percentile level, (4) two-way clustering at the firm and percentile level, (5) clustering at reform-specific percentile, (6) two-way clustering at the reform-specific percentile and firm level, and (7) two-way clustering at the reform-specific percentile and individual level. Reform-specific percentiles are calculated as percentiles separately for each reform sample.

Figure A.7: Robustness Check: Outcome Variable Winsorization



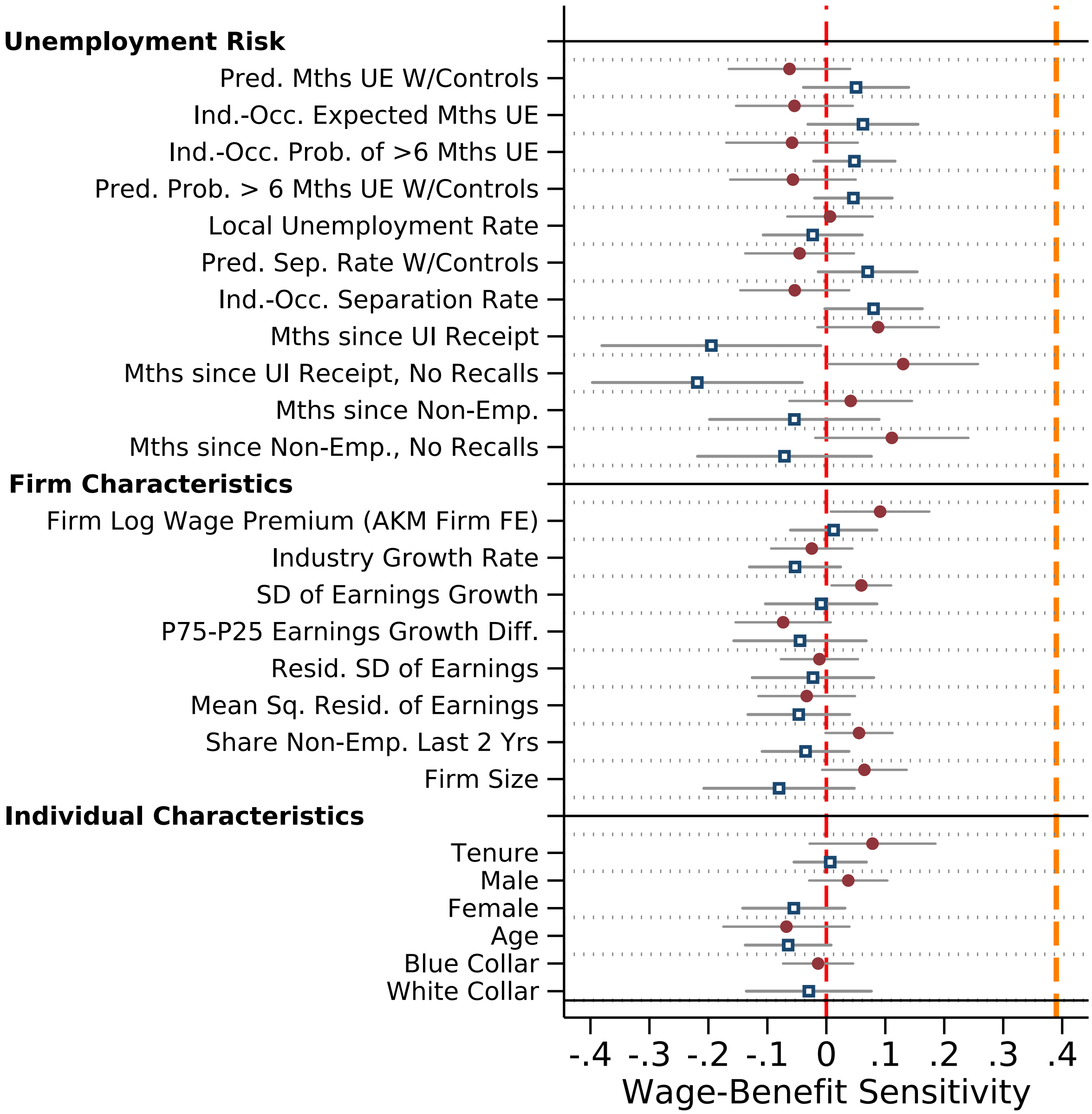
Note: The figure plots estimated δ_0 coefficients and associated confidence intervals based on the difference-in-differences specification in (33). It estimates specification (4) reported in Tables 2 but the level of winsorization we use for the outcome variables varies across specifications.

Figure A.8: Robustness Check: Different Parametric Earnings Controls



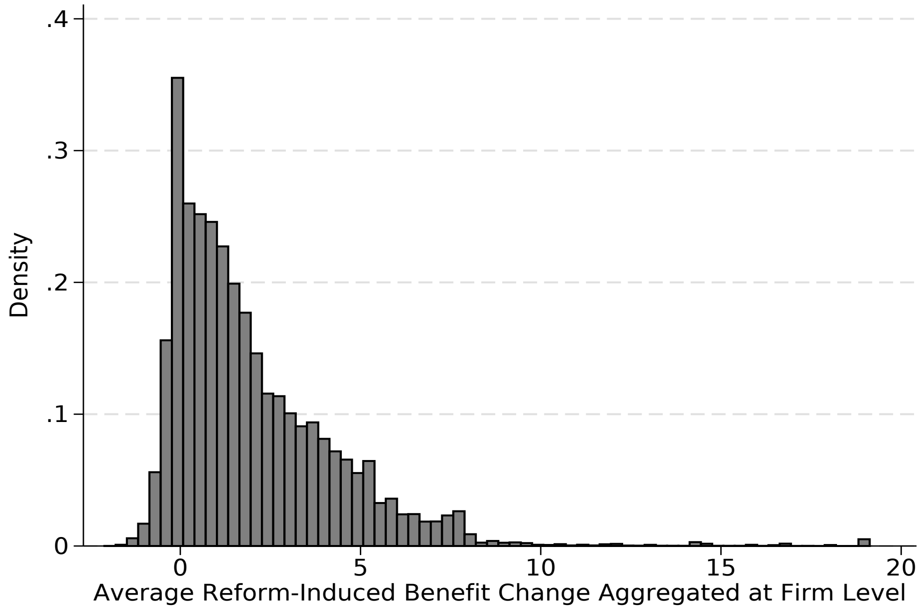
Note: The figure plots estimated δ_0 coefficients and associated confidence intervals based on the difference-in-differences specification in (33). It estimates specification (4) reported in Tables 2 but changes the year-specific parametric earnings controls used. The red estimates controls for log earnings, the yellow estimates controls for earnings linearly, and the green estimates control linearly for earnings percentiles.

Figure A.9: Heterogeneity of Nonemployment Effects on Wages: Two-Year Effects



Note: The figure shows σ_0 coefficients from estimating Equation (33) but interacting an indicator for each different heterogeneity group category with the σ_0 and σ_e coefficients in Equation (33). We also vary the parametric earnings controls by heterogeneity type, allowing for differential earnings growth patterns by heterogeneity type. The estimates are from specification (4) in Tables 2 and 3 that include Mincerian and industry/occupation controls but not the firm-by-year fixed effects. See Section 5 and Appendix G for more details about the construction of each heterogeneity group. For all the categories except for sex and occupation, the top red estimate is for individuals with the lowest values of that heterogeneity group and the bottom blue estimate is for individuals with the highest values. For the investigations regarding months since most recent UI receipt/nonemployment, we also relax the sample restriction requiring 12 months of employment in the base year to pick up workers recently hired specifically.

Figure A.10: Distribution of Benefit Changes at the Firm Level



Note: The figure plots the distribution of the average reform-induced benefit change aggregated at the firm level.

C Theoretical Appendix

C.1 Robustness of the Wage-Benefit Sensitivity Across Model Variants

Next, we show that the key prediction from the benchmark model carries over to a wide variety of richer models considered in the literature. In Section 6 we additionally discuss alternative models that insulate wages from the nonemployment value, and which may therefore rationalize the zero effect of b on w that we document in the empirical Section 4.

I. Equilibrium adjustment: DMP model. Together, our difference-in-differences design and theoretical framework aim to isolate the *micro effects* of an idiosyncratic shift in the outside option on wages, holding constant (or netting out with a control group) market-level adjustment. Yet, we cannot definitely empirically rule out the concern that experimental groups populate segmented – rather than roughly the same – labor markets. Our treatment effect would then capture "macro" effects. Next, we derive this macro wage-benefit sensitivity explicitly with equilibrium adjustment in the context of a calibrated DMP model. We show that the magnitude and structure of the micro and macro sensitivities are strikingly similar quantitatively and structurally. We conclude that market-level spillovers cannot explain small zero wage-benefit sensitivities.

The canonical DMP Nash wage replaces the continuation term of the worker with an equilibrium value related to labor market tightness $\theta = v/u$, the ratio of vacancies v to unemployment u):[70]

$$w^{\text{DMP}} = \phi p + \overbrace{(1-\phi)b + \phi\theta k}^{=(1-\phi)\rho N} \tag{A1}$$

With a market-wide increase in benefits, the capital gain continuation term of ρN is pinned down by firm's free entry, such that the wage comovement is described by:

$$dw^{\text{DMP}} = (1-\phi)db + \phi k d\theta \tag{A2}$$

Next we solve the free entry condition $\frac{k}{q(\theta)} = J = \frac{p-w'}{\rho+\delta}$ for $kd\theta = -dw' \cdot \frac{1}{\eta}\frac{f(\theta)}{\rho+\delta}$ to move into the wage equation (noting that θ is only affected by b through w and denoting by η the elasticity of

[70]In DMP models, the reemployment capital-gains term in the worker's outside option $\rho N = b + f[E(w'^{\text{DMP}}) - N]$ is replaced with the firm's value of a filled job (recognizing the Nash sharing rule such that $(1-\phi)f[E(w')-N] = \phi f[J(w')-V]$). Free entry has firms post vacancies until the value of vacancies is pushed to zero $V = 0 \Leftrightarrow \frac{k}{q} = J$, implying that $\phi f[J(w')-V] = \phi k f/q = \phi k\theta$, due to the standard constant-returns matching function, by which $f(\theta)/q(\theta) = \theta$, such that $\phi k\theta$ now captures the worker's capital gain from reemployement $(1-\phi)f(E(w')-N)$.

the matching function respect to unemployment):

$$dw^{\text{DMP}} = (1-\phi)db + \phi\left[-dw'^{\text{DMP}} \cdot \frac{1}{\eta}\frac{f(\theta)}{\rho+\delta}\right] \tag{A3}$$

$$\Leftrightarrow \frac{dw^{\text{DMP}}}{db} = \frac{1-\phi}{1+\phi\frac{1}{\eta}\frac{f(\theta)}{\rho+\delta}} \tag{A4}$$

$$\approx \frac{1-\phi}{1+\phi\cdot\frac{1}{\eta}\cdot(u^{-1}-1)} \tag{A5}$$

where step 2 uses $dw = dw'$, and step 3 uses $\frac{f}{\rho+\delta} \approx \frac{f}{\delta} \approx \frac{1-u}{u} = u^{-1}-1$, where u denotes the market-level unemployment rate (since ρ is small compared to worker flow rates). Strikingly, this expression mirrors our structural *micro* sensitivity except for two differences. First, the ϕ factor in the denominator is divided by $\eta < 1$, attenuating the sensitivity slightly. Second, the relevant unemployment rate u refers to the market-level average rather than the worker's idiosyncratic time in nonemployment post-separation τ. In both limits, we have $dw/db|_{\tau=1} = dw^{\text{DMP}}/db\big|_{u=1} = 1-\phi$. For $\phi = 0.1$ (micro estimates from rent sharing), $u \approx 7\%$ (consistent with the calibration post-separation) and $\eta = 0.72$ (e.g., Shimer, 2005), we obtained a calibrated benchmark for the wage-benefit sensitivity of $\frac{1-0.1}{1+0.1\frac{1}{0.72}\cdot\frac{0.93}{0.07}} \approx 0.32$.[71] Moreover, higher unemployment u increases the macro sensitivity almost exactly as a higher τ increases the micro sensitivity, which generalizes the implications of whether the sensitivity differs in the local unemployment rate, a prediction we test in Section 5.1. Therefore, our quantitative and structural benchmark for the wage-benefit sensitivity carries over to a macro context with equilibrium adjustment and perfectly segmented labor markets for the treatment group and the control group.

II. Stole and Zwiebel (1996) bargaining with multi-worker firms. Extensions to multi-worker contexts highlight the complications that the splitting of the *inside* option entails with multi-worker firms and diminishing returns. We build on the derivation of the Nash wage with firm level production function $Y = n^\alpha$ in Acemoglu and Hawkins (2014) augmented with our worker-specific outside option Ω_i:[72]

$$w^{\text{MultiWorker}} = \frac{\alpha\phi}{1-\phi+\alpha\phi} \cdot x_f \cdot n_f^{\alpha-1} + (1-\phi)\Omega_i \tag{A6}$$

That is, multi-worker firm bargaining preserves the sensitivity of wages to outside options Ω.[73]

III. Representative vs. individual households. Implementations of matching-frictional labor markets are largely either in terms of individual households with linear utility or with large households that send off households into employment with full insurance in the spirit of

[71] With $\eta = 0.5$ instead of 0.72, the sensitivity is 0.25. With $\tau = 0.05$ instead of 0.07 (plausible because we no longer consider post-separation time in unemployment but the aggregate unemployment rate), we have 0.25.

[72] Cahuc et al. (2008) also derive a dynamic search model with Stole and Zwiebel (1996) bargaining and heterogeneous worker groups i that may differ in their outside options b_i and derive the wage for group i as $w_i(n) = (1-\alpha)\rho N_i + \int_0^1 a^{\frac{1-\alpha}{\alpha}} F_i(na)\, da$.

[73] These models also imply that rent sharing estimates from firm-specific TFP shifts x_f transferred to predict wage sensitivity to b would require an additional scaling up if $\alpha < 1$.

indivisible labor (Rogerson, 1988; Hansen, 1985), for example Merz (1995), Andolfatto (1996), or Shimer (2010). In Appendix Section C.2.1 we extend this setting to an individual household with nonlinear utility. Our individual household bridges these setups with the assumption of perfect capital markets (and negligibly long unemployment spells).

IV. Endogenous separations. The Nash wage is the same in models with endogenous separations among existing jobs due to idiosyncratic productivity shocks, where p is replaced with p_{it}. Inframarginal surviving matches, i.e. those that we track in the data, exhibit the same pass-through of Ω_i into wages.[74]

V. On-the-job search. On its own, on-the-job search with a job ladder (e.g., due to heterogeneous firms or match-specific quality) need not change the wage bargaining process as long as the worker is required to give notice to the firm before engaging in bargaining with the next employer. Nonemployment then remains the outside option in wage bargaining. This tractable route is taken by for example Mortensen and Nagypal (2007) and Fujita and Ramey (2012). We discuss alternative models with competing job offers as outside options in Section 6. In this class of models however, new hires from nonemployment still use nonemployment as their outside option in their initial bargain, where wages thus follow our baseline model.

VI. Finite potential benefit duration. While a common approach is to model benefits as having infinite potential duration, its duration is finite in Austria, as we describe in Section 3. Yet, in the Austrian setting, infinite benefit duration is a particularly good approximation for initially incumbent workers because only around 20% of unemployment spells end up in benefit exhaustion (Card et al., 2007). Moreover, after UI exhaustion, eligible Austrian workers collect a follow-up UI substitute $s(b) < b$ (*Notstandshilfe*, i.e. unemployment assistance (UA)). Importantly, $s(b)$ is explicitly indexed to a worker's pre-exhaustion UIB levels and – while in many cases lower – its level shifts almost one to one with changes in b. This feature leaves post-UI benefits sensitive to our reforms even for UI exhausters.[75]

Here, we extend the model to a two-tier system of finite-duration UIBs b, after which fraction α of still-jobless workers move into post-UI substitute $s(b) < b$. Denote by ζ the fraction of the unemployment spell a separator spends on UA (vs. UI). We treat ζ as the probability that a given separator moves into s (UA) or b (UB) post-separation. An initially employed worker's expected outside option is therefore $\Omega = \rho\mathbb{E}[N] = (1-\zeta)\cdot\rho N_b + \zeta\cdot\rho N_s = \zeta\left(\tau_s\alpha s + (1-\tau_s)w_s\right) + (1-\zeta)\left(\tau_b b + (1-\tau_b)w_b\right)$. With permanent types and wages $w_s < w_b$, Nash still implies identical *sensitivities* $dw_s/ds = dw_b/db$. Moreover, due to $f_s = f_b$, we have that once in a type, $\tau_s = \tau_b$.

[74]In these models, b_i will also shift the reservation quality at which matches are formed and destroyed. Jäger et al. (2018) study a large extension of potential duration of UI for older workers and document substantial separation responses of that policy, which perhaps served as a bridge into early retirement in particular for workers in declining industries. In this paper, we do not detect significant separation effects to increases in benefit *leves*, perhaps because we study younger workers.

[75]UA benefits are capped at 92% of the worker's UI benefits. Importantly, for uncapped workers, UA benefits shift 0.95 to one with the worker's UIB level. The precise formulate is $\text{UAB}_i = \min\{0.92b_i, \max\{0, 0.95b_i - \text{Spousal Earnings}_i + \text{Dependent Allowances}_i\}\}$. Due to the spousal earnings means test, not all workers are eligible for UA. For 1990, Lalive et al. (2006) report that median UA was about 70 % of the median UIB. Based on data from 2004, Card et al. (2007) gauge the average UA at 38 % of UIB for the typical job loser.

In consequence, the wage sensitivity to benefits for the finite benefit duration is:

$$\frac{dw^{\text{finite}}}{db} = \frac{(1-\phi)\tau}{\frac{1}{1-\zeta\left(1-\alpha\frac{ds}{db}\right)} - (1-\phi)(1-\tau)} \tag{A7}$$

Using the fact that only 20% of workers exhaust their benefits and the fraction of the unemployment spell a separator spends on UA (vs. UI), we calibrate $\zeta = \frac{0.8\cdot 0+0.2\cdot 1/f}{1/f} = 0.2$, where $1/f$ denotes both expected duration remaining in nonemployment after benefit exhaustion as well as the average time at separation. A fraction $\alpha \approx 0.6$ of those workers move on to the post-UI substitute unemployment assistance. We calculate the fraction α as the share of workers who take up post-UI benefits within a 60 day window of exhausting their UI benefits; for this analysis, the sample is restricted to workers who do not take up employment in the same time window. Among those who receive them, the post-UI benefits are almost one-to-one indexed to the household's previous, actually received UI benefit level, and thus move in lock-step with benefit *changes*.[76]

As a result, the term $[1-\zeta\left(1-\alpha\frac{ds}{db}\right)] = 0.91$ provides negligible attenuation of the wage-benefit sensitivity: the wage benefit-sensitivity remains at 0.24. This is an underestimate if the workers exhausting UI have a lower job finding rate and thus a larger τ, which for that subset of workers would greatly amplify the sensitivity: setting $\tau = 0.12$ rather than 0.07 will restore $dw/db = 0.36$ for those workers.

In other words, since an initially employed Austrian worker has a low probability of benefit exhaustion and, moreover, post-UI benefits are indexed to UI benefits our design is robust to finite benefit duration. Perhaps this fact also explains why we also do not find wage effects from potential benefit duration extensions in Section 5.1 and Appendix H. We have also not found evidence that workers with particularly high potential benefit durations exhibit different wage sensitivity to the unemployment benefit level.

VII. Limited take-up and UI wait periods for unilateral quitters. Austria has broad UI eligibility that encompasses even quitters. There is however a 28-day wait period, after which UI recipients enjoy full potential benefit duration (i.e. for 28 more calendar days than their peers receiving UI immediately). We evaluate this consideration in two steps. First, we define a probability $1-\upsilon$ that a bargaining progress breakdown leaves the worker eligible for UI whereas at probability υ leaves the worker ineligible (for any social insurance program). Ineligible workers wait 28 days until they receive UI, implying that $z^{\text{ineligigble}} = z^{\text{eligigible}} - b$ for initial period of nonemployment. In discrete time, $N^{in} = z^{in} + f^m\beta E^{in} + (1-f^m)\beta N^{el}$, such that:

$$\mathbb{E}[N] = (1-\upsilon)N^{el} + \upsilon N^{in} \tag{A8}$$

$$= (1-\upsilon)N^{el} + \upsilon\left[z^{in} + (1-f^m)\beta N^{el} + f^m\beta E^{in}\right] \tag{A9}$$

$$= N^{el}\left(1-\upsilon\left[1-(1-f^m)\beta\right]\right) + \upsilon\left[z^{in} + f^m\beta E^{in}\right] \tag{A10}$$

[76] The law stipulates that post-UI benefits move with a slope of 0.92 along with previous UI benefits. There are additional additive components, e.g., benefits for dependents and reductions for other income, and the post-UI benefit level is capped at 0.95 times previous UI benefits. For the calibration, we pick the middle point between 0.95 and 0.92 and assume $ds/db \approx 0.935$.

The effect of b on the expected outside option is bounded from below by an attenuation factor times our previously derived sensitivity of N to b, due to $dE^{in}/db \geq 0$ and $dz^{in}/db \geq 0$:

$$\frac{d\mathbb{E}[N]}{db} \geq \frac{dN^{el}}{db} \underbrace{[1 - \upsilon + \upsilon(1 - f^m)\beta]}_{\approx 1 - \upsilon f^m} \tag{A11}$$

where $\beta = 0.9965 \approx 1$ at monthly frequencies. Therefore, the wage-benefit sensitivity is at least:

$$\frac{dw^{\text{Limited Elig.}}}{db} \geq (1 - \phi) \cdot \frac{1 - \upsilon f_m}{1 + \phi\,(\tau^{-1} - 1)} \tag{A12}$$

Calibrating the bracketed attenuation factor with $f = 0.12$ (incorporating a monthly $\beta = 0.9965$ will not change the result) implies that the attenuation is by 0.88 *even if all separations were to go into nonemployment with initial ineligibility* (i.e. $\nu = 1$). That is, since so many nonemployment spells go beyond one month, this institutional feature has limited effects on the predicted wage-benefit sensitivity.[77] This benchmark thereby also evaluates also delayed take-up for any reason even among the immediately eligible. In reality, most separations into nonemployment in Austria entail UI eligibility such that ν is closer to zero than to one, greatly limiting attenuation.

VIII. Wage stickiness rather than period-by-period bargaining. Real-world wage renegotiations may occur infrequently on the job, e.g. arrive at rate γ. Then, the measured wage response to a (permanent) shift in db is increasing in time-since-reform dt, and on average:

$$\mathbb{E}\left[\frac{dw^{\text{sticky,dt}}}{db}\right] = (1 - e^{-\gamma dt}) \cdot \frac{1 - \phi}{1 + \phi\,(\tau^{-1} - 1)} + e^{-\gamma dt} \cdot 0 \tag{A13}$$

Empirically, we approach this aspect from three angles. First, we start with observing average wage earnings in the first full calendar year after the reform takes effect.[78] We then additionally investigate earnings in the calendar year in the subsequent year, allowing two years for wage pass-through, whereas existing evidence on wage stickiness suggests half of wages to get reset within one year.[79] Second, we consider wage effects in *new jobs*, for workers switching jobs with or without unemployment spells in between, where we follow the standard assumption that new jobs get to set wages initially in a flexible way. Third, we sort jobs (firms) by the usual degree of wage volatility, essentially by an empirical proxy for γ, and investigate heterogenous wage effects.

IX. Taxation. Our bargaining setup so far sidesteps the tax system. In Austria, benefits are not taxed, whereas wages and profits are. If the employer's and the worker's income taxes are approximately taxed by the same τ, then changes in *net* benefits b enter the worker's outside option relatively as $\frac{b}{1-\tau}$. For $\tau \approx 0.3$, accounting for the tax system would therefore *amplify* the predicted sensitivity of wages to b by $\frac{1}{1-0.3} \approx 1.41$ for any given ϕ. Analogously, a given wage response will, structurally interpreted in a model of Nash bargaining with nonemployment as the

[77] This attenuation is further slightly reduced with finite PBD because the one-month delay does not reduce subsequent PDB, such that at probability $(1 - f^m)^{\text{PBD Months}}$, the worker "buys back" the first month (valued as $b - \alpha s$, i.e. the premium over UI substitute s adjusted for eligibility probability α.

[78] An exception is the 1989 reform, which takes effect mid-year.

[79] See, e.g., Barattieri et al. (2014) for the United States, and Sigurdsson and Sigurdardottir (2016) for Iceland. Finally, the evidence on inside-option rent sharing documents same-year wage effects for incumbent workers.

outside option, would for example imply 1.41 as large a worker bargaining power parameter. As an empirical robustness check, we further report specifications in which we scale up benefits (and benefit changes) to correspond to (hypothetical) gross benefit changes so that all calculations occur in terms of gross units. The results of the robustness check lead to the same conclusion as our main results and also reveal an insensitivity of wages to (gross) benefit changes.

X. Bounded rationality: myopia. Our framework assumes that all workers and firms are rational in particular about their expectations about the nonemployment state. However, myopic agents may discount the future by more than the social planner would on their behalf. In our model, this consideration would most simply be nested with a larger ρ. Since the initial post-separation state is unemployment, $\frac{\partial \tau}{\partial \rho} > 0$, implying that the agents put more weight on b, amplifying the effect on the wage-benefit sensitivity.

XI. Bounded rationality: bounded rationality and k-level thinking. Other deviations from the fully rational benchmark may however attenuate the effect. The wage sensitivity consists of the direct effect as well as expectations about wage responses in subsequent jobs. The latter feedback effect is a strong ingredient into the theoretical sensitivity of wages to benefits and hard-wired into the model. A promising theory to attenuate the effect will therefore attenuate the feedback effect of re-employment wages into the wage bargain at hand. Perhaps $k = 1$-level thinking may provide such a rationalization: agents act while ignoring equilibrium effects because they only consider one iteration of the equilibrium adjustment, but not the reemployment wage adjustment. The resulting wage-benefit sensitivity would then be limited to the direct effect:

$$\frac{dw^{(k\,=\,1)}}{db} = (1 - \phi)\tau \tag{A14}$$

Calibrating the ($k = 1$) sensitivity to $\tau = 0.07$ and $\phi = 0.1$ would return a smaller sensitivity of 0.063 on average. Larger effects would emerge with $k > 1$. However, the sensitivity is still increasing in τ, linearly so now. In Section 4.4, we test whether workers with larger τ (predicted time on UI post-separation) have larger pass-through, and do not find evidence for a slope, in contrast to the prediction from even ($k = 1$)-level thinking.

C.2 Additional Wage Setting Models

C.2.1 Bilateral Nash Bargaining Between an Individual Household with a Potentially Multi-Worker Firm

The model presented here forms the basis for the additional model variants presented in Section C.1. Here we generalize the structural wage equation by a variety of dimensions, starting with a bilateral bargaining between a worker and a multi-worker firm, long-term jobs and non-linear utility.

Hiring costs and ex-post job surplus. Employment relationships carry strictly positive joint job surplus because of hiring costs, $c'(H) > 0$, $c(0) = 0$, which are sunk before bargaining. In consequence, both the worker and the firm would strictly prefer to form the match (for an efficiently set wage) than part ways.

Household. Labor is indivisible and hours are normalized to one. In a given period s, the household is either employed or unemployed ($e_s \in \{0, 1\}$). There is no direct labor supply channel; workers accept job opportunities when they emerge. When employed, the worker earns wage w_s. The employed household incurs labor disutility γ. When unemployed, the worker collects unemployment insurance benefits b. With probability f, the worker finds a job and moves into employment (and wage bargaining) next period. With probability $1 - \delta$, employed job seekers lose their jobs and become unemployed. Households can borrow and save at interest rate r, fulfilling a lifetime budget constraint.[80] Households own firms and collect capital income in form of dividends d_t.

$$V^H(e_t) = \max_{c_t} \mathbb{E}_t \sum_{s=t}^{\infty} \beta^{s-t} u(c_s) - \gamma \cdot \mathbb{I}(e_s = 1) \tag{A15}$$

$$\text{s.t.} \quad \mathbb{E}_t \sum_{s=t}^{\infty} \frac{c_s}{(1+r)^{s-t}} \leq \mathbb{E}_t \sum_{s=t}^{\infty} \frac{\mathbb{I}(e_s = 1) \cdot w_s + \mathbb{I}(e_s = 0) \cdot b + d_s}{(1+r)^{s-t}} + a_t \tag{A16}$$

$$\mathbb{E}_t[e_{s+1} | e_s = 1] = 1 - \delta \ \ \forall s \tag{A17}$$

$$\mathbb{E}_t[e_{s+1} | e_s = 0] = f \ \ \forall s \tag{A18}$$

The household's problem can be cast in dynamic programming in familiar form associated with search and matching models:

$$U_t = \max_{c_t} u(c_t | e_t = 0) + (1 - f)\beta \mathbb{E}_t U_{t+1} + f \beta \mathbb{E}_t \widetilde{W}_{t+1} \tag{A19}$$

$$W_t = \max_{c_t} u(c_t | e_t = 1) - \gamma + (1 - \delta)\beta \mathbb{E}_t W_{t+1} + \delta \beta \mathbb{E}_t U_{t+1} \tag{A20}$$

where U_t denotes the value function of a worker that is currently unemployed ($e_t = 0$) and W_t for the employed worker ($e_t = 1$). $\widetilde{W}_{t+1}$ denotes a potential subsequent job. The household's benefit from employment, at a given wage w, is pinned down by the difference in income, net of the disutility of labor, plus the shift in the continuation value:

$$W_t(w) - U_t = \lambda(w - b) - \gamma + (1 - \delta) \cdot \beta \mathbb{E}_t(W_{t+1} - U_{t+1}) - f \cdot \beta \mathbb{E}_t(\widetilde{W}_{t+1} - U_{t+1}) \tag{A21}$$

Firm. The multi-worker firm, facing a competitive product and capital market, employs N_t workers in long-term jobs and rents capital K_t at rate R_t. Capital rentals are made given wages after bargaining.[81] Production follows constant returns with all labor being of the same type and thus perfect substitutes, which together with rented capital implies linear production in labor, avoiding multi-worker bargaining complications. Each period, a fraction $1 - \delta$ workers separate into unemployment exogenously, whereas the firm hires H_t workers at cost $c(H_t)$. Employment follows a law of motion as a constraint in the firm's problem. The firm maximizes the present

[80] Due to the absence of moral hazard in job search and due to the law of large numbers on the part of the unmodelled lenders, the expected lifetime earnings do not complicate the borrowing potential of households. Since average unemployment spells are short in nature (on the order of 45% at the monthly rate in the US), we abstract from shifts in lifetime earnings in shifting lifetime wealth and therefore the multiplier on the budget constraint. Therefore, we assume that the budget constraint multiplier is approximately independent of the employment status, $\lambda(e = 0) \approx \lambda(e = 1)$.

[81] Rental of capital inputs and this timing conventions precludes the complication of potential investment holdup associated with bargaining.

value of payouts to the households (stockholders):

$$V_t^F(N_t) = \lambda \mathbb{E}_t \max_{H_t, K_t} \sum_{s=t}^{\infty} \beta^{s-t} [F(K_t, N_t) - w_t N_t - R_t K_t - c(H_t)] \tag{A22}$$

$$\text{s.t.} \quad N_{t+1} = (1-\delta) N_t + H_t \tag{A23}$$

The firm's problem can be cast in dynamic programming in familiar form associated with search and matching models; where the firm's state variable is the employment level:

$$V_t^F(N_t) = \max_{H_t, K_t} \left\{ \lambda [F(K_t, N_t) - w_t N_t - R_t K_t - c(H_t)] + \beta V_{t+1}^F(N_{t+1}) \right\} \tag{A24}$$

$$\text{s.t.} \quad N_{t+1} = (1-\delta) N_t + H_t \tag{A25}$$

The firm's input demand (capital rentals and hiring) is described by the following first-order conditions and the envelope condition for μ_t, the shadow value on the law of motion for employment, pinned down by the envelope condition:

$$F_K(N_t, K_t) = R_t \tag{A26}$$

$$c'(H_t) = \beta \mathbb{E}_t \frac{\partial V_{t+1}(N_{t+1})}{\partial N_{t+1}} \tag{A27}$$

$$\frac{\partial V_t^F(N_t)}{\partial N_t} = \lambda [F_N(K_t, N_t) - w_t] + (1-\delta) \beta \mathbb{E}_t \frac{\partial V_{t+1}^F(N_{t+1})}{\partial N_{t+1}} \tag{A28}$$

$$\Rightarrow c'(H_t) = \beta \mathbb{E}_t \left[F_N(K_{t+1}, N_{t+1}) - w_{t+1} + (1-\delta) c'(H_{t+1}) \right] \tag{A29}$$

These conditions describe input demand *given* the wages firms expect to pay at the bargaining stage. Firm's value of employing an incremental individual worker (hired last period and becoming productive, and thus bargaining, in period t) is:

$$\Delta V_t^F(N_t, w) = \lambda [F_N(K_t, N_t) - w] + (1-\delta) \beta {V_{t+1}^F}'(N_{t+1}) \tag{A30}$$

Nash wage bargaining. Nash bargaining solves the following joint maximization problem, by which the worker and the firm pick a Nash wage w^N that maximizes the geometric sum of net-of-wage surplus of the match to the worker $W(w) - U$ and of the firm $\Delta V_t(N_{t-1}, w)$, weighted by exponents ϕ and $1-\phi$:

$$w^N = \arg\max_w \, (W(w) - U)^{\phi} \times \left(\Delta V^F(N_t, w) \right)^{1-\phi} \tag{A31}$$

$$\Rightarrow W(w^N) = U + \phi \underbrace{\left(\Delta V^F(N_t, w) + W(w^N) - U \right)}_{\text{Job surplus}} \tag{A32}$$

That is, the employed worker receives her outside option U plus share ϕ of the job surplus: the sum of the parties' inside options net of their outside options. Worker bargaining power parameter ϕ guides the share of the surplus that the employed worker receives, on top of her outside option. Next, we solve for the Nash wage w^N that implements this surplus split.

The model recognizes the long-term nature of jobs.[82] Wages then not only reflect current conditions but also expectations about future inside and outside values, through the continuation

[82] We consider period-by-period bargaining in the main part of the this exposition.

values. An important implication of Nash bargaining to apply also in subsequent period, renders the Nash wage identical to the myopic thought experiment except for a continuation term:[83]

$$w^N = \phi F_N(K_t, N_t) + (1-\phi)(1-\beta)\frac{U}{\lambda} \tag{A33}$$

The condition mirrors the continuous-time conditions in the main text, where $1-\beta \approx \rho$ and U/λ corresponds to N.

C.2.2 Alternative Bargaining Model: A Simple Version of Credible Bargaining (Hall and Milgrom, 2008)

We describe a simple version of the credible bargaining protocol proposed by Hall and Milgrom (2008) that relies on alternating offers. The model remains empirically untested but has been favored for its macroeconomic upside: it generates endogenous rigidity to shocks and therefore amplifies employment fluctuations (see, e.g., Christiano et al., 2016; Hall, 2017). Specifically, "the credible bargaining equilibrium is less sensitive to conditions in the outside market" (Hall, 2017, p. 310).

The firm and the worker make alternating wage offers. In between bargaining rounds, the firm incurs a delay cost γ. Importantly, in our discussion here we allow the worker's flow utility z to differ from the flow unemployment benefits b, unlike in the existing treatments in macroeconomic applications of this bargaining protocol. After all, for an employed worker z may capture leisure, disutility from bargaining, the old, still-prevailing wage, and so forth. Moreover z may accordingly differ between an unemployed negotiator entering a new job, and an already-employed job seeker potentially seeking to renegotiate.

In between rebargaining rounds, the match may dissolve. The probability of this bargaining-stage separation is s, which may be different from the probability of standard exogenous job destruction during production, δ. N will therefore enter the problem either through s or δ, with importantly opposite effects on the worker's reservation wage, as we show below.

Inside values. Preserving unemployment value N for the worker and a zero for the firm's vacancy value due to free entry, we define the inside value of the worker $W(w)$ and the firm $J(w)$ (where we have set vacancy value $V=0$ due to free entry):

$$E(w) = \frac{w + \beta\delta N}{1-\beta(1-\delta)} \tag{A34}$$

$$J(w) = \frac{p - w}{1-\beta(1-\delta)} \tag{A35}$$

Strategies for wage offers. The optimal strategies are described by reservation wages. The worker's reservation wage is $\underline{w}$, and the firm's reservation wage is $\overline{w} > \underline{w}$, which we have yet to

[83] The derivation recognizes that $\phi\beta\mathbb{E}_t(W_{t+1} - U_{t+1}) = (1-\phi)\beta\mathbb{E}_t {V_{t+1}^F}'(N_t)$ by Nash bargaining in $t+1$ *in the job at hand*. In consequence, the $(1-\delta)$-weighted continuation terms cancel out:

$$(1-\phi)\left[\lambda(w^N - b) - \gamma + (1-\delta)\cdot\beta\mathbb{E}_t(W_{t+1} - U_{t+1}) + f\cdot\beta\mathbb{E}_t(\widetilde{W}_{t+1} - U_{t+1})\right] = \phi\left[\lambda[F_N - w^N] + (1-\delta)\beta\mathbb{E}_t {V_{t+1}^F}'(N_t)\right]$$

derive. When it is the worker's (firm's) turn to make an offer, she (it) will offer $\overline{w}$ ($\underline{w}$), leaving the firm (worker) indifferent between rejecting and rebargaining.

Worker's strategy: offer firm's reservation wage. The firm's indifference condition defines the worker's strategy, to offer the firm its reservation wage $\overline{w}$:

$$\frac{p-\overline{w}}{1-\beta(1-\delta)} = -\gamma + \beta(1-s)\frac{p-\underline{w}}{1-\beta(1-\delta)} \tag{A36}$$

$$p-\overline{w} = -(1-\beta(1-\delta))\gamma + \beta(1-s))(p-\underline{w}) \tag{A37}$$

$$\overline{w} = (1-\beta(1-\delta))\gamma + \beta(1-s))\underline{w} - p(1-\beta(1-s)) \tag{A38}$$

Firm's strategy: offer worker's reservation wage. Analogously, the firm offers the worker her reservation wage. The definition of the reservation wage is such that the worker is rendered indifferent between $\underline{w}$ and waiting a period to make her own offer to the firm – which in turn will optimally equal the firm's reservation wage $\overline{w}$:

$$\frac{\underline{w}+\beta\delta N}{1-\beta(1-\delta)} = z + (1-s)\beta\frac{\overline{w}+\beta\delta N}{1-\beta(1-\delta)} + s\beta N \tag{A39}$$

For $s=1$, i.e. rejection by the worker results in unemployment, the reservation wage is equal to the flow value-while-bargaining z plus an "amortized", flow value of unemployment U:

$$\Leftrightarrow \underline{w} = (1-\beta(1-\delta))z + \beta(1-\beta(1-\delta))N \tag{A40}$$

The worker's reservation wage is maximally sensitive to N if a rejected offer indeed results in unemployment, i.e. for $s=1$. In fact, if the time period is short, the reservation wage is the flow payoff of not accepting the offer (and thus forgoing z this period), and the excess of that going forward compared to unemployment.

More generally, we can rearrange the terms to isolate the present value of wages promised by the firm to leave the worker indifferent:

$$\frac{\underline{w}}{1-\beta(1-\delta)} = \overbrace{z}^{\text{flow value while barg.}} + (1-s)\,\overbrace{\beta\frac{\overline{w}}{1-\beta(1-\delta)}}^{\text{Follow-up offer}} + \beta\overbrace{(s-\delta)\frac{1-\beta}{1-\beta(1-\delta)}N}^{\text{Rel. unemp. risk: bargaining vs. producing}} \tag{A41}$$

$$\Leftrightarrow \underline{w} = (1-\beta(1-\delta))z + (1-s)\beta\overline{w} + \beta(s-\delta)(1-\beta)N \tag{A42}$$

Given N, we can solve for worker and firm reservation wages. The worker's reservation wage (and the optimal wage the firm would offer the worker) is:

$$\underline{w} = \frac{(1-\beta(1-\delta))z + (1-s)\beta\left[(1-\beta(1-\delta))\gamma + p(1-\beta(1-s))\right]}{1-\beta^2(1-s)^2} + \frac{\beta(s-\delta)}{1-\beta^2(1-s)^2}\times(1-\beta)N \tag{A43}$$

The wage insensitivity to the nonemployment value $(1-\beta)N$ (ρN in our continuous time setting) is:

$$\frac{d\underline{w}}{d(1-\beta)N} = \frac{\beta(s-\delta)}{1-\beta^2(1-s)^2} \tag{A44}$$

Therefore, for $s = \delta$, the wage is insensitive to the nonemployment value. And still, the model can still accommodate small rent sharing coefficients:

$$\frac{d\underline{w}}{dp} = \frac{(1-s)\beta(1-\beta(1-s))}{1-\beta^2(1-s)^2} \tag{A45}$$

For $s = \delta \approx 0$, this becomes very close to zero:

$$\left.\frac{d\underline{w}}{dp}\right|_{s=\delta\approx 0} \approx \beta\frac{1-\beta}{1+\beta^2} \tag{A46}$$

Therefore, the protocol can accommodate wages that are, in the same calibration, insensitive to outside options including the nonemployment value, and have small wage responses to inside option shifts such as rent sharing (e.g., for small s).

The role of s vs. δ in mediating the effect of N on worker reservation wages. As in the standard Nash model, N denotes both the outside option of the worker in case of bargaining breakdown during the bargaining process (weighted by s) as well as the value of an exogenous job destruction (arriving with probability δ). The net effect of U on the worker's reservation wage $\underline{w}$ depends on the relative size of s and δ in the alternating offer bargaining protocol.

A useful benchmark is $s = \delta$. Here, the worker is exposed to N with the same probability – whether she decides to reject the firm's offer to get a chance to make her counteroffer (where with probability s bargaining breaks down and she becomes unemployed), or whether she accepts the current offer – when therefore production begins a period earlier (which exposes her job destruction probability δ, and thus she puts a δ weight on N one period earlier). In this knife-edge case, the worker's reservation wage $\underline{w}$ turns *completely insensitive to N – and thus b*, and is only driven by the while-bargaining flow utility z (which need not contain b) and the (present value of the) wage gain resulting from getting the chance to make the (in subgame perfect equilibrium expected to be accepted) counteroffer, $\overline{w}$.

Calibrating AOB to $\delta = s$ *could in principle* generate wage insensitivity to N (and thus b, assuming that $z \neq b$ for an incumbent worker). However, for cases where δ is small relative to s, AOB may feature high sensitivity of $\underline{w}$ to shifts in N and thus b. For bilateral negotiations, perhaps $s \approx 1$ with $\delta < 5\%$ may not be a poor approximation of the real world, for example.

Whether $s \approx \delta$ is empirically realistic as such is difficult to assess because independently calibrating s directly to empirical evidence is not straightforward.[84] For example, Hall (2017) calibrates $s = 0.013$ and $\delta = 0.0345$, which here would lead worker reservation wages to *fall* when N were to increase ceteris paribus. Conversely, Hall and Milgrom (2008) sets $\delta = 0.0014$ and $s = 0.0055$ at the daily frequency, which in our version of the AOB model leads increases in N to *increase* wages (reservation wages of the worker) ceteris paribus.

[84] For example, in a situation with multiple applicants, s from the perspective of the worker should capture also the risk of losing out to the next applicant, with higher probability s than the incumbent worker would worry about being displaced by a colleague or get high with a job destruction shock δ. This would suggest that $s >> \delta$.

The role of z vs. b. While we intentionally define z (the flow utility of the worker while bargaining, perhaps not containing b for, e.g., an incumbent worker) separately from b (the nonemployment payoff, contained in N), the original authors and the follow-up literature (see, e.g., Hall and Milgrom, 2008; Christiano et al., 2016; Hall, 2017) set both to be the same, and thus explicitly include unemployment benefits in $z = b$. But these authors are interested in new hires and their wage responses; our setting also studied incumbent workers, whose z is unlikely to contain b but rather reflect a default, previous wage. Somewhat in tension to the model however, we do not find evidence for new hires' out of unemployment to exhibit large wage sensitivity.

D Interpreting Firm- and Industry-Level Rent Sharing Estimates in a Bargaining Setting

A larger body of evidence examines the effect of idiosyncratic inside values of jobs on wages: rent sharing of firm- and industry-specific productivity and profit shifts, which is consistent with rent sharing. Card et al. (2018) review that literature. A leading interpretation is that shifts in surplus arise from TFP shifters. A structural interpretation of a shift in the inside value of the employment relationship in Nash bargaining is:

$$w^N = \phi \times p + (1-\phi) \times \Omega \tag{A47}$$

$$\Rightarrow dw^N = \phi \times \underbrace{dp}_{\text{Rent sharing variation}} \tag{A48}$$

Below, we proceed under the assumption that p shifts are well-measured. If so, the rent-sharing result can be readily interpreted in a bargaining framework.

Elasticity specifications. A common empirical estimate comes in an *elasticity* of wages with respect to value added per worker, measured at the firm or industry level:[85]

$$\xi = \frac{dw/w}{dp/p} \tag{A49}$$

Structurally interpreted in the Nash bargaining setup, this elasticity turns out to capture a product of two distinct terms: the ratio of the marginal product over the wage, times bargaining power ϕ:

$$\frac{dw^N/w^N}{dp/p} = \phi \times \frac{p}{w^N} \tag{A50}$$

Rent sharing elasticities ξ therefore provide *upper bounds* for ϕ:

$$\phi = \frac{w}{p} \cdot \xi \leq \xi \tag{A51}$$

Of course, if the ratio of w to p, the marginal product of the worker, were known, ϕ can be immediately backed out. However, the very motivation of models of imperfectly competitive labor markets, which give rise to bargaining, rent sharing and wage posting, is that these two values can diverge dramatically and in heterogeneous ways.

This bound is tight if $\phi \approx 1$ or if $b \approx p$ since then, by Nash, $w \approx p$. However, this bound is less useful in case the elasticity is small. In that case, ϕ is implied to be small, and w may deviate from MPL greatly unless b is close to p. In the data, x is indeed estimated to be small, implying a small bargaining power parameter and also permitting a small wage–MPL ratio absent high b. In this case, information on the *level* of b is required again to make progress. Formally, one can plug in the Nash expression for w to obtain a correspondence between ϕ and

[85] Some studies consider profit elasticities rather than value added shifts; rescaling into value added elasticities that rely on strong assumptions about homogeneity and the comovement of variable and fixed factors with productivity shifts.

p, b and the measured wage–productivity elasticity ξ as follows:

$$\phi = \frac{b\xi}{p(1-\xi)+b\xi} = \frac{1}{\frac{p}{b}\cdot\frac{1-\xi}{\xi}+1} \tag{A52}$$

We caution that it may therefore be impossible to translate the elasticity estimates into bargaining power parameters without strong quantitative assumptions about the bargaining structure, chiefly because the observable variables, w and perhaps p, do not uniquely map into b and ϕ.

An interesting example is Card et al. (2015), who among many verification tests also estimate the heterogeneity in ξ for women and men. The elasticity for women is below the elasticity for men. However, even with measured productivity shifts being homogeneous, two distinct factors may cause the elasticity differences within a bargaining framework. First, either men and women wield differential bargaining power ϕ^g where $g \in \{w, m\}$. Second, $\phi^w = \phi^m$ yet $p^f/w^f < p^m/w^m$ or $p^f/b^f < p^m/b^m$. That is, the latter scenario could arise if the opportunity cost of working of women $b^f > b^m$, as would also be in line with their larger labor supply elasticities, higher unemployment, and lower participation overall.

The information needed to translate a given value added rent sharing elasticity into the point estimate for ϕ therefore requires strong assumptions or empirical knowledge about b. Measuring the level of the worker's flow valuation of nonemployment b (and thus surplus $b = MPL - b$) is difficult even for an average household (see, e.g., Chodorow-Reich and Karabarbounis, 2016). z includes unemployment benefits but also any utility differences between the employed and unemployed state, or other income. $\frac{z}{MPL-z}$ is similarly elusive and related to the fundamental surplus in Ljungqvist and Sargent (2017), which is $\frac{MPL}{MPL-z}$).

Identifying ϕ off *level* shifts in p rather than percentage shifts eliminates the complications arising from elasticities, .

E Additional Institutional Information and Validation Exercises

E.1 Earnings Base for Unemployment Benefit Determination Throughout our Sample Period

From 1977 until 1987, the earnings base for calculating unemployment benefits are generally the earnings in the last full month of employment before the beginning of an unemployment spell (§ 21 (1) Arbeitslosenversicherungsgesetz 1977). Importantly, Austrian wage contracts are structured to pay out 14 instead of 12 monthly salaries, with the two additional ones typically paid out at the beginning of the summer and at the end of the year, respectively. These additional payments are proportionally factored into and added to the earnings in the last four weeks before the beginning of an unemployment spell to calculate unemployment benefits (§ 21 (2) Arbeitslosenversicherungsgesetz 1977). To illustrate, someone with constant monthly earnings of ATS 10,000 would be paid an annual salary of ATS 140,000. Unemployment benefits would be calculated based on monthly earnings of ATS 11,667 based on the monthly earnings of ATS 10,000 plus 1/12 of the two additional bonus payments (ATS 10,000 * 2 / 12 = ATS 1,667). A reform in 1987 changed the calculation period from the last month before unemployment to the last six months before unemployment, while still factoring in the 13th and 14th monthly salary proportionally. A 1996 reform then changed the calculation more substantially by using last year's earnings for unemployment spells beginning after June 30 of a given year and the earnings in the second to last year for spells beginning before June 30. The 1996 reform left the treatment of the 13th and 14th salaries unchanged.

Sources. The laws are contained in the respectively updated versions of § 21 of the Unemployment Insurance Act (Arbeitslosenversicherungsgesetz, ASVG).

E.2 Predicting Benefit Receipts from Lagged Income

The crucial ingredient for our strategy to use shifts in the benefit schedule is the correct measurement of the income concept used by the UI system to assign *employed* workers the benefit they would receive conditional on a separation leading to nonemployment.

This step requires a review of the relevant earnings concept for UIB determination. Two of our four reforms we study occurred before 1987, when the earnings in the last month of full employment were the earnings concept. In 1989, the earnings concept referred the average earnings in the last six months. In our identification strategy for these reforms, we assign an employed worker her *predicted* contemporaneous earnings to assign her a benefit level.

We validate this monthly earnings concept from the ASSD by predicting unemployment insurance benefits for actual *separators* and comparing these predicted UIBs with actually received UIBs.[86] To this end, we merge the unemployment benefit data (AMS) with the ASSD

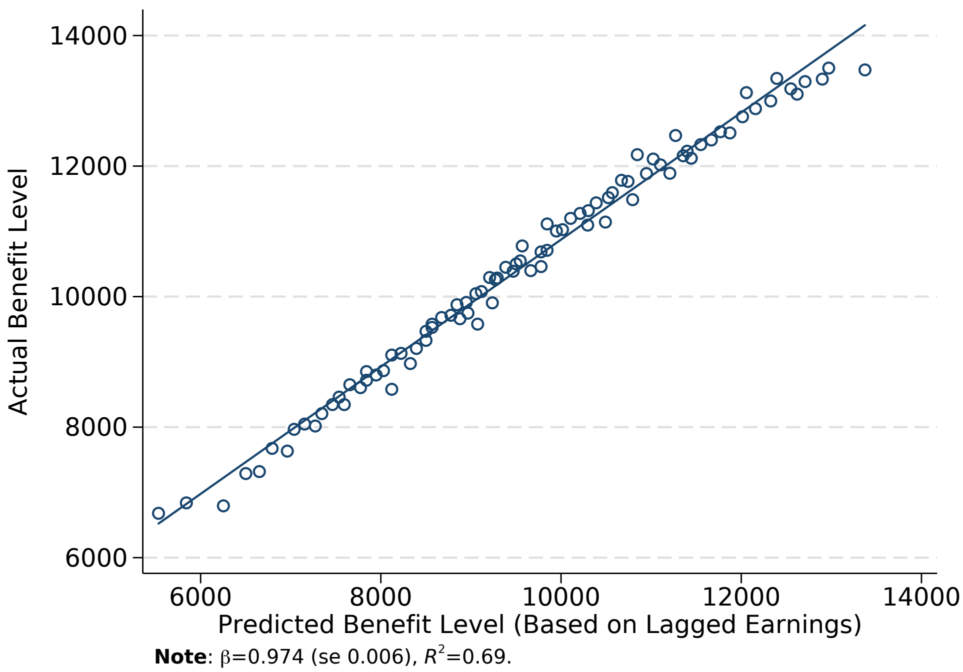
[86]The ASSD provides us with administrative data on earnings average earnings the worker received from an employment relationship over the course of the calendar year. Together with daily information on the employment spell duration for each calendar year, we construct average monthly earnings. By construction, our earnings measure cannot capture month to month variation in earnings, and therefore generally (except for separations occurring on February first) do not specifically refer to the full month's earnings before the separation.

(social security based data), which contains our earnings measure. All measures are nominal and not inflation-adjusted.

Figure A.11 plots the relationship between actual and predicted UI benefit levels for all Austrian separators drawing UI benefits. The relationship traces out a slope that is on average 0.974. We therefore conclude that our approach accurately assigns employed workers by their ASSD-based earnings into the UI benefit levels.

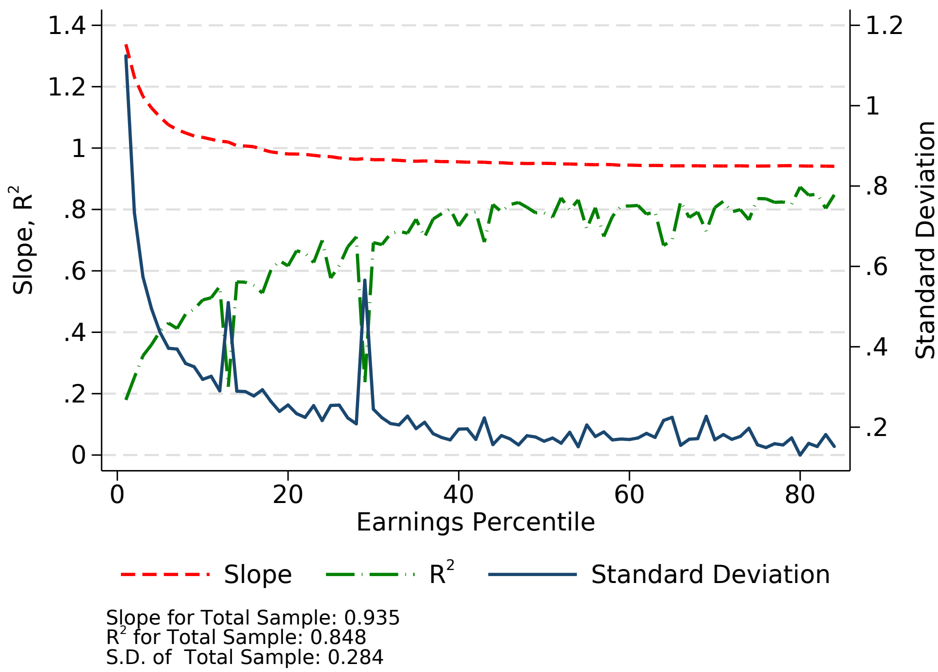
In addition, we also validate that our earnings prediction works well across the earnings distribution with coefficients on predicted and actual benefits close to 1 throughout (Figure A.12).

Figure A.11: Validation: Actual Benefit Receipts vs. Predicted Receipts from Measured Pre-Separation Average Earnings



Note: The figure draws on earnings data from the ASSD and benefit data from the AMS. The x-axis shows predicted benefit levels based on earnings data from the ASSD. The y-axis shows actually paid-out benefits based on data from the AMS. The figure is a binned scatter plot based on individual-level observations.

Figure A.12: Quality of Wage Prediction Procedure



Note: The Figure reports several statistics by earnings percentile for the income prediction procedure. In particular, the figure reports the slope of actual to predicted wages, as well as the standard deviation of the residual and the R^2.

F Alternative Outcomes

In this section, we briefly discuss effects of the reforms on alternative outcomes: separations, unemployment duration, and sickness. Across specifications and outcomes, we find that the benefit increases were associated with quantitatively negligible effects on these outcomes that are statistically indistinguishable from zero in most specifications.

Separation and unemployment effects. The improvement in the nonemployment outside option may lead marginal workers to select into nonemployment that would have otherwise experienced higher wage growth (e.g. because they are young or have low tenure, and therefore high wage growth).[87] We therefore report treatment effects on separations and unemployment in Figure A.13 for one- and two-year horizons. The benefit change treatment is expressed in percentage points (i.e. 1ppt db/w is 1), the outcome variables are range from 0 to 1. We do not find a statistically or economically significant effect of the improved nonemployment option. [88] Figure A.13 also reports treatment effects for the probability of experiencing an employment to unemployment to employment (EUE) spell and the fraction of months spend on UI over the next one and two years. At the two-year level we see suggestive evidence that treatment increased the probability of an EUE spell and the fraction of months spend on UI, consistent with the prior literature on the effects of UI generosity on unemployment spell durations (see Lalive et al., 2006; Card et al., 2015, for evidence from Austria).

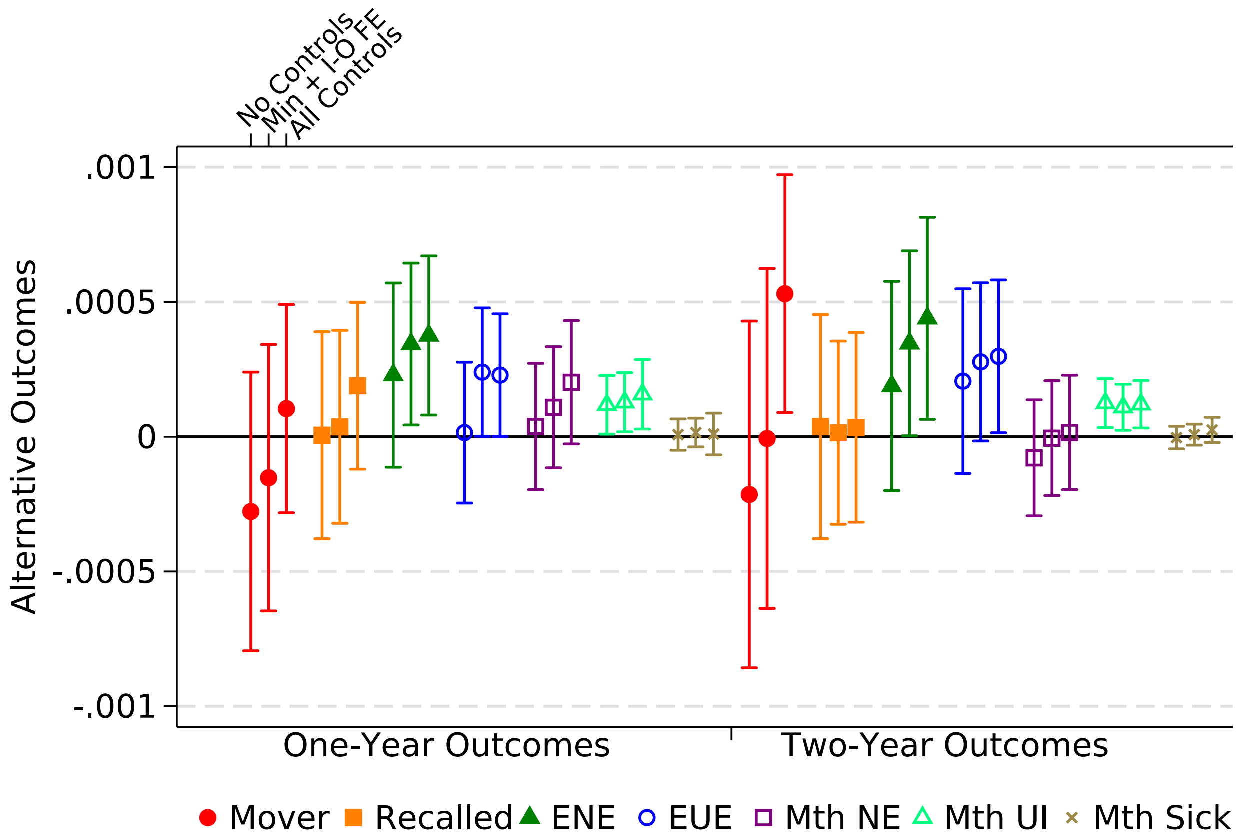
Efficiency wage effects: sickness incidence. Efficiency wage mechanisms may mask bargaining-related wage effects by lowering productivity, if workers are more likely to reduce effort. Yet, we have not found retention effects in the previous robustness checks. We additionally study the treatment effect on registered sickness spells in our administrative data in Figure A.13. Sickness spells do not respond to the improved outside option.[89]

[87]See Jäger et al. (2018) for evidence for older workers separating into nonemployment in response to a large increase in the potential benefit duration, along with characterization of the incremental separators.

[88]Consider the one-year mover estimate of around .0001. For a 10 percentage point increase in an individual's replacement rate, we can rule out an increase her mover probability by more than .1 percentage points. Compared to the baseline annual one-year mover rate of around 9 %, this would be an economically small increase in the mover rate. The upper end of the one-year mover confidence interval also implies that for a 10 percentage point increase in an individual's replacement rate, we can rule out an increase her mover rate by more than .5 percentage points.

[89]However, the productivity decrease would have had to be tremendous in order to account for the net wage effect of zero. If worker bargaining power were 0.1, then the 8ppt increase in the change in benefits (normalized by the wage) would have had to imply a $\frac{.39\times 8\text{ppt}}{0.1} = 31.2\text{ppt}$ decline in the productivity/wage ratio to offset the bargaining channel and leave wages unchanged on net. Since we expect that $w/p \approx 1$ we would need a similar order of magnitude *percent* decline in productivity to offset the bargaining effect.

Figure A.13: Employment and Separation Effects: Difference-in-Differences Regression Design



Note: The figure plots σ_0 coefficients from estimating equation 33 but replacing the $\frac{dw}{w}$ outcome with alternative outcomes. All of the alternative outcomes range from 0-1 (either transition probabilities or shares) and the dependent variable is the percentage point change in $\frac{dw}{w}$ (ranging from around 0 to 20). *Mover*, *Recalled*, *ENE* and *EUE* refer to indicators for going through different employment transition types in the next one or two years. Specifically, *mover* refers to individuals who are observed at a new employer and do not return to their original employer within the next one or two years. *Recalled* refers to individuals who leave their current employer for another employer or nonemployment and then return to their original employer within the next year or two (depending on the specification). *ENE* refers to employer to different employer transitions with an intermediate nonemployment spell (excluding paternity leave). *EUE* refers to employer to different employer transitions with an intermediate unemployment spell (measured by any UI receipt). *Mth NE*, *Mth UI*, and *Mth Sick* are the share of months in the next one or two years spent in different labor market states (they range from 0-1). *Mth NE* refers to the share of months nonemployed. *Mth UI* refers to the share of months on UI receipt. *Mth Sick* refers to the share of months on sick leave. The industry-occupation controls are time-varying fixed effects for each four-digit industry interacted with an indicator for a blue vs. white-collar occupation. Firm FE indicates that time-varying firm-fixed effects were included. The base rates for the outcome variables averaged across all the pre-reform years are: *Movers: .086*, *Recall: .035*, *ENE: .053*, *EUE: .032*, *Mth NE: .044*, *Mth UI: .017*, and *Mth Sick: .006*.

G Construction of Variables for Heterogeneity Analysis

This section describes the construction of the variables we use for the analysis of treatment effect heterogeneity. Below, we describe how we divide the heterogeneity groups into quintiles (unless otherwise stated), which we calculate separately for each reform. Throughout, we draw on the sample of all workers, regardless of whether they are employed all year, unless stated otherwise. Prime-age below refers to the ages 25 to 54. The variable `status` refers to workers' employment status in the ASSD status.

1. **Firm size**.
   - Begin with the universe of prime-age workers.
   - Count the total number of workers at the firm who are employed for the whole year.
   - Separate into four groups (*not* quintiles): firms less than 10 people, between 11 and 100 people, between 101 and 1,000 people, and larger than 1,000 people.
2. **The share of the worker's firm that was nonemployed in the last two years**.
   - Begin with the universe of prime-age workers.
   - Count the number of workers at the firm whose current employment spell is less than 24 months and who was unemployed in the month before their current employment spell (`status` = 1).
   - Count the total number of workers at the firm.
   - Divide the former by the latter.
   - We separate the sample into quintiles by worker.
3. **Tenure**
   - Begin with the sample of workers that is included in our analysis.
   - Split the tenure variable by quintile.
4. **Four measures of the time since nonemployment**.

   (a) **Months since nonemployment** (i.e. `status` $\neq 3$) Note that if employment spells are separated by only a single month of illness, then the month of illness and the two spells are counted as a single employment spell.

   (b) **Months since last UIB receipt** (i.e. `status` = 1). Note that the employment spell length keeps counting if the worker becomes sick, goes on disability, or takes a parental leave.

   (c) **Months since the last change in labor market status, skipping recalls from illness/leave**. This is the same as (a), but if a worker becomes nonemployed (i.e. `status` $\neq 1, 3$) and then returns to the same employer (i.e. the next status change is a change back into employment with the same firm), then the worker remains in the same employment spell throughout. Here, the spell count only resets when a worker receives UIB *or* when a worker becomes ill, goes on parental leave, etc. and does not return to the same firm when they are next employed.

(d) **Months since the last UIB receipt, skipping recalls after unemployment**. This is the same as 2), but if a worker becomes unemployed or nonemployed (i.e. `status` $\neq 3$) but then returns to the same employer (i.e. the next status change is a change back into employment with the same firm), then the worker remains in the same employment spell throughout. Here, the spell count only resets when a worker receives UIB and does not return to the same firm when they are next employed.

- We then implement the following procedures:
  - Begin with sample of prime-age workers.
  - Count the number of months for each of the four designations for each worker.
  - Split into quintiles.
  - Time: year t

5. **Local unemployment rates**.

- Begin with the universe of workers aged between 25 and 54 in a given year.
- A: Count the number of workers who are unemployed (`status`$= 1$) by area of residence using the `gkz` variable. The relevant information is only available starting in 1987, so we use their 1987 location for pre-1987 years.
- B: Count all the workers in the area of residence who are unemployed, sick, employed, self-employed, on parental leave, and in minor employment.
- Divide A by B.
- Here, we separate the sample into quartiles, not quintiles, because the sample bunches (in areas with large populations).

6. **Industry growth rates**.

- Begin with the universe of prime-age workers in a given year. Measure the leave-out mean industry growth rate. That is, for worker i in firm j and industry k, the growth between t and $t' = t + 1$ is

$$\triangle S_{ijk} = \frac{\sum_{j' \in J-j} \mathbb{1}(\text{Industry}_{j'} = k) \cdot (\text{Employment}_{j't'} - \text{Employment}_{j't})}{\sum_{j' \in J-j} \mathbb{1}(\text{Industry}_{j'} = k) \cdot \text{Employment}_{j't}}$$

- Count the number of workers in the firm (`benr`), not necessarily employed the whole year.
- Count the number of workers in the industry (`nace08`), not necessarily employed the whole year.
- Subtract, for each firm, its population from the number of workers in the industry.
- Find the same number for the next year $t+1$ (i.e. two years pre-reform), but only for workers employed at the same firm between year t and year $t+1$.
- Calculate the percent difference between the leave-out employment in the industry between year $t+1$ and year t.

7. **AKM firm effects**

- For each year in the reform sample t (i.e. the four years pre-reform), take the universe of prime-age workers from year $t-10$ to t. Before 1982, take 1972 as the earliest year. Do not use 1972 or 1973.
- Regress log-earnings on year fixed effects, a third-order polynomial in age, and an exhaustive set of worker and firm fixed effects (Abowd et al., 1999). We use the procedure in (Correia, 2017) for estimation.
- Save the firm fixed effects for year t and assign to workers in the regression sample.
- Divide the sample into quintiles based on the firm effects.

8. **Age**

   - Sample identical to the one we use for analysis.

9. **Four measures of within-firm wage dispersion**.

   (a) **The standard deviation of year-on-year earnings growth within the firm**.

   - Focus on a sample of workers who stay with their firm from one year to the next.
   - Drop workers at the ASSD cap and with missing earnings.
   - Calculate the individual earnings growth relative to last year. Winsorize to the 5th and 95th percentiles.
   - Calculate the standard deviation of the earnings growth by firm-year among workers who were in the same firm across the two years.

   (b) **The difference between the 75th and 25th percentile of within-firm earnings growth**.

   - Take the earnings growth variable and sample above.
   - For each firm-year, calculate the percentile for each worker's earnings growth.
   - Take the difference between the average earnings growth for an individual in the 74th-76th percentile to that for an individual in the 24th-26th percentile.

   (c) **The residualized standard deviation of log-earnings**. We base this measure on the residuals from a regression of log-earnings on tenure-experience-occupation-industry-year fixed effects, with standard deviations calculated at the firm-year level. Tenure $n(i,t)$ is made up of 5 three-year categories and a category for those with more than 15 years of tenure. Experience $e(i,t)$ is made up of 5 five-year categories and a category for those with more than 25 years experience. Occupation refers to white- vs. blue-collar, for which there are often separate collective bargaining agreements. Calculate the log-earnings for each worker, and winsorize to the 5th and 95th percentile. Regress log-earnings on industry-occupation-tenure-experience-year fixed effects. Calculate residuals from this regression, and take the standard deviation of the residual by firm-year. Split the sample into quintiles.

   (d) **The mean squared residuals of log-earnings**.

   - Calculate the average by firm-year of the square of the residuals from the previous regression.

10. **Occupation**.

- *Motivation*. Survey data suggest that workers with more education/skills are likelier to bargain. Thus white-collar workers might bargain more and thus be more sensitive to the outside option.
- Place blue-collar workers in occupation group 1 (`whitecoll` = 0) and white-collar workers in occupation group 2 (`whitecoll` = 1) .

11. **Predicted time in unemployment (τ)**

    - For each year t, take the the universe of prime-age workers that were employed in December of year $t-1$ and separate into nonemployment (for at least a month) in some month m_N in year t. Also apply our regression sample restrictions: the percentile restrictions and year restrictions for our reforms, as well as the requirement for 12-month employment in year $t-1$.
    - Count y_i, the fraction of the individual's full month's UI receipt among the individual's months in the sample from month m_U in year t through calendar month m_U in year $t+16$, sixteen years later (the longest delay over which we can track workers in our data while including the 2001 reform).
      - Our monthly panel data set counts a month as employment if the worker is recorded as employed in the ASSD for at least one day in that month. A month counts as UI if the worker is employed for zero days and is on UI for at least one day (the worker can be observed in other non-employment statuses in the month as well). A month is counted as non-UI nonemployment if it contains neither one day on UI nor in recorded employment.
    - Regress τ_i on predictors $\mathbf{x}_i$: categories of age (cutoffs 29, 34, 39, 44, 49), tenure (cutoffs 2, 5, 8, 11, 14), and experience (cutoffs: 5, 10, 15, 20); industry-occupation FEs (occupation: blue/white collar); gender FEs; year FEs; and region FEs (NUTS). There are also fixed effects for six categories of the number of months since last observed on UI: a category indicating the top-coded value, since we can only measure UI status from January 1972 onward, and quintiles of values below the top-coded value for the year. The quintiles are constructed on the basis of the entire regression sample including non-separators, as we later on project the model on the regression sample. .
    - For the full regression sample (i.e. incl. the non-separators), we predict $\widehat{\tau}_i = f(\mathbf{x}_i)$ by using these estimated coefficients on controls x_i (lagged the year FE by two years as for our other heterogeneity cuts). We separate the predicted values for $\widehat{\tau}_i$ into year-specific quintiles.

12. **Three additional measures of industry-occupation unemployment risk**.

    (a) **Separation rate**. This is the probability of being unemployed in the next period in a given industry-occupation, given that one is employed in the current period.

    - Sample the universe of prime-age workers.
    - Create an indicator for whether the individual is unemployed (`status`= 1) in the next year.
    - Regress this indicator on industry-occupation fixed effects for that year, and save these fixed effects. I also run a specification with categories for tenure and

experience and a linear control for age and keep the predicted values.

Regression: Let Y_i be an indicator for being unemployed in the year $t+1$. Individual i has occupation o (blue or white collar) in industry k. Then, for all workers in year t,

$$Y_i = \beta_0 + \phi_{k(i),o(i)} + \epsilon_i$$

(b) **Expected months of unemployment**. This is the average number of months of unemployment in the next period, conditional on being employed in the current period.

- Sample the universe of prime-age workers.
- Calculate how many months the worker is unemployed in the following year.
- Regress the number of months on industry-occupation fixed effects for that year, and save these fixed effects.

Regression: Let t be the year three years before the reform. Individual i has occupation o (blue or white collar) in industry k. Then, for all workers in year t,

$$Y_i = \beta_0 + \phi_{k(i),o(i)} + \epsilon_i$$

(c) **Probability of being unemployed for more than 6 months**. It is another measure of the "severity" of unemployment spells in the industry-occupation.

- Begin with the sample of prime-age workers.
- Create an indicator for whether the individual is unemployed for more than 6 months in the following year.
- Regress the indicator on industry-occupation fixed effects for that year, and save these fixed effects.

Regression: Let Y_i be an indicator for being unemployed for more than six months in the year $t+1$. Individual i has occupation o (blue or white collar) in industry k. Then, for all workers in year t,

$$Y_i = \beta_0 + \phi_{k(i),o(i)} + \epsilon_i$$

H Alternative Variation in UI Generosity: Measuring Wage Effects from An Age-Specific Reform of Potential Benefit Duration

In this section, we analyze the effect of changes in potential benefit duration (PBD) of UIBs, rather than UIB levels, on incumbent wages. We do so by exploiting a reform in 1989 that changes PBD for workers aged 40 and above. Figure A.14 shows how the PBD schedule changed for individuals age 30-49. Before 1989, the PBD was only experience and not age-dependent.[90] In 1989, these eligibility rules were changed so that individuals age 40-49 with at least five years of experience in the past 10 years were eligible for 39 weeks while individuals below age 40 were still only eligible for 30 weeks. For the analysis below, we focus on the PBD reform for individuals age 40-49 and compare their earnings growth to individuals age 30-39.[91] We apply the same sample restrictions as in our main result for the full sample but drop all individuals present in particular Austrian regions where workers aged 50 and above were eligible for even larger PBD reform since 1988.[92]

The two panels in Appendix Figure A.15 plot the average earnings log differences (one and two years) by age groups in the treated and control years. The left-panel plots the average wage growth from 1987-1988 (the control year) and from 1988-1989 (the treatment year) as well as their difference. If the PBD extension for older workers passed through to their wages, we would expect an increase in wage growth for older workers. The right panel plots the same for two-year wage growth. Neither Figures show an increase in wage growth for treated individuals.

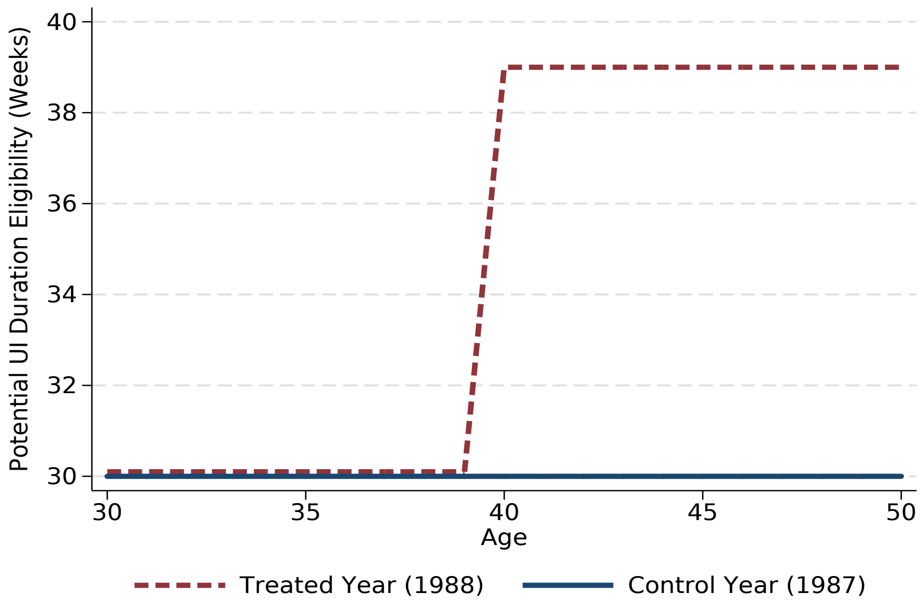
In Figure A.16, we report results from estimating a specification similar to Equation (33) but replacing the replacement rate reform indicators with an indicator for being ages 39-42 and adding age-specific fixed effects. We also include the same controls included in specification (4) in Table 2. The figures show no significant treatment effects when the reform was enacted as well as a lack of pre-trends, validating our identifying assumptions. In conclusion, we do not find wage effects of PBD on incumbent wages either, thereby mirroring the insensitivity we document for UI level shifts.

[90] Individuals with less than 12 weeks of UI contributions in the last two years were eligible for 12 weeks, individuals with 52 weeks in the last two years were eligible for 20 weeks, and individuals with 156 weeks (3 years) and the last five years were eligible for 30 weeks.

[91] These rules applied to workers with at least 6 years of experience in the past 10 years, which is our sample restriction for this part of the analysis. See Nekoei and Weber (2017) for an evaluation of this reform on *unemployed* job seekers' spell duration and reemployment wages.

[92] We do not study the latter reform because of a regional reform that further increased PBD for workers older than 50 and led to separations (and thus attrition) among those older workers (Jäger et al., 2018), that would not allow for a measurement of wage effects.

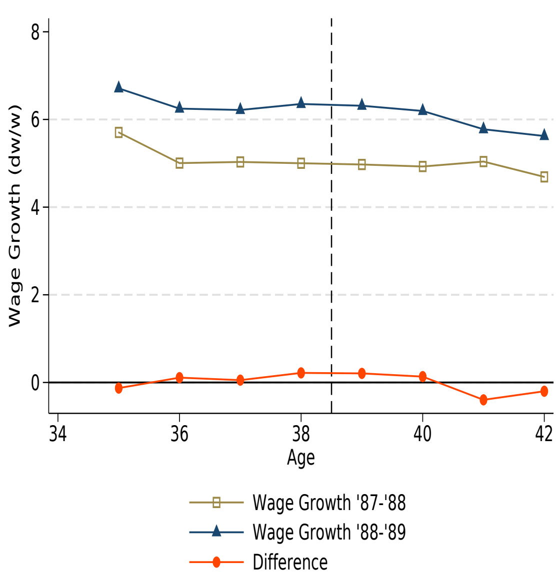
Figure A.14: PBD Schedule - Treated and Control Years



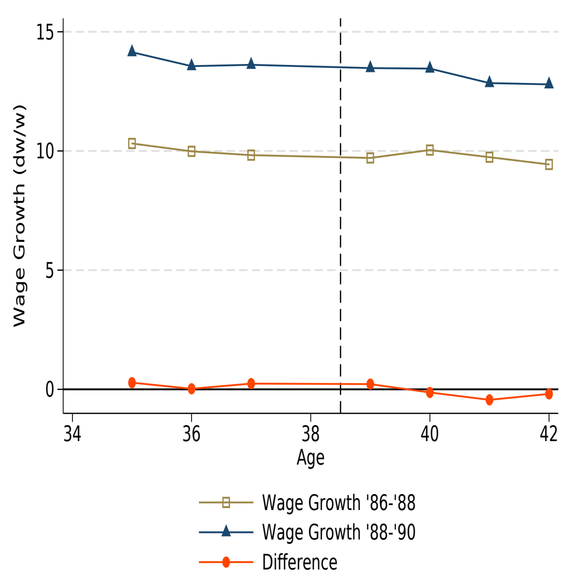
Note: The figure plots potential benefit duration (PBD) schedule by age for individuals in 1988 and 1989. Before 1988, all individuals with at least five years of work experience in the past ten years were eligible for 30 weeks of PBD. In 1989, individuals age 40-49 with the same experience were eligible for 39 weeks.

Figure A.15: Non-Parametric PBD Figures - One and Two Year Earnings Growth

One Year Earnings Growth



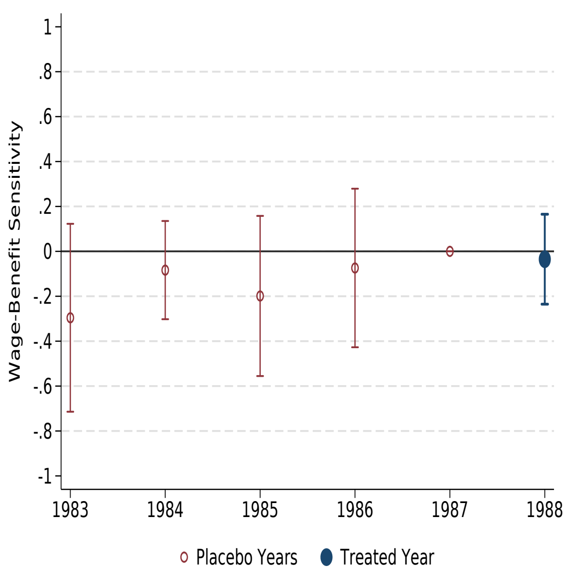
Two Year Earnings Growth



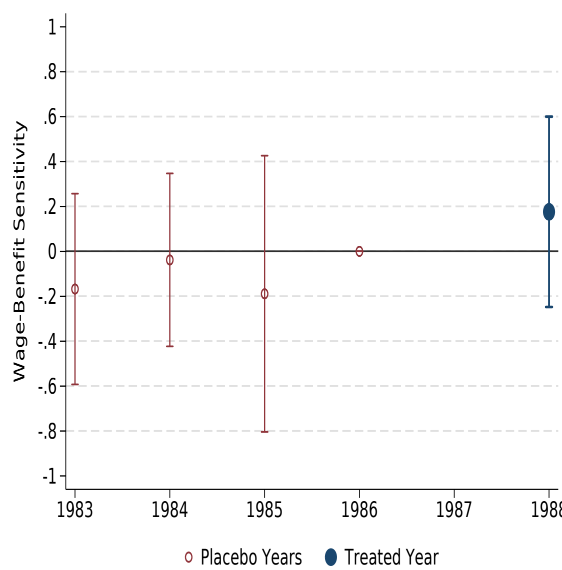
Note: These figures plot average earnings growth by age from 1987-1988 and 1989-1989 (the year the PBD extension went into effect). Consequently, they mirror the non-parametric analysis for the replacement rate reforms presented in the first two panels of A.1-A.4.

Figure A.16: Difference in Difference Coefficient Estimates

One Year Earnings Growth



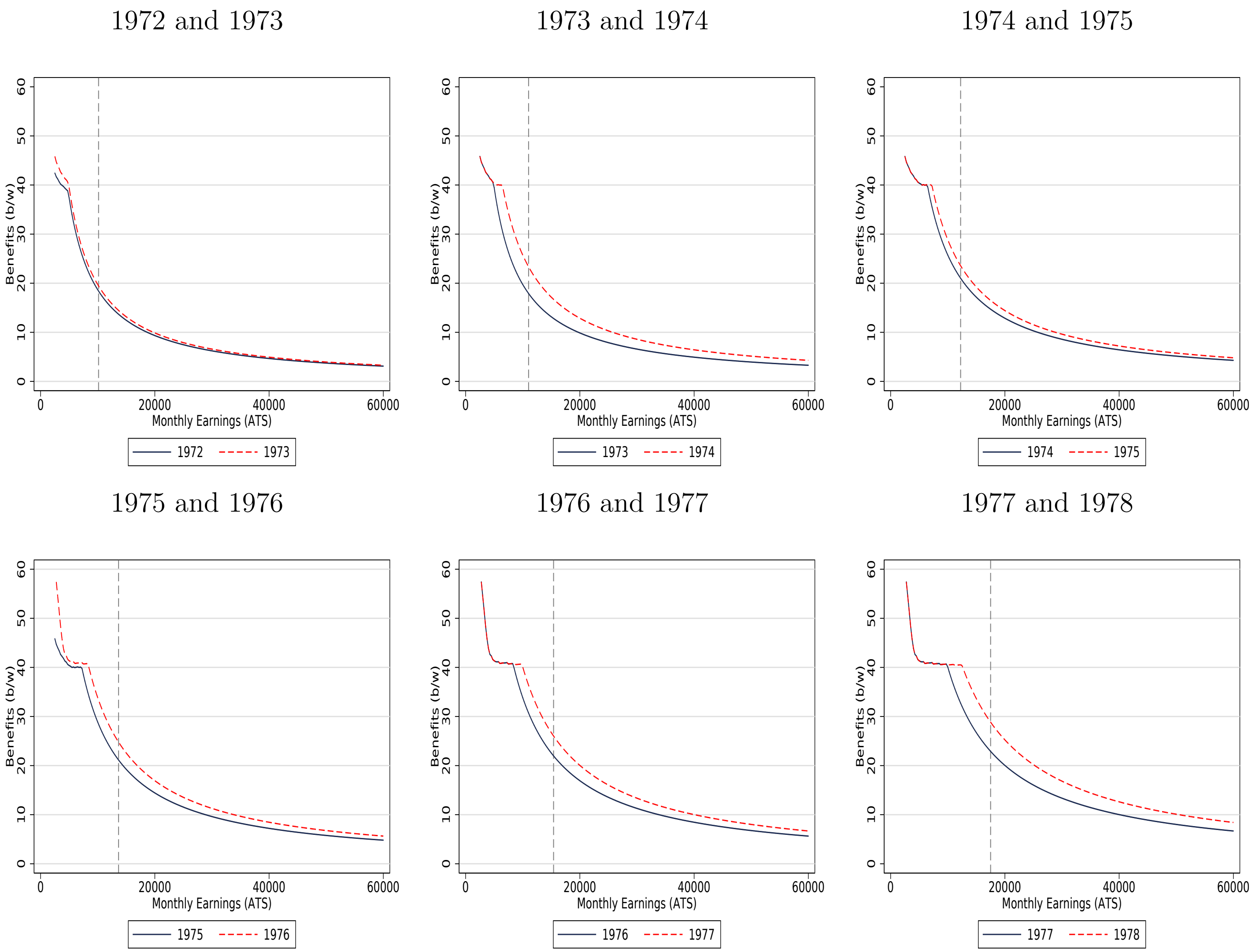
Two Year Earnings Growth



Note: These figures report results from estimating a specification similar to Equation (33) but replacing the reform-induced benefit changes with an indicator for being ages 39-42 in 1988 (treated by the PBD reform) and adding age-specific fixed effects. We include the same controls included in specification (4) in table 2.

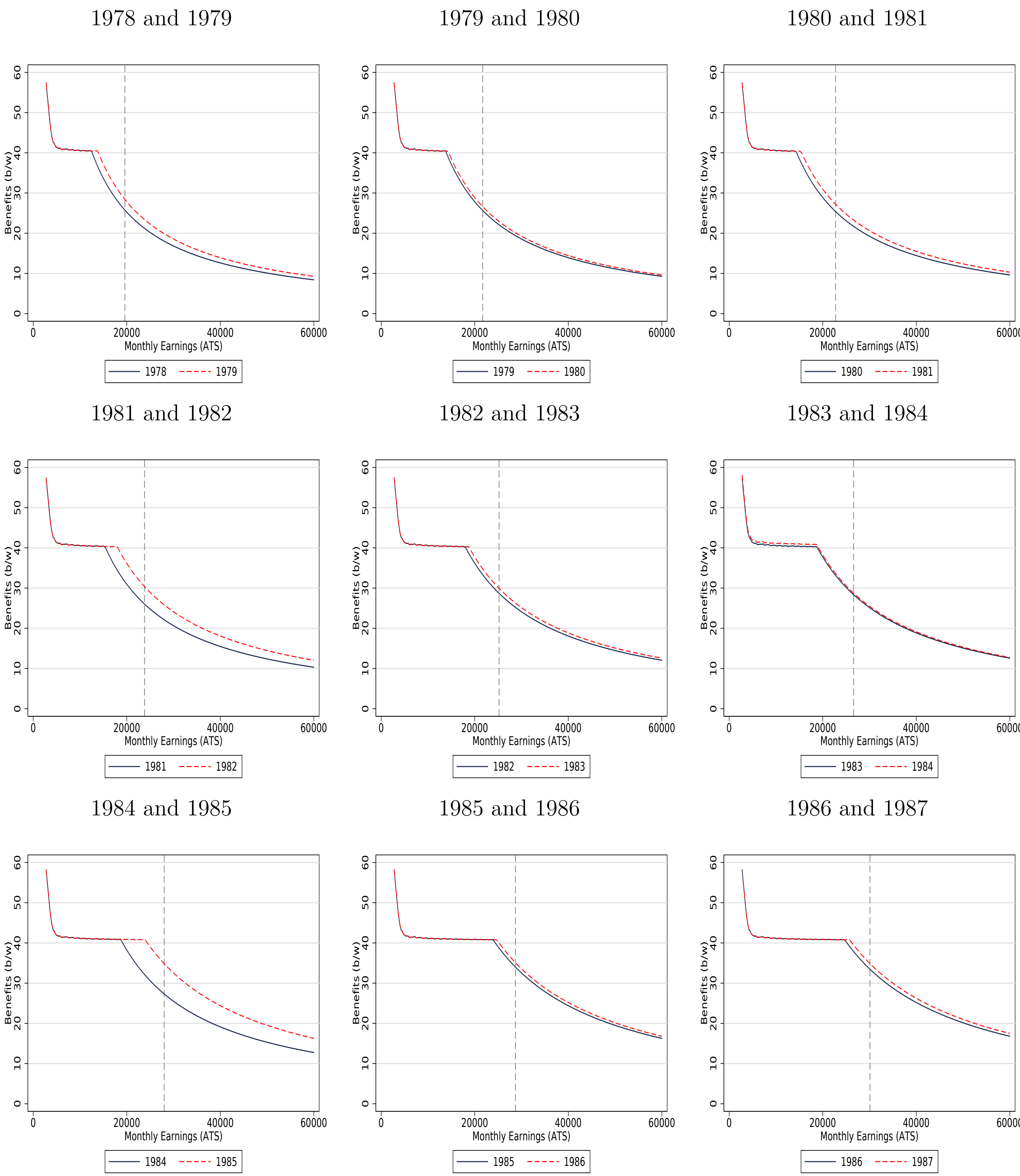
I UI Benefit Schedules in Austria: 1972–2003

Figure B.1: UI Benefit Schedules 1972-1978



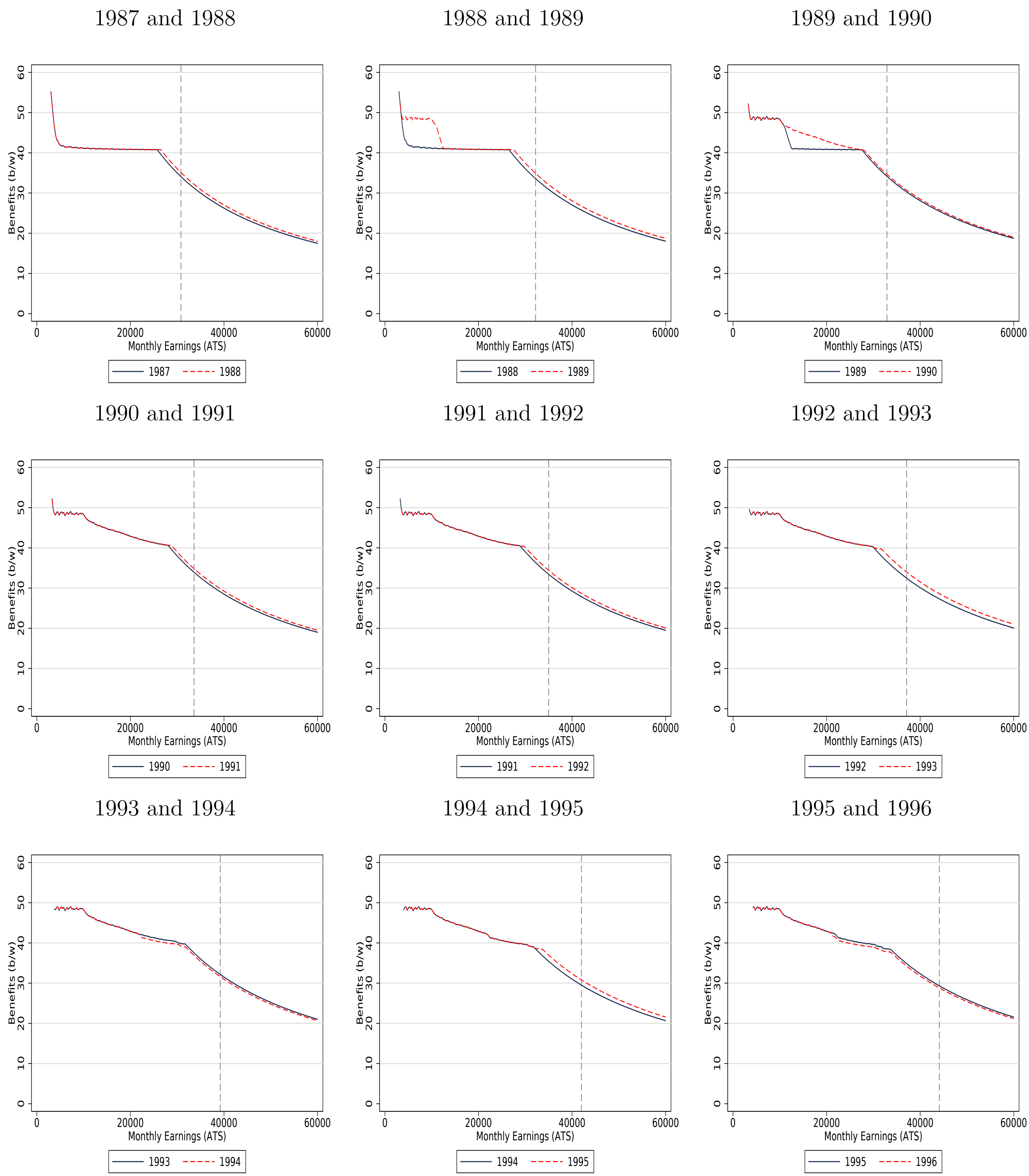
Note: The dashed vertical lines in gray correspond to the social security earnings maximum.

Figure B.2: UI Benefit Schedules 1978-1987



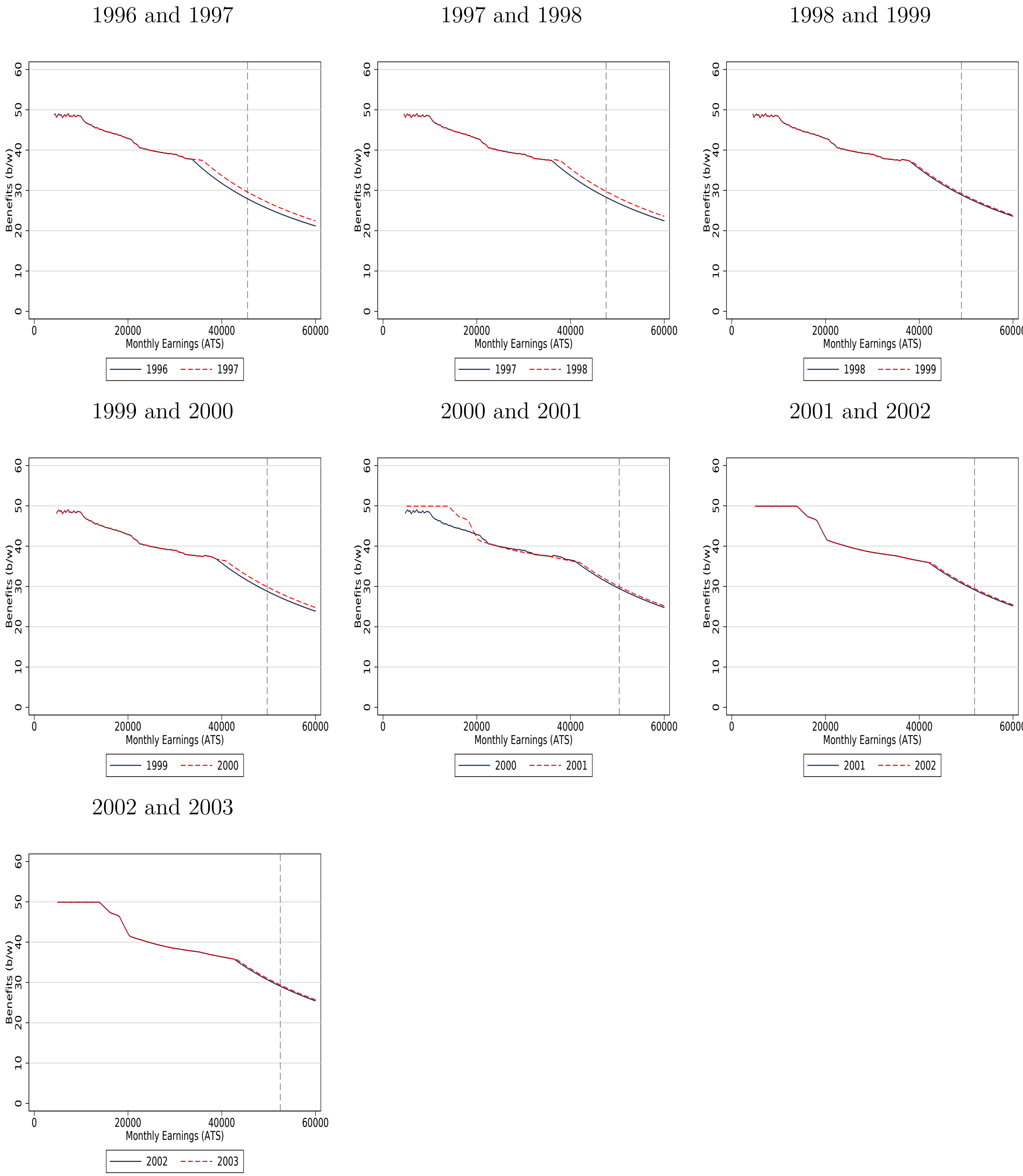
Note: The dashed vertical lines in gray correspond to the social security earnings maximum.

Figure B.3: UI Benefit Schedules 1987-1996



Note: The dashed vertical lines in gray correspond to the social security earnings maximum.

Figure B.4: UI Benefit Schedules 1996-2003



Note: The dashed vertical lines in gray correspond to the social security earnings maximum.