

Unemployment Insurance and Family Labor Supply

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Abstract

Unemployment insurance (UI) duration is known to affect the recipients, but does it also affect their families? I provide the first evidence on how family members across different relationships adjust their labor supply when an unemployed individual becomes entitled to UI of longer duration. Using Dutch administrative data, I exploit sharp discontinuities in maximum UI entitlement duration in a regression discontinuity design. As a direct effect of the policy, longer entitlement raises actual UI benefit duration and delays exit from unemployment. In response, spouses increase employment by about 3 percentage points; adult children increase employment by about 5 percentage points. Parents, on the other hand, do not increase employment when their unemployed children receive longer UI entitlement. Accounting for these family spillovers raises the Marginal Value of Public Funds (MVPF) by 6%, suggesting that ignoring family labor supply responses understates the value of UI extension policies.

Keywords: unemployment insurance, added worker effect, intergenerational transmission, spillover effects

JEL code: J65, J13

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1 Introduction

Governments devote substantial resources to unemployment insurance (UI) as a central pillar of income support for displaced workers. In 2023, expenditure on unemployment-related benefits in the European Union amounted to €179 billion, equivalent to 1% of GDP (Eurostat, 2026). A key policy parameter is UI generosity, and researchers have studied its distortionary cost extensively. More generous UI, in particular longer entitlement duration, raises the value of unemployment, lowers search effort, and extends unemployment duration.¹ Existing research on UI entitlement duration has mostly focused on how it shapes the job search behavior and reemployment outcomes of the UI claimants. Very few studies, however, look beyond the claimants to see whether family members of unemployed workers respond.² This paper asks whether spouses, adult children, and parents of unemployed workers adjust their labor supply as family insurance when UI entitlement becomes longer.

Buffering an income shock through family insurance is not uncommon. Previous literature has documented risk sharing among spouses. When one spouse experiences an unemployment shock, the other spouse often increases labor supply to offset the income loss (Lundberg, 1985; Cullen & Gruber, 2000). This pattern, known as the *added worker effect*, has mostly been analyzed within couples. Intergenerational transfers have been documented: parents use savings to support adult children who experience negative income shocks (Fagereng et al., 2025), family welfare dependence passes from parents to children (Dahl et al., 2014), and grandparental retirement decisions spill over onto daughters' labor supply (Kaufmann et al., 2023). Despite these strong family linkages, there is no paper studying the impact of more generous UI on the labor supply decisions of spouses, parents, and adult children.

Understanding the labor supply response of family members also matters for quantifying the fiscal externality of UI policies. Extensions of UI entitlement are particularly interesting to study because they affect family labor supply through two distinct channels. I refer to these two channels as the income channel and the duration channel throughout this paper. On the one hand, a longer entitlement provides overall more income to the unemployed, so family members need to support them less (the income channel). On the other hand, a longer UI entitlement leads to behavioral responses: in expectation, the

¹McCall (1970) and Card et al. (2007), Johnston and Mas (2018), Schmieder et al. (2012b), Lichter and Schiprowski (2021), and Marinescu and Skandalis (2021).

²Between spouses, Cullen and Gruber (2000) study how UI benefit levels affect the labor supply of wives, but not UI entitlement duration. Between parents and adult children, no paper studies spillovers of either UI benefit levels or UI entitlement duration.

unemployed stay unemployed longer, so family members need to insure them more (the duration channel). Depending on which channel dominates, family members may adjust their own labor supply upward or downward. The literature documents that the UI exit rate spikes at entitlement exhaustion (Schmieder et al., 2016), making the duration channel even more relevant when studying the effect of UI entitlement extension. As the two channels work in opposite directions, the net effect of UI entitlement duration on family labor supply is unclear.

I aim to fill this gap by studying how UI entitlement duration affects the labor supply of family members across different relationships, including spouses, parents, and adult children. I study this empirically in the Netherlands, exploiting exogenous jumps in UI entitlement duration in the Dutch UI scheme. I find that longer UI entitlement leads to longer actual UI duration for the unemployed, which generates employment spillovers to spouses and adult children, while parents show no employment response to their adult children's UI entitlement. I also examine spillovers on the family members' take-up of other social programs. I further develop a household search model to study when family members respond over the unemployment spell and test its predictions empirically.

Identifying the causal effect of UI entitlement duration on family labor supply faces two challenges. The first challenge is identification-related: variation in UI entitlement duration must be plausibly exogenous, so that changes in family members' labor supply can be attributed to UI entitlement policy rather than to other confounding factors, such as unobserved household characteristics or aggregate shocks that hit family members simultaneously. The second challenge is data-related: high-quality intergenerational data are needed to detect spillover effects precisely, yet parent-child linkages are often drawn from survey data, where the linkage cannot be tracked if the parent and adult child do not live in the same household. In addition, survey data often suffer from small sample sizes and measurement errors, and individuals are often poorly tracked over time.

The empirical setting and data in the Netherlands allow me to address these challenges. This setting offers two advantages. First, Dutch UI eligibility is restricted to involuntarily unemployed workers, addressing the concern that job loss may not be exogenous. Second, the maximum UI entitlement duration is determined by employment history, and discontinuities in the employment history generate exogenous variation in maximum UI entitlement duration: unemployed individuals whose employment history exceeds certain cutoffs are entitled to longer UI. This setting allows me to estimate the net effect on family labor supply using a regression discontinuity (RD) design: I first estimate the direct effect and show that the exogenous longer UI entitlement increases realized UI duration for the unemployed; I then estimate the spillover effect and examine how this

exogenous jump in UI entitlement affects the labor supply decisions of family members. I use administrative datasets from Statistics Netherlands (CBS) covering the entire Dutch population. I merge high-quality information on income, employment status, and social benefit receipts, along with demographic characteristics, across multiple administrative records. Importantly, the data also allow me to link unemployed individuals to their spouses, parents, and adult children. Unlike survey data, I can keep this link even when parents and adult children do not share a household.

I investigate the spillover effects of UI entitlement duration on the labor market outcomes of family members. In the Netherlands before 2006, maximum UI entitlement duration was determined by prior employment history; unemployed individuals whose employment history exceeds given cutoffs become entitled to longer UI. I use the exogenous jump in UI entitlement duration to conduct a regression discontinuity (RD) design. I begin by documenting the direct effect of UI duration. I find that longer UI entitlement increases UI benefit duration by 22.9 days on average, with a corresponding delay in UI exit, as the probability of exiting UI within one, two, and three years falls by roughly 2 percentage points. These results represent the average direct effect across all UI recipients, showing that longer UI entitlement prolongs UI use.

I then study the spillover effect for spouses, parents, and adult children. I find that spouses increase employment by approximately 3 percentage points and income by 50 log points when the unemployed spouse's UI entitlement increases from 2 to 2.5 years. This response is concentrated on the extensive margin and is driven by female spouses, particularly those who were previously inactive. Across generations, parents of unemployed children do not increase their employment or income on average when their unemployed children's UI entitlement increases from 1 to 1.5 years. However, I find that parents with pre-UI earnings above the median relative to their unemployed children do increase employment. A potential explanation is that these parents step in to support poorer children. Adult children, meanwhile, increase employment by about 5 percentage points and income by 21 log points when their unemployed parents' UI entitlement increases from 4 to 5 years. The response is driven by daughters and is largest for the daughter-mother pair. This result suggests that grandchild care may be one channel of family support, as unemployed mothers with longer UI have more time to look after grandchildren, allowing their daughters to work more. This is in line with evidence that grandparental availability for childcare raises maternal labor supply (Kaufmann et al., 2023). This spillover to children is also concentrated among children with pre-UI earnings below the median relative to their unemployed parents, which means poorer children increase employment when their richer parents remain unemployed for longer. This

pattern suggests that poorer children may rely on transfers from richer parents before unemployment, and once the parents are unemployed longer, these children need to work and rely more on themselves. This points to the direction of intergenerational altruism running mostly from parents to children.

Moreover, I examine spillover effects on other social programs. Children and spouses show a reduction in social assistance take-up when the unemployed family member qualifies for a longer UI entitlement, by about 1.4 and 0.5 percentage points, respectively. Family members' own UI take-up, by contrast, shows little change: the effect for children is close to 0, while for parents and spouses there is some evidence of a very small increase, by less than 0.4 percentage point. This pattern suggests that the observed labor supply responses reflect intra-family insurance rather than peer effects, under which family members would simply imitate each other by raising their own UI take-up (Bertrand et al., 2000; Dahl et al., 2014).

Next, I develop a simple household search model to formalize the income and duration channels described above, and derive predictions on the timing of family employment responses. The model predicts that, compared with a shorter entitlement, unemployed individuals with a longer entitlement have a higher reservation wage, a lower job-finding rate, and stay on UI longer. Forward-looking family members who anticipate this lower job-finding rate should therefore increase their labor supply from the start of the UI spell. Relative to a shorter entitlement, the increase in family labor supply under a longer entitlement is largest around the expiration of the shorter entitlement. Taking these predictions to the data, I find that the timing of the response differs across family relationships. A potential explanation could be differences in information and proximity across family relationships. Most spouses co-reside with their unemployed partners, are better informed about these partners' remaining entitlement and job prospects, and therefore increase employment from the start of the unemployment spell. Adult children, by contrast, more often live apart and raise their employment only when their parents' continued reliance on UI becomes more directly observable near UI expiration. I scale each family member's peak employment response by the corresponding direct effect on the unemployed individual's UI exit rate. Spouses increase employment by 3 percentage points when their unemployed partners are less likely to leave UI by 3 percentage points, while adult children increase employment by 4 percentage points when their unemployed parents are less likely to leave UI by 10 percentage points. The children's scaled response is thus roughly 40% of the spousal response.

My findings have policy implications. Accounting for these spillovers raises the Marginal Value of Public Funds (MVPF) of extending UI entitlement from 0.68 to 0.72, an increase

of 6%.³ An MVPF below one implies that the policy has negative fiscal externalities, but these negative externalities are smaller once family spillovers are incorporated, meaning UI extensions are less distortionary than a calculation without family spillovers would suggest. Hence, ignoring family labor supply responses understates the value of UI extension policies.

This paper relates to several strands of literature. First, it connects to the literature on the disincentive effects of unemployment insurance. This has been studied from the claimant's own side, where longer potential duration raises the claimant's own nonemployment duration (Card et al., 2007; Johnston & Mas, 2018; Schmieder et al., 2012a), shapes job search effort and reservation wages over the spell (Lichter & Schiprowski, 2021; Marinescu & Skandalis, 2021), and affects the quality of the job the claimants eventually find, including reemployment wages (Le Barbanchon, 2016; Nekoei & Weber, 2017; Schmieder et al., 2016; de Groot & van der Klaauw, 2019). de Groot and van der Klaauw (2019) studies the direct effect of the same entitlement-duration discontinuities in the Netherlands that this paper exploits, but on the claimant's own outcomes. There is much less evidence on spillover effects of UI on family members. The pioneering work is Cullen and Gruber (2000), which asks whether UI crowds out the added worker effect and finds that more generous benefits absorb much of the spousal labor supply response to a husband's unemployment. Their evidence comes from variation in UI benefit levels across states and over time, and it speaks to the benefit level rather than the entitlement-duration margin. On parents and children, prior work documents how children respond to a parent's job loss (Fradkin et al., 2019; Oreopoulos et al., 2008), but this evidence concerns the job loss itself rather than the UI benefits entitlement. What is missing is direct, exogenously identified evidence on how UI generosity, particularly on the duration margin, shapes the labor supply of other family members. This paper yields several contributions. It provides the first causal estimate of UI generosity on family labor supply along the entitlement-duration margin. A second contribution is the unit of analysis: moving beyond the couple, I provide the first evidence on intergenerational employment responses to UI benefits. Finally, I develop a model and empirical design that maps the timing of family responses relative to UI expiration.

Second, the paper relates to the literature on how families respond to negative income shocks, through spousal labor supply, intra-family transfers, or children's education (Lundberg, 1985; Cullen & Gruber, 2000; Halla et al., 2020; Kaplan, 2012; McGarry, 2016). However, negative income shocks from unemployment are generally hard to argue as ex-

³This falls within the range typically found for UI policies (0.43–0.89) in Hendren and Sprung-Keyser (2020).

ogenous. The existing literature has addressed this challenge between spouses by relying on mass layoffs as a source of involuntary displacement (Halla et al., 2020). A related literature on extended family networks shows that the relevant unit for informal insurance reaches beyond the couple, in terms of schooling and migration decisions in village economies (Angelucci et al., 2009, 2010). I build on both threads. Dutch UI eligibility is restricted to the involuntarily unemployed, which matches the mass layoff identification strategy in Halla et al. (2020). This lets me extend the added worker effect to parents and children for the first time, using exogenous variation in UI entitlement among the involuntarily unemployed to study family labor supply spillovers beyond the couple.

Third, this paper draws on a broader literature on how social insurance programs, including disability insurance (DI) and pension programs, affect the employment decisions of family members. Autor et al. (2019) show that DI receipt has little effect on the income and consumption of married applicants, since spousal labor supply strongly buffers household effects following DI denial. Oral et al. (2024) document retirement spillovers within families, neighborhoods, and workplaces following a Dutch pension reform, driven by social norms. A related strand documents intergenerational transmission of welfare take-up, where children of parents who participate in social insurance programs are themselves more likely to participate as adults (Dahl et al., 2014; Dahl & Gielen, 2021; Cobb-Clark et al., 2022; Hartley et al., 2022). Yet, not much comparable evidence exists for UI. I fill this gap in the literature by examining spillovers in family employment decisions within the context of UI: my outcome is short-run family labor supply during an ongoing unemployment spell, rather than long-run program take-up, and I interpret the family response as evidence on an informal insurance channel within the family network.

The remainder of the paper is structured as follows. Section 2 describes the institutional setting and data. Section 3 outlines the empirical strategy. Section 4 presents the main results. Section 5 provides a theoretical framework to interpret the results. Section 6 studies the timing of the family employment response. Section 7 discusses the policy implications by calculating the marginal value of public funds, and Section 8 concludes.

2 Institutional setting and data

2.1 The Dutch Unemployment Insurance System Before 2006

This section describes the UI system in the Netherlands before 2006, the regime exploited in this paper. Dutch UI is financed through the compulsory employee insurance schemes

(*werknemersverzekeringen*).

Until 2006, workers with sufficiently long employment histories could receive wage-related benefits for up to five years. To qualify, a worker had to lose at least five working hours per week, or half her hours if she worked fewer than ten. She also had to have worked in at least 26 of the previous 39 weeks, and in at least four of the previous five years. A worker who met only the weekly requirement received a short-term benefit,⁴ whereas a worker who met both requirements qualified for the long-term, wage-related benefit. This paper focuses on the long-term UI benefit and exploits the exogenous variation in its entitlement length, generated by the stepwise duration schedule that will be described below. This long-term UI setting is also more meaningful for studying the employment response of family members, since the short-term benefit entails only brief transitions in and out of unemployment insurance that call for little employment adjustment.

The long-term UI benefit replaced a flat 70% of the worker's last earned wage, subject to a statutory ceiling on insurable earnings. Receipt was conditional on an active job search throughout the spell. The central institutional feature for my identification strategy is the duration of the long-term benefit, which followed a stepwise schedule based on a worker's accumulated employment history and ranged from six months to five years. As Figure 1 shows, the maximum entitlement period increased discretely at successive thresholds of accumulated employment history, holding constant within each interval. Entitlement duration was 6 months for workers with 4 to 5 years of employment history, 9 months for 5 to 10 years, 12 months for 10 to 15 years, 18 months for 15 to 20 years, 24 months for 20 to 25 years, 30 months for 25 to 30 years, 36 months for 30 to 35 years, 48 months for 35 to 40 years, and 60 months for 40 or more years. These discrete increases generate sharp, exogenous jumps in UI benefit duration at known thresholds. The jump is 3 months at the 5-year and 10-year thresholds, 6 months at the 15-, 20-, 25-, and 30-year thresholds, and 12 months at the 35- and 40-year thresholds. The jumps are larger at higher thresholds.

Employment history is determined as follows. The administration computes it in two parts, the sum of which gives the worker's total employment history. From 1998 onward, a calendar year counts toward employment history if the individual received social-security wages on at least 52 days in that year. Because no individual records exist before 1998, the rule credits every year after age eighteen as a year of employment, re-

⁴The short-term benefit was fixed at six months at 70% of the minimum wage. The eligibility conditions and the short-term/long-term structure are described in De Groot and van der Klaauw (2019, §3.1) and follow the *Werkloosheidswet* (WW), Article 42 (version in force 30 September 2005) before the October 2006 reform.

ardless of whether the worker was actually employed. The pre-1998 component therefore equals the worker's age on January 1, 1998 minus eighteen.

The UI benefits were restricted to workers who became unemployed involuntarily.⁵ This involuntary job loss requirement is common across UI systems in other countries as well. In the Netherlands, a worker who was at fault for their own unemployment was denied the benefits in full. Resigning voluntarily without a compelling reason counted as culpable unemployment and disqualified the worker from UI. A feature specific to the pre-2006 regime was a broader notion of fault: a worker was expected not only to refrain from quitting but also to actively resist an employer-initiated dismissal, and failing to contest a proposed dismissal could itself be treated as culpable unemployment. Crucially for identification, the involuntariness requirement limited workers' scope to manipulate their entitlement, since they could not freely time their own job loss to qualify for a longer benefit duration.⁶

2.2 Data

This paper uses administrative microdata from Statistics Netherlands (CBS). The data cover the full Dutch population and include individual identifiers that allow linkage across registers. I combine UI benefit begin and end dates, employment and social benefits take-up records, earnings and income files, and address information and demographic registers including gender and birth date. A key advantage of this data is that it allows me to link unemployed individuals to their family members, including spouses, parents, and children, even when they do not live together. This is particularly important for parents and children, since in most cases they do not live in the same household once children reach adulthood. This overcomes a common limitation of survey data, which typically only captures spillovers within the household and misses family members living apart. The main outcomes are employment and income for the unemployed individuals and their family members. I observe employment and social benefits take-up at the monthly level, and income at the annual level.

The sample period runs from 1999 to 2006, during which UI entitlement follows the rules described in Section 2.1. I keep unemployed individuals who actually take UI for

⁵See WW Articles 24 and 27 (version in force in 2005). Article 24 obliged the worker to prevent culpable unemployment, and Article 27 provided for refusal or reduction of the benefit when that obligation was breached. Before 1 October 2006, Article 24(2) defined culpability broadly enough to require workers to contest an employer-initiated dismissal; the October 2006 amendment narrowed it to dismissals for an urgent cause attributable to the worker and to terminations the worker initiated without a compelling reason.

⁶I also find no empirical evidence of such manipulation in Section 3.

more than 6 months, which corresponds to the long-run UI entitlement defined by law as above 6 months. I link these unemployed individuals to spouses, defined as married or cohabiting partners.⁷ I also link unemployed individuals to their legal parents and children, who do not need to live together, as long as the relationship is recorded as a legal parent-child relationship in the administrative data. Parents-in-law are therefore not included. The three samples of unemployed individuals used to construct the spouses, children, and parents sample may therefore overlap, as an unemployed individual can have a linked spouse, children, and parents at the same time. The sample is restricted to family members below age 70. This restriction makes it possible to study the labor market outcomes of family members who have not yet retired, and to examine whether their retirement timing is affected as well.

For each unemployed subsample, I use the cutoffs in the UI scheme around which its employment histories are concentrated, as shown in Figure 2. This matters particularly for unemployed children and parents, whose employment histories, given their age, are not distributed evenly across the full range. Pooling all cutoffs would pull in cutoffs where the sample is thin and make the estimates noisy. Specifically, I use the 15-year cutoff for unemployed children and the 40-year cutoff for unemployed parents. For unemployed individuals with spouses, whose employment histories are spread across the full range, I pool all cutoffs from 10 to 40 years. Each unemployed subsample, spouses, parents, or children, therefore has its own corresponding linked family sample: unemployed partners linked to spouses, unemployed parents linked to children, or unemployed children linked to parents.

I construct employment history at the monthly level following the statutory rules in Section 2.1, aggregating three components. First, from 1999 onward, one year is assigned if the individual worked at least 52 days in that calendar year.⁸ Second, for 1998, where employment data are not available, one employed year is added, following de Groot and van der Klaauw (2019), if the individual meets the eligibility condition in 1999 and was at least eighteen in 1998. Third, for all years up to and including 1997, employment history is counted based on the number of months between December 1997 and the month in which the individual reached age eighteen. This measure yields a continuous employment history measure at the monthly level as the running variable for deciding the UI entitlement in the regression discontinuity design in Section 3.

Table 1 reports summary statistics for the unemployed and linked family samples.

⁷I require the partnership to span the entire UI spell; that is, it must begin before the UI spell starts and, if it ends, end after the UI spell finishes.

⁸I do not observe bunching in the data around the 52-day threshold, so there is no evidence that individuals strategically worked just enough days to qualify for an employed year.

Panel A shows unemployed parents are on average 58 years old at the start of their UI spell and 62 at the end, with 28 percent female and average pre-UI earnings around 32,500 euros, and an employment history averaging close to 40 years, corresponding to average actual UI duration around 1,010 days. Panel B shows their linked adult children are on average 30 years old, with about 74 percent already employed before the parent's UI spell began. Panel C shows unemployed children are on average 34 years old at the start of their UI spell, with 58 percent female, average pre-UI earnings around 19,000 euros, an average employment history of 15 years, and on average close to two parents and 0.17 unemployed siblings in the sample. Panel D shows their linked parents are on average 62 years old, close to pension claim age, with 70 percent female and about 17 percent employed before the child's UI spell. Panel E shows unemployed spouses are on average 44 years old at the start of their UI spell, with average pre-UI earnings around 24,000 euros and an average employment history of 25 years, corresponding to an average actual UI duration around 547 days. Panel F shows their linked spouses are on average a similar age, around 44 years old, with about 66 percent employed before the partner's UI spell began.

3 Empirical Methodology

This section outlines the empirical strategy used to estimate the spillover effect of UI entitlement duration on the employment of family members from UI entitlement duration. The first challenge of identification is that unemployment is usually hard to argue as exogenous. Unemployment spells often coincide with aggregate shocks, such as recessions, that simultaneously affect the labor market outcomes of other family members. Moreover, unemployed individuals could themselves be selected into unemployment based on the labor market behavior of their family members, for instance, if a family member's earnings or employment status affects the unemployed individual's own job separation decisions. An advantage of this empirical setting is that UI benefits in the Netherlands are granted only to involuntarily unemployed individuals rather than those who quit, in line with the broader added worker effect literature that uses involuntary displacement from mass layoffs or firm closures as treatment to look at spouses' labor supply (Halla et al., 2020).

The second challenge is that variation in UI entitlement duration must be plausibly exogenous, so that changes in family members' labor supply can be attributed to UI entitlement policy rather than to other confounding factors. For instance, unemployed individuals with longer employment histories may differ from those with shorter histo-

ries along dimensions that are also correlated with family labor supply, such as family structure, the unemployed individual’s own pre-UI earnings, as well as those of their family members. To address this, I estimate the causal impact of UI duration on family labor supply using a regression discontinuity (RD) design that exploits discontinuities in maximum UI entitlement, following the approach in Dahl and Gielen (2021), who study intergenerational spillovers in the setting of disability insurance. In my empirical setting, entitlement duration jumps at employment history thresholds of 10, 15, 20, and up to 40 years, as in Figure 1, creating quasi-experimental variation in UI duration entitlement.

To estimate the direct effect, I examine how longer UI entitlement affects labor market outcomes for the unemployed individuals i , using the following specification:

$$Y_i = \alpha + \beta_1 D_i + \beta_2 (X_i - c(X_i)) + \beta_3 (X_i - c(X_i)) \times D_i + \epsilon_i \quad (1)$$

where Y_i denotes the labor market outcomes for the unemployed individuals i , including UI duration in days and the probability of leaving UI in the following years. The running variable X_i is the employment history of the unemployed individuals, and $c(X_i)$ is the nearest cutoff in employment history defining the jump in UI entitlement.⁹ For example, if an individual’s employment history is 15 years and 1 month, they are 1 month above the cutoff at 15 years, so the centered running variable takes a value of 1 month. While the employment history cutoffs span 10 to 40 years, I use group-specific cutoffs depending on the distribution of employment histories within each family sample, as described in Section 2.2.

D_i is an indicator equal to one if the unemployed individual’s employment history exceeds the nearest cutoff, and zero otherwise. The coefficient β_2 captures this underlying slope, and its interaction with D_i , with coefficient β_3 , allows the slope to differ on either side of the cutoff. As a result, β_1 captures the discontinuous jump at the cutoff, which reflects the causal effect of extended UI entitlement on the unemployed individual. In particular, for UI duration in days, β_1 reflects whether unemployed individuals respond by staying longer on UI as a result of the policy. I use a local linear regression with the optimal bandwidth following Calonico et al. (2014). In addition, I conduct extensive robustness checks for other bandwidth and second-order polynomial choices.

I then estimate the spillover effect of extended UI entitlement for i on the labor supply

⁹Since employment history cutoffs are spaced five years apart, while the estimation sample is constructed using a maximum distance of two years from each cutoff, the estimation window does not overlap with more than one cutoff. This is further supported by the fact that the optimal bandwidth, estimated below, turns out to be no more than 12 months, confirming that only the single closest cutoff is relevant for each observation.

of family members j , using the following specification:

$$Y_j = \alpha + \gamma_1 D_i + \gamma_2 (X_i - c(X_i)) + \gamma_3 (X_i - c(X_i)) \times D_i + \epsilon_{ij} \quad (2)$$

Here, Y_j denotes labor market outcomes of the family members j , namely spouses, parents, and adult children. The outcomes include the probability of being employed and the probability of taking up other social insurance programs. I construct these as indicators for entry into the outcome status before the end of the unemployed individual's UI spell, lasting until a reference date, the policy-determined expiration of UI. In Section 6, I complement this static specification by showing employment in every month relative to the start of the UI spell, allowing me to trace out the dynamic response of family members over time. For the income of family members, which is observed annually rather than monthly, I use Equation (2) and additionally control for the unemployed individual's UI start month. Treatment D_i is defined by the employment history of the unemployed individual i . For example, when evaluating spillovers to a parent, the unemployed child's employment history determines treatment: $D_i = 1$ if the child's employment history exceeds the nearest cutoff $c(X_i)$, resulting in longer UI entitlement. Conversely, when evaluating spillovers to an adult child, the unemployed parent's employment history is used. The coefficient γ_1 captures the reduced-form spillover effect of longer UI entitlement duration on family labor supply. As in Equation (1), I use a linear specification and the optimal bandwidth, with robustness checks on these choices.

In a regression discontinuity (RD) design, two central identification assumptions are required. The first assumption is that the running variable, employment history, should not be manipulated around the cutoffs, meaning unemployed individuals should not be able to select themselves to be just above the cutoffs. This is unlikely in this setting for institutional reasons: before 2006, Dutch law on UI required individuals to demonstrate that their unemployment was involuntary, and employees were required to contest an employer-initiated dismissal. This makes it difficult for an unemployed individual to manipulate their employment history, even through an informal, under-the-table arrangement with their employer. To assess this assumption, I examine the smoothness of the density of the running variable around the eligibility thresholds of 10, 15, ..., 40 years. Figure 3 pools all unemployed individuals and shows that the density of employment history is smooth around the cutoffs. Appendix A.1 repeats this check separately by subsample, for unemployed spouses, unemployed parents, and unemployed children in Figure A1, and for the corresponding family samples of spouses, children, and parents in Figure A2, and separately by cutoff in Figures A3 to A5. There are two reasons why manipulation is not found. First, a key component in calculating employment history,

as noted in the institutional rules, is birth date, which cannot be changed. Second, the requirement to contest involuntary unemployment, combined with the complexity of the rules for computing employment history, further limits individuals' ability to manipulate the running variable.

The second assumption is that the unemployed individuals and their family members are comparable around the cutoffs, so that the only difference is the unemployed individual's UI entitlement. I conduct balancing tests by examining whether the samples are similar in terms of predetermined observables, including age and earnings before the start of UI, for both the unemployed individuals and their family members around the cutoffs. Table 2 reports the balancing test following Equation (1) and Equation (2), checking whether each predetermined covariate differs on the right and left of the cutoffs. Nearly all predetermined covariates are balanced across the cutoffs.¹⁰

4 Results

I first document the direct effect of the entitlement discontinuity on UI benefit duration and exit behavior, both on average and separately for unemployed partners, adult children and parents. I then turn to the spillover effects of this discontinuity on the labor supply of their family members. These effects capture two channels that work in opposite directions. First, longer entitlement gives the unemployed benefit income for longer, so the family needs to step in less ("income channel"). Second, longer entitlement may potentially keep the unemployed out of work for longer, living on benefits instead of full earnings, so the family needs to provide more insurance ("duration channel"). I therefore test the net effect on family labor supply empirically. In each RD graph, the outcome is plotted as a binned scatter against the running variable, months of employment history relative to the cutoff, with separate linear fits estimated on either side of the vertical line that marks the discontinuity. Each graph also reports the RD coefficient and standard error in the corner, estimating the effect of the jump in UI entitlement at the cutoff. This section focuses on the static RD results described in Section 3, while the dynamic effects are presented in Section 6.

¹⁰The only two exceptions are age at UI start for unemployed spouses, 0.60 years lower above the cutoff, and living with a partner for unemployed parents, 1.4 percentage points higher. Within the prime-age range of spouse sample, such an age difference is unlikely to shift spouse employment. A second earner in the parental household reduces the need for adult children to work, so the second imbalance would, if anything, only bias the employment response of adult children downward.

4.1 Direct effects on the unemployed

Figure 4 illustrates the direct effect of entitlement on the actual UI take-up duration for the unemployed. I first show the average effect on the pooled unemployed sample. The regression discontinuity estimate indicates that longer UI entitlement increases benefit duration by 22.93 days on average. Consistent with this increase in UI duration, Figure 5 documents a reduction in the probability of exiting UI within one, two, and three years by roughly 2 percentage points. These results represent the average direct effect across all UI recipients: longer UI entitlement prolongs UI use.

I estimate the direct effects separately for each subsample of unemployed individuals, namely unemployed partners, unemployed adult children, and unemployed parents. These subsamples differ markedly in employment history length, and consequently in the entitlement jump they face at the cutoff. For unemployed parents, at the 40-year cutoff, UI entitlement increases from 4 to 5 years. Unemployed adult children have shorter employment histories, and their entitlement increases from 12 to 18 months at the 15-year cutoff. For unemployed spouses, using the pooled cutoffs, UI entitlement increases on average from 2 to 2.5 years. Appendix A.2 reports the estimates separately for each unemployed subsample. For unemployed parents, crossing the entitlement threshold increases UI benefit duration by 6.54 days, and lowers the probability of leaving UI within 5 years by 6 percentage points (Figure A8). For unemployed children, the corresponding increase in benefit duration is 33.19 days, with exit probabilities declining by 10 percentage points within 1 year (Figure A7). For unemployed spouses, benefit duration increases by 14.06 days, with exit probabilities declining by 0.2, 0.3, and 0.1 percentage points within one, two, and three years (Figure A6). Across all three subsamples, the pattern is consistent: a larger jump in entitlement at the cutoff translates into both an increase in UI benefit duration and a larger decline in the probability of UI exit. The variation in the size and location of the UI entitlement jump across subsamples is what drives the heterogeneity in the estimated direct effects on the unemployed. Despite these differences, the direction of the effect is consistent across all three groups: extending UI entitlement leads recipients to remain on UI longer, consistent with previous studies (Schmieder et al., 2012b).

To benchmark the size of these effects against the literature, I calculate the pass-through rate, the share of each additional day of potential entitlement that translates into an extra day of actual UI receipt, separately for each subsample of unemployed individuals. For unemployed children, the entitlement jump at the cutoff is from 12 to 18 months of potential duration, and actual benefit duration increases by 33.19 days, implying a pass-through rate of 0.184. For unemployed parents, the jump is from 4 to 5 years, and actual benefit duration increases by 6.54 days, implying a pass-through rate of 0.018. For un-

employed spouses, the jump is from 2 to 2.5 years, and actual benefit duration increases by 14.06 days, implying a pass-through rate of 0.078. Schmieder et al. (2012b) report a pass-through rate of approximately 0.10, meaning each additional month of potential UI duration raises actual nonemployment duration by roughly 0.1 months in Germany. My estimates for children in the Dutch context are above this benchmark, while those for parents and spouses are below. Averaged across the three subsamples, the pass-through rate is 0.093, close to the estimate of Schmieder et al. (2012b). The differences across subsamples could be explained by the fact that the unemployed individuals in each subsample face different employment histories and entitlement jumps. The jumps also occur at different stages of the life cycle, so the estimates for the different subsamples may not be directly comparable.

4.2 Spillover effect on family labor supply

This section examines whether the unemployment insurance entitlement of a UI claimant spills over onto the labor supply of family members, including spouses, parents, and adult children. The reduced form specification follows Equation (2), where the running variable is the UI claimants' employment history, which determines their UI entitlement. Each figure plots the reduced form for one family type: spouses, parents, or adult children. The x-axis measures the UI claimants' distance to the UI entitlement cutoff, and the y-axis reports the labor supply outcome of the corresponding family member. The RD coefficient and standard error are reported in the bottom right corner of each panel.

4.2.1 Spillover effect on spouses

I examine spillover effects for spouses aged below 70 who have a partner receiving UI at least once between 1999 and 2006. I plot spouses' labor market outcomes against the distance between the unemployed partners' employment history and the nearest entitlement cutoff with the pooled cutoff from 10 to 40, using local linear regressions on each side of the cutoff with the optimal bandwidth.

Figure 6 shows that spouses are about 3 percentage points more likely to be employed in 2.5 years, the window around UI expiration, when the unemployed partners qualify for a longer entitlement above the cutoff. Since longer entitlement increases the unemployed individuals' UI duration, spouses appear to respond by increasing their labor supply at the extensive margin. This pattern fits the added worker effect, where spouses increase labor supply when their partner becomes unemployed (Cullen & Gruber, 2000). On the intensive margin, Figure A16 shows spouses have about 47 log points higher income

when their partner has a longer UI entitlement, including zero-income observations. Excluding zero earners, the effect is no longer significant, so the income increase is driven by the extensive margin rather than earnings gains among those already working. Overall, spouses respond to their partner's longer UI entitlement at the extensive margin.

In Figure 7a, the employment response is driven mostly by female spouses, who display a larger and more statistically significant increase than male spouses. As Figure 7c shows, it is also concentrated among spouses who had no income right before their partner's UI spell began, with an increase of about 2 percentage points. This is intuitive given the setup, since spouses without prior labor market attachment have more scope to respond on the extensive margin, and the labor supply of married women is more elastic (Blau & Kahn, 2007).

I additionally examine the spillover effects for spouses separately at each entitlement cutoff in the unemployed partner's employment history, namely at 10, 15, 20, 25, 30, 35 and 40 years. For each cutoff, I estimate the effect on spouses' employment within one, two, and three years after the unemployed partners' UI spell begins. As reported in Table A1, the estimates stay consistently positive across time horizons, so spouses increase labor supply not only in the first year but also over the following two and three years. Comparing across cutoffs in Figure A15, the responses concentrate around the 15-, 20-, and 25-year thresholds. Finally, Figure A14 and Table 3 show that the results are robust to alternative bandwidths and polynomial specifications. The estimated effect on spousal employment remains positive and significant across specifications, supporting the baseline finding.

4.2.2 Spillover effect on parents

I examine spillover effects for parents aged below 70 who have at least one child receiving UI between 1999 and 2006. I plot parents' labor market outcomes against the distance between their child's employment history and the nearest entitlement cutoff, using local linear regressions on each side of the cutoff with the optimal bandwidth. I focus on the 15-year cutoff based on the density of children's employment history, since this is the most relevant threshold. At this cutoff, UI entitlement increases from 12 to 18 months, and children with around 15 years of employment history are, on average, about 34 years old, with parents on average 62, close to pension claim age when the children's UI starts.

Parents show no significant employment effect in 1.5 years, around the children's UI expiration in Figure 9, and this holds across bandwidth specifications in Figure A17. I test this by the gender of the parent and the unemployed child, and by the parent's employment status before the child's UI spell, and find no effect on parents' employment in

any of these splits (Figures 10a and 10c). I also split by whether the parent lives with the unemployed child, but most of them do not live together, and the cohabitation subsample does not have enough statistical power (Figure 10b). Turning to the income of the parents, I find no significant effect, whether zero-income observations are included or excluded, as Figure A19. Since parents in this sample are on average close to retirement age, I also check whether the children's longer UI entitlement affects the parents' retirement timing. I define retirement using two measures, pension claim age and the age at which the parent exits the labor market in Figure A20. Neither measure shows a significant change.

One possible explanation for the lack of a parental response is that labor supply adjustment costs are higher at older ages. The UI spell itself, by policy at the 15-year employment year cutoff, lasts around a year, and the treatment only extends entitlement by about 6 months, so within this window parents may be able to smooth consumption using savings, either their own or their children's, rather than adjusting labor supply. Unfortunately, the Dutch data do not include wealth or savings information before 2006. Therefore, in the heterogeneity analysis in Figure 10d, I use the parents' pre-UI earnings relative to their unemployed child's pre-UI earnings as a proxy. I find that parents do increase employment when their relative earnings are in the upper quantile, above the 75th percentile, meaning the unemployed child had lower pre-UI earnings and the parents were relatively richer. Parents increase employment when poorer children are unemployed for longer, resembling an intergenerational version of the added worker effect.

4.2.3 Spillover effect on adult children

I examine spillover effects for adult children of parents who receive UI at least once between 1999 and 2006. I plot adult children's labor market outcomes against the distance between their UI recipient parent's employment history and the nearest entitlement cutoff, using local linear regressions on each side of the cutoff with the optimal bandwidth. I focus on the 40-year cutoff based on the density of parents' employment history, since employment histories concentrate there: on average, when the parent's UI spell starts, the parent is 58, and the child is 30. This cutoff also marks where parental UI entitlement jumps from 4 to 5 years.

Figure 12 shows that longer parental UI entitlement increases the probability of adult children being employed by roughly 5 percentage points in 5 years, around the parents' UI expiration. Figure A21 shows this holds across different bandwidth specifications. In Figure A23, children's income increases by about 21 log points when zero-income observations are included, but there is no significant effect when zero-income observations are excluded. Overall, adult children respond to their parents' longer UI entitlement by

increasing employment, consistent with an intergenerational added worker effect.

Splitting by relative pre-earnings, defined as the child's own earnings before the parent's UI spell relative to the unemployed parent's pre-UI earnings, Figure 13d shows the employment increase is driven almost entirely by children in the bottom 25% of this distribution, by about 6 percentage points. In other words, the response is concentrated among children who are poorer relative to their parents. I do not have data on monetary transfers between family members, but one possible story is that these children relied on some support from their parents before the unemployment spell, and when the parent becomes unemployed, they need to increase their own employment. This also points in the direction of an altruistic transfer running from parents to children, consistent with the earlier finding that the parent spillover effect is likewise concentrated among poorer children and richer parents. The results are also driven by children who do not live with their parents (Figure 13b), which is not surprising since in the Netherlands most adults live separately from their parents, so the subsample living together is small and has little power to detect an effect.

In Figure 13a, I also split the sample into four parent-child gender pairs, namely son-father, son-mother, daughter-father and daughter-mother. The response is driven by daughters and is largest for the daughter-mother pair. One possible channel is grandchild care, as unemployed mothers with longer UI have more time to look after grandchildren, allowing their daughters to work more. This is a form of family insurance in kind, in which the unemployed mother contributes time while her daughter could earn more. This is in line with evidence that grandparental availability for childcare raises maternal labor supply (Kaufmann et al., 2023). Among sons, I find a positive spillover for son-father pairs, but not for son-mother pairs, which could be explained by the spillover being stronger for family ties within the same gender (Fingerman et al., 2020). Figure 13c shows that the response is also concentrated among children who were already receiving benefits before the parents' UI spell, and among children who were already working, who are more likely to be employed continuously. It also shows no evidence that children respond by giving up education to increase employment.

Taking the results for spouses, adult children, and parents together, there is a positive spillover from unemployed family members to their spouses and adult children when UI entitlement is longer. When the unemployed person stays on UI longer, family members increase employment, in line with the added worker effect. This increase is driven by the extensive margin, concentrated among previously inactive wives, and among daughters who were already on benefits or already employed and not living with their parents. For children, the effect is concentrated among those who are poorer relative to their richer

parents. Even though parents, on average, do not respond to their unemployed child's longer UI entitlement by increasing employment, I find a positive effect for the poorer children-richer parents subsample, which points to the direction of intergenerational altruism running mostly from parents to children.

4.3 Spillover effect on other outcomes

This section looks at the spillover effects on take-up of other social insurance programs and on other employment statuses, such as inactivity. The setup follows the same reduced-form definition as in the empirical strategy in Section 3.

Children and spouses show a reduction in social assistance take-up when the unemployed qualifies for a longer entitlement, by about 1.4 and 0.5 percentage points, respectively, in Figure 11 and Figure 14. Parents show no significant change in social assistance take-up. Disability and pension take-up show no significant change across family members, and there is no significant change in the no income status.

A potential mechanism for the spillover effects within a social network is the peer effect, whereby family members adjust their behavior based on others' social insurance take-up via social norms or information channels (Oral et al., 2024). If spouses, parents, or children were simply imitating the unemployed family member's longer UI use, they would be more likely to be on UI themselves. This is not the case for children, where the effect on own UI take-up is close to 0. For parents and spouses, there is some evidence of a small increase in own UI take-up by less than 0.4 percentage points, suggesting a modest peer effect for this group. Overall, these findings suggest that family members mostly do not imitate each other's use of UI benefits during episodes of unemployment, making peer effects an unlikely explanation for most of the observed labor supply responses.

To assess the implications of UI entitlement for both the unemployed and their households, I also study its effects on household income following the start of the UI spell in Figure 15. A longer UI entitlement does not produce significant changes in household gross or net income following the start of the UI spell. This suggests that, although family members increase labor supply in response to the unemployed individual's longer UI duration, these adjustments neither fully overcompensate nor undercompensate for the recipient's lost earnings. However, these findings on household income should be interpreted with caution. The household income data are available only for the main breadwinner, so if the UI recipient is not the main breadwinner, the estimated effect may not capture real household income changes. Similarly, labor supply responses by family members who reside in different households are not reflected.

5 Theoretical Framework

To guide the interpretation of the empirical results, I develop a simple household search model. The model captures how family labour supply adjusts dynamically during the unemployment spell and how it responds to changes in UI entitlement duration.

5.1 Environment

Consider a household consisting of two members: an unemployed indexed i , and a family member indexed j . Time is continuous. Let $t \in [0, T^{UI}]$ denote elapsed unemployment duration and $s = T^{UI} - t$ denote remaining UI benefit entitlement, which shrinks at rate one per unit of elapsed time regardless of any decision by the household. All value functions are indexed by elapsed duration t .

The unemployed i searches for employment in a labor market characterized by a Poisson offer arrival rate λ and a wage offer distribution $F(w)$ with density $f(w) > 0$ on support $[\underline{w}, \bar{w}]$. While $s > 0$, the unemployed receives a UI benefit $b > 0$ per unit of time. Once entitlement is exhausted ($s = 0$), the benefit falls to a lower level $b_0 \geq 0$. The instantaneous utility of consumption is $u(c)$, strictly increasing and strictly concave. Family member j supplies labor h^j at wage w^j , incurring disutility of working $v(h^j)$, which is strictly increasing and strictly convex with $v(0) = 0$. Under a static budget constraint, the total consumption of i and j is $c = b + w^j h^j$ while i remains unemployed.

I compare two UI regimes that differ in maximum entitlement duration, a short regime T^S and a long regime T^L , with $T^L > T^S > 0$. I characterize the labor supply of family member j under each regime across three windows of the unemployment spell, conditional on i remaining unemployed throughout: Window 1 ($t \leq T^S$), during which both regimes T^L and T^S provide active UI benefit payments; Window 2 ($T^S < t \leq T^L$), during which UI benefits have run out for the unemployed individual i in the short regime T^S but not in the long regime T^L ; and Window 3 ($t > T^L$), during which UI benefits have run out for the unemployed individual i in both regimes T^S and T^L . Formal proofs of all propositions are collected in Appendix B.

5.2 The Value of Unemployment and Job Search

Setup: unemployed member i receives b until entitlement expires at T^{UI} , with $UI \in \{S, L\}$ denoting the short regime T^S or the long regime T^L , then b_0 . Because the remaining entitlement $T^{UI} - t$ shrinks mechanically as the UI spell continues, the value of unemployment V_t^u is a genuine function of calendar time t , not a constant as in the

standard stationary model of McCall (1970). The Bellman equation is as follows:

$$V_t^u = b_t + \beta \left[(1 - \lambda) V_{t+1}^u + \lambda \int \max \{ V_{t+1}^u, V^e(w) \} dH(w) \right], \quad b_t = \begin{cases} b & t < T^{UI}, \\ b_0 & t \geq T^{UI}. \end{cases} \quad (3)$$

The term $V_t^u - V_{t+1}^u$ is the shadow value of remaining entitlement, the marginal value of having one more period before benefits expire. The reservation wage w_t^* is defined implicitly by the indifference condition $V^e(w_t^*) = V_{t+1}^u$, and the job-finding hazard is $\theta_t = \lambda[1 - F(w_t^*)]$.

Proposition 1 (Value is increasing in remaining entitlement). $V_t^u > V_{t+1}^u$ for all $t < T^{UI}$. The value of unemployment is strictly increasing in remaining entitlement s and strictly decreasing in elapsed duration t .

Proposition 2 (Longer entitlement raises the reservation wage). For any $T^L > T^S$, $w_t^*(T^L) > w_t^*(T^S)$ for all $t < T^S$, conditional on i remaining unemployed.

Proposition 3 (Longer entitlement lowers the job-finding hazard, with a widening gap). $\theta_t(T^L) < \theta_t(T^S)$ for all $t < T^S$, conditional on i remaining unemployed, and the hazard gap $\theta_t(T^S) - \theta_t(T^L)$ is strictly increasing in t .

Having more time left on UI benefits is unambiguously good for the unemployed i , so the shadow value of an extra period of entitlement is always positive. When unemployment is more valuable, i needs to be offered a higher wage before it is worth giving up the unemployment state. Therefore, longer entitlement induces more selective job search, which in turn delays reemployment. This is in line with my empirical estimates showing that longer UI entitlement eligibility increases UI duration by approximately 23 days on average in section 4.1. As the exhaustion date T^S approaches, the unemployed i under T^S faces an increasingly sharp incentive to lower the reservation wage and accept offers before UI benefits run out, while i under T^L , still far from exhaustion date T^L , continues searching selectively. The gap between the two job-finding rates therefore grows over time and is largest close to T^S .

5.3 Family Member j 's Forward-Looking Labor Supply

The labor supply decision of j is governed by a forward-looking optimality condition that reflects the unitary household's joint valuation of j 's earnings. If j were myopic and cared only about the consumption her earnings finance today, she would simply equate the marginal benefit and cost of an hour of work in the current period, $w^j u'(c) = v'(h^j)$.

A forward-looking j , however, recognizes that her labor income sustains household consumption throughout the expected remaining unemployment spell, not merely in the current period. The optimality condition under the household framework is:

$$w^j u'(c_t) \cdot \Omega_t = v'(h_t^{j*}) \quad (4)$$

where

$$\Omega_t \equiv \sum_{s=t}^{\infty} \beta^{s-t} \prod_{r=t}^{s-1} (1 - \theta_r) \quad (5)$$

is the *spell multiplier*, the discounted sum over future periods of the probability that the household still relies on j 's income in that period, where θ_r is the probability that i finds a job in period r and β is the discount factor. Intuitively, j 's work today pays off across the whole horizon the household expects to depend on it, rather than only in the period it is supplied. When j is myopic, $\Omega_t = 1$ and (4) collapses to the static condition. When j is forward-looking, $\Omega_t > 1$ raises the marginal benefit of each hour j supplies, since working more today is effectively an investment in smoothing household consumption over the whole expected spell, not just the current period.

Proposition 4 (Longer UI raises the spell multiplier). $\Omega_t(T^L) > \Omega_t(T^S)$ for all $t \leq T^S$, conditional on i remaining unemployed.

Longer entitlement changes how long i is expected to remain unemployed, which changes how much j 's current labor is worth to the household. Under T^L , i is more selective, so the probability of remaining unemployed in any future period is higher, and every term in the sum defining Ω_t is accordingly larger.

5.4 Family Member j 's Labor Supply across the Three Time Windows

This section compares j 's labor supply under the long entitlement T^L and the short entitlement T^S across three time windows, namely Window 1 with $t \leq T^S$, in which both regimes still pay benefits; Window 2 with $T^S < t \leq T^L$, in which benefits have run out under T^S but not under T^L ; and Window 3 with $t > T^L$, in which benefits have run out under both regimes.

Proposition 5 (Window 1). Conditional on i remaining unemployed, $h_t^{j*}(T^L) > h_t^{j*}(T^S)$ for all $t \leq T^S$, and the hours gap $\Delta h_t \equiv h_t^{j*}(T^L) - h_t^{j*}(T^S)$ is strictly increasing in t .

Both regimes pay $b_t = b$ in this window. By Proposition 4, $\Omega_t(T^L) > \Omega_t(T^S)$, so the marginal benefit of j 's labor is strictly higher under T^L . The gap widens over time because

of the widening hazard gap in Proposition 3. As $t \rightarrow T^S$, i 's job-finding rate under T^S rises sharply while it stays low under T^L , so j under T^L expects a relatively longer remaining UI spell and supplies more labor in response.

Proposition 6 (Window 2). *Conditional on i remaining unemployed, the sign of $h_t^{j*}(T^L) - h_t^{j*}(T^S)$ is ambiguous.*

After T^S , two forces work in opposite directions. The first is an *income effect* that pushes $h^{j*}(T^L)$ below $h^{j*}(T^S)$. Because i still receives benefits under T^L but not under T^S , household income is higher under T^L , so each additional euro j earns is worth less to the household than under T^S . The second is a *duration effect* that pushes $h^{j*}(T^L)$ above $h^{j*}(T^S)$. Under T^L , i still has a higher reservation wage, so $\Omega_t(T^L) > \Omega_t(T^S)$ continues to hold, and j works more because the household expects a longer UI spell.

Proposition 7 (Window 3). *Conditional on i remaining unemployed, $h_t^{j*}(T^L) = h_t^{j*}(T^S)$ for all $t > T^L$.*

After T^L , benefits have run out under both regimes, so the two households face identical conditions and j supplies the same amount of labor.

6 Empirical Estimation of the Dynamic Effects

I next examine how the spillover effect evolves over the course of the unemployment spell, rather than relying on a single static RD estimate as in Section 4. I estimate the RD coefficient on employment separately at each month, and for income outcomes at the yearly level, since the unemployed individual's UI spell began.¹¹ I estimate these dynamic RD coefficients across the three time windows described in the theoretical framework in Section 5, with the vertical lines in Figure 16 separating the three time windows, namely before T^S , between T^S and T^L , and after T^L . I present the dynamic results by family relationship, pairing each direct effect on the unemployed with the corresponding spillover effect on the family member's employment.

The pattern of direct effects for the unemployed adult children and the unemployed parents, shown in Figure 16c and Figure 16e, matches the model predictions well: the negative effect on the probability of leaving UI is the largest at the end of Window 1, exactly when the short entitlement scheme expires. For spouses, Figure 16a shows a broadly similar pattern, with unemployed spouses less likely to leave UI throughout Window 1 and Window 2.

¹¹The income variable is only available at the yearly level.

When it comes to the dynamic spillover effects on family members' employment, Figure 16b shows that spousal employment rises from the very start of the unemployment spell. This is not surprising, as spouses are the family members who best match the assumptions of the model. Since they usually live together, spouses know when their partner's entitlement expires and can expect a partner on longer UI to stay unemployed longer. As they also share consumption, expecting a longer spell means expecting lower consumption, which gives them a reason to increase labor supply already at the start of the spell. Spousal employment continues to rise through Window 2, indicating that the UI duration effect dominates any income effect. It remains persistent into Window 3 as well, implying that spouses stay in the labor force even after their partner's UI spell has ended.

Parents, in contrast, show no significant employment response in Figure 16d, a result that does not align with the model. Two assumptions of the model are less likely to hold for parents. First, parents and their adult children often live apart and do not share consumption, so the shared household framework fits them less well. Second, the model assumes that family can adjust labor supply without frictions. Given their age and pension incentives, older parents may find it hard to adjust their labor supply, which leaves little room for a response even if they wanted to support their children.

In Figure 16f, children's employment responses align well with their unemployed parent's UI exit behavior, rising only around the point at which the parent is most likely to remain on UI. This pattern echoes the added worker effect found among spouses. They do not respond at the start of the spell, however, unlike what the theoretical model with perfect anticipation would predict. A likely reason is that adult children who live apart from their parents have limited information about the parent's entitlement and job search, which constrains forward-looking behavior.

The income results in Figure 17 corroborate this employment pattern. Spousal income rises by 38 log points from the first year since UI start. The response of adult children becomes marginally significant by 11 log points only around the fourth year, matching the timing of their employment response. For both relationships, this income effect appears only when zero income is included, as shown in Figures 17a and 17e. Figures 17b and 17f show no significant effect on income at the intensive margin once zero income is excluded.

I compare the magnitude and timing of these responses across family relationships to better understand the underlying mechanism. I scale each family member's peak employment response by the corresponding direct effect on the unemployed individual's UI exit rate in Table 4: the spousal response (3 pp per -3 pp) is larger than that of adult children (4 pp per -10 pp), with the children's scaled response equal to roughly 40% of the spousal

response. For both relationships, the timing of the family member's employment increase aligns well with when the unemployed individual is more likely to remain on UI. Yet the point at which each relationship begins to respond differs sharply. Spouses respond immediately, from the very start of the unemployment spell, while adult children respond only around the time their parent's UI is expected to expire. Several explanations could account for this difference. Approximately 81% of spouses in the sample co-reside with the unemployed individual, and are therefore likely better informed about the partner's UI entitlement duration and job-finding prospects than parents and adult children, most of whom live apart from the unemployed family member in the Netherlands. A spouse who expects her partner to remain unemployed for longer has more reason to work more now, since the help she provides matters for longer, not just today. Parents and adult children, by contrast, are less likely to observe the unemployed individual's UI entitlement duration directly, and living apart in different households may also weaken the incentive to respond on the other's behalf. This is consistent with adult children raising their employment only once their parent's continued reliance on UI becomes more directly observable, around the parent's UI expiration date, rather than anticipating it earlier in the spell.

7 Policy Implication: Marginal Value of Public Funds

To assess the welfare implications of UI entitlement extensions once family spillovers are taken into account, I compute the marginal value of public funds (MVPF) following Hendren and Sprung-Keyser (2020). Parents show no significant effect on employment on average, so there is no fiscal externality to incorporate and no separate MVPF calculation for the parent sample. This analysis therefore focuses on the spouse and children samples.

Following Hendren and Sprung-Keyser (2020), the MVPF is defined as the ratio of a policy's willingness to pay to its net cost to the government as Equation (6):

$$\text{MVPF} = \frac{\text{WTP}}{\text{Net Cost}} \quad (6)$$

$$\text{WTP} = b \times (T^L - T^S) \times S(T^S) \quad (7)$$

In Equation (7), willingness to pay reflects the value claimants place on the additional UI entitlement, where b is the monthly benefit and $T^L - T^S$ is the length of the entitlement extension. The term $S(T^S)$ is the probability of remaining on UI at the shorter entitlement duration. This survival probability weights the extension by the share of claimants who

are still unemployed when their original entitlement would have ended, since only these claimants actually value the additional months of benefits. By the envelope theorem, the UI recipients are already optimizing their behavior given the existing policy, so a marginal change in entitlement generosity has no first-order effect on their own utility through the induced behavioral response. Willingness to pay is therefore determined by the mechanical cost of the transfer alone, since additional costs from behavioral responses are not valued dollar for dollar by the recipients. As shown by Equation (8), net cost is the sum of a standard component and a family-adjusted component,

$$\text{Net Cost} = \underbrace{C^{\text{mech}} + C^{\text{behav}} + FE^{\text{cl}}}_{\text{standard}} - \underbrace{FE^{\text{family}}}_{\text{new}} \quad (8)$$

The standard component follows Hendren and Sprung-Keyser (2020) directly. The mechanical cost C^{mech} is the direct cost of paying benefits for the extended duration, and is numerically equivalent to WTP. The behavioral cost C^{behav} captures the additional benefit payments that arise because claimants respond to the extended entitlement by staying on UI longer than they would have under the original, shorter duration, thereby drawing more benefit payments than the policy's mechanical cost alone would imply. The claimant fiscal externality FE^{cl} captures the change in tax revenue and social insurance contributions from the claimant's own delayed or accelerated reemployment. I extend this framework with a family fiscal externality term, FE^{family} , which subtracts from net cost the additional tax revenue and social insurance contributions generated when family members increase their own employment in response to the claimant's longer UI entitlement.

The family fiscal externality is calculated by:

$$FE^{\text{family}} = \bar{\gamma} \times \frac{\bar{w}^{\text{family}}}{12} \times D \times \tau \quad (9)$$

where $\bar{\gamma}$ is the average monthly RD estimate on family employment, $\bar{w}^{\text{family}}$ is family post-UI annual earnings, D is the number of months over which the effect persists, and τ is the combined marginal tax and social insurance contribution rate.¹² The intuition for why incorporating family spillovers raises the MVPF follows directly from the structure of the net cost term. Since WTP is unaffected by family labor supply responses, it follows that whenever the family fiscal externality is positive, the family-adjusted net cost

¹² Average tax rates apply the 2005 Dutch box 1 schedule to the mean annual earnings of each group. The schedule combines income tax with employee contributions to the national insurance schemes, namely the AOW, the general old age pension, the ANW, the general surviving dependents insurance, and the AWBZ, the general exceptional medical expenses insurance. Employer-side WW, unemployment insurance, and WAO, disability insurance, premiums are excluded.

is strictly smaller than the standard net cost. Because the MVPF is decreasing in net cost for a fixed WTP, a smaller net cost implies a larger MVPF, so the family-adjusted MVPF exceeds the standard MVPF. The mechanism underlying a positive family fiscal externality is that when a family member's employment probability rises in response to the claimant's extended UI entitlement, that family member's additional earnings generate additional tax and social contribution revenue for the government. This revenue is a fiscal benefit of the policy that standard MVPF calculations, which consider only the claimant's own labor supply response, do not capture. Table 5 reports the resulting calculations, and Appendix Table A4 reports the key inputs for the spouse and children samples. I calculate the overall MVPF, which pools the spouse, children, and parent samples weighted by sample size, and then decompose the MVPF by family member.

Overall MVPF: Pooling the three samples, the mechanical cost of the extension, which equals the claimant's willingness to pay, is €5,912 per claimant. The behavioral cost is €2,020 and the claimant's own fiscal externality is €696, for a standard net cost of €8,628 and a standard MVPF of 0.676. This falls within the range typically found for UI policies, 0.43 to 0.89, in Hendren and Sprung-Keyser (2020). Once family labor supply responses are counted, the family fiscal externality of €218 per claimant partly offsets this net cost, lowering it by 2.5% to €8,410. As a result, the MVPF rises from 0.676 to 0.716, an increase of about 6%. An MVPF below one indicates that the extension generates negative fiscal externalities. Accounting for family spillovers, these negative externalities are smaller, so UI extensions are less distortionary than a calculation that ignores family members would suggest.

Decomposition by family member: For spouses, the mechanical cost is €2,806, the behavioral cost is €1,224, and the claimant's own fiscal externality is €421, for a standard net cost of €4,451 and a standard MVPF of 0.630. Spouses respond persistently over the 60 months following the UI spell's start, generating a family fiscal externality of €1,160 per claimant. This lowers the net cost to €3,291 and raises the MVPF to 0.853, close to the upper end of the range in Hendren and Sprung-Keyser (2020).

For children, the mechanical cost is €12,079, the behavioral cost is €3,739, and the claimant's own fiscal externality is €1,507, for a standard net cost of €17,324 and a standard MVPF of 0.697. The employment response of children is concentrated around the time the unemployed parent's UI benefits run out, where the effects are largest. Effects in other months are quite small. Together, these responses yield a small family fiscal externality of €44, which raises the MVPF to 0.699.

The offset of net cost therefore differs across family members. Family spillovers lower the net cost by 26.1% in the spouse sample and by 0.3% in the children sample. Weight-

ing by sample size, spouses account for 94% of the overall family fiscal externality and children for the remaining 6%. The smaller contribution from children reflects two differences in their employment response. First, it is smaller in magnitude than that of spouses. Second, the timing differs between the two groups. Children respond mainly around the expiration of UI benefits, whereas spouses respond from the beginning of the UI spell, so the spousal response accumulates over a much longer period.

Summary: Taken together, incorporating family labor supply responses raises the MVPF of UI extensions by about 6%, from 0.676 to 0.716. Although the MVPF remains below one, the standard calculation without family spillovers overstates the fiscal cost of UI extensions, because it ignores the additional tax revenue and social insurance contribution generated by family members who increase their labor supply when the unemployed have longer UI benefits.

8 Conclusion

This paper provides a comprehensive study of family spillovers from unemployment insurance, examining the labor supply responses of spouses, parents and adult children, and offers the first evidence on how UI entitlement duration drives these spillovers, using the Dutch setting. Exploiting exogenous jumps in UI entitlement using a regression discontinuity design, I find that longer UI duration delays exits from UI for the unemployed and generates spillovers to their family members. When UI entitlement is longer, spouses increase employment by about 3 percentage points and labor income by 50 log points while reducing reliance on other social benefits. Adult children raise employment by about 5 percentage points and income by 21 log points. Parents do not increase their employment or income on average.

I also study the timing of family members' employment responses. Spouses respond from the start of the unemployment spell, while adult children respond only near UI expiration. The magnitude of the children's response is about 40 percent of the spouses' response. The increase in family employment is driven by the extensive margin, with previously inactive wives entering employment and daughters who were either on benefits or already employed but not living with their parents. A potential alternative mechanism, common in the family spillover literature, is a peer effect, where family members adjust behavior based on others' UI take-up. My findings indicate the peer effect is negligible, as UI participation among spouses, parents, and adult children shows no meaningful change. Instead, family insurance is a more likely channel.

Accounting for these family spillovers has implications for how we evaluate the wel-

fare cost of extending UI. In the MVPF framework, accounting for the fiscal externalities generated by spouse and adult child employment responses raises the estimated MVPF from 0.676 to 0.716, a 6% increase relative to the standard calculation that ignores spillovers. This suggests that conventional UI evaluations, which focus solely on the UI recipients, understate the value of UI extension policies. These findings highlight the broader economic implications of UI generosity and the role of intra-family insurance in shaping labor supply. They also suggest that the design of UI programs should account for such family spillover.

Future work could pursue two directions. First, future work could separate the standard moral hazard of staying longer on UI from a second layer, in which the unemployed stay longer because they know their family will work more to insure them. This would show how much of the longer UI duration response reflects the family safety net rather than job search behavior alone. Second, the MVPF framework's willingness to pay rests on a revealed preference assumption, and future work could examine how individuals who place different value on family insurance might in turn hold a different willingness to pay for UI.

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Table 1: Summary Statistics

Variable	Mean	SD	Median
<i>Panel A: Unemployed parents: cutoff 40 (N=101,844)</i>			
Age at start of the UI spell	58.37	1.57	58.17
Age at end of the UI spell	62.10	2.40	62.08
Female	0.28	0.45	0.00
Pre-UI taxable earnings (€)	32,452.72	47,568.14	28,419.00
Living with a child	0.05	0.22	0.00
Number of children	2.49	1.05	2.00
Employment history (years)	39.86	1.11	39.83
UI duration (days)	1,009.16	686.42	851.00
<i>Panel B: family spillover kids: cutoff 40 (N=101,844)</i>			
Age at start of the UI spell	30.20	4.66	30.50
Age at end of the UI spell	33.92	5.04	34.25
Female	0.49	0.50	0.00
Pre-UI taxable earnings (€)	21,465.20	14,340.7	21,902.00
Employed before UI	0.74	0.44	1.00
<i>Panel C: Unemployed children: cutoff 15 (N=114,272)</i>			
Age at start of the UI spell	33.97	2.21	33.67
Age at end of the UI spell	35.30	2.55	34.92
Female	0.58	0.49	1.00
Pre-UI taxable earnings (€)	18,981.11	14,616.33	17,901.00
Living with a parent	0.02	0.15	0.00
Number of parents	1.89	0.31	2.00
Number of UI-receiving siblings	0.17	0.44	0.00
Employment history (years)	15.02	1.17	15.00
UI duration (days)	415.49	275.55	333.00
<i>Panel D: family spillover parents: cutoff 15 (N=114,272)</i>			
Age at start of the UI spell	62.13	6.19	61.33
Age at end of the UI spell	63.46	6.32	62.58
Pre-UI taxable earnings (€)	24,057.95	29,150.58	20,424.00
Female	0.7	0.50	1.00
Employed before UI	0.17	0.38	0.00

(Table 1 continued)

Variable	Mean	SD	Median
<i>Panel E: Unemployed spouses: pooled cutoff 10-40 (N=179,003)</i>			
Age at start of the UI spell	44.21	9.67	43.67
Age at end of the UI spell	46.04	10.47	45.17
Female	0.49	0.50	0.00
Pre-UI taxable earnings (€)	24,178.96	29,514.85	20,111.00
Living with partner/parents	0.81	0.39	1.00
Employment history (years)	25.28	9.69	24.83
UI duration (days)	546.65	459.88	363.00
<i>Panel F: family spillover spouses: pooled cutoff 10-40 (N=179,003)</i>			
Age at start of the UI spell	43.94	9.97	43.25
Age at end of the UI spell	45.77	10.70	44.83
Pre-UI taxable earnings (€)	26,850.20	20,508.36	25,907.00
Employed before UI	0.66	0.47	1.00
Marital status	1.21	0.40	1.00

Note: This table reports summary statistics for the samples used in the regression discontinuity analysis. Panels A, C, and E describe the unemployed individual (parent, child, and spouse, respectively), restricted to observations around the relevant UI entitlement cutoff. Panels B, D, and F describe the corresponding family member. Female equals 1 if female, 0 if male. Marital status equals 1 if married, 2 if cohabiting. Employed before UI equals 1 if yes, 0 if no. Mean, SD, and median are reported for each covariate. N is the sample size at the unemployed-family-UI spell level, so an individual with multiple unemployment spells contributes one observation per spell,

Table 2: Regression Discontinuity Design: Balancing Tests

	(1) Age at start	(2) Pre-UI earnings (€)	(3) Living w/ partner	(4) No. of children	(5) No. of parents	(6) Marital status
<i>Panel A: Direct effect, unemployed parents (cutoff 40, N= 366,798)</i>						
RD estimate: above entitlement duration cutoff	-0.057 (0.035)	-763.570 (961.851)	0.014** (0.006)	-0.009 (0.022)		
<i>Panel B: Family spillover, kids (cutoff 40, N= 366,798)</i>						
RD estimate: above entitlement duration cutoff	-0.066 (0.102)	-90.694 (512.591)				
<i>Panel C: Direct effect, unemployed children (cutoff 15, N= 714,130)</i>						
RD estimate: above entitlement duration cutoff	-0.013 (0.043)	531.236 (444.277)	-0.001 (0.005)		0.008 (0.009)	
<i>Panel D: Family spillover, parents (cutoff 15, N= 714,130)</i>						
RD estimate: above entitlement duration cutoff	0.179 (0.179)	1,910.776 (1,238.124)				
<i>Panel E: Direct effect, unemployed spouses (pooled cutoff 10-40, N= 233,070)</i>						
RD estimate: above entitlement duration cutoff	-0.602** (0.275)	1,153.430 (707.945)	0.002 (0.008)			
<i>Panel F: Family spillover, spouses (pooled cutoff 10-40, N= 233,070)</i>						
RD estimate: above entitlement duration cutoff	-0.307 (0.229)	185.169 (646.213)				0.013 (0.009)

Note: This table reports estimates of β_1 from Equation (1) for the unemployed individual's covariates and of γ_1 from Equation (2) for the family member's covariates, using the optimal bandwidth, to test for discontinuities in predetermined covariates. The regression discontinuity estimates of the effect of the UI entitlement duration jump on each covariate are reported, with standard errors in parentheses. Blank cells indicate the covariate is not defined for that sample. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Employment Spillover Effects: Robustness Across Specifications

	(1) 12-month bandwidth polynomial 1	(2) Optimal bandwidth polynomial 1	(3) Optimal bandwidth polynomial 2
Parents	0.012* (0.006)	0.004 (0.010) [bw = 6.28]	0.002 (0.014) [bw = 8.77]
Children	0.030*** (0.008)	0.055*** (0.018) [bw = 3.72]	0.061*** (0.023) [bw = 5.97]
Spouses	0.018*** (0.007)	0.031** (0.012) [bw = 4.91]	0.045*** (0.017) [bw = 6.46]

Note: This table reports estimates of γ_1 from Equation (2) for family members' employment across three specifications. Column (1) uses a fixed 12-month bandwidth with a linear polynomial. Columns (2) and (3) use the MSE-optimal bandwidth, reported in brackets, with linear and quadratic polynomials, respectively. Bw denotes the optimal bandwidth. Standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Summary of spillover effects relative to direct effects on the unemployed

	Spillover to spouse	Spillover to children
Direct effect on the unemployed: Probability(leave UI)	-0.03	-0.10
Reduced form for family: Probability(be employed)	0.03	0.04

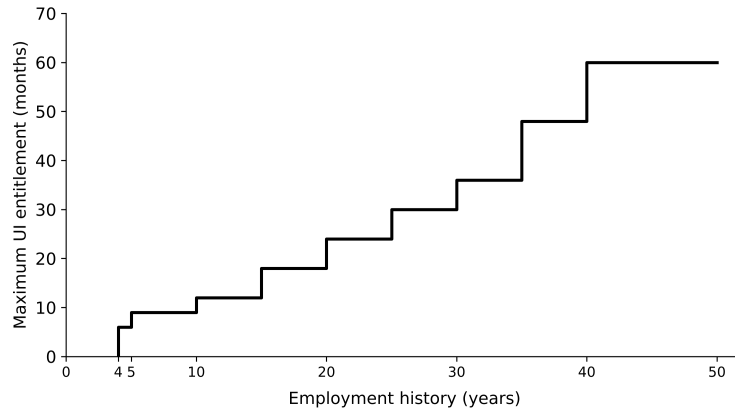
Note: This table shows the family spillover effect scaled by the direct effect on the corresponding unemployed individual. The direct effect row reports how longer UI entitlement changes the UI exit rate of the unemployed individual. The reduced form reports the corresponding spillover effect on family members' employment outcomes. Estimates are from the dynamic effect at the month when the effect is strongest: month 27 for spouses, month 49 for unemployed parents, and month 48 for their children.

Table 5: Family spillovers and the MVPF of UI extensions

	Spouses	Children	Parents	Pooled
WTP = mechanical cost	€2,806	€12,079	€3,759	€5,912
+ Behavioral cost, claimant	€1,224	€3,739	€1,397	€2,020
+ Fiscal externality, claimant	€421	€1,507	€369	€696
Net cost, standard	€4,451	€17,324	€5,525	€8,628
– Fiscal externality, family	€1,160	€44	€0	€218
Net cost, with family	€3,291	€17,280	€5,525	€8,410
Change in net cost	–26.1%	–0.3%	0.0%	–2.5%
Share of family fiscal externality	94.4%	5.6%	0.0%	100%
MVPF, standard	0.630	0.697	0.680	0.676
MVPF, with family	0.853	0.699	0.680	0.716
Observations	233,070	366,798	714,130	1,313,998

Note: The pooled column reports sample-size weighted averages of each cost component and of the sample-specific MVPFs. The share of family fiscal externality is each sample's weighted contribution to the pooled family fiscal externality.

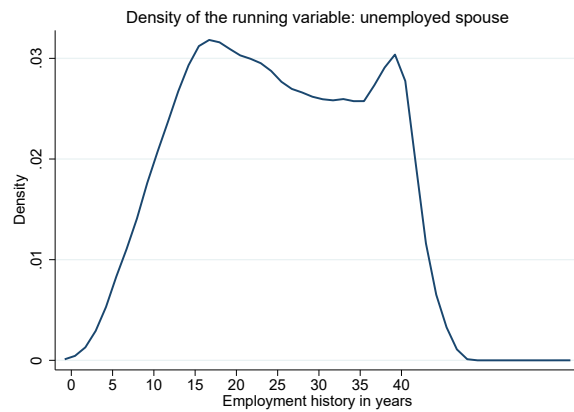
Figure 1: Maximum UI entitlement duration by employment history



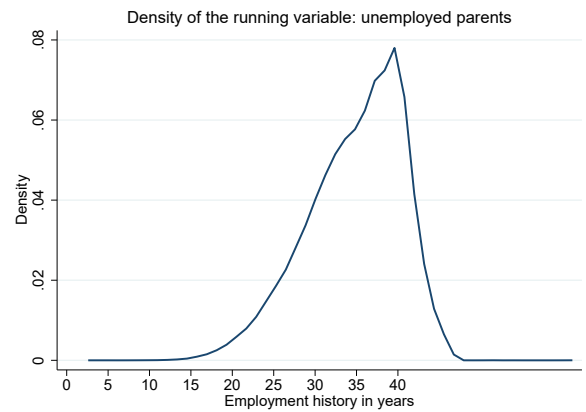
Note: This figure reports the maximum duration of the long-term, wage-related unemployment benefit with 70% replacement rate in the pre-2006 regime, as a stepwise function of accumulated employment history. Benefit duration is constant within each interval and rises discretely at each threshold: 6 months (0.5 year) for 4–5 years of employment history, 9 months (0.75 year) for 5–10 years, 12 months (1 year) for 10–15 years, 18 months (1.5 years) for 15–20 years, 24 months (2 years) for 20–25 years, 30 months (2.5 years) for 25–30 years, 36 months (3 years) for 30–35 years, 48 months (4 years) for 35–40 years, and 60 months (5 years) for 40+ years.

Figure 2: Distribution of the employment history

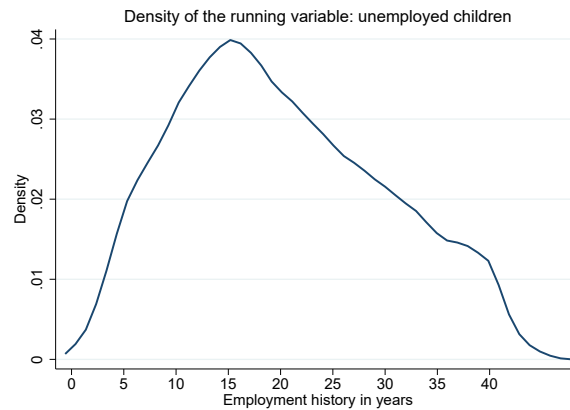
(a) Spouses



(b) Parents

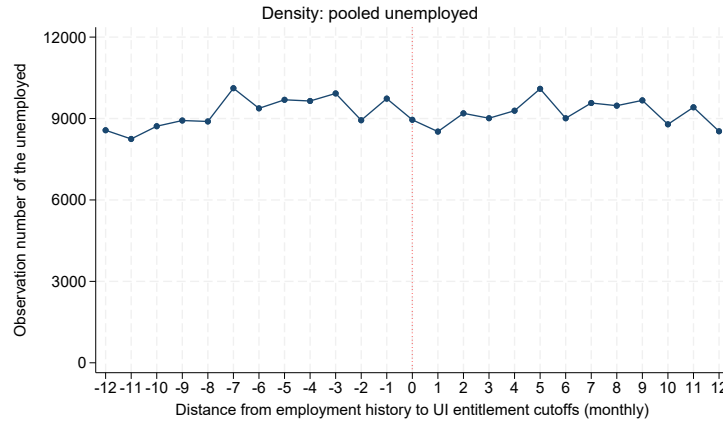


(c) Children



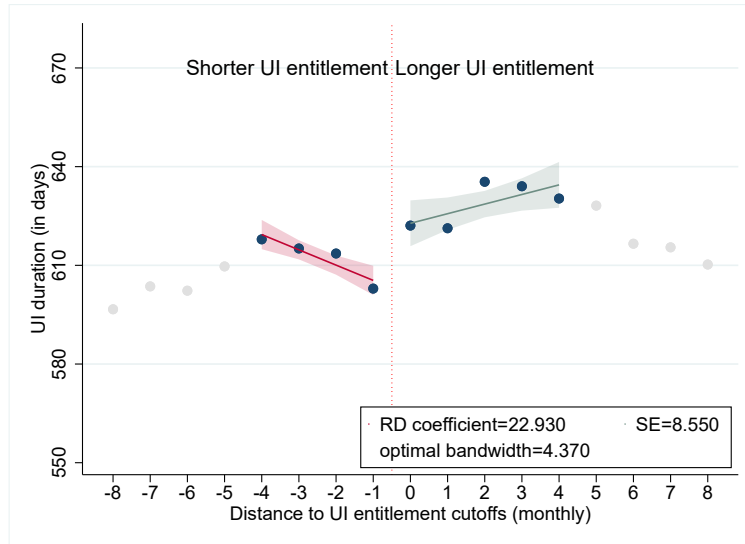
Note: This figure shows the density of employment history for each unemployed subsample: unemployed spouses, unemployed parents, and unemployed children.

Figure 3: Density of employment history around the cutoff



Note: This figure shows the number of unemployed individuals at each month of employment history, measured in months relative to the closest UI entitlement cutoff. The red dashed line indicates the closest cutoff in employment history that determines UI entitlement. The solid line depicts a smoothed density to assess continuity around the cutoff, testing for no systematic manipulation of employment history near the cutoffs.

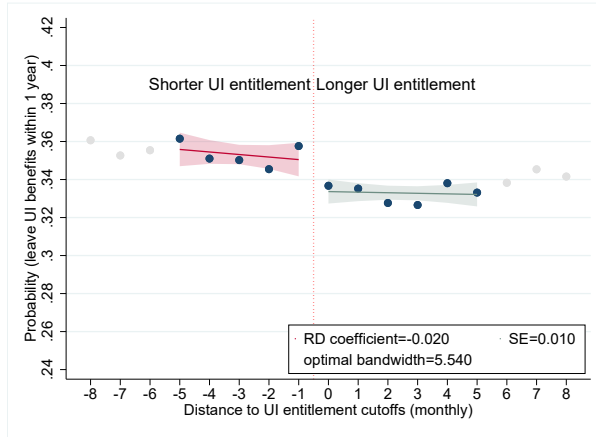
Figure 4: Direct effects on the unemployed: actual UI duration (in days)



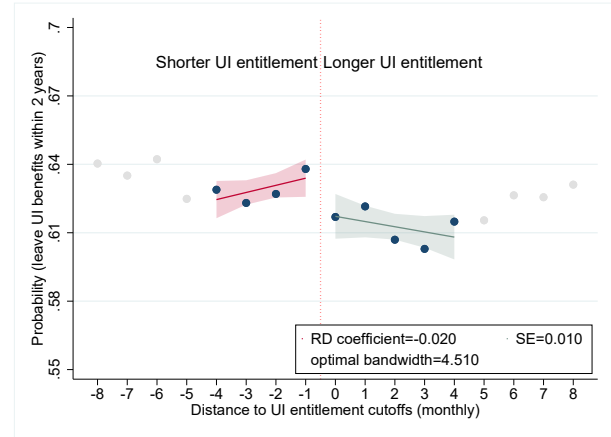
Note: This figure shows unemployed individuals' actual UI benefits duration by their employment history in monthly bins, measured relative to the UI entitlement cutoffs. The red dashed line demarcates the cutoffs of the employment history that create a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoffs. The text box reports the estimate of β_1 from Equation (1), which is the jump in UI duration in days at the cutoff, together with its standard error and optimal bandwidth.

Figure 5: Direct effects on the unemployed: leave UI within 1, 2, and 3 years

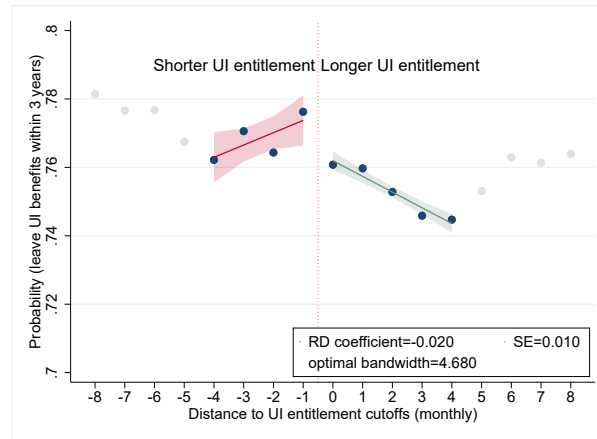
(a) Within 1 year



(b) Within 2 years

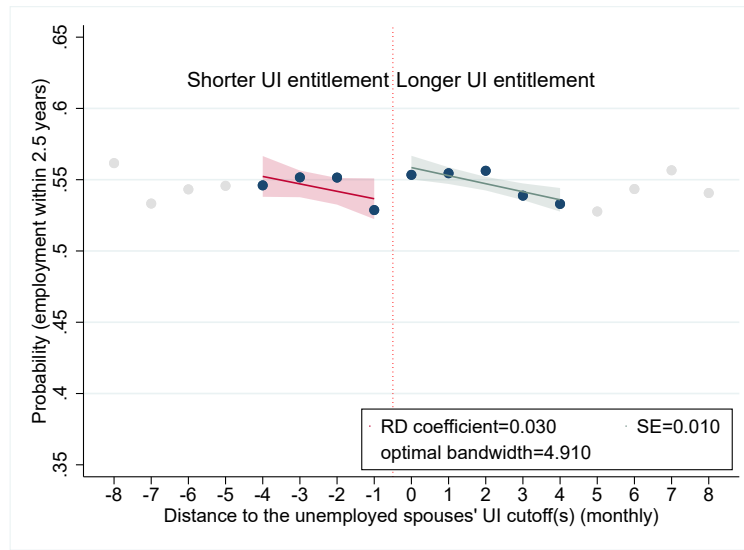


(c) Within 3 years



Note: This figure shows unemployed individuals leaving UI within 1, 2, and 3 years by their employment history in monthly bins, measured relative to the UI entitlement cutoffs. The red dashed line demarcates the cutoffs of the employment history that create a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoffs. Each text box reports the estimate of β_1 from Equation (1), which is the jump in the probability of leaving UI at the cutoff, together with its standard error and optimal bandwidth.

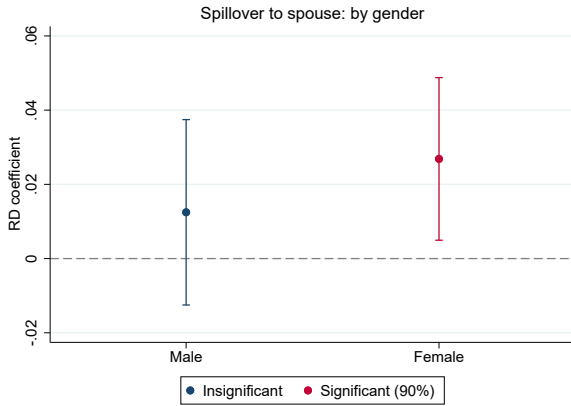
Figure 6: Spillover effect results for spouses: employment spell covering UI expiration



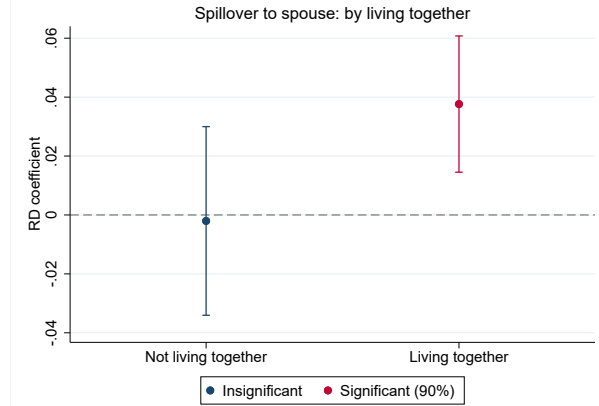
Note: This figure shows spouses' probability of having an employment spell covering UI expiration in 2.5 years by their unemployed spouses' employment history in monthly bins, measured relative to the UI entitlement cutoffs. The red dashed line demarcates the cutoffs of the unemployed spouses' employment history that create a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoffs. The text box reports the estimate of γ_1 from Equation (2), which is the jump in the family member's probability of employment at the cutoff, together with its standard error and optimal bandwidth.

Figure 7: Heterogeneity in spillover effects on spouses

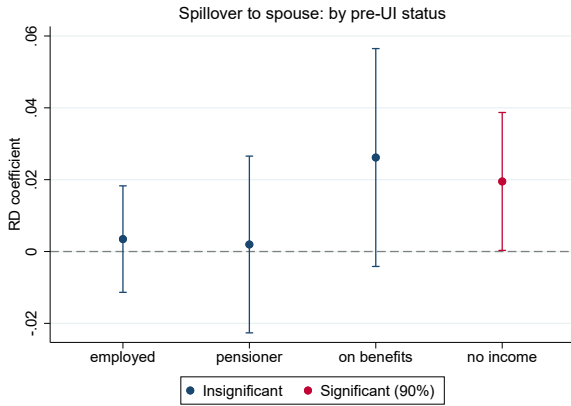
(a) By gender



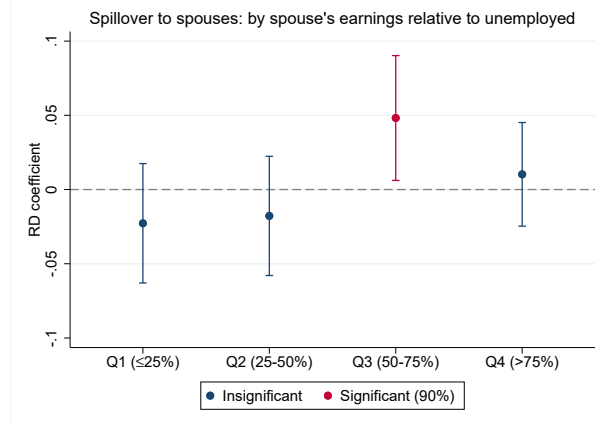
(b) By living together



(c) By pre-UI status

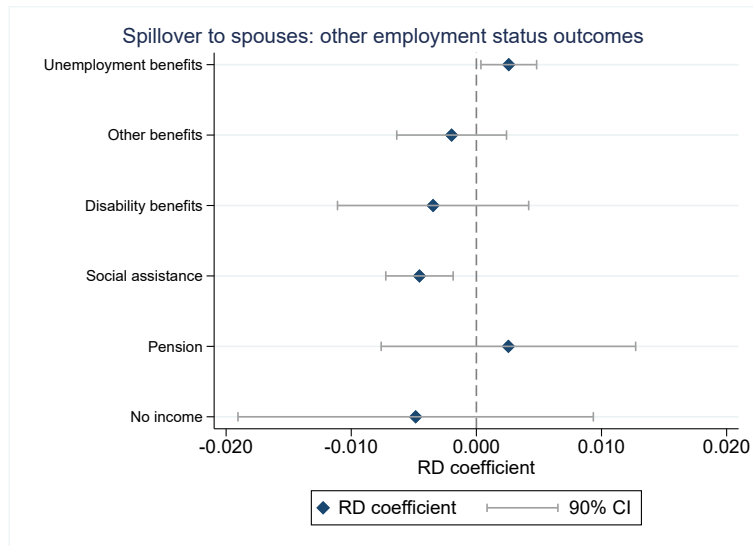


(d) By spouse's earnings relative to unemployed



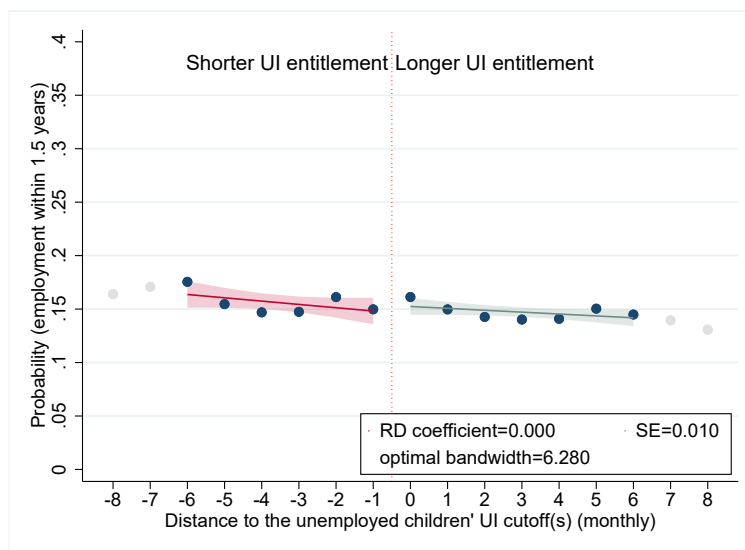
Note: This figure shows heterogeneity in the spillover effect on spouses' employment, same as in Figure 6 across subgroups. Red markers denote estimates significant at the 10% level, and navy markers denote insignificant estimates.

Figure 8: Spillover effect results for spouses: other outcomes covering UI expiration



Note: This figure shows the effects on spouses' other employment status outcomes, estimated as γ_1 from Equation (2) using the optimal bandwidth. All coefficients are reported with 90% confidence intervals.

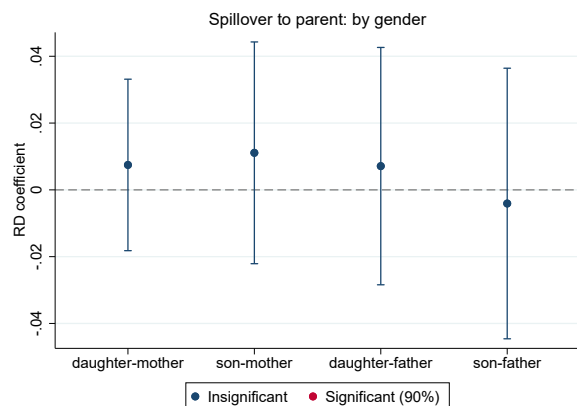
Figure 9: Spillover effect results for parents: employment spell covering UI expiration



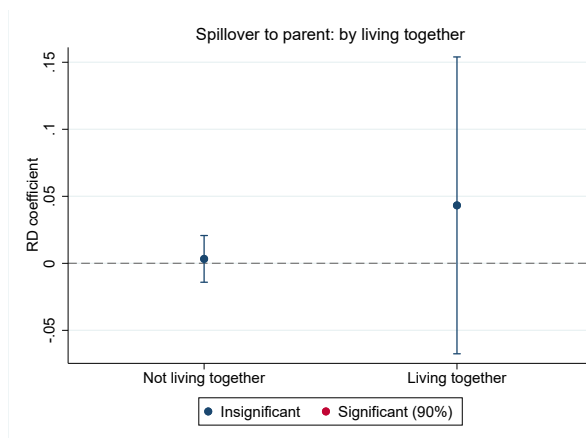
Note: This figure shows parents' probability of having an employment spell covering UI expiration in 1.5 years by their unemployed children's employment history in monthly bins, measured relative to the UI entitlement cutoffs. The red dashed line demarcates the cutoffs of the unemployed children's employment history that create a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoffs. The text box reports the estimate of γ_1 from Equation (2), which is the change in the family member's probability of employment at the cutoff, together with its standard error and optimal bandwidth.

Figure 10: Heterogeneity in spillover effects on parents

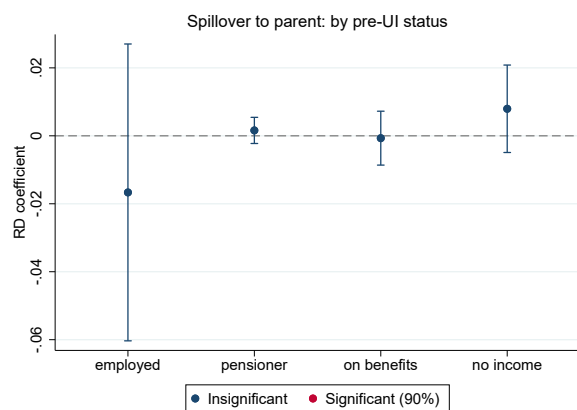
(a) By gender



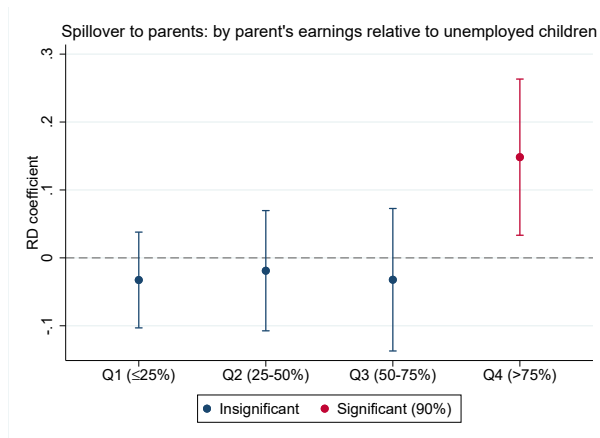
(b) By living together



(c) By pre-UI status

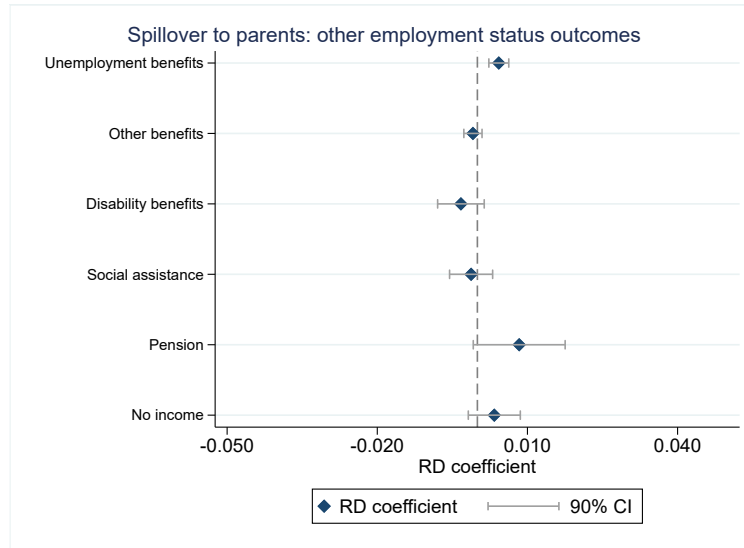


(d) By parent's earnings relative to unemployed children



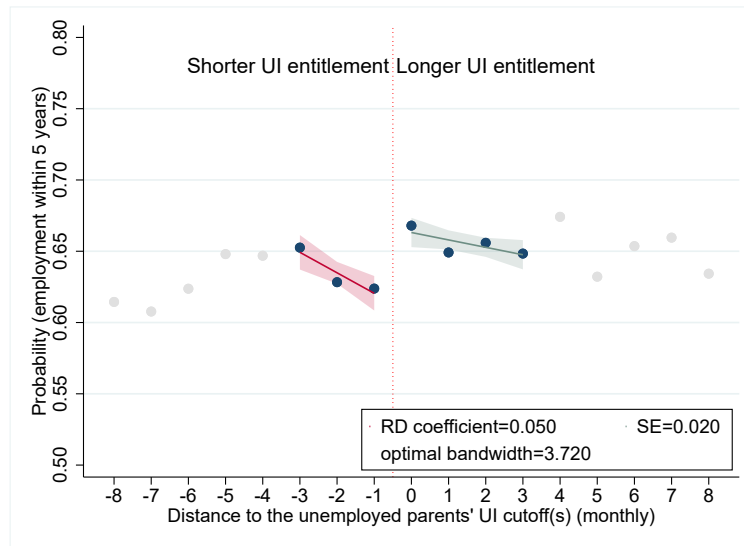
Note: This figure shows heterogeneity in the spillover effect on parents' employment, same as in Figure 9, across subgroups. Red markers denote estimates significant at the 10% level, and navy markers denote insignificant estimates.

Figure 11: Spillover effect results for parents: other outcomes covering UI expiration



Note: This figure shows the effects on parents' other employment status outcomes, estimated as γ_1 from Equation (2) using the optimal bandwidth. All coefficients are reported with 90% confidence intervals.

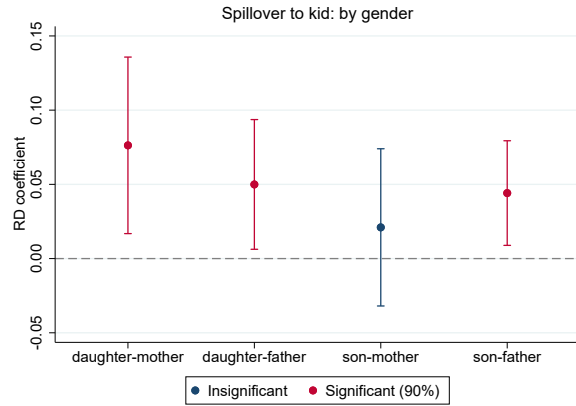
Figure 12: Spillover effect results for adult children: employment spell covering UI expiration



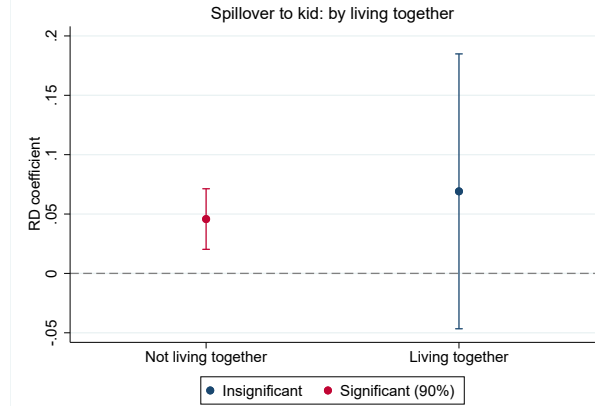
Note: This figure shows children's probability of having an employment spell covering UI expiration in 5 years by their unemployed parents' employment history in monthly bins, measured relative to the UI entitlement cutoffs. The red dashed line demarcates the cutoffs of the unemployed parents' employment history that create a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoffs. The text box reports the estimate of γ_1 from Equation (2), which is the jump in the family member's probability of employment at the cutoff, together with its standard error and optimal bandwidth.

Figure 13: Heterogeneity in spillover effects on adult children

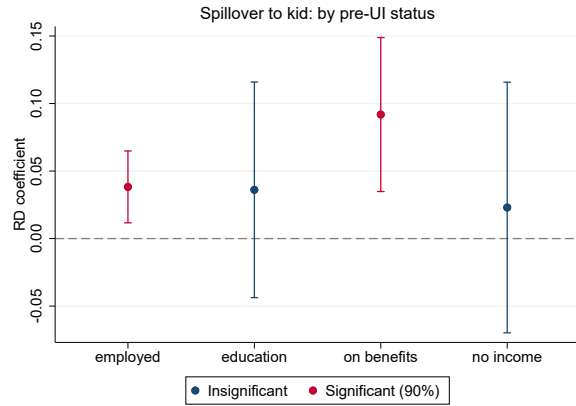
(a) By gender



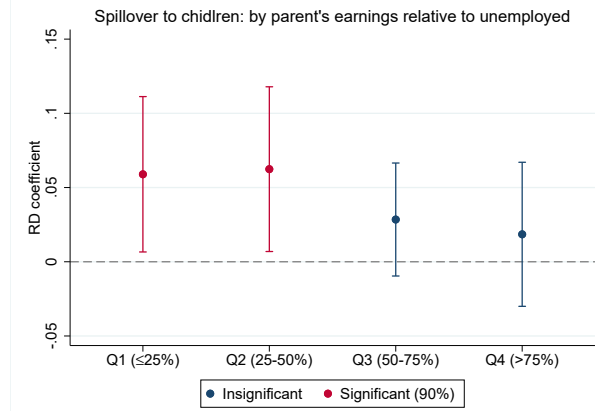
(b) By living together



(c) By pre-UI status

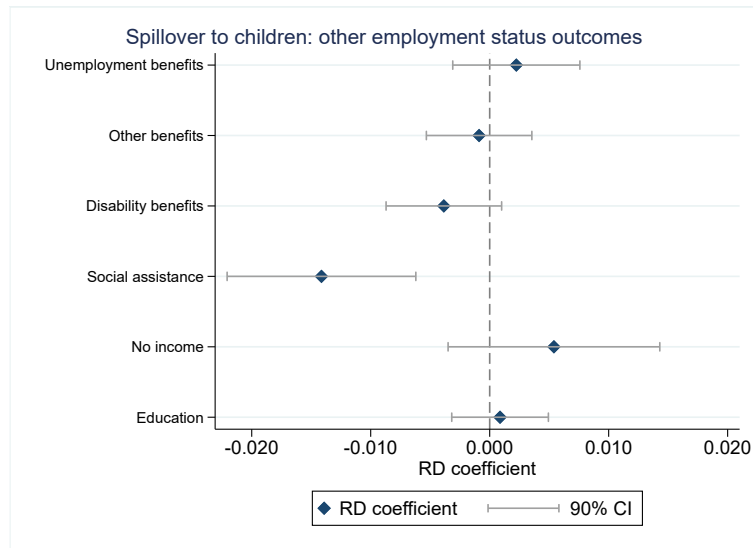


(d) By parent's earnings relative to unemployed



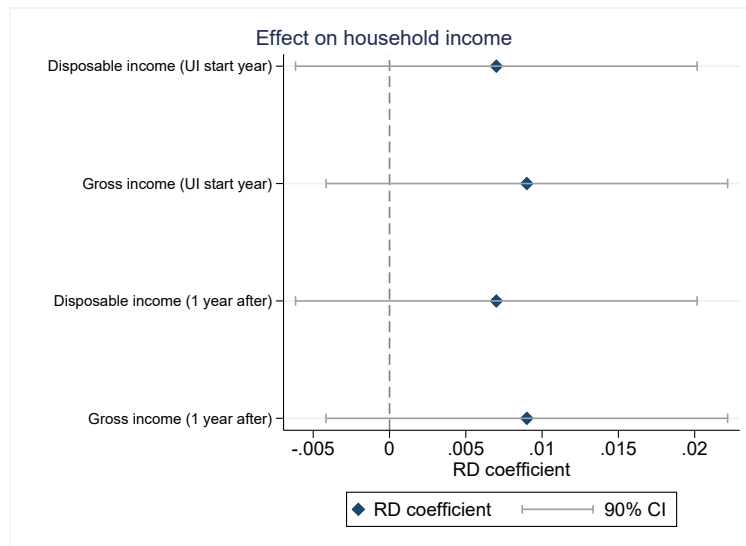
Note: This figure shows heterogeneity across subgroups in the spillover effect on children's employment, same as in Figure 12. Each point represents the estimate of γ_1 from Equation (2) for one subgroup. Red markers denote estimates significant at the 10% level, and navy markers denote insignificant estimates.

Figure 14: Spillover effect results for adult children: other outcomes covering UI expiration



Note: This figure shows the effects on adult children's other employment status outcomes, estimated as γ_1 from Equation (2) using the optimal bandwidth. All coefficients are reported with 90% confidence intervals.

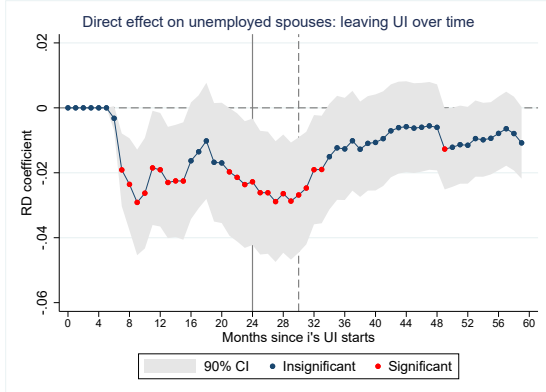
Figure 15: Effect on household income



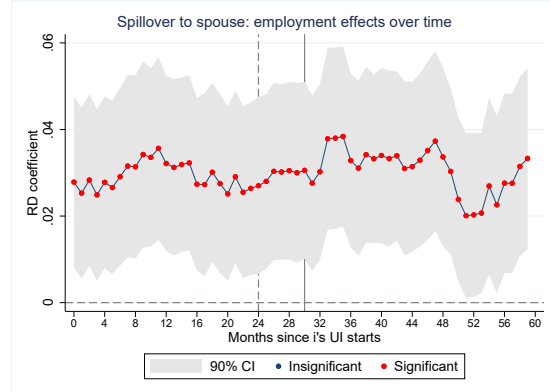
Note: This figure shows the effects on household gross and net income after the household starts receiving unemployment insurance (UI), estimated as γ_1 from Equation (2) using the optimal bandwidth. Income is measured as $\log(\text{income} + 1)$, including zero income. All coefficients are reported with 90% confidence intervals.

Figure 16: Monthly dynamic effects for the unemployed individual and family members

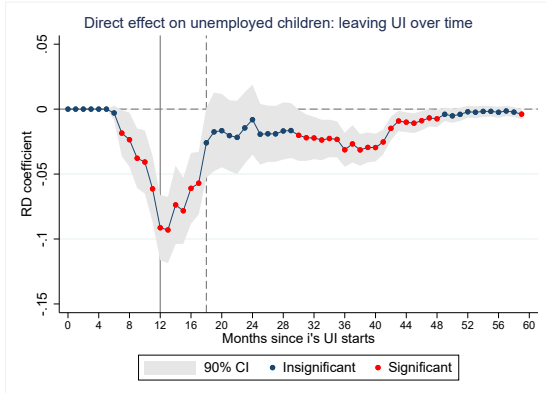
(a) Effect on unemployed spouses' probability of leaving UI



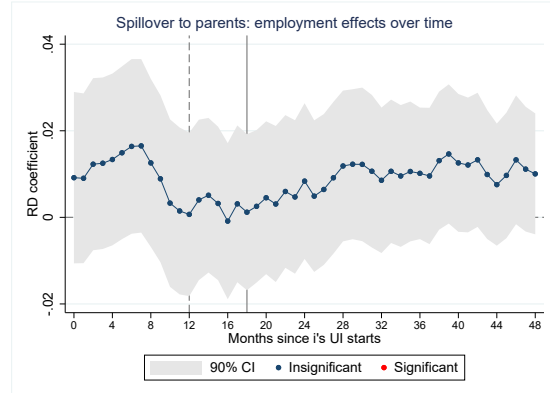
(b) Spillover effect on spouses' employment



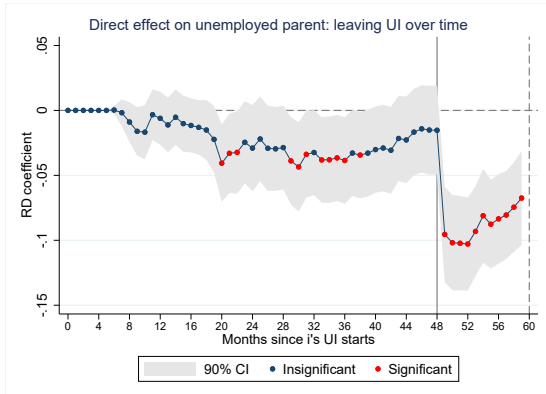
(c) Effect on unemployed children's probability of leaving UI



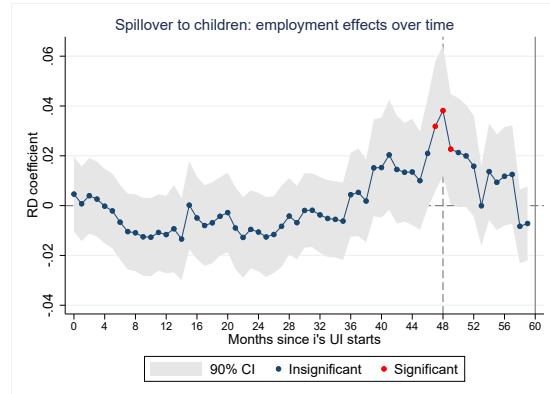
(d) Spillover effect on parents' employment



(e) Effect on unemployed parents' probability of leaving UI

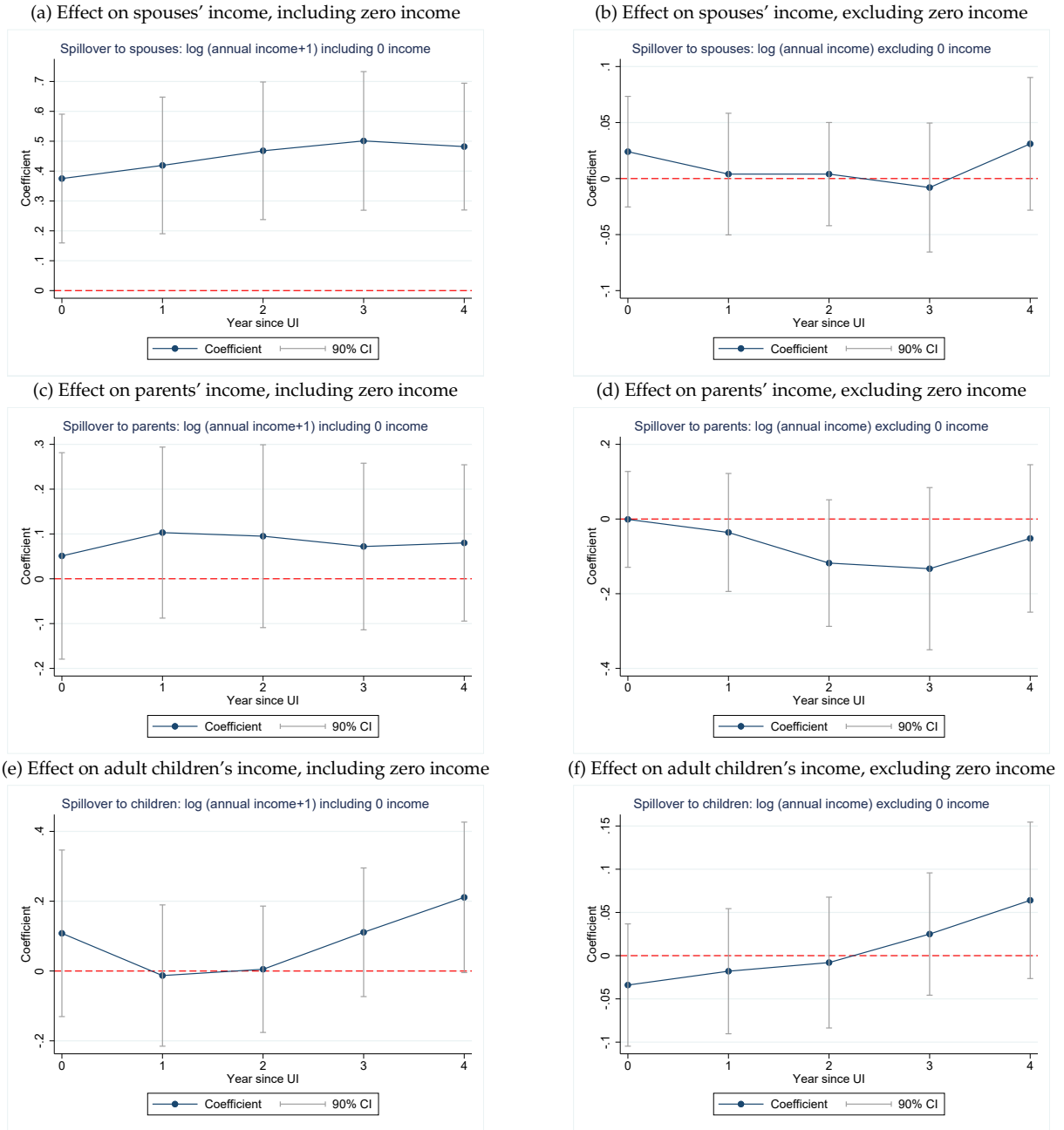


(f) Spillover effect on children's employment



Note: The left column shows the direct effects on the unemployed individual's probability of leaving UI, and the right column shows the spillover effects on the employment of the family member. The rows refer to unemployed spouses and their spouses, unemployed children and their parents, and unemployed parents and their adult children. The outcome for the direct effect is a dummy equal to one if the individual has left UI in a given month, and the spillover outcome is a dummy equal to one if the family member is employed in that month. Each point represents the estimate of β_1 from Equation (1) in the left column and of γ_1 from Equation (2) in the right column in a given month since the start of the UI spell. The vertical lines mark the expiration of the shorter entitlement, T^S , and the longer entitlement, T^L , separating the periods before T^S , between T^S and T^L , and after T^L .

Figure 17: Yearly dynamic spillover effects on family members' income

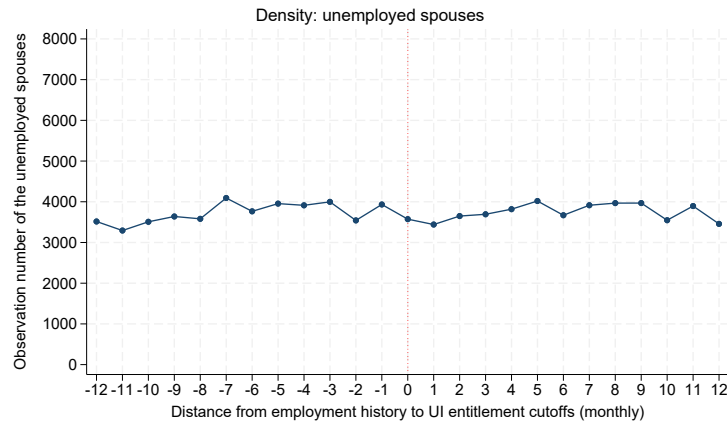


Note: This figure shows the dynamic spillover effects on family members' $\log(\text{annual income} + 1)$ over time since the unemployed individual's UI spell begins. The rows refer to spouses, parents and adult children of the unemployed individual. The left column includes zero income, and the right column excludes them. Each point represents the estimate of γ_1 from Equation (2) in a given year since the start of the UI spell, and all coefficients are reported with 90% confidence intervals.

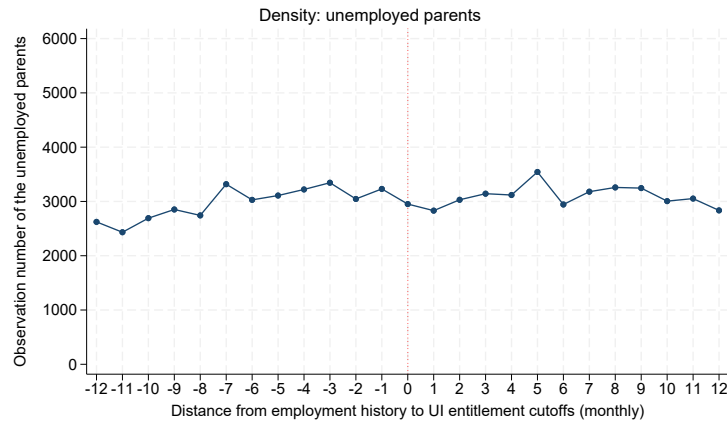
A Appendix Figures and Tables

A.1 Identification assumptions of RD by samples

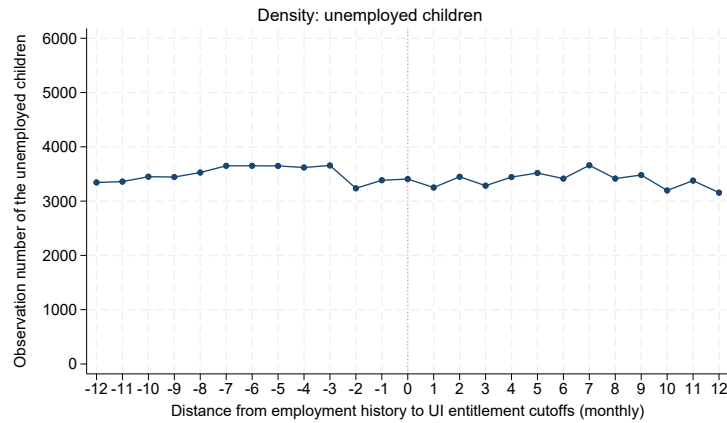
Figure A1: Number of observations by employment history: unemployed subsample
(a) Spouses



(b) Parents

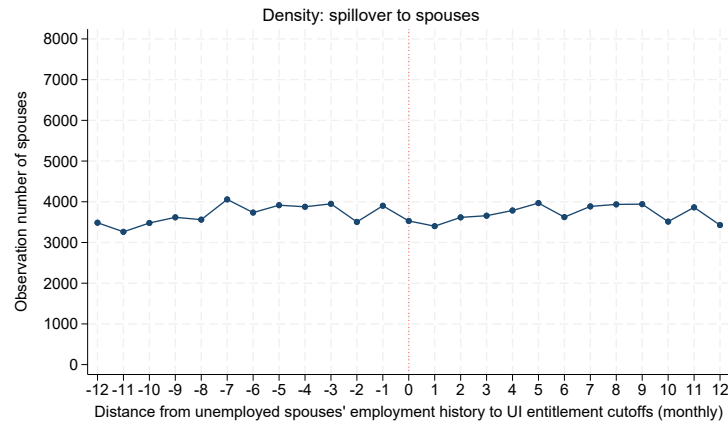


(c) Children

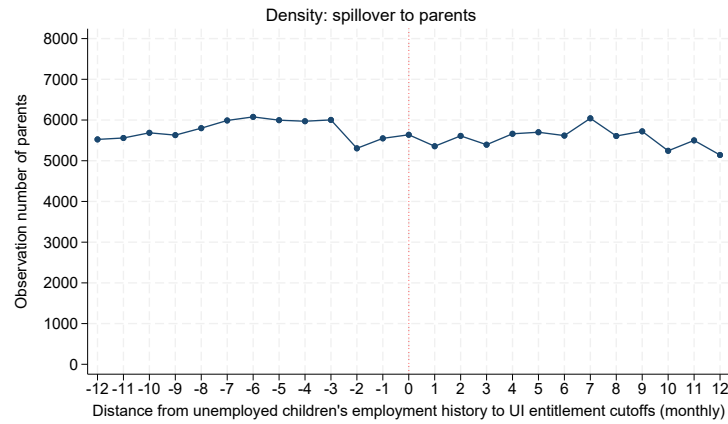


Note: This figure shows the number of unemployed individuals at each month of employment history, measured in months relative to the UI entitlement cutoff. The red dashed line indicates the closest cutoff in employment history that determines UI entitlement. The solid line depicts a smoothed density to assess continuity around the cutoff, testing for no systematic manipulation of employment history near the cutoffs.

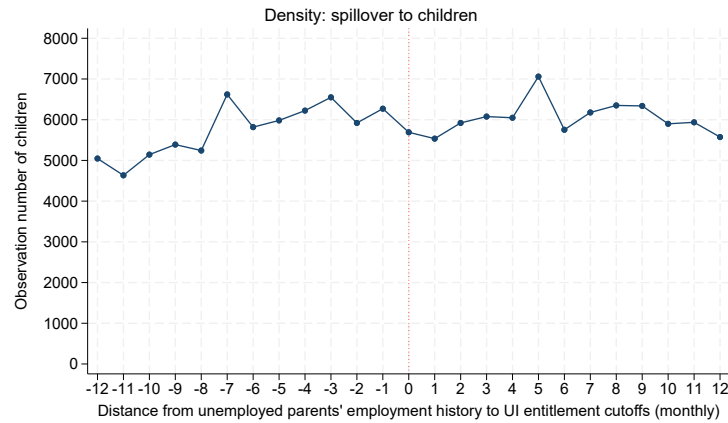
Figure A2: Number of observations by employment history: spillover subsample
(a) Spouses



(b) Parents

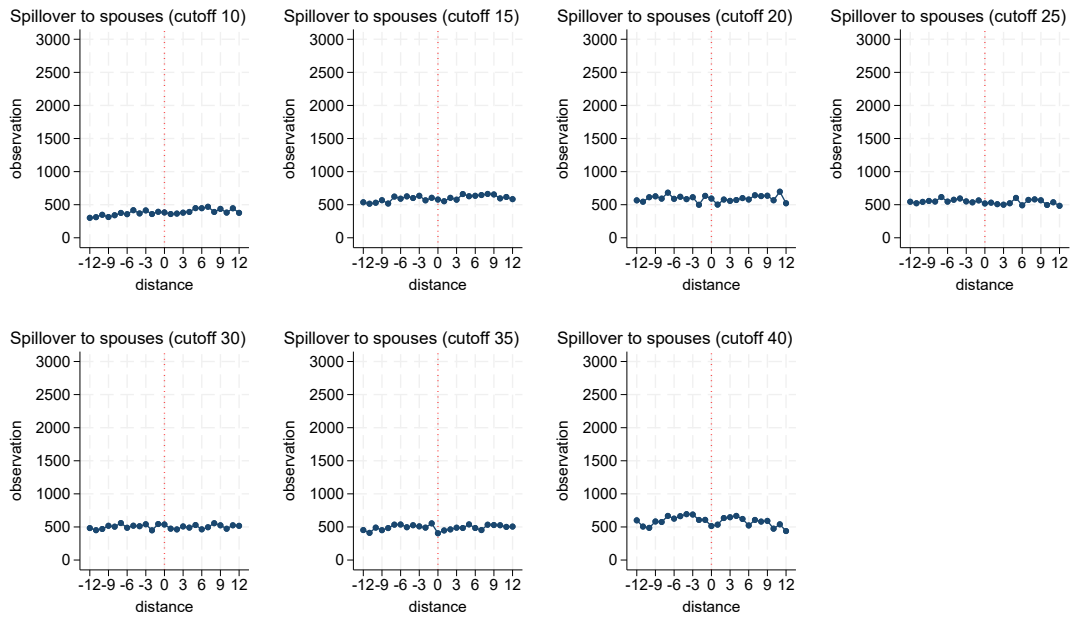


(c) Children



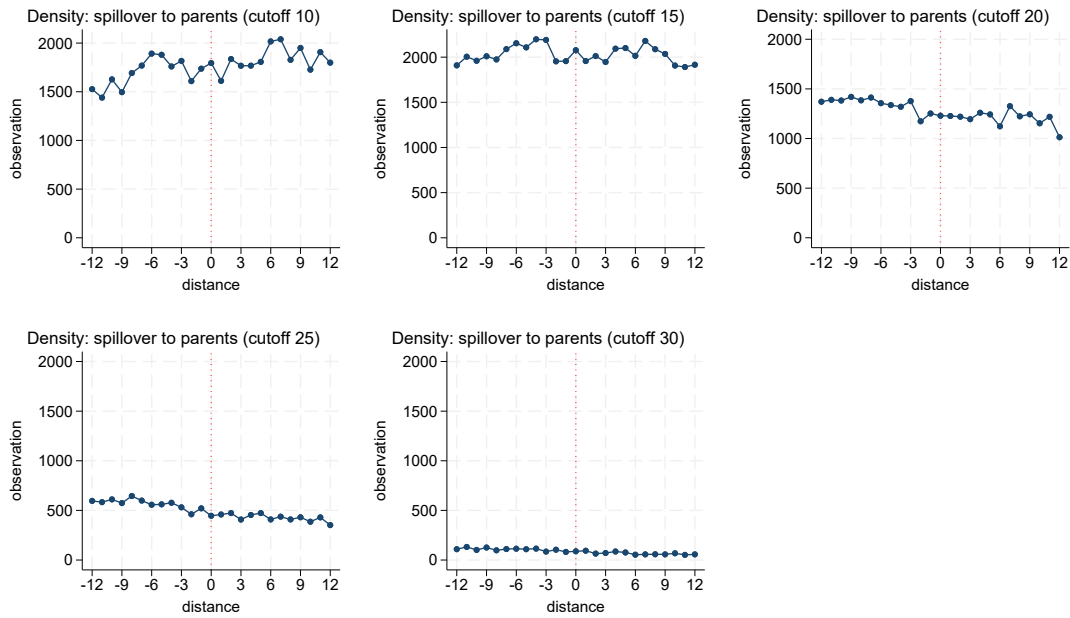
Note: This figure shows the number of family members observed at each month of the unemployed individual's employment history, measured in months relative to the UI entitlement cutoff. The red dashed line indicates the closest cutoff in employment history that determines UI entitlement. The solid line depicts a smoothed density to assess continuity around the cutoff, testing for no systematic manipulation of employment history near the cutoffs.

Figure A3: Density of employment history by cutoff: spouses



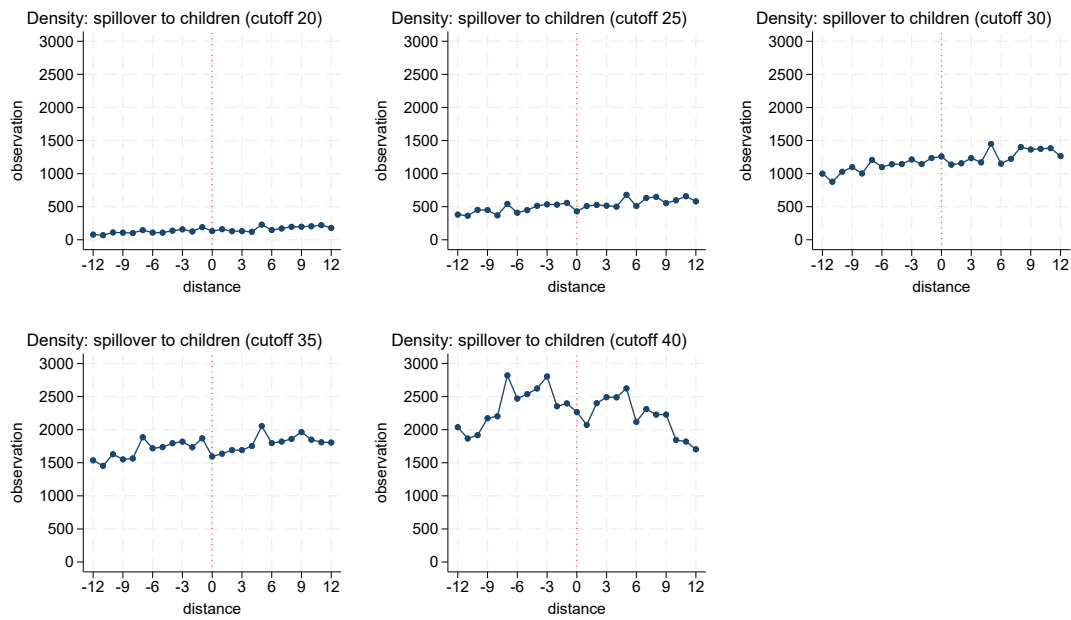
Note: This figure shows the number of observations at each month of employment history, separately by each UI entitlement cutoff, for the spouse subsample. The red dashed line indicates the relevant cutoff in employment history that determines UI entitlement.

Figure A4: Density of employment history by cutoff: parents



Note: This figure shows the number of observations at each month of employment history, separately by each UI entitlement cutoff, for the parent subsample. The red dashed line indicates the relevant cutoff in employment history that determines UI entitlement.

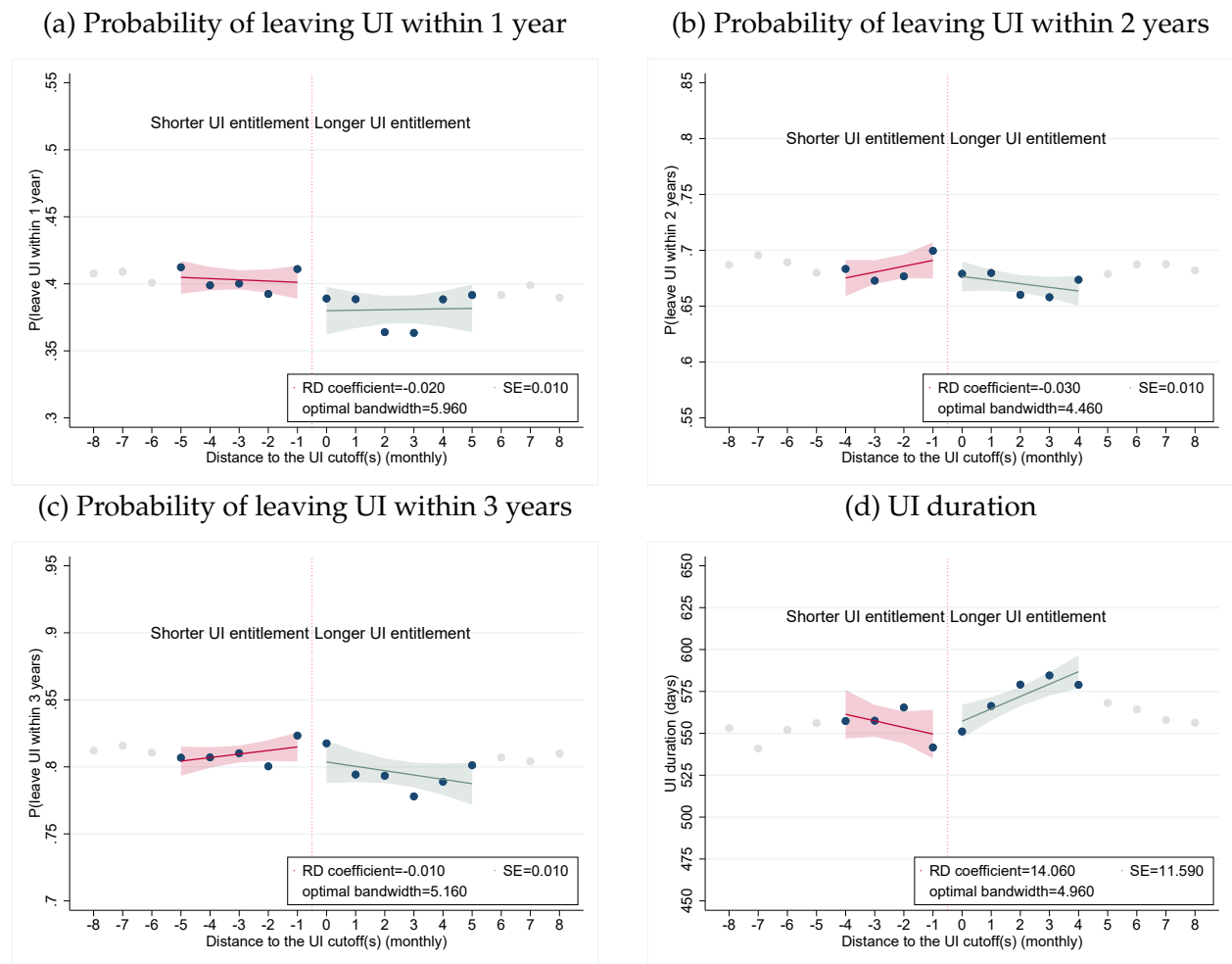
Figure A5: Density of employment history by cutoff: children



Note: This figure shows the number of observations at each month of employment history, separately by each UI entitlement cutoff, for the adult children subsample. The red dashed line indicates the relevant cutoff in employment history that determines UI entitlement.

A.2 Direct effects on the unemployed by sample

Figure A6: Direct effects on unemployed spouses



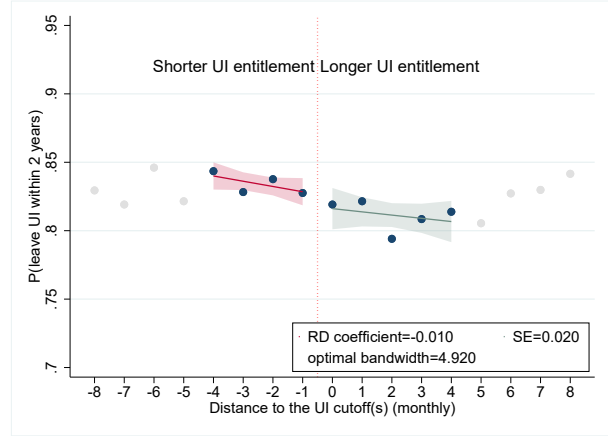
Note: This figure shows direct effects on unemployed spouses by employment history in monthly bins, measured relative to the UI entitlement cutoffs. The red dashed line demarcates the cutoff in employment history that creates a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoff. The text box reports the estimate of β_1 from Equation (1), together with its standard error and optimal bandwidth.

Figure A7: Direct effects on unemployed adult children

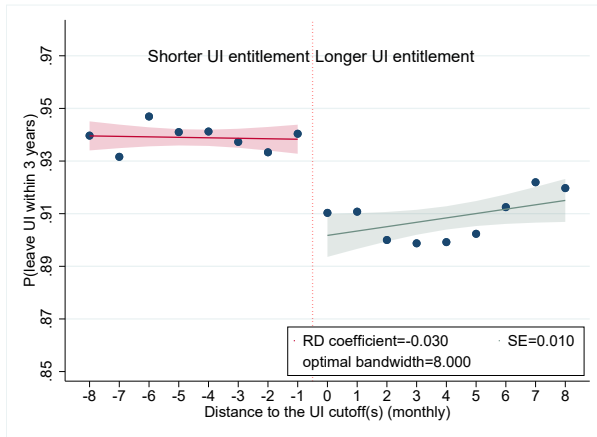
(a) Probability of leaving UI within 1 year



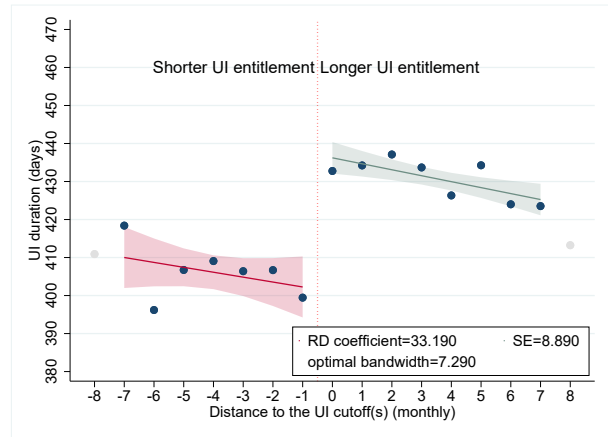
(b) Probability of leaving UI within 2 years



(c) Probability of leaving UI within 3 years



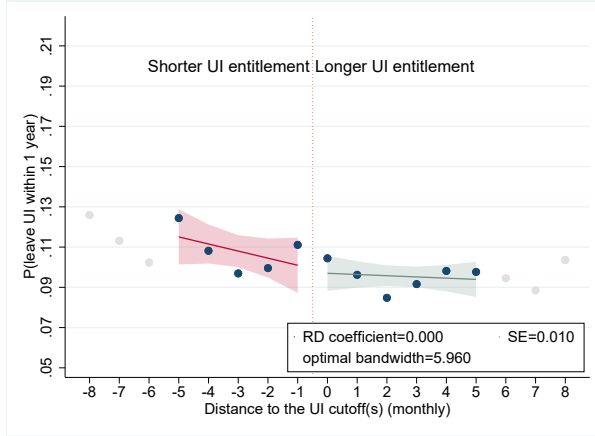
(d) UI duration



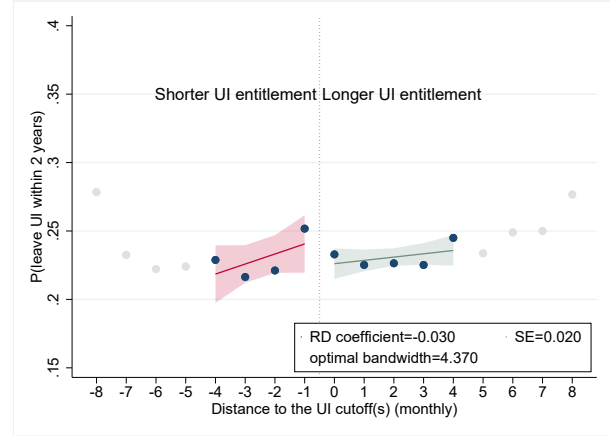
Note: This figure shows direct effects on unemployed adult children by employment history in monthly bins, measured relative to the UI entitlement cutoffs. The red dashed line demarcates the cutoff in employment history that creates a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoff. The text box reports the estimate of β_1 from Equation (1), together with its standard error and optimal bandwidth.

Figure A8: Direct effects on unemployed parents

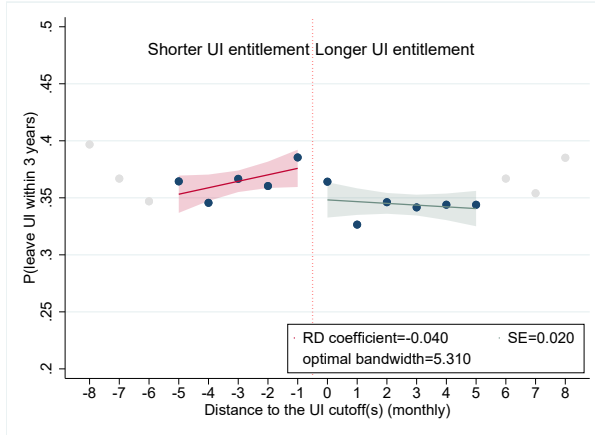
(a) Probability of leaving UI within 1 year



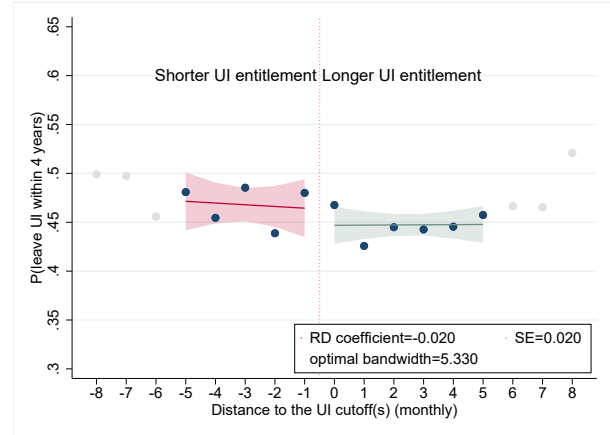
(b) Probability of leaving UI within 2 years



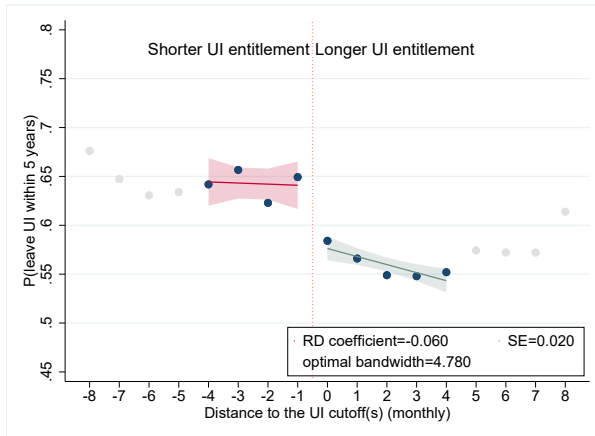
(c) Probability of leaving UI within 3 years



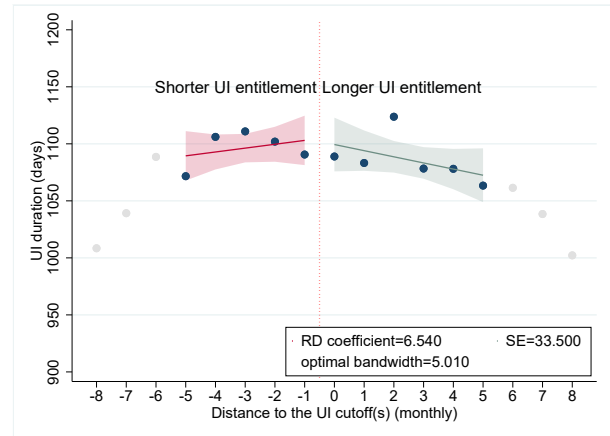
(d) Probability of leaving UI within 4 years



(e) Probability of leaving UI within 5 years



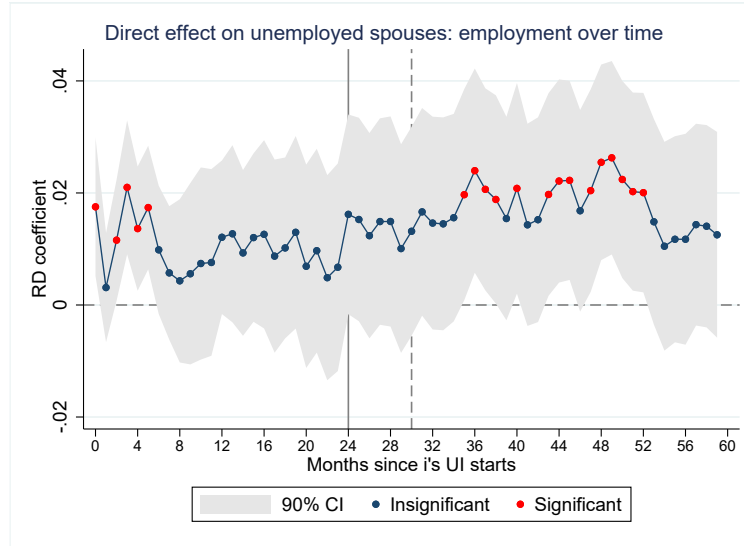
(f) UI duration



Note: This figure shows direct effects on unemployed parents by employment history in monthly bins, measured relative to the UI entitlement cutoffs. The red dashed line demarcates the cutoff in employment history that creates a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoff. The text box reports the estimate of β_1 from Equation (1), together with its standard error and optimal bandwidth.

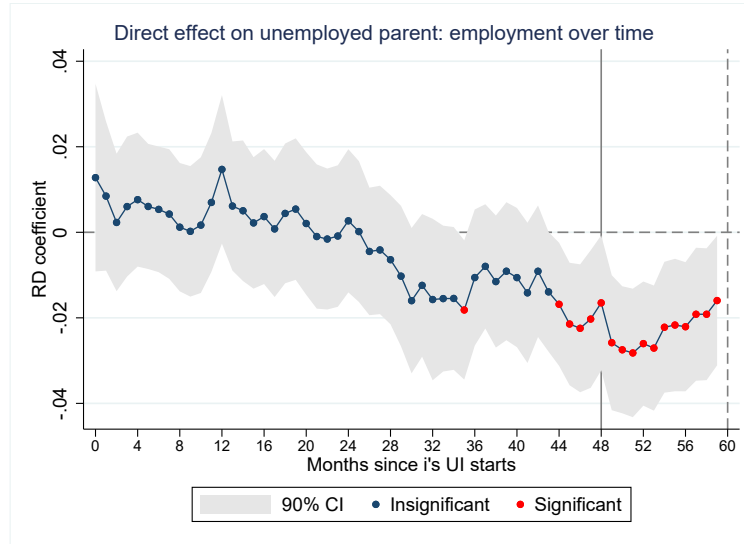
A.3 Dynamic direct effects on the unemployed by sample

Figure A9: Direct effect: dynamic employment effects for unemployed spouses



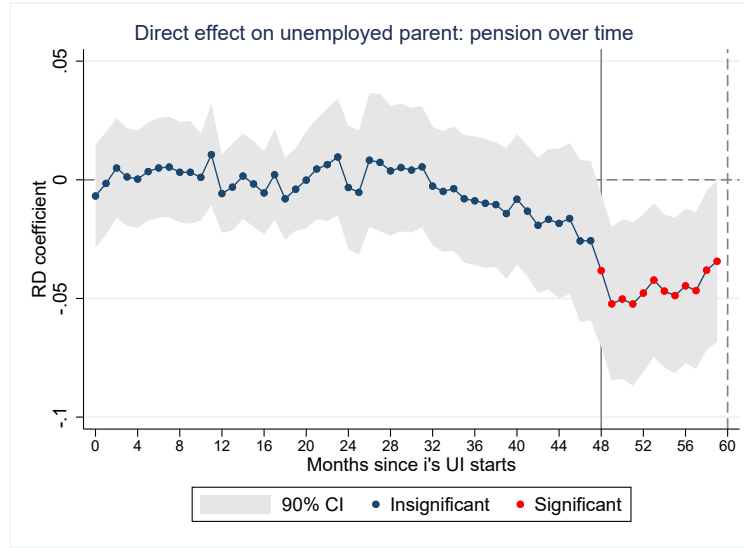
Note: This figure shows the dynamic direct effects on the employment of unemployed spouses over time since their own UI spell begins. Each point represents the estimate of β_1 from Equation (1) for the probability of employment in a given month since the start of the UI spell. Red markers denote estimates significant at the 90% confidence level; navy markers denote insignificant estimates.

Figure A10: Direct effect: dynamic employment effects for unemployed parents



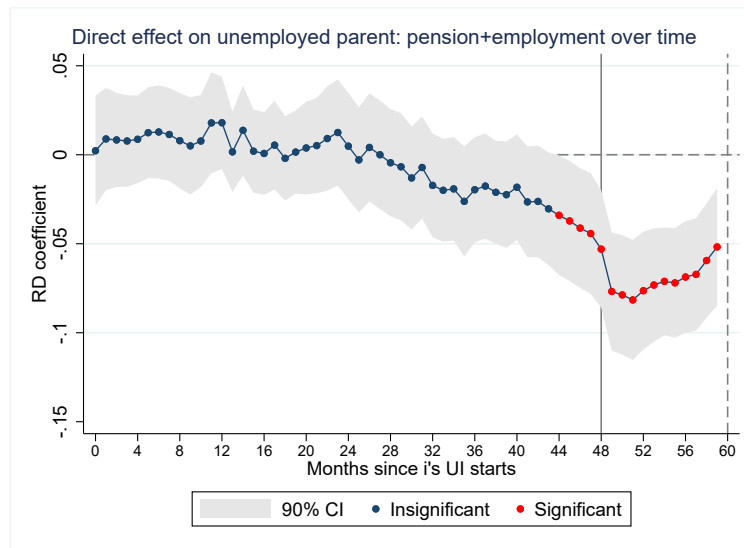
Note: This figure shows the dynamic direct effects on the employment of unemployed parents over time since their own UI spell begins. Each point represents the estimate of β_1 from Equation (1) for the probability of employment in a given month since the start of the UI spell. Red markers denote estimates significant at the 90% confidence level; navy markers denote insignificant estimates.

Figure A11: Direct effect: dynamic pension effects for unemployed parents



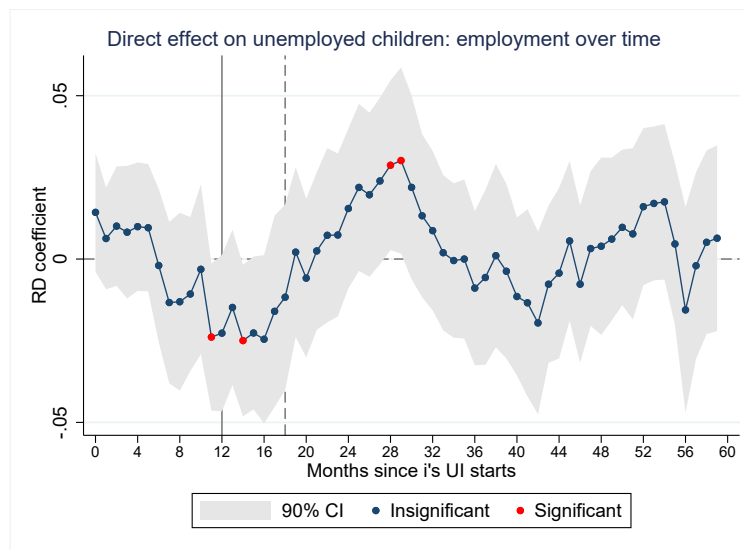
Note: This figure shows the dynamic direct effects on the pension receipt of unemployed parents over time since their own UI spell begins. Each point represents the estimate of β_1 from Equation (1) for the probability of receiving a pension in a given month since the start of the UI spell. Red markers denote estimates significant at the 90% confidence level; navy markers denote insignificant estimates.

Figure A12: Direct effect: dynamic pension and employment effects for unemployed parents



Note: This figure shows the dynamic direct effects on the combined outcome of pension receipt and employment of unemployed parents over time since their own UI spell begins. Each point represents the estimate of β_1 from Equation (1) for the probability of pension receipt or employment in a given month since the start of the UI spell. Red markers denote estimates significant at the 90% confidence level; navy markers denote insignificant estimates.

Figure A13: Direct effect: dynamic employment effects for unemployed children

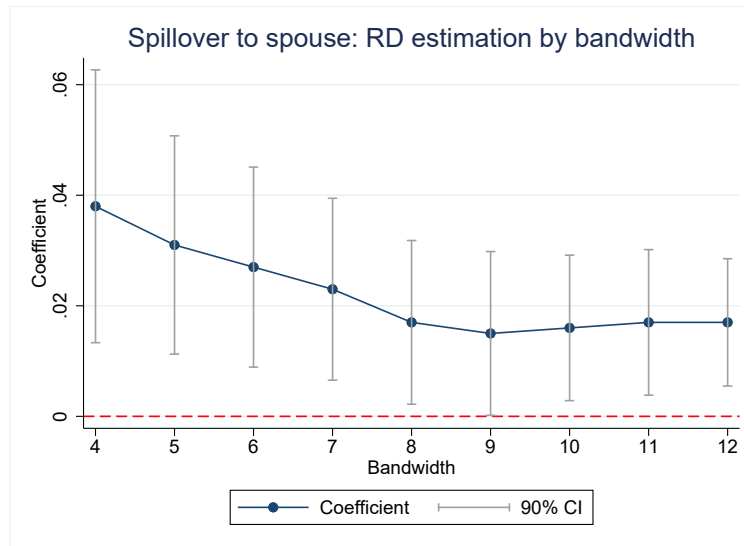


Note: This figure shows the dynamic direct effects on the employment of unemployed adult children over time since their own UI spell begins. Each point represents the estimate of β_1 from Equation (1) for the probability of employment in a given month since the start of the UI spell. Red markers denote estimates significant at the 90% confidence level; navy markers denote insignificant estimates.

A.4 RD coefficients for different time windows and cutoffs

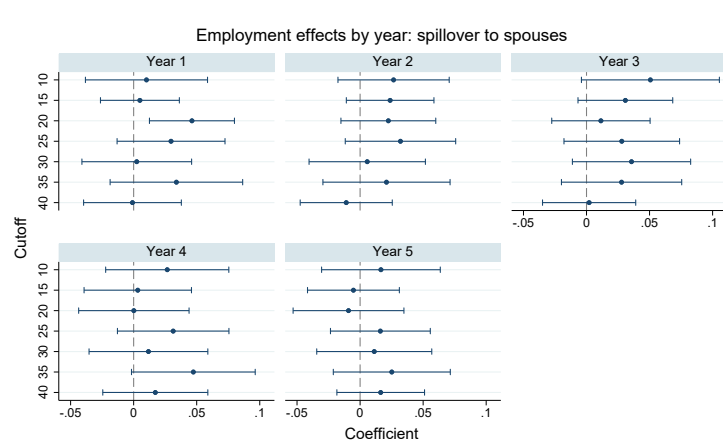
A.4.1 Spillover effect for spouses

Figure A14: Bandwidth robustness: spillover effects on spouses' employment spell covering UI expiration



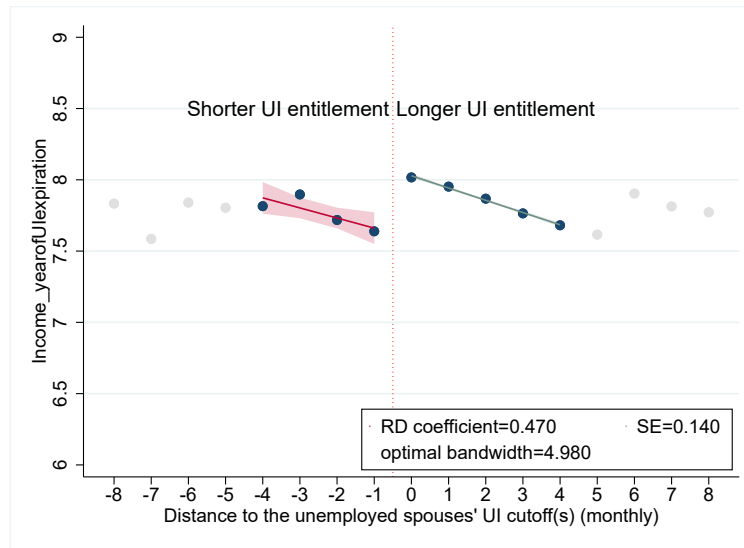
Note: This figure plots estimates of γ_1 from Equation (2) and 90% confidence intervals for the spillover effect on spouses' employment spell covering UI expiration, using bandwidths ranging from 4 to 12 months, as a robustness check for Figure 6.

Figure A15: Spillover effect on spouses by cutoff



Note: This figure shows estimates of γ_1 from Equation (2) for spouses' labor market outcomes separately for each employment history cutoff of the unemployed individual. The vertical axis lists the cutoffs, and each panel shows employment within one, two, three, four, and five years since the start of the UI spell.

Figure A16: Spillover effect on spouses: primary income from work and business



Note: This figure shows spouses' primary income from work and business in the third year since UI start, around UI expiration in 2.5 years, by their unemployed spouses' employment history in monthly bins, measured relative to the UI entitlement cutoffs. Income is measured as $\log(\text{income} + 1)$, including zero income. The red dashed line demarcates the cutoffs of the unemployed spouses' employment history that create a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoffs. The text box reports the estimate of γ_1 from Equation (2), together with its standard error and optimal bandwidth.

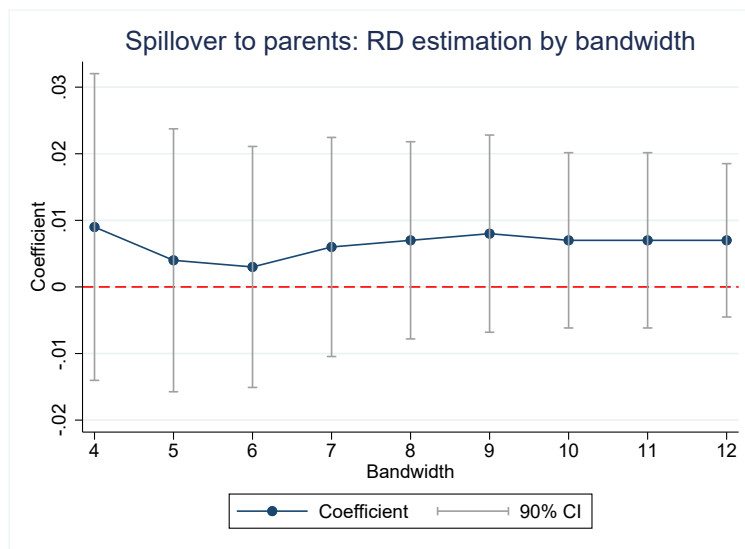
Table A1: Spillover to spouses: RD coefficients for different time windows

	Within 1 year	Within 2 years	Within 3 years
Employment	0.020*** (0.007)	0.016** (0.007)	0.022*** (0.007)
UI benefits	0.000 (0.002)	0.000 (0.001)	0.001 (0.001)
Other benefits	-0.002 (0.002)	-0.001 (0.002)	0.000 (0.001)
Inactivity	-0.005 (0.005)	-0.002 (0.005)	-0.001 (0.004)

Note: This table shows estimates of γ_1 from Equation (2) for spouses' labor market outcomes for different time windows since the start of the unemployed spouse's UI spell. Standard errors are reported below the coefficients. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

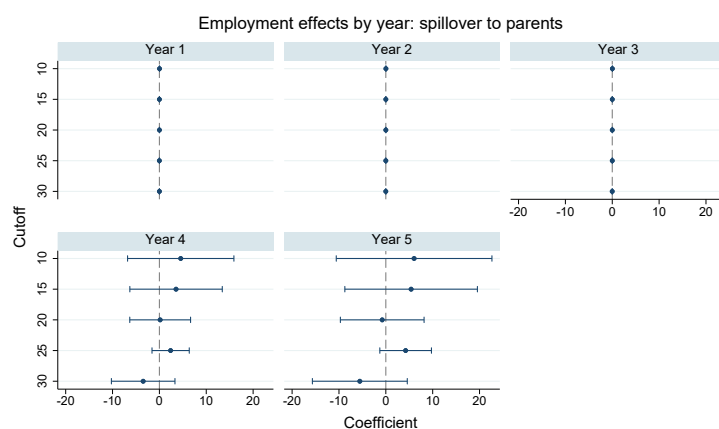
A.4.2 Spillover effect for parents

Figure A17: Bandwidth robustness: spillover effects on parents' employment spell covering UI expiration



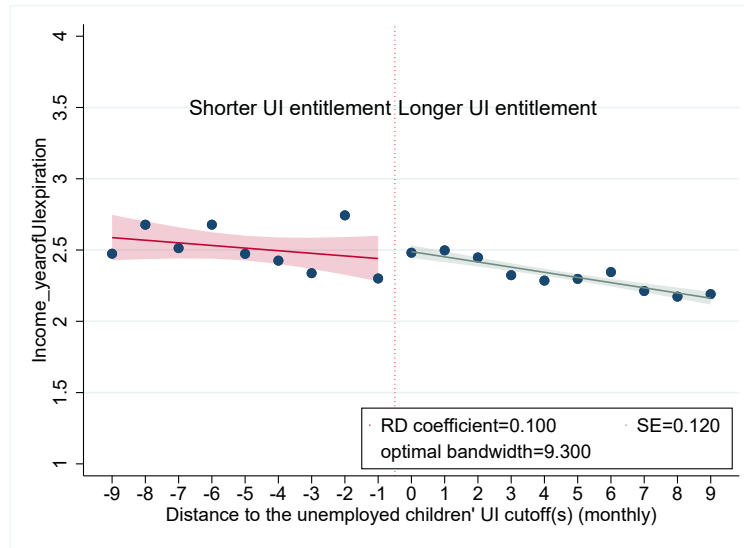
Note: This figure plots estimates of γ_1 from Equation (2) and 90% confidence intervals for the spillover effect on parents' employment spell covering UI expiration, using bandwidths ranging from 4 to 12 months, as a robustness check for Figure 9.

Figure A18: Spillover effect on parents by cutoff



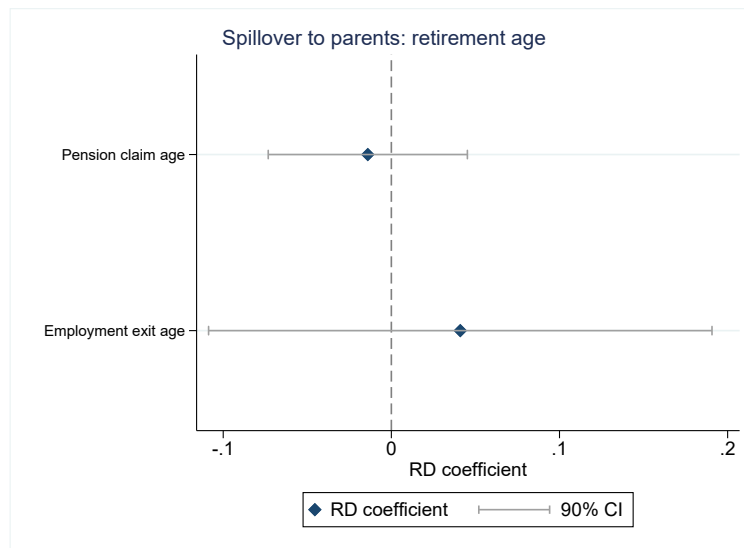
Note: This figure shows estimates of γ_1 from Equation (2) for parents' labor market outcomes separately for each employment history cutoff of the unemployed adult child. The vertical axis lists the cutoffs, and each panel shows employment within one, two, three, four and five years after the start of the UI spell.

Figure A19: Spillover effect on parents: primary income from work and business



Note: This figure shows parents' primary income from work and business in the second year since their children's UI start, around UI expiration in 1.5 years, by their unemployed children's employment history in monthly bins, measured relative to the UI entitlement cutoffs. Income is measured as $\log(\text{income} + 1)$, including zero income. The red dashed line demarcates the cutoffs of the unemployed children's employment history that create a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoffs. The text box reports the estimate of γ_1 from Equation (2), together with its standard error and optimal bandwidth.

Figure A20: Spillover effect results for parents: retirement age



Note: This figure shows the effects on parents' retirement behavior, estimated as γ_1 from Equation (2) using the optimal bandwidth. Retirement is characterized by two definitions: the age at which individuals first claim pension benefits, and the age at which they exit their last employment spell. All coefficients are reported with 90% confidence intervals.

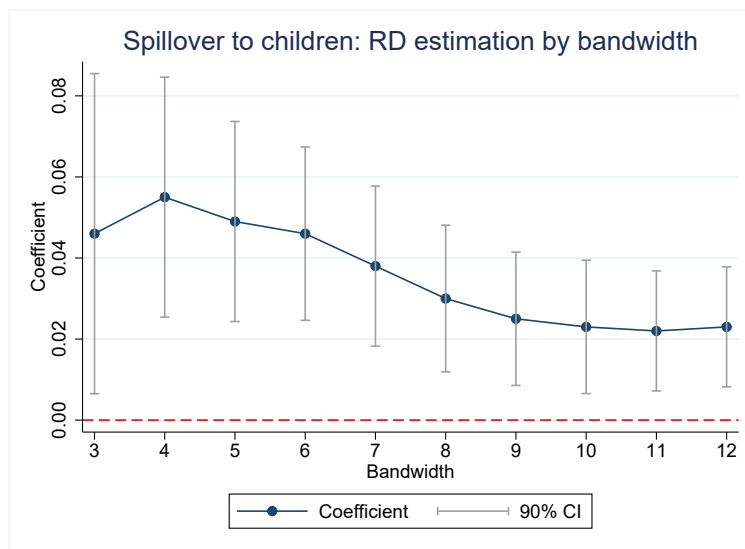
Table A2: Spillover to parents: RD coefficients for different time windows

	Within 1 year	Within 2 years	Within 3 years
Employment	0.010** (0.004)	0.006 (0.004)	0.005* (0.003)
UI benefits	0.004** (0.002)	0.002** (0.001)	0.001 (0.001)
Other benefits	-0.002** (0.001)	-0.002** (0.001)	-0.003*** (0.001)
Inactivity	0.003 (0.004)	0.002 (0.004)	0.001 (0.003)

Note: This table shows estimates of γ_1 from Equation (2) for parents' labor market outcomes for different time windows since the start of the unemployed adult child's UI spell. Standard errors are reported below the coefficients. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

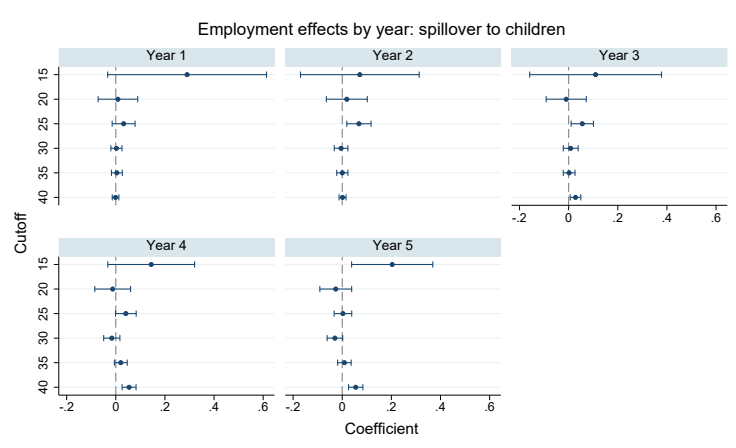
A.4.3 Spillover effect for children

Figure A21: Bandwidth robustness: spillover effects on adult children's employment spell covering UI expiration



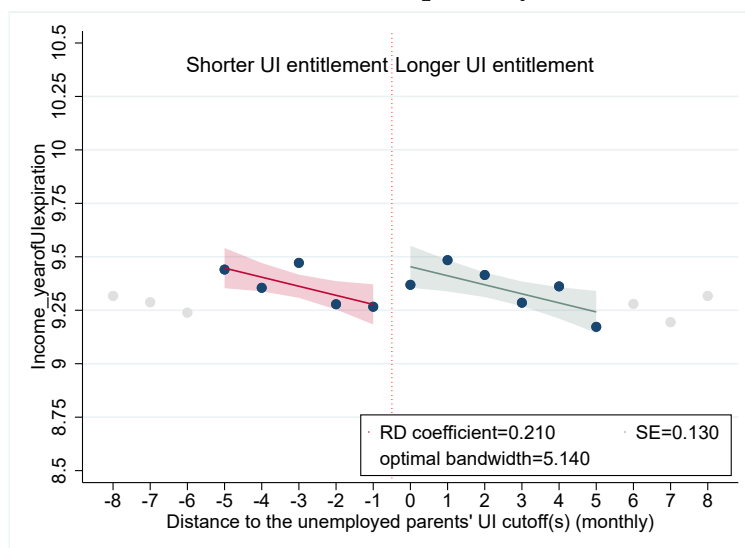
Note: This figure plots estimates of γ_1 from Equation (2) and 90% confidence intervals for the spillover effect on adult children's employment spell covering UI expiration, using bandwidths ranging from 3 to 12 months, as a robustness check for Figure 12.

Figure A22: Spillover effect on adult children by cutoff



Note: This figure shows estimates of γ_1 from Equation (2) for adult children's labor market outcomes separately for each employment history cutoff of the unemployed parent. The vertical axis lists the cutoffs, and each panel shows employment within one, two, three, four and five years after the start of the UI spell.

Figure A23: Spillover effect on adult children: primary income from work and business



Note: This figure shows children's primary income from work and business in the fifth year since their parents' UI start, around UI expiration in 5 years, by their unemployed parents' employment history in monthly bins. Income is measured as $\log(\text{income} + 1)$, including zero income. The red dashed line demarcates the cutoffs of the unemployed parents' employment history that create a jump in UI entitlement. The solid lines depict a linear fit estimated separately on each side of the cutoffs. The text box reports the estimate of γ_1 from Equation (2), together with its standard error and optimal bandwidth.

Table A3: Spillover to adult children: RD coefficients for different time windows

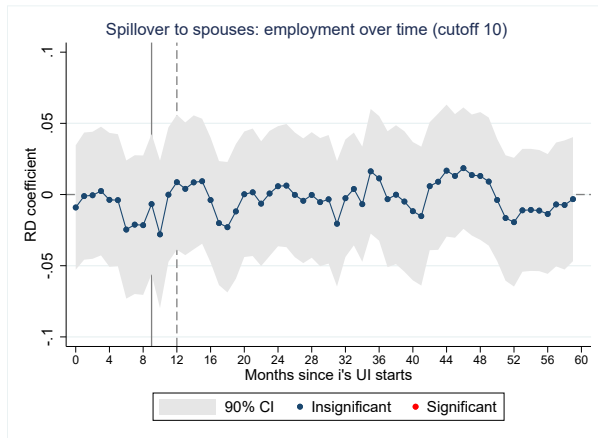
	Within 1 year	Within 2 years	Within 3 years
Employment	0.002 (0.005)	0.006 (0.005)	0.010** (0.005)
UI benefits	0.005* (0.003)	0.005** (0.002)	0.006*** (0.002)
Being students	0.004 (0.004)	0.003 (0.003)	0.002 (0.002)
Other benefits	0.002 (0.002)	0.003 (0.002)	0.003*** (0.001)
Inactivity	0.006 (0.004)	0.007** (0.003)	0.006** (0.003)

Note: This table shows estimates of γ_1 from Equation (2) for adult children's labor market outcomes for different time windows since the start of the unemployed parent's UI spell. Standard errors are reported below the coefficients. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

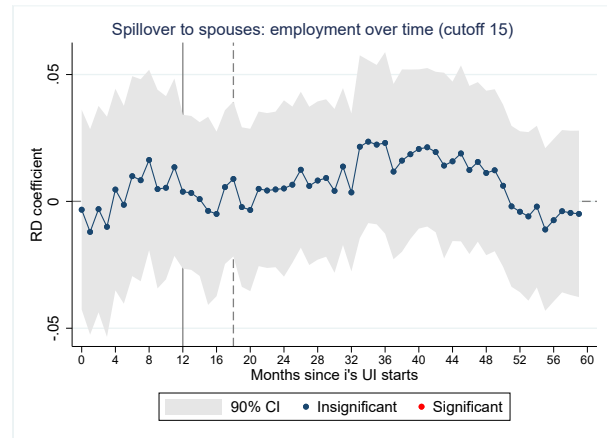
A.5 Dynamic spillover effect for spouses

Figure A24: Dynamic spillover effects on spouses' employment, by cutoff

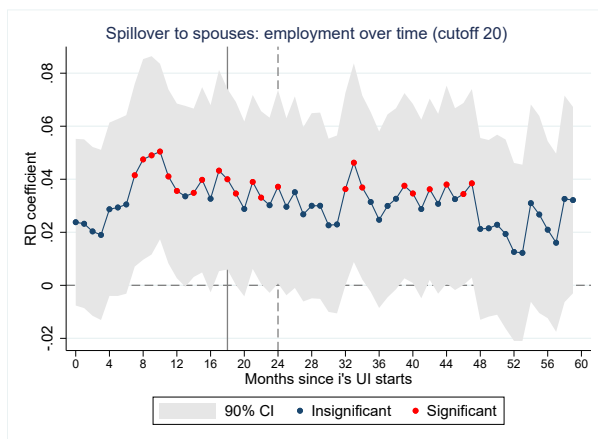
(a) Cutoff 10



(b) Cutoff 15



(c) Cutoff 20



(d) Cutoff 25

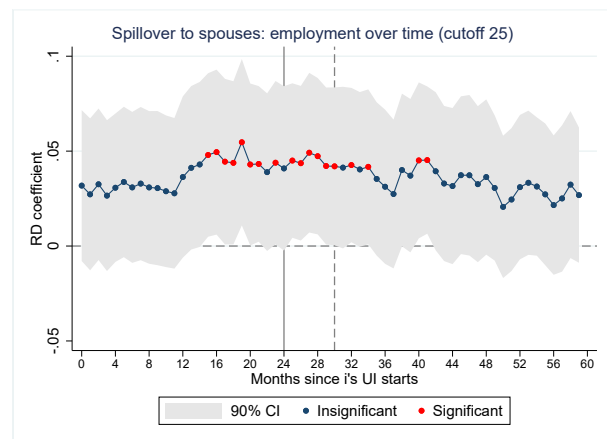
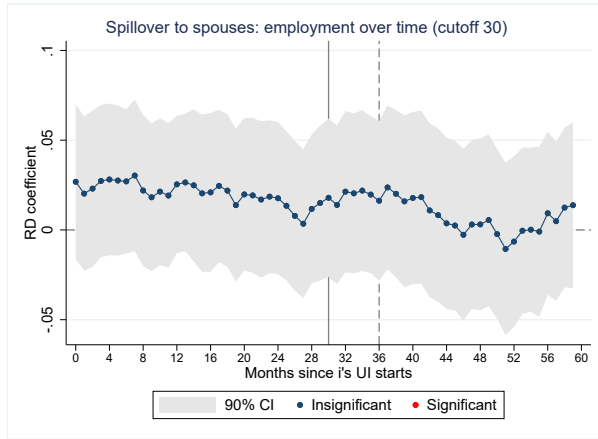
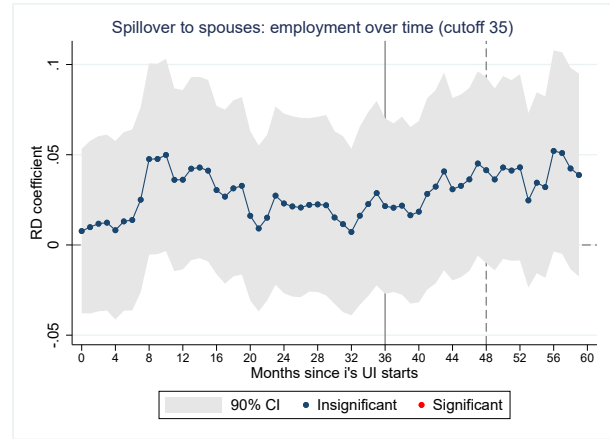


Figure A24: Dynamic spillover effects on spouses' employment, by cutoff (continued)

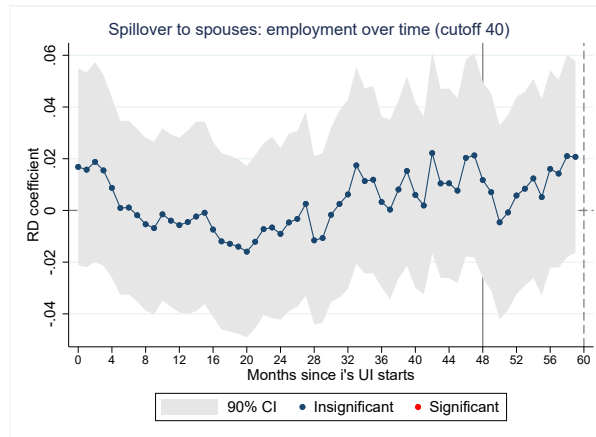
(e) Cutoff 30



(f) Cutoff 35



(g) Cutoff 40



Note: This figure shows the dynamic spillover effects on spouses' employment over time since their partners' UI spell begins, with each panel showing the results for one UI entitlement cutoff. Each point represents the estimate of γ_1 from Equation (2) for the probability of employment in a given month since the start of the UI spell. Red markers denote estimates significant at the 10% level, and navy markers denote insignificant estimates.

B Proofs of Propositions in Section 5

Proof of Proposition 1

Since λ , F , β and w^j do not depend on t , the value of unemployment at t depends on t only through remaining entitlement $s = T^{UI} - t$, so we write $V_t^u = V^u(s)$. Let $\varphi(b_t) \equiv \max_{h^j} \{u(b_t + w^j h^j) - v(h^j)\}$ denote the flow value at benefit level b_t , which is strictly increasing in b_t since $u' > 0$. Define

$$G(x) \equiv \lambda \int \max\{V^e(w), x\} dF(w) + (1 - \lambda)x. \quad (10)$$

Equation (3) then reads $V^u(s) = \varphi(b) + \beta G(V^u(s - 1))$ for $s \geq 0$, and $V^u(s) = \underline{V}^u$ for $s < 0$, where $\underline{V}^u = \varphi(b_0) + \beta G(\underline{V}^u)$ is the stationary value after exhaustion. Because $\max\{V^e(w), \cdot\}$ is nondecreasing with slope at most one and $\lambda \in (0, 1)$, for any $x > y$

$$0 < (1 - \lambda)(x - y) \leq G(x) - G(y) \leq x - y. \quad (11)$$

Let $\Delta(s) \equiv V^u(s) - V^u(s - 1)$. At $s = 0$, $\Delta(0) = \varphi(b) - \varphi(b_0) > 0$ since $b > b_0$. For $s \geq 1$ the flow terms cancel, so $\Delta(s) = \beta[G(V^u(s - 1)) - G(V^u(s - 2))]$. If $\Delta(s - 1) > 0$, then (11) gives

$$0 < \Delta(s) \leq \beta \Delta(s - 1) < \Delta(s - 1). \quad (12)$$

By induction, $\Delta(s) > 0$ for all $s \geq 0$, which is $V_t^u > V_{t+1}^u$ for all $t \leq T^{UI}$. Moreover, $\Delta(s)$ is strictly decreasing in s , so an additional period of entitlement is worth more the closer i is to exhaustion. $\square$

Proof of Proposition 2

Under regime T^k , $k \in \{S, L\}$, remaining entitlement at $t + 1$ is $s_{t+1}^k = T^k - t - 1$. For $t < T^S$, $s_{t+1}^L > s_{t+1}^S \geq 0$. Applying Proposition 1 repeatedly gives $V^u(s_{t+1}^L) > V^u(s_{t+1}^S)$, that is $V_{t+1}^u(T^L) > V_{t+1}^u(T^S)$. The reservation wage satisfies $V^e(w_t^*(T^k)) = V_{t+1}^u(T^k)$, and V^e is strictly increasing in w . Therefore $w_t^*(T^L) > w_t^*(T^S)$ for all $t < T^S$. $\square$

Proof of Proposition 3

The hazard is $\theta_t(T^k) = \lambda[1 - F(w_t^*(T^k))]$. Since $f > 0$ on the support, F is strictly increasing, and Proposition 2 gives $\theta_t(T^L) < \theta_t(T^S)$ for all $t < T^S$.

For the gap, define the continuation value gap

$$D_t \equiv V_{t+1}^u(T^L) - V_{t+1}^u(T^S) = \sum_{k=s_{t+1}^S+1}^{s_{t+1}^L} \Delta(k). \quad (13)$$

Moving from t to $t+1$ lowers both s_{t+1}^S and s_{t+1}^L by one, so

$$D_{t+1} - D_t = \Delta(s_{t+1}^S) - \Delta(s_{t+1}^L) > 0, \quad (14)$$

where the inequality follows from (12) and $s_{t+1}^S < s_{t+1}^L$. Because D_t is computed from (3), it already accounts for the probability of finding a job before T^S .

To translate this into hazards, let $x_t^k \equiv V_{t+1}^u(T^k)$ and $H(x) \equiv F((V^e)^{-1}(x))$, with density $h(x) = f(w)/V^e(w)$ evaluated at $w = (V^e)^{-1}(x)$. We assume that h is nonincreasing over the relevant range, which holds when wage offers are not concentrated at the top of the distribution. The hazard gap is $\theta_t(T^S) - \theta_t(T^L) = \lambda \int_{x_t^S}^{x_t^S+D_t} h(x) dx$. Since $x_{t+1}^S < x_t^S$ by Proposition 1, $D_{t+1} > D_t$, h is nonincreasing and $h > 0$,

$$\int_{x_{t+1}^S}^{x_{t+1}^S+D_{t+1}} h(x) dx > \int_{x_{t+1}^S}^{x_{t+1}^S+D_t} h(x) dx \geq \int_{x_t^S}^{x_t^S+D_t} h(x) dx. \quad (15)$$

The hazard gap is therefore strictly increasing in t for all $t < T^S$. $\square$

Proof of Proposition 4

From (5), each term $\prod_{r=t}^{s-1} (1 - \theta_r)$ is the probability of remaining unemployed through period s . By Proposition 3, and by the argument of Proposition 2 applied with weak inequality for $T^S \leq r \leq T^L$, $(1 - \theta_r(T^L)) \geq (1 - \theta_r(T^S))$ for all r , with strict inequality for $r < T^S$. Therefore every term in the sum is weakly larger under T^L , with at least some terms strictly larger, giving $\Omega_t(T^L) > \Omega_t(T^S)$. $\square$

Proof of Proposition 5

In Window 1, $b_t = b$ is identical across regimes, so c_t is identical at any given hours level and $u'(c_t)$ is identical across regimes. From (4), h_t^{j*} is strictly increasing in the effective marginal benefit $w^j u'(c_t) \Omega_t$. Since $\Omega_t(T^L) > \Omega_t(T^S)$ by Proposition 4, the effective marginal benefit is strictly larger under T^L , and since $v'' > 0$

$$h_t^{j*}(T^L) > h_t^{j*}(T^S) \quad \forall t \leq T^S. \quad (16)$$

□

Proof of Proposition 6

From (4), h_t^{j*} is increasing in the effective marginal benefit $MB_t = w^j u'(c_t) \Omega_t$. In Window 2, the marginal benefit gap across regimes is

$$MB_t(T^L) - MB_t(T^S) = w^j \left[u'(c_t(T^L)) \Omega_t(T^L) - u'(c_t(T^S)) \tilde{\Omega}_t(T^S) \right]. \quad (17)$$

Under T^L , $b_t = b > b_0$ so $c_t(T^L) = b + w^j h_t^j > b_0 + w^j h_t^j = c_t(T^S)$. By strict concavity of u , $u'(c_t(T^L)) < u'(c_t(T^S))$ (income effect). By Proposition 4, $\Omega_t(T^L) > \Omega_t(T^S)$ (spell effect). The conditional spell multiplier $\tilde{\Omega}_t(T^S) > \Omega_t(T^S)$ for the negatively selected pool still unemployed under T^S (selection effect). The sign of $MB_t(T^L) - MB_t(T^S)$ therefore depends on the relative magnitudes, giving the threshold condition

$$\frac{u'(c_t(T^S)) \Omega_t(T^L)}{u'(c_t(T^L)) \tilde{\Omega}_t(T^S)}. \quad (18)$$

The left side is increasing in b ; the right side is increasing in $T^L - T^S$. The sign is therefore ambiguous in general. □

Proof of Proposition 7

For $t > T^L$, both regimes have $b_t = b_0$ and face the same stationary post-exhaustion environment, with the same reservation wage w_0^* , the same hazard $\theta_0 = \lambda[1 - F(w_0^*)]$, and therefore the same spell multiplier Ω_t . From (4), h_t^{j*} depends on t only through b_t and Ω_t , both of which are identical across regimes. Therefore $h_t^{j*}(T^L) = h_t^{j*}(T^S)$ for all $t > T^L$. □

C MVPF Calculation Inputs for Section 7

Table A4 reports the inputs used to compute the MVPF for each sample in Table 5.

Table A4: Key inputs for the MVPF calculation

	Spouses	Children
Claimant pre-UI wage	€24,969	€32,435
Family post-UI earnings	€29,068	€24,452
UI benefit b , 70% of wage	€1,457/mo	€1,892/mo
Extension $T^L - T^S$	6 mo	12 mo
$S(T^S)^a$	0.321	0.532
Claimant extra UI ^b	0.84 mo	1.98 mo
$\bar{\gamma}^c$	0.030	0.0015
Average tax rate, claimant	24.1%	28.2%
Average tax rate, family	26.6%	23.7%
Observations	233,070	366,798

Notes. ^a Survival rate at T^S , the share of claimants just left of the cutoff still on UI when the short entitlement ends, computed from CBS exit rates. ^b Equal to $-\sum_{t=1}^{60} \hat{\beta}_t$, the sum of monthly RD estimates on leaving UI by month t . ^c Average of all monthly RD estimates on family member employment. Tax rates are 2005 averages.