

Additional Results for Women: When Institutions Interact: How the Effects of Unemployment Insurance are Shaped by Retirement Policies *

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*This is a separate appendix that provides main results for women for the paper “When Institutions Interact: How the Effects of Unemployment Insurance are Shaped by Retirement Policies” by Matthew Gudgeon, Pablo Guzman-Pinto, Johannes F. Schmieder, Simon Trenkle and Han Ye. It provides core reduced form as well as structural results. As other institutional features as well as the estimation procedures are largely identical to those of men they we do not replicated them here for brevity by refer for the reader for those of the main paper instead.

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A Pension rules for Women

For most of our study period, women faced different retirement rules and had hence somewhat different incentives than men. Women with sufficient contribution years were entitled to claim a more generous women' pension. This allowed qualifying women to enter retirement as early as age 60 without any penalty throughout our observation period. As a result and in contrast to men, the UI pathway is generally irrelevant as the women's pension always allowed women to retire as early or earlier than men, often under more generous terms, and without going through unemployment.

Women with at least 15 years of contributions, of which at least 10 must have occurred after age 40, were eligible for a separate oldage pension. The early retirement age (ERA) for this women pathway remained at 60 throughout the sample period until this pathway was abolished for cohorts born in or after 1952. The normal retirement age (NRA) was 60 until the 1939 cohort, when it began to gradually increase, reaching 65 for the 1944 cohort (SGB VI appendix 20). The NRA then remained at age 65 until the pathway was abolished. These changes occurred later than those for the UI pathway, so that the women's pathway always offered early retirement on more generous terms than other pathways. In particular, the woman's pathway was also more generous in terms of both ERA and penalties than the UI pathway since the ERA never increased and the NRA only increased for later cohorts. As a result the UI pathway itself is largely irrelevant for women. Of course, women could still use UI as a bridge to retirement even though they are not required to be unemployed at least one year past the age of 58 and a half to claim pensions.

For men this option was not available which meant they could retire via the standard old-age pension at age 65 throughout our observation period, or through UI or some of

the other periods which allowed to use the pathway via UI. See main appendix D for details on the different pension paths.

B Reduced-Form and Structural Results for Women

In the following, we replicate and discuss all of our main analyses (both reduced-form and structural) for women. Overall, patterns for women are qualitatively similar to those of men (with a few differences, such as virtually no UI inflows after the ERA for women), despite women not needing to use the UI pathway. The model fit is good and our take-aways regarding the importance of interactions between UI and retirement institutions and their implications are similar. Table AA1 column (1) shows that older women started out from a higher unemployment rate in 1983 (10.3%) which rose to 16.0% in 1994 and then fell to 8.0% in 2014. As with men, the same PBD extension has a substantially larger effect on women aged 56-59 than 52-55 (see Figure AA6). Moreover, Germany's PBD increases in the late 80s played a similarly important role in explaining the rise in the unemployment rate of older women in the 80s and 90s, accounting for 4.9 of the observed 5.7pp increase (Table AA1). The model also attributes a meaningful portion of the subsequent fall in the unemployment rate of older women from 1994 to 2014 to institutional factors (2.8 of 8.0pp).

B.1 Reduced-Form Results for Women

Figure AA1 shows the number of women entering UI by age for the six focal cohorts. We observe bunching in UI entries at age 60-PBD in all pre-1952 cohorts. For cohorts 1924, 1929 and 1935, the ERA and NRA for women's pathway are both 60, while the maximum PBD was 12 months, 24 months, and 32 months, respectively. Similar to men, we observe bunching in UI inflows at ages 59, 58 and 57 and 4 months. However, the amount of bunching is not as large as that of men. For example, for cohort 1924, around 1100 women enter UI and the share of women on UI between 59 and 60 is around 5% (see Figure AA2) in contrast to 10% for men. Figure AA3 complements Figure AA1 by plotting mean non-employment duration by age for each cohort until age 63. It confirms that women entering at the bridge-to retirement age remain non-employed for close to the maximum duration, similar to men. The 1945 cohort of women faced less generous retirement rules; they could retire at age 60, but the NRA was 65, meaning they faced an

18% permanent pension reduction for retiring at 60. As a result, we see substantially less bunching. Unlike men, women born in 1950 could still draw pensions at age 60 (albeit with penalty), resulting in some bunching at age 58. Beginning with the 1952 cohort, the woman's pathway was closed (as was the UI pathway) and women were no longer allowed to retire early at 60. Like men, women eligible for the old-age pension for the long-term insured, could still retire at age 63, and indeed we see some bunching at age 61. Overall, women behave similarly to men, but their inflow responses are slightly more muted, consistent with not requiring a UI spell to draw pensions and generally more generous early retirement options.

Next we turn to the RD estimates of the intensive margin effect of UI extensions for women. Table AA3 presents RD estimates of the jump in the density at the age threshold for women, using the same specification as for the male sample. We exclude 2 months on each side of the cutoff – the donut hole – in all our regressions. Relative to men, the density appears less continuous at several cutoffs potentially introducing bias, though the magnitude of these density jumps is modest and results are relatively robust to the inclusion of additional controls. The 8 RD estimates for the different age cutoffs, with and without controls, are reported in Table AA2. The estimates average 0.10, suggesting that for each month of additional UI, female workers spend around three more days in non-employment. These estimates are quite similar to our baseline estimates for men. For women, we use the 0.064 estimate at the age 52 cutoff between 1999 and 2006 as a target moment in our structural estimation. Table AA5 assesses the robustness of the RD estimates for women by varying controls, sample restrictions (excluding 3 months around the cutoffs), bandwidth choice (12 months), and using triangular kernel. Results are reassuringly stable. For a more detailed discussion of these RD results, please refer to the main Appendix of the paper.

B.2 Structural Results for Women

Turning to the structural model estimation and results, we note that the model setup for women is almost identical to that for men. However, due to the women's pension and differences in real world average contribution years of women, we have to make some adjustments. Because we allow individuals to choose the best retirement option available, women will always choose the women's pathway over the UI pathway. The value of OLF for women depends on the two potential retirement pathways (women's pension and the long-term-insured pathway). If the women's pension is not available (for cohorts born

since 1952), then the value of OLF is that of the long-term-insurance pathway. If both are available, then the maximum value between the two options will be the value of OLF. Table AA7 lists the institutional parameters that differ for women relative to men, namely the ERA and NRA (due to the women’s pension) and average contribution years at age 54.

Figure AA4 assesses our estimated model’s in sample fit for women by comparing simulated E to U transitions and simulated non-employment durations to their empirical counterparts for the three cohorts matched in the estimation (1929, 1935 and 1950). Overall, our model captures the key empirical patterns of interest. The fit is even slightly better than that of the male sample. In particular, we better fit UI inflow spikes and non-employment durations at ages prior to the bridge retirement age. This could be due to the fact women are less likely to be protected by collective labor agreements, which are linked to specific ages that are not featured in our model.

Figure AA5 shows how well the model performs out-of-sample for the 1924, 1945, and 1952 cohorts for the women sample. Despite primarily using parameters estimated from other cohorts (we only re-estimate one parameter out-of-sample – the cohort specific disutility of work), our model clearly fits the broad empirical patterns of interest, matching overall UI inflows, the spike in UI inflows at the bridge-to-retirement age, and non-employment durations relatively well. Figure AA5 also conducts a counterfactual exercise in which we simulate what happens when PBD is one year longer for all individuals (for more detail, see the equivalent exercise for men in the main appendix). Using the 1945 cohort as an example (panels (c) and (d)), we can see workers shift their bridge-to-retirement age from 57 and 4 months to 56 and 4 months. For younger workers, whose inflows are largely unaffected by this extension, the increase in non-employment durations largely matches what would be expected due to intensive margin responses.

Figure AA6 (a) shows the empirical and simulated unemployment rates for women, separately for each age group. Compared to men, women aged 56 to 59 experience a slightly smaller, but still quite pronounced, increase in their unemployment rates in the 90s. The unemployment rate rose sharply in the 80s, increasing from near 10% in 1983 to 15% in the late 1980s, eventually peaking at nearly 18% in 1994. Subsequently, the rate declined to 7% by 2014. Our model fits the empirical pattern well. At younger ages we fit the empirical pattern closely, under-fitting by at most 1 percentage point between 1990 and 2005. At the older ages the model fits the pattern very closely in the 80s but tends to under-predict the empirical unemployment rate in the 90s and 00s, and over-predicts in

the last years. The overall fit, though, is similar to that of the men.

Figure AA6 (b) shows the impact of extending PBD by one year. As for males, the extension has a modest effect on individuals aged 52-55 driven by intensive margin responses. In contrast, this same PBD extension raises the unemployment rate of older workers substantially.

Figures AA7 and AA8 conduct our other counterfactual policy simulations for women. Figure AA7 illustrates that keeping PBD fixed at 12 months would have massively reduced non-employment duration for 1935 cohort women in their late 50s, as the bridge-to-retirement age would have remained at age 59 instead of moving to earlier ages. Figure AA8 (a) shows how keeping PBD fixed at 12 would have affected the overall unemployment rate of both younger and older workers. Our analysis indicates that in 1994, unemployment rates for workers aged 56-59 would have been 4.9pp lower (see column (1) of Table AA1).

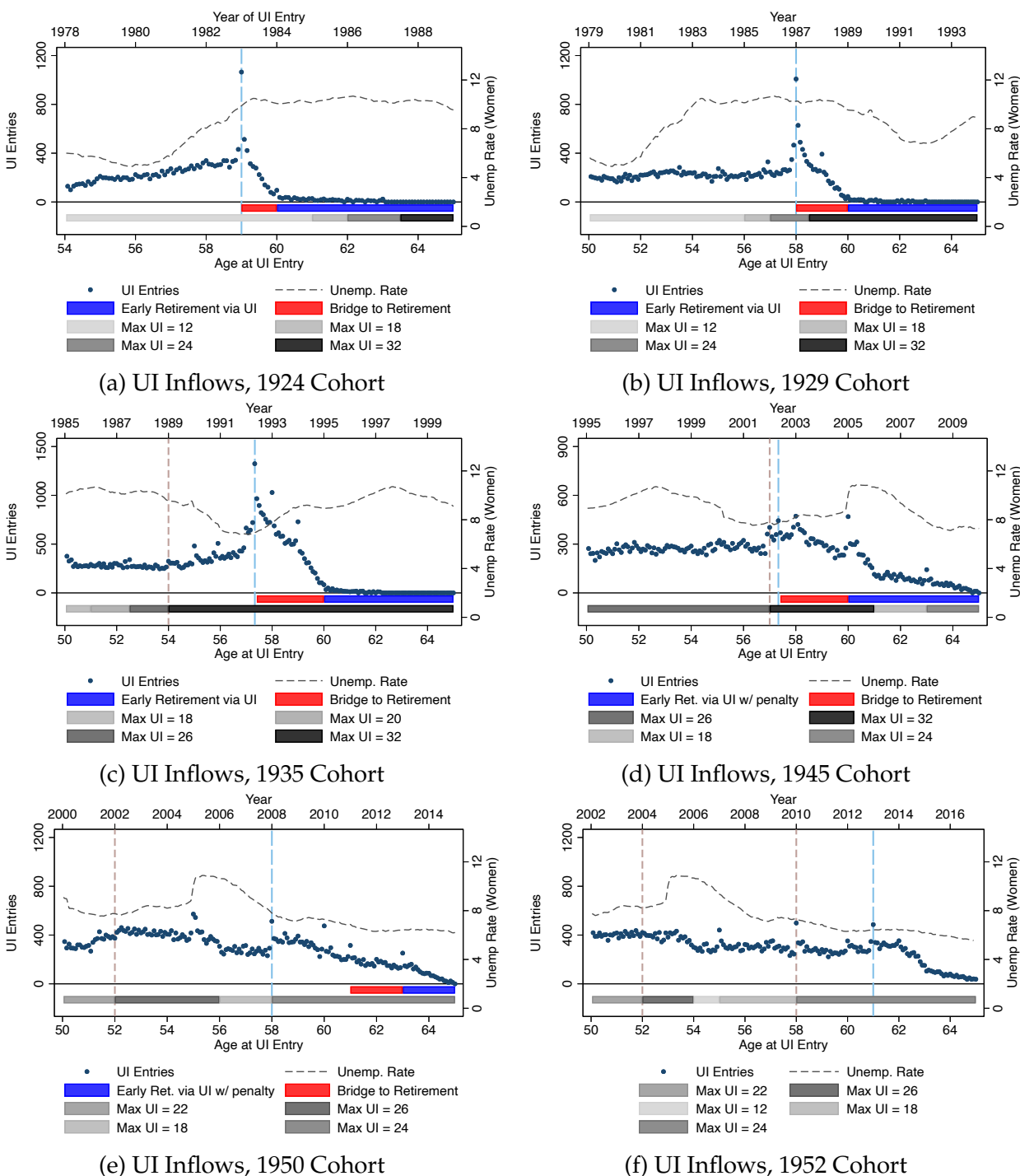
Figure AA8 (b) considers an alternative policy simulation that assumes PBD evolves as it did in real life but imagines that both the women's pathway and UI pathway into retirement never existed, making age 63 the earliest possible retirement age for all birth cohorts. As for men, closing these pathways would have made a substantial difference for the unemployment rates of older workers (but not so for those of slightly younger workers).

Figure AA8 (c) examines what would have happened in later years if institutions had remained at their 1994 levels (or changed one by one instead of all together).¹ The dashed blue line shows that, had all institutions remained fixed at their (generous) 1994 levels, the unemployment rate would have only declined by 5.2pp between 1994 and 2014 (due to non-policy or economic reasons) instead of declining by 8.0pp (the solid, dark blue line). Thus, the retirement and UI policy changes account for 2.8pp (or 35%) of the observed decline between 1994 and 2014. Altogether, the main takeaways from these simulated results for women are similar to those for men.

¹To build intuition, Figures AA7 (c) and (d) show how these same changes look for a single cohort – the 1952 cohort.

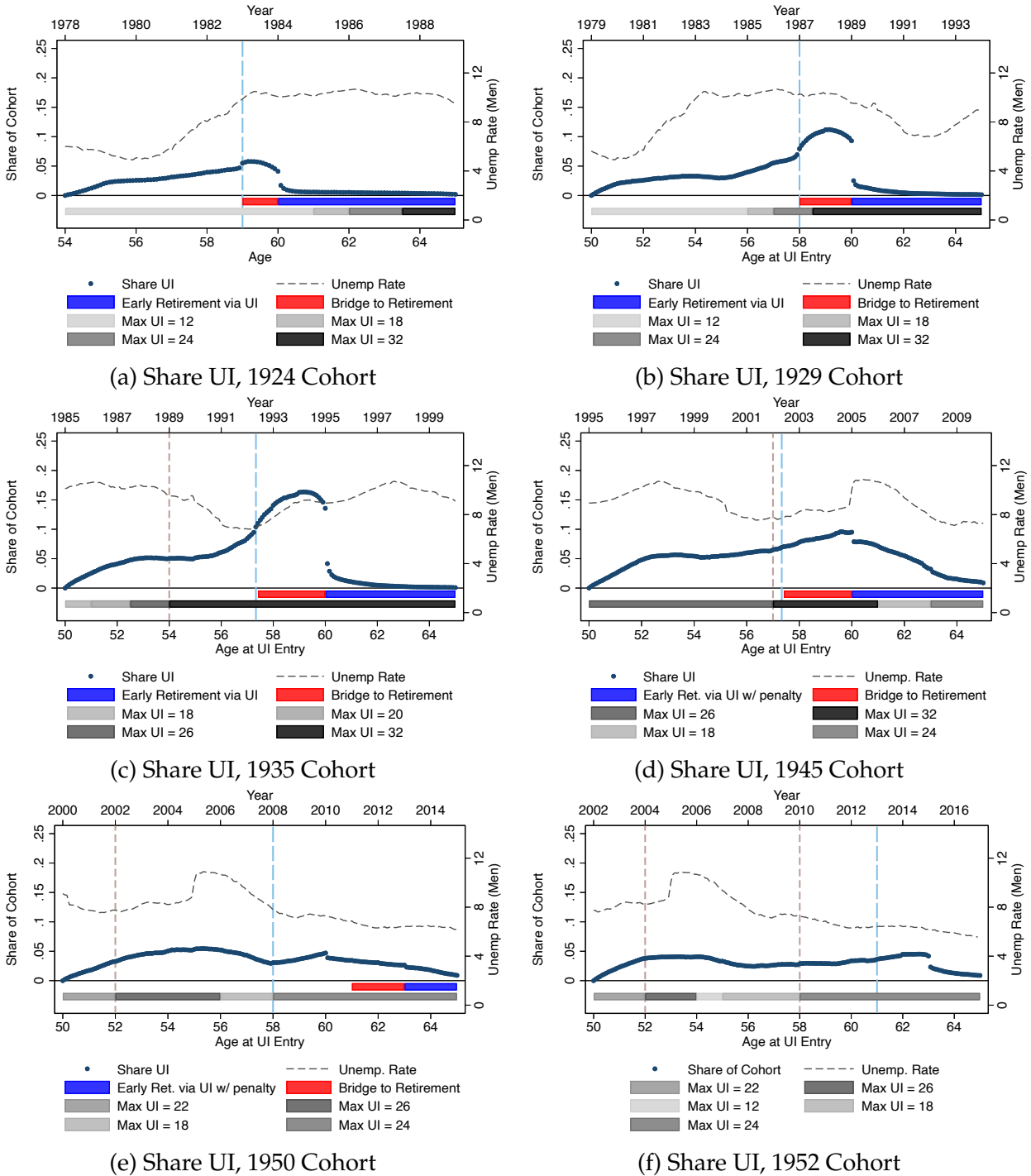
C Figures and Tables for Women

Figure AA1: UI Inflows by Age for Different Cohorts in Germany, Women



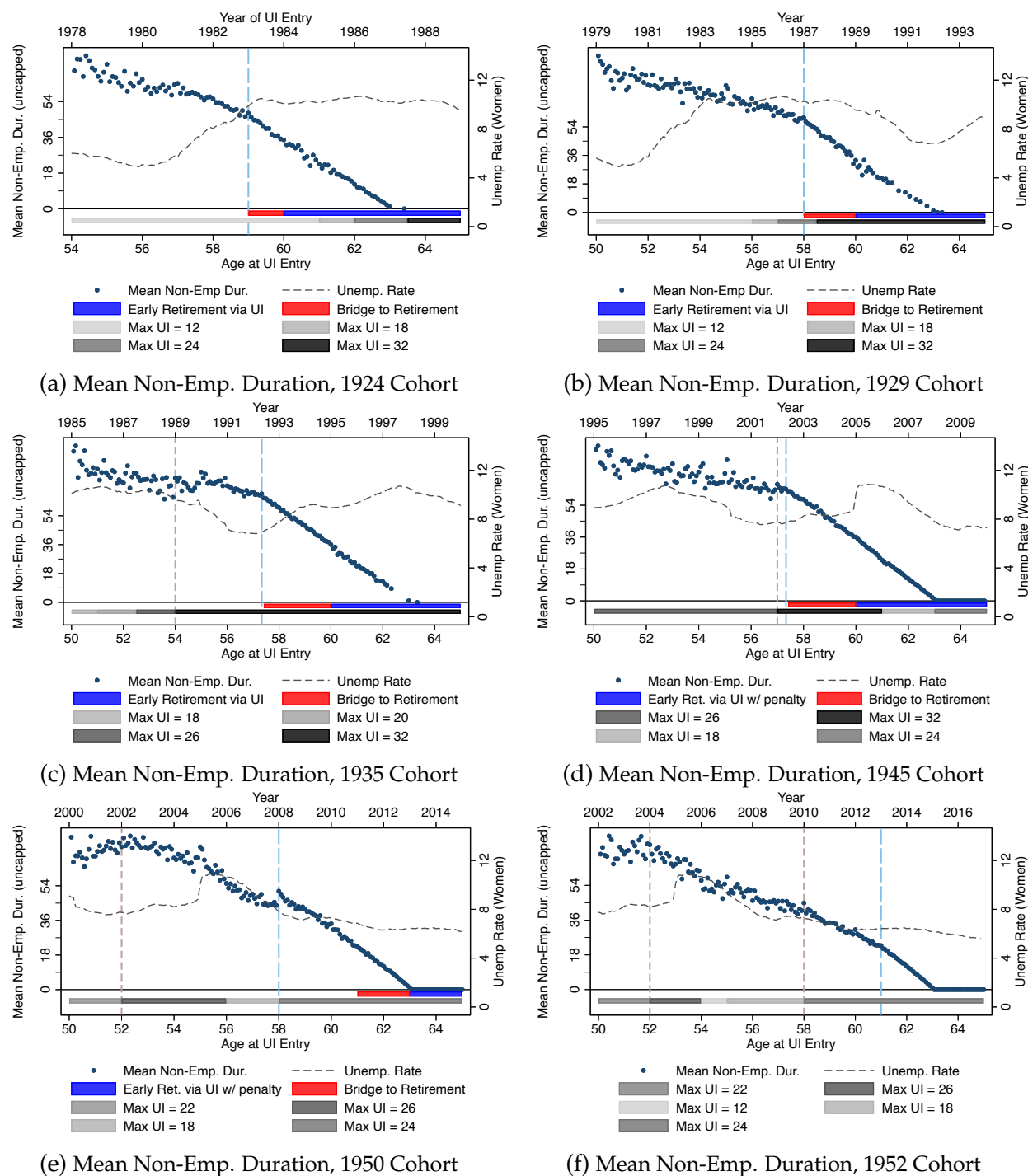
Notes: This figure plots UI inflows (transitions from employment to unemployment) by age for different cohorts of West German women in our sample (left axis). It also plots the female, seasonally adjusted unemployment rate as a dashed gray line (right axis). The red bar under the figure indicates the period over which an individual could receive UI before drawing pension if he entered UI at the bridge-to-retirement age (the blue dashed line). The blue bar indicates the period over which such an individual would receive their pension. Different shades of gray represent different maximum PBD eligibility for UI, which can change because of an age-cutoff (red dashed line) or because of an UI policy change enacted in that year (gray dotted line).

Figure AA2: Share UI by Age for Different Cohorts in Germany, Women



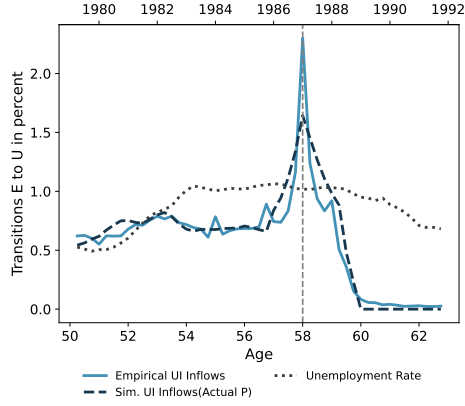
Notes: This figure plots the share of the cohort in UI by age for different cohorts of West German women in our sample (left axis). It also plots the female, seasonally adjusted unemployment rate as a dashed gray line (right axis). The red bar under the figure indicates the period over which an individual could receive UI before drawing pension if he entered UI at the bridge-to-retirement age (blue dashed line). The blue bar indicates the period over which such an individual would receive their pension. The different shades of gray represent different maximum PBD eligibility for UI, which can change because of an age-cutoff (red dashed line) or because of a UI policy change enacted in that year (gray dotted line).

Figure AA3: Mean Non-Emp. Duration by Age for Different Cohorts in Germany, Women

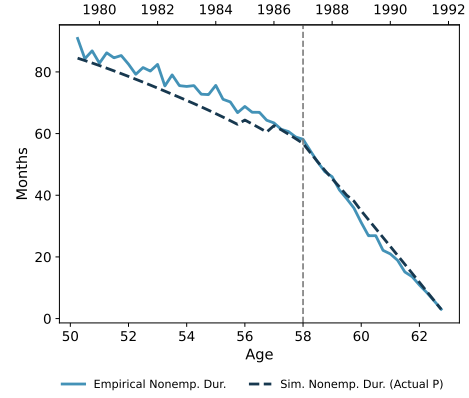


Notes: This figure plots mean non-employment duration (up to age 63) for different cohorts of West German women in our sample entering unemployment at the given age (left axis). It also plots the female, seasonally adjusted unemployment rate as a dashed gray line (right axis). The red bar under the figure indicates the period over which an individual could receive UI before drawing pension if he entered UI at the bridge-to-retirement age (the blue dashed line). The blue bar indicates the period over which such an individual would receive their pension. Different shades of gray represent different maximum PBD eligibility for UI, which can change because of an age-cutoff (the red dashed line) or because of an UI policy change enacted in that year (gray dotted line).

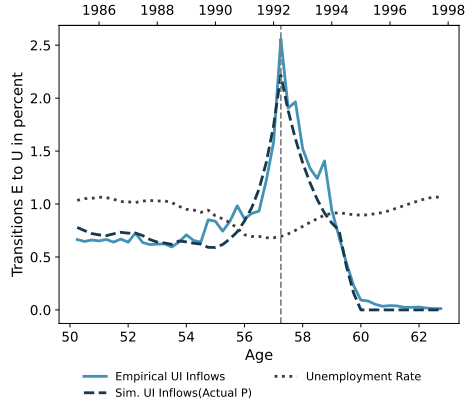
Figure AA4: In-Sample Fit of Life-Cycle Model - Women



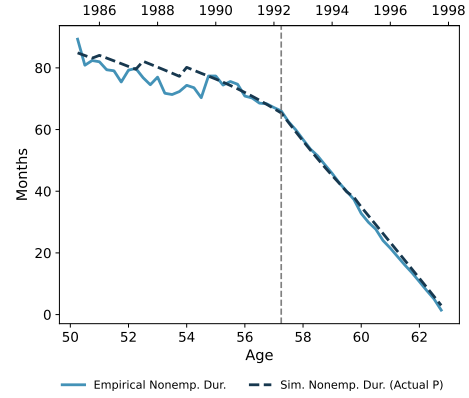
(a) Transitions from E to U, 1929



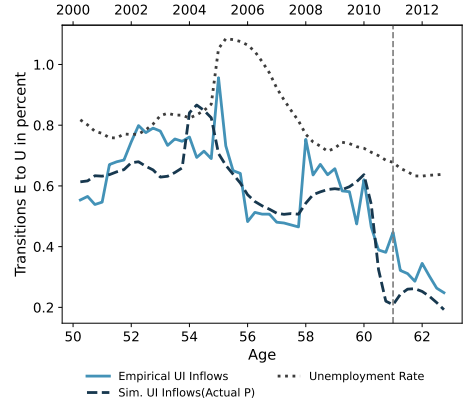
(b) Non Employment Duration, 1929



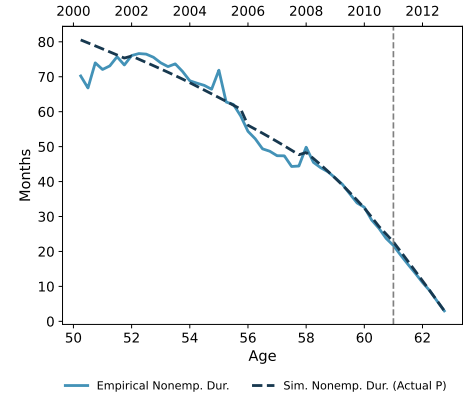
(c) Transitions from E to U, 1935



(d) Non Employment Duration, 1935



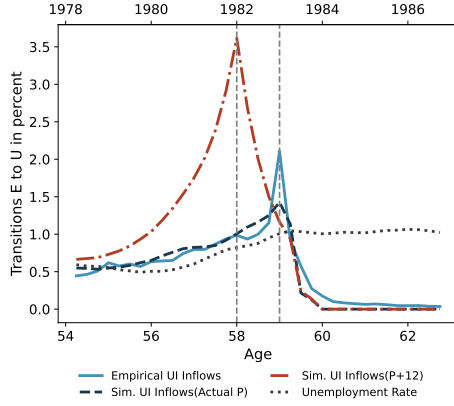
(e) Transitions from E to U, 1950



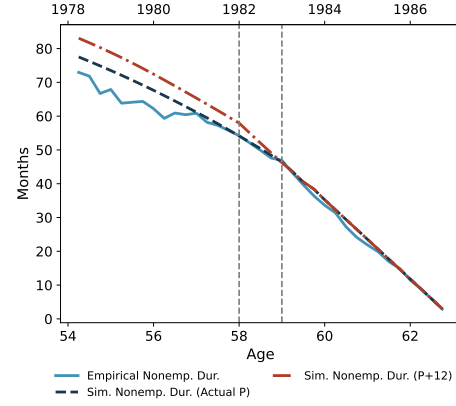
(f) Non Employment Duration, 1950

Notes: This figure is the analogue of Figure 5 in the main paper for the women sample.

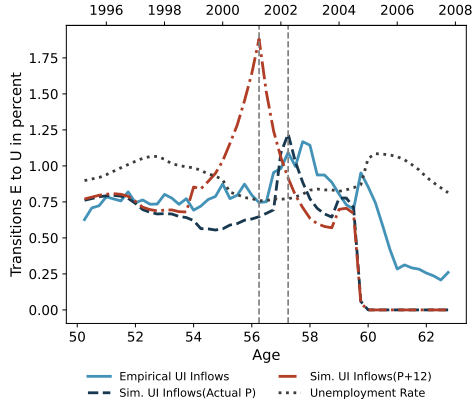
Figure AA5: Out-of-Sample Fit of Life-Cycle Model - Women



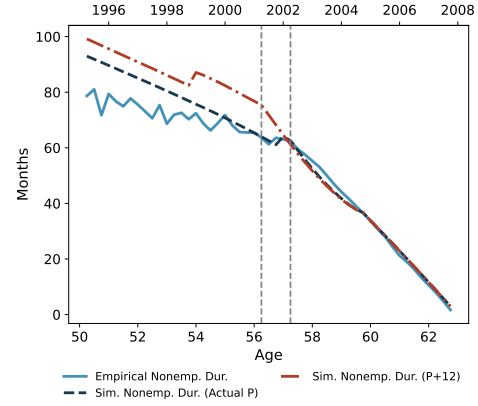
(a) Transitions from E to U, 1924



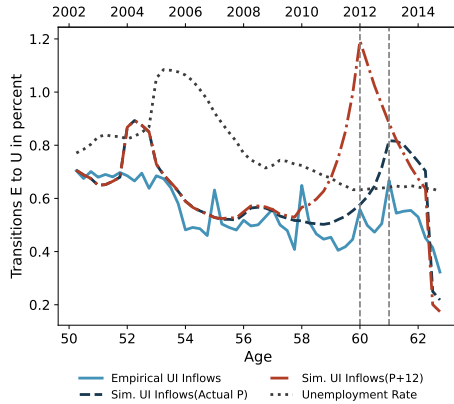
(b) Non Employment Duration, 1924



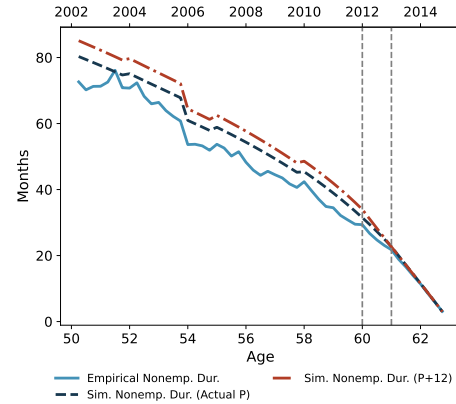
(c) Transitions from E to U, 1945



(d) Non Employment Duration, 1945



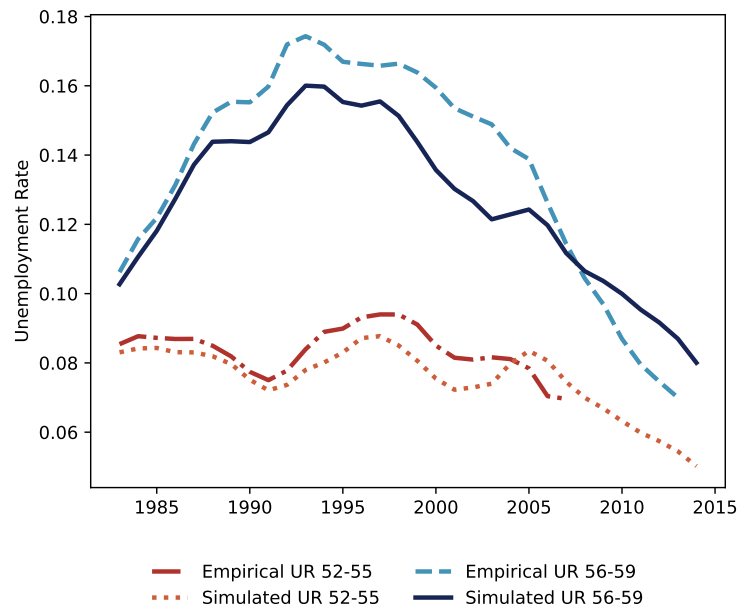
(e) Transitions from E to U, 1952



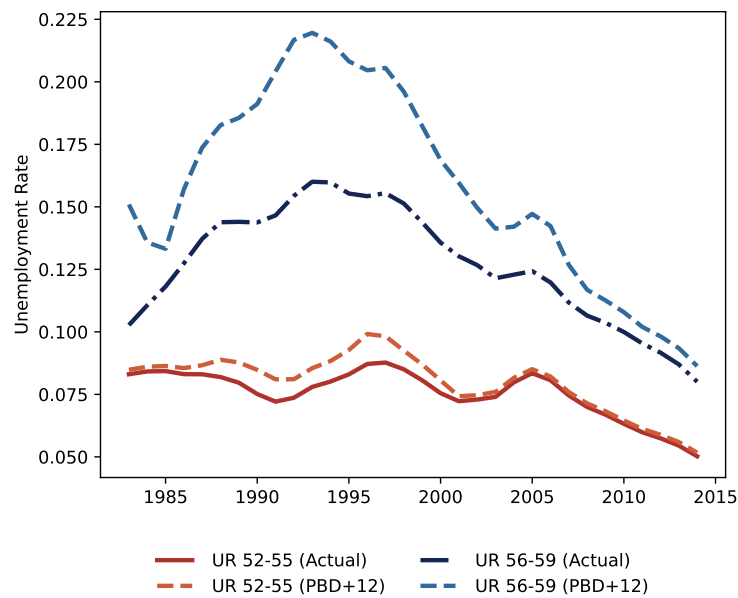
(f) Non Employment Duration, 1952

Notes: This figure corresponds to Figure 6 in the main paper, but is for the women sample.

Figure AA6: Empirical and Simulated Unemployment Rate - Women



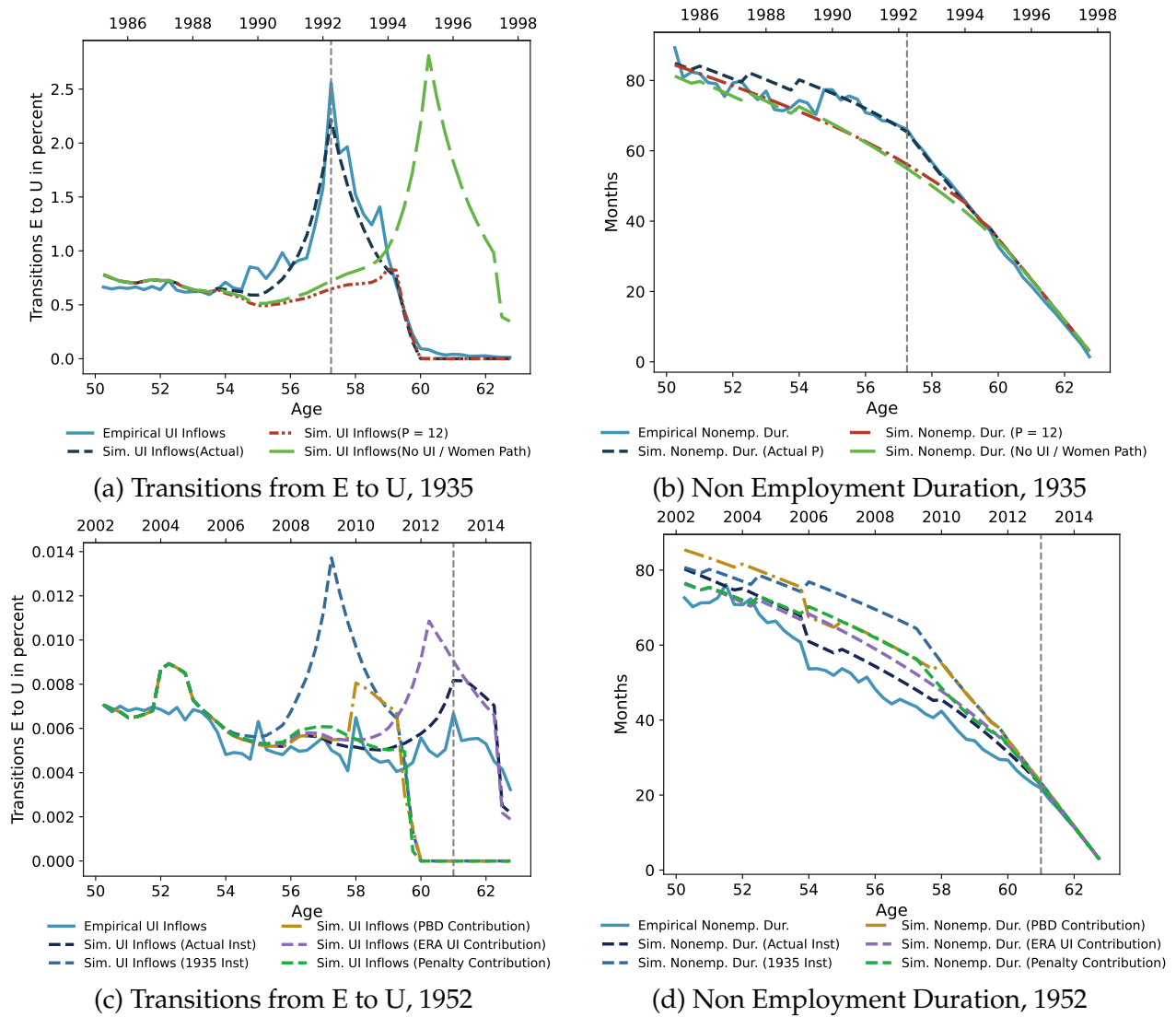
(a) Empirical and Simulated Unemployment Rate



(b) Extending UI PBD by 12 months

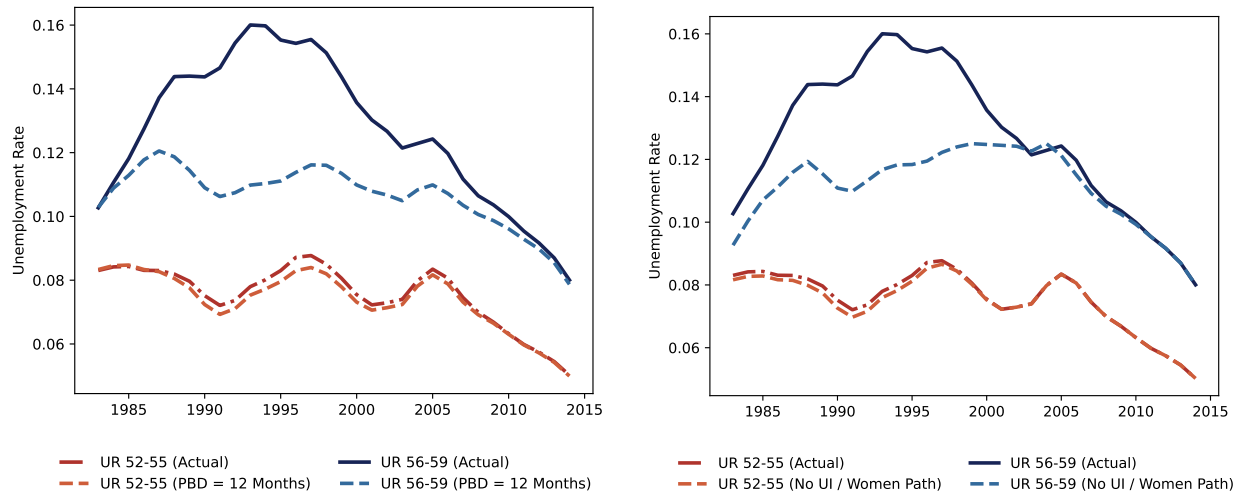
Notes: This figure corresponds to Figure 7 in the main paper but is for the women sample.

Figure AA7: Model Simulations for Counterfactual Policies - Women



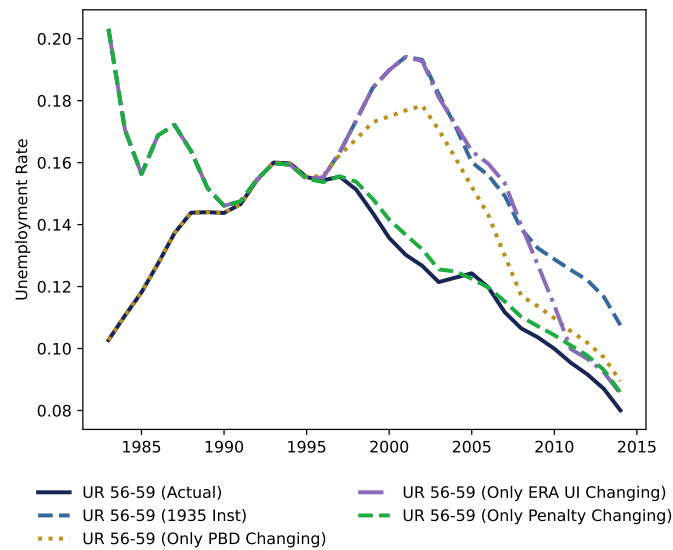
Notes: This figure corresponds to Figure 8 in the main paper but is for the women sample.

Figure AA8: Simulated Unemployment Rates under Alternative Policy Regime - Women



(a) PBD fixed at 12 months

(b) No UI Pathway



(c) The Influence of Policy Changes after 1994

Notes: This figure corresponds to Figure ?? in the main paper but is for the women sample.

Table AA1: Results for Women and Robustness to Alternative Model Specifications

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|--------|--------------|---------------------------|------------------|---------------------------|-----------|--------------|
| | Women | Baseline Men | Linear Time Trend in Cost | No Trend in Cost | No Fixed Cost of UI Entry | Higher UA | Constant Eta |
| Model Fit | | | | | | | |
| SSE | 5,547 | 18,017 | 18,310 | 21,391 | 43,182 | 17,940 | 26,620 |
| dD/dP age 52 | 0.065 | 0.124 | 0.117 | 0.114 | 0.101 | 0.126 | 0.132 |
| Unemployment Rate (Age 56-59) | | | | | | | |
| 1983, Actual Inst. | 10.3% | 6.2% | 6.0% | 5.8% | 6.4% | 6.2% | 5.3% |
| 1994, Actual Inst. | 16.0% | 16.1% | 16.3% | 16.0% | 13.4% | 16.4% | 13.1% |
| 1994, PBD=PBD+12 | 21.6% | 18.6% | 19.0% | 18.8% | 14.5% | 19.2% | 19.8% |
| 1994, PBD=12 | 11.0% | 10.5% | 10.1% | 10.0% | 9.8% | 10.3% | 6.8% |
| 1994, No UI and no Women's Path | 11.8% | 7.0% | 6.9% | 6.8% | 7.3% | 6.9% | 6.5% |
| 2014, Actual Inst. | 8.0% | 4.1% | 4.1% | 4.1% | 3.4% | 4.3% | 4.6% |
| Change in UR (Age 56-59) from 1983 to 1994 | | | | | | | |
| Overall change | 5.7pp | 10.0pp | 10.2pp | 10.2pp | 7.0pp | 10.3pp | 7.8pp |
| Change due to PBD change | 4.9pp | 5.7pp | 6.2pp | 6.1pp | 3.5pp | 6.1pp | 6.2pp |
| Change due to other reasons | 0.8pp | 4.3pp | 4.0pp | 4.2pp | 3.4pp | 4.2pp | 1.5pp |
| Change in UR (Age 56-59) from 1994 to 2014 | | | | | | | |
| Overall change | -8.0pp | -12.1pp | -12.1pp | -11.9pp | -10.0pp | -12.1pp | -8.5pp |
| Change due to PBD and Retirement Policies | -2.7pp | -8.9pp | -8.7pp | -7.8pp | -3.1pp | -10.7pp | -3.8pp |
| Change due to other reasons | -5.2pp | -3.1pp | -3.4pp | -4.1pp | -6.9pp | -1.5pp | -4.6pp |
| Change due to PBD change | -1.8pp | -3.0pp | -3.2pp | -2.9pp | -0.8pp | -3.8pp | -2.5pp |
| Change due to UI ERA change | -2.2pp | -7.8pp | -7.7pp | -6.8pp | -2.5pp | -9.2pp | -3.2pp |
| Change due to penalty | -2.2pp | -5.4pp | -5.5pp | -4.6pp | -1.7pp | -8.7pp | -3.3pp |

Notes: The table shows key simulation results for alternative samples and models. Column (1) shows the results from estimating the model on women (using both empirical moments and the relevant institutional parameters for women). Column (2) replicates the baseline model for men for ease of comparison with successive columns. Column (3) estimates the model using a linear as opposed to exponential time trend in the cost of job search. Column (4) estimates the model assuming no time trend in the cost of job search. Column (5) estimates the model assuming that there is no fixed cost of entering UI. Column (6) estimates the model after increasing UA from 500 to 750. Column (7) estimates the model imposing a constant mean of the disutility of work $\bar{\eta}$ across all cohorts (in-sample and out-of-sample).

Table AA2: RD Estimations of the Effects of UI PBD Extensions on Nonemployment Duration for Men and Women

| | | Male | | Female | | Male and Female | |
|-----------------------------------|-----------------|-----------|-----------|-----------|-----------|-----------------|-----------|
| | | Base | Controls | Base | Controls | Base | Controls |
| Period Jul 1987 - Feb 1999 | | | | | | | |
| Age 42, P: (12-18), Δ P: 6 | $\frac{dy}{dP}$ | 0.092 | 0.080 | 0.124 | 0.124 | 0.107 | 0.100 |
| | | [0.026]** | [0.025]** | [0.027]** | [0.026]** | [0.019]** | [0.018]** |
| N | | 173,313 | 173,313 | 148,220 | 148,220 | 321,533 | 321,533 |
| Mean Dep. Var | | 16.049 | 16.049 | 17.736 | 17.736 | 16.827 | 16.827 |
| Age 44, P: (18-22), Δ P: 4 | $\frac{dy}{dP}$ | 0.079 | 0.068 | 0.056 | 0.049 | 0.066 | 0.060 |
| | | [0.041]+ | [0.039]+ | [0.038] | [0.037] | [0.028]* | [0.026]* |
| N | | 170,270 | 170,270 | 152,092 | 152,092 | 322,362 | 322,362 |
| Mean Dep. Var | | 17.046 | 17.046 | 18.777 | 18.777 | 17.863 | 17.863 |
| Age 49, P: (22-26), Δ P: 4 | $\frac{dy}{dP}$ | 0.121 | 0.103 | 0.105 | 0.107 | 0.119 | 0.107 |
| | | [0.068]+ | [0.062] | [0.065] | [0.063]+ | [0.049]* | [0.046]* |
| N | | 107,255 | 107,255 | 91,736 | 91,736 | 198,991 | 198,991 |
| Mean Dep. Var | | 18.568 | 18.568 | 20.920 | 20.920 | 19.652 | 19.652 |
| Age 54, P: (26-32), Δ P: 6 | $\frac{dy}{dP}$ | 0.129 | 0.126 | 0.203 | 0.222 | 0.173 | 0.181 |
| | | [0.053]* | [0.048]** | [0.040]** | [0.039]** | [0.034]** | [0.032]** |
| N | | 66,720 | 66,720 | 66,823 | 66,823 | 133,543 | 133,543 |
| Mean Dep. Var | | 24.331 | 24.331 | 28.639 | 28.639 | 26.486 | 26.486 |
| Period Mar 1999 - Jan 2006 | | | | | | | |
| Age 45, P: (12-18), Δ P: 6 | $\frac{dy}{dP}$ | 0.024 | 0.024 | 0.118 | 0.115 | 0.067 | 0.067 |
| | | [0.028] | [0.027] | [0.029]** | [0.028]** | [0.020]** | [0.020]** |
| N | | 156,927 | 156,927 | 132,763 | 132,763 | 289,690 | 289,690 |
| Mean Dep. Var | | 15.637 | 15.637 | 15.605 | 15.605 | 15.622 | 15.622 |
| Age 47, P: (18-22), Δ P: 4 | $\frac{dy}{dP}$ | 0.113 | 0.104 | 0.128 | 0.124 | 0.120 | 0.112 |
| | | [0.044]* | [0.042]* | [0.044]** | [0.043]** | [0.031]** | [0.029]** |
| N | | 148,285 | 148,285 | 132,154 | 132,154 | 280,439 | 280,439 |
| Mean Dep. Var | | 16.794 | 16.794 | 17.214 | 17.214 | 16.992 | 16.992 |
| Age 52, P: (22-26), Δ P: 4 | $\frac{dy}{dP}$ | 0.128 | 0.126 | 0.064 | 0.066 | 0.101 | 0.097 |
| | | [0.049]** | [0.048]** | [0.048] | [0.046] | [0.034]** | [0.033]** |
| N | | 113,128 | 113,128 | 106,936 | 106,936 | 220,064 | 220,064 |
| Mean Dep. Var | | 20.546 | 20.546 | 22.619 | 22.619 | 21.553 | 21.553 |
| Period Feb 2006 - Dec2007 | | | | | | | |
| Age 50, P: (12-15), Δ P: 3 | $\frac{dy}{dP}$ | 0.048 | 0.062 | 0.151 | 0.142 | 0.096 | 0.103 |
| | | [0.103] | [0.100] | [0.097] | [0.096] | [0.073] | [0.072] |
| N | | 57,116 | 57,116 | 52,647 | 52,647 | 109,763 | 109,763 |
| Mean Dep. Var | | 18.539 | 18.539 | 18.077 | 18.077 | 18.317 | 18.317 |

Notes: This table shows RD estimates of UI extensions at various cutoffs on nonemployment duration in months (capped at 36 months). Estimates are obtained using local polynomial regressions controlling linearly for age (allowing for different slopes on each side of cutoff), using a rectangular kernel and a bandwidth of 2 years on each side of the cutoff, except for age cutoff 49 and 54 who have only a bandwidth of one year on the right due to other discontinuities. Standard errors (in brackets) clustered on day level (+ p<0.1, * p<0.05, ** p<0.01).

Table AA3: Placebo Outcomes, Females

| | | Fraction of UI entries per day | Pre UI Wage | Foreign Citizen | Years of Education | Occ. Tenure Last Job | Ind. Tenure Last Job | Times untill UI Claim |
|-----------------------------------|-----------------|-----------------------------------|--------------------|---------------------|-----------------------|-------------------------|-------------------------|--------------------------|
| Period Jul 1987 - Feb 1999 | | | | | | | | |
| Age 42, P: (12-18), Δ P: 6 | $\frac{dy}{dP}$ | 0.001 [0.001] | 0.120 [0.061]* | 0.000 [0.001] | 0.002 [0.008] | 0.019 [0.012] | 0.013 [0.012] | 0.003 [0.007] |
| N | | 148,220 | 148,220 | 148,220 | 148,220 | 148,220 | 148,220 | 148,220 |
| Mean Dep. Var | | 1.000 | 52.560 | 0.122 | 12.756 | 7.801 | 6.850 | 1.371 |
| Age 44, P: (18-22), Δ P: 4 | $\frac{dy}{dP}$ | -0.001 [0.003] | 0.045 [0.095] | -0.001 [0.001] | 0.002 [0.011] | 0.001 [0.019] | 0.013 [0.018] | -0.013 [0.010] |
| N | | 152,092 | 152,092 | 152,092 | 152,092 | 152,092 | 152,092 | 152,092 |
| Mean Dep. Var | | 1.000 | 52.242 | 0.123 | 12.817 | 7.798 | 6.921 | 1.358 |
| Age 49, P: (22-26), Δ P: 4 | $\frac{dy}{dP}$ | 0.008 [0.003]* | -0.076 [0.134] | 0.000 [0.001] | 0.005 [0.016] | 0.021 [0.030] | 0.026 [0.029] | -0.004 [0.009] |
| N | | 91,736 | 91,736 | 91,736 | 91,736 | 91,736 | 91,736 | 91,736 |
| Mean Dep. Var | | 1.000 | 53.000 | 0.104 | 12.821 | 8.617 | 7.865 | 0.866 |
| Age 54, P: (26-32), Δ P: 6 | $\frac{dy}{dP}$ | 0.016 [0.003]** | 0.452 [0.107]** | -0.002 [0.001]** | -0.009 [0.010] | 0.015 [0.022] | -0.010 [0.023] | -0.007 [0.006] |
| N | | 66,823 | 66,823 | 66,823 | 66,823 | 66,823 | 66,823 | 66,823 |
| Mean Dep. Var | | 1.000 | 50.236 | 0.059 | 11.662 | 8.369 | 8.157 | 0.770 |
| Period Mar 1999 - Jan 2006 | | | | | | | | |
| Age 45, P: (12-18), Δ P: 6 | $\frac{dy}{dP}$ | 0.005 [0.002]** | 0.003 [0.070] | 0.000 [0.001] | -0.000 [0.007] | -0.002 [0.015] | 0.009 [0.012] | -0.007 [0.007] |
| N | | 132,763 | 132,763 | 132,763 | 132,763 | 132,763 | 132,763 | 132,763 |
| Mean Dep. Var | | 1.000 | 49.867 | 0.065 | 13.574 | 8.275 | 3.821 | 1.134 |
| Age 47, P: (18-22), Δ P: 4 | $\frac{dy}{dP}$ | 0.007 [0.003]** | 0.083 [0.108] | -0.000 [0.001] | 0.023 [0.012]* | 0.010 [0.026] | -0.003 [0.019] | -0.004 [0.010] |
| N | | 132,154 | 132,154 | 132,154 | 132,154 | 132,154 | 132,154 | 132,154 |
| Mean Dep. Var | | 1.000 | 49.352 | 0.072 | 13.596 | 8.715 | 4.047 | 1.145 |
| Age 52, P: (22-26), Δ P: 4 | $\frac{dy}{dP}$ | 0.012 [0.003]** | 0.326 [0.126]* | 0.001 [0.001] | -0.007 [0.013] | 0.066 [0.029]* | 0.048 [0.026]+ | 0.013 [0.010] |
| N | | 106,936 | 106,936 | 106,936 | 106,936 | 106,936 | 106,936 | 106,936 |
| Mean Dep. Var | | 1.000 | 48.233 | 0.082 | 13.569 | 10.014 | 5.545 | 1.202 |
| Period Jan 2008 - Dec 2010 | | | | | | | | |
| Age 50, P: (12-15), Δ P: 3 | $\frac{dy}{dP}$ | 0.021 [0.005]** | -0.187 [0.241] | -0.000 [0.002] | -0.020 [0.021] | -0.047 [0.057] | -0.041 [0.020]* | 0.008 [0.011] |
| N | | 52,647 | 52,647 | 52,647 | 52,647 | 52,647 | 52,647 | 52,647 |
| Mean Dep. Var | | 1.000 | 47.291 | 0.070 | 12.328 | 9.267 | 3.631 | 0.469 |

Notes: This table shows estimates of UI extensions at various cutoffs on different placebo outcomes. For details on the specification see the notes to Table AA2. Standard errors (in brackets) clustered on day level (+ p<0.1, * p<0.05, ** p<0.01).

Table AA4: Placebo Outcomes, Women + Men

| | | Fraction of UI entries per day | Pre UI Wage | Foreign Citizen | Years of Education | Occ. Tenure Last Job | Ind. Tenure Last Job | Times until UI Claim |
|-----------------------------------|-----------------|-----------------------------------|--------------------|--------------------|-----------------------|-------------------------|-------------------------|-------------------------|
| Period Jul 1987 - Feb 1999 | | | | | | | | |
| Age 42, P: (12-18), Δ P: 6 | $\frac{dy}{dP}$ | -0.001 [0.001] | 0.079 [0.051] | 0.001 [0.001]+ | 0.004 [0.005] | 0.007 [0.008] | 0.010 [0.008] | 0.001 [0.005] |
| N | | 321,533 | 321,533 | 321,533 | 321,533 | 321,533 | 321,533 | 321,533 |
| Mean Dep. Var | | 1.000 | 67.735 | 0.128 | 12.839 | 8.962 | 7.966 | 1.450 |
| Age 44, P: (18-22), Δ P: 4 | $\frac{dy}{dP}$ | 0.003 [0.002] | 0.077 [0.079] | -0.000 [0.001] | 0.008 [0.008] | -0.000 [0.013] | 0.010 [0.013] | 0.001 [0.007] |
| N | | 322,362 | 322,362 | 322,362 | 322,362 | 322,362 | 322,362 | 322,362 |
| Mean Dep. Var | | 1.000 | 67.146 | 0.136 | 12.835 | 9.292 | 8.324 | 1.447 |
| Age 49, P: (22-26), Δ P: 4 | $\frac{dy}{dP}$ | 0.004 [0.002]+ | -0.233 [0.120]+ | -0.000 [0.001] | 0.002 [0.012] | 0.010 [0.020] | 0.029 [0.020] | -0.006 [0.007] |
| N | | 198,991 | 198,991 | 198,991 | 198,991 | 198,991 | 198,991 | 198,991 |
| Mean Dep. Var | | 1.000 | 68.451 | 0.142 | 12.786 | 10.625 | 9.694 | 0.957 |
| Age 54, P: (26-32), Δ P: 6 | $\frac{dy}{dP}$ | 0.011 [0.002]** | 0.409 [0.101]** | -0.002 [0.001]* | -0.008 [0.008] | 0.010 [0.016] | -0.002 [0.017] | -0.000 [0.004] |
| N | | 133,543 | 133,543 | 133,543 | 133,543 | 133,543 | 133,543 | 133,543 |
| Mean Dep. Var | | 1.000 | 63.058 | 0.101 | 11.614 | 10.272 | 9.998 | 0.838 |
| Period Mar 1999 - Jan 2006 | | | | | | | | |
| Age 45, P: (12-18), Δ P: 6 | $\frac{dy}{dP}$ | 0.003 [0.001]* | -0.049 [0.055] | 0.000 [0.000] | -0.002 [0.005] | 0.004 [0.010] | 0.013 [0.009] | -0.007 [0.004] |
| N | | 289,690 | 289,690 | 289,690 | 289,690 | 289,690 | 289,690 | 289,690 |
| Mean Dep. Var | | 1.000 | 65.179 | 0.075 | 13.516 | 10.150 | 4.753 | 1.208 |
| Age 47, P: (18-22), Δ P: 4 | $\frac{dy}{dP}$ | 0.005 [0.002]** | -0.050 [0.090] | 0.000 [0.001] | 0.021 [0.008]* | -0.002 [0.018] | -0.008 [0.015] | -0.008 [0.007] |
| N | | 280,439 | 280,439 | 280,439 | 280,439 | 280,439 | 280,439 | 280,439 |
| Mean Dep. Var | | 1.000 | 64.125 | 0.077 | 13.505 | 10.848 | 5.057 | 1.220 |
| Age 52, P: (22-26), Δ P: 4 | $\frac{dy}{dP}$ | 0.008 [0.002]** | 0.059 [0.112] | 0.000 [0.001] | -0.009 [0.009] | 0.049 [0.022]* | 0.040 [0.021]+ | 0.004 [0.007] |
| N | | 220,064 | 220,064 | 220,064 | 220,064 | 220,064 | 220,064 | 220,064 |
| Mean Dep. Var | | 1.000 | 62.717 | 0.086 | 13.348 | 12.866 | 7.065 | 1.310 |
| Period Jan 2008 - Dec 2010 | | | | | | | | |
| Age 50, P: (12-15), Δ P: 3 | $\frac{dy}{dP}$ | 0.017 [0.003]** | 0.119 [0.199] | -0.000 [0.001] | -0.003 [0.014] | -0.012 [0.041] | -0.019 [0.011] | 0.000 [0.007] |
| N | | 109,763 | 109,763 | 109,763 | 109,763 | 109,763 | 109,763 | 109,763 |
| Mean Dep. Var | | 1.000 | 62.142 | 0.080 | 12.443 | 11.426 | 4.874 | 0.461 |

Notes: This table shows RD estimates of UI extensions at various cutoffs on different placebo outcomes. For details on the specification see the notes to Table AA2. Standard errors (in brackets) clustered on day level (+ p<0.1, * p<0.05, ** p<0.01).

Table AA5: Robustness for RD-Estimates, Women

| | (1) baseline estimate | (2) more controls | (3) exclude 3 months | (4) bw 12 months | (5) kernel triangular |
|------------------------------------|-----------------------------|-------------------------|----------------------------|------------------------|-----------------------------|
| Period Jul 1987 - Feb 1999, Age 42 | | | | | |
| $\frac{dy}{dP}$ | 0.124** [0.0266] | 0.120** [0.0264] | 0.112** [0.0306] | 0.137** [0.0477] | 0.123** [0.0312] |
| N | 148220 | 148220 | 141468 | 67098 | 148220 |
| Period Jul 1987 - Feb 1999, Age 44 | | | | | |
| $\frac{dy}{dP}$ | 0.0558 [0.0384] | 0.0445 [0.0390] | 0.0539 [0.0454] | 0.131+ [0.0702] | 0.0766+ [0.0462] |
| N | 152092 | 152092 | 144991 | 69463 | 152092 |
| Period Jul 1987 - Feb 1999, Age 49 | | | | | |
| $\frac{dy}{dP}$ | 0.0649 [0.0589] | 0.0697 [0.0540] | 0.0646 [0.0685] | 0.0367 [0.0694] | 0.0576 [0.0591] |
| N | 115576 | 115576 | 108182 | 72433 | 115576 |
| Period Jul 1987 - Feb 1999, Age 54 | | | | | |
| $\frac{dy}{dP}$ | 0.203** [0.0403] | 0.197** [0.0394] | 0.168** [0.0489] | 0.221** [0.0515] | 0.209** [0.0425] |
| N | 66823 | 66823 | 62537 | 42085 | 66823 |
| Period Mar 1999 - Jan 2006, Age 45 | | | | | |
| $\frac{dy}{dP}$ | 0.118** [0.0289] | 0.115** [0.0273] | 0.109** [0.0312] | 0.131** [0.0485] | 0.118** [0.0319] |
| N | 132763 | 132763 | 126625 | 60612 | 132763 |
| Period Mar 1999 - Jan 2006, Age 47 | | | | | |
| $\frac{dy}{dP}$ | 0.128** [0.0443] | 0.124** [0.0418] | 0.0746 [0.0482] | 0.282** [0.0747] | 0.167** [0.0490] |
| N | 132154 | 132154 | 126025 | 59650 | 132154 |
| Period Mar 1999 - Jan 2006, Age 52 | | | | | |
| $\frac{dy}{dP}$ | 0.0638 [0.0484] | 0.0633 [0.0471] | 0.0626 [0.0544] | 0.149+ [0.0845] | 0.0729 [0.0555] |
| N | 106936 | 106936 | 101891 | 49396 | 106936 |
| Period Jan 2008 - Dec 2010, Age 50 | | | | | |
| $\frac{dy}{dP}$ | 0.151 [0.0971] | 0.157 [0.0975] | 0.166 [0.111] | 0.232 [0.174] | 0.194+ [0.114] |
| N | 52647 | 52647 | 50282 | 24037 | 52647 |

Notes: This table explores robustness of the RD estimates in Table AA2 for women. Column (1) copies the baseline results. Column (2) adds to the baseline controls in addition one-digit industry controls, state fixed effects as well as calendar month and year FE. Column (3) excludes three instead of two months on each side of the cutoff, column (4) uses a bandwidth of 24 months and column (5) uses a triangular kernel. Standard errors (in brackets) clustered on day level (+ p<0.1, * p<0.05, ** p<0.01).

Table AA6: Robustness for RD-Estimates, Women+Men

| | (1) baseline estimate | (2) more controls | (3) exclude 3 months | (4) bw 12 months | (5) kernel triangular |
|------------------------------------|-----------------------------|-------------------------|----------------------------|------------------------|-----------------------------|
| Period Jul 1987 - Feb 1999, Age 42 | | | | | |
| $\frac{dy}{dP}$ | 0.107** [0.0191] | 0.0922** [0.0182] | 0.0918** [0.0211] | 0.107** [0.0327] | 0.104** [0.0214] |
| N | 321533 | 321533 | 306671 | 145617 | 321533 |
| Period Jul 1987 - Feb 1999, Age 44 | | | | | |
| $\frac{dy}{dP}$ | 0.0657* [0.0283] | 0.0514+ [0.0273] | 0.0489 [0.0318] | 0.157** [0.0491] | 0.0860** [0.0323] |
| N | 322362 | 322362 | 307213 | 146797 | 322362 |
| Period Jul 1987 - Feb 1999, Age 49 | | | | | |
| $\frac{dy}{dP}$ | 0.105* [0.0421] | 0.0758* [0.0375] | 0.0762 [0.0484] | 0.115* [0.0492] | 0.102* [0.0418] |
| N | 243626 | 243626 | 228065 | 152931 | 243626 |
| Period Jul 1987 - Feb 1999, Age 54 | | | | | |
| $\frac{dy}{dP}$ | 0.173** [0.0340] | 0.151** [0.0302] | 0.164** [0.0386] | 0.205** [0.0410] | 0.185** [0.0340] |
| N | 133543 | 133543 | 125044 | 85142 | 133543 |
| Period Mar 1999 - Jan 2006, Age 45 | | | | | |
| $\frac{dy}{dP}$ | 0.0673** [0.0201] | 0.0657** [0.0189] | 0.0611** [0.0217] | 0.0670* [0.0336] | 0.0625** [0.0220] |
| N | 289690 | 289690 | 276337 | 132029 | 289690 |
| Period Mar 1999 - Jan 2006, Age 47 | | | | | |
| $\frac{dy}{dP}$ | 0.120** [0.0312] | 0.108** [0.0293] | 0.0827* [0.0337] | 0.206** [0.0522] | 0.142** [0.0343] |
| N | 280439 | 280439 | 267430 | 126965 | 280439 |
| Period Mar 1999 - Jan 2006, Age 52 | | | | | |
| $\frac{dy}{dP}$ | 0.101** [0.0341] | 0.0883** [0.0333] | 0.0995* [0.0388] | 0.110+ [0.0603] | 0.0755+ [0.0396] |
| N | 220064 | 220064 | 209801 | 101362 | 220064 |
| Period Jan 2008 - Dec 2010, Age 50 | | | | | |
| $\frac{dy}{dP}$ | 0.0955 [0.0732] | 0.125+ [0.0675] | 0.0931 [0.0775] | 0.168 [0.120] | 0.0982 [0.0787] |
| N | 109763 | 109763 | 104737 | 50209 | 109763 |

Notes: This table explores robustness of the RD estimates in Table AA2 for women and men. Column (1) copies the baseline results. Column (2) adds to the baseline controls in addition one-digit industry controls, state fixed effects as well as calendar month and year FE. Column (3) excludes three instead of two months on each side of the cutoff, column (4) uses a bandwidth of 24 months and column (5) uses a triangular kernel. Standard errors (in brackets) clustered on day level (+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$).

Table AA7: Institutional Parameters for the Key Cohorts, Women

| Women | 1924 | 1929 | 1935 | 1945 | 1950 | 1952 |
|--|------|------|--------|--------|------|------|
| ERA (earliest possible) via women's pension | 60 | 60 | 60 | 60 | 60 | - |
| NRA (no penalty) via women's pension | 60 | 60 | 60 | 65 | 65 | - |
| UI Bridge Age | 59 | 58 | 57+1/3 | 57+1/3 | 58 | 61* |
| PBD at bridge age | 12m | 24m | 32m | 32m | 24m | 24m* |
| Pension contribution years at age 54 cond. on being emp. at 50 | 23.9 | 23.9 | 24.8 | 22.9 | 27.0 | 25.9 |
| Penalty for retiring at ERA via women's path | 0 | 0 | 0 | 0.18 | 0.18 | - |

Source: Sozialgesetzbuch (SGB) Sechstes Buch (VI) and see Appendix D and Appendix F for more details. **Notes:** * The old-age pension for women pathway is abolished for cohorts born in 1952 and after. Therefore, the bridge age via UI here refers to the age at which individual take the full UI and transition into the old-age pension for long-term insured if they are eligible for this pathway.